

INDIVIDUAL SEWAGE DISPOSAL SYSTEM RULES AND REGULATIONS MONTEZUMA COUNTY, COLORADO

SECTION I TITLE AND POLICY

- 1.1 Title: These regulations shall be known as the Individual Sewage Disposal Systems Regulations.
- 1.2 Policy: The Montezuma County Board of Health declares the purpose of these regulations, to protect the physical and mental health of the people, to control communicable diseases, to regulate wastes from dwellings, business, industrial, and public buildings. These regulations shall be applicable throughout in Montezuma County, and shall be enforced by the Board of Health. These regulations are designed to control the construction, location, and operation of sewage disposal systems, the transportation and final disposal of sewage materials and Systems Cleaners and Installers of such systems. The Montezuma County Board of Health declares that its general policy is to require the use of public sewer systems where and whenever feasible, and to limit the installation of individual sewage disposal systems to areas that are not feasible for public sewers. These rules and regulations shall meet or exceed the requirements of the guidelines as adopted by the Colorado Board of Health pursuant to Chapter 25, /article 10, C.R.S. 1973.

SECTION II DEFINITIONS

Absorption System: means a leaching field and adjacent soils or other system for the treatment of sewage in an individual sewage disposal system by means of absorption into the ground.

Aerobic Sewage Treatment Systems: means an individual sewage disposal system employing biological action which is maintained by the addition of air or oxygen.

Applicant: means any person who submits an application for a permit for an individual sewage disposal system.

Bedrock: means the more or less solid undisturbed rock in place either at the surface of beneath surface deposits of gravel, sand, or soil or a consolidated rock formation of impervious material which may exhibit jointed, fractured, or deteriorated characteristics.

Building Sewer: means that part of the piping of a drainage systems which extends from the end of the building drain and which receives the discharge of the building drain and conveys it to a public sewer, private sewer, individual sewage disposal systems, or other points of disposal.

Competent Technician: means a person designated by the local health department who is able to conduct and interpret the results of percolation tests.

Composting Toilet: means a unit which consists of a toilet seat and cover over a riser which connects to a compartment or a vault that contains or will receive composting materials sufficient to reduce waste by aerobic decomposition.

Department: means the Montezuma County Department of Health.

Dispersal System: means a system for the disposal of effluent after final treatment in an individual sewage disposal system by a method which does not depend upon or utilize the treatment capability of the soil.

Distribution Box: means a watertight chamber below the outlet level of a septic tank or treatment unit and from which effluent enters the absorption system.

Division: means the division of administration of the department.

Dosing Tank: means a tank which provides for a high rate periodic discharge.

Effective Size of granular media is that size such that 10% weight of the media is finer than this size.

Effluent: means the liquid waste discharge from an individual sewage disposal system.

Experimental System: means a particular design or type of system based upon improvements, or development in the technology of sewage disposal and is otherwise provided for in paragraphs (e) to (j) of 25-10-105, C.R.S. 1973.

Groundwater Table: means the upper surface of groundwater in the zone of saturation of geologic formations.

Guidelines: means the minimum requirements as described in this document.

Health Officer: means the chief administrative and executive officer of a local health department, or the appointed health officer of the local board of health.

Individual Sewage Disposal Systems and the term "system": where the context so indicates means an absorption system of any size of flow or a system or facility for treating, neutralizing, stabilizing, or disposing of sewage treatment works.

Liner: means a watertight membrane liner of at least 0.01 inch (10 mil) thickness which is used to prevent effluent from entering the soil or groundwater table. Material shall be polyvinyl chloride or material of equal integrity.

Local Health Department: means any city, county, city and county, district or regional health department and may include a local board of health.

Manufacturer: means the person or firm that constructs or assembles individual sewage treatment system components.

Mini-System: means a system designed to accommodate only wastes from sinks, lavatories, tubs, showers, and laundry.

Percolation Tests: means a subsurface soil test at the depth of a proposed absorption system or similar component of an individual sewage disposal 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.

Permeability: means the property of a material which permits movement of water through the material.

Permit: means a permit for the construction or alteration, installation, and use, or for the repair of an individual sewage disposal system.

Person: means individual, partnership, firm, corporation, association, or other legal entity and also the state, any political subdivision thereof, or other government entity.

Privy: means a 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 animals.

Professional Geologist: is 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.

Registered Professional Engineer: means an engineer licensed in accordance with Section 12-25-111. C.R.S. 1973.

Sand Filter: means a subsurface system which utilizes filtration or absorption or both, which contains an intermediate layer of sand as filter material.

Sanitarian: means a person who is trained in physical, biological, and sanitary science to carry out inspectional and educational duties in the field of environmental sanitation.

Seepage Bed or Absorption Bed: means a subsurface soil absorption area which is wider than three (3) feet, together with a system of perforated distribution pipes through which effluent may seep or leach into the soil.

Seepage Pit: means a type of soil absorption system dependent upon suitable soil at depths greater than that of an absorption trench or bed, and designed on the basis of sidewall area.

Septic Tank: means a watertight, accessible covered receptacle designed and constructed to receive sewage from a building sewer, to settle solids from the liquid, to digest organic matter, and store digested solids through a period of retention and allow the clarified liquids to discharge to other treatment units for final disposal.

Serial Distribution: means an arrangement of absorption trenches, seepage pits or seepage beds where effluent is retained to utilize the absorption capacity of a component before flowing into a succeeding component.

Sewage: means a combination of liquid wastes which may include chemicals, house wastes, human excreta, animal or vegetable matter in suspension or solution, or other solids in suspension or solution and which is discharged from a dwelling, building, or other establishment.

Sewage Treatment Works: means a system of facility for treating, neutralizing, stabilizing, or disposing of sewage, which system or facility has a designed capacity to receive more than two thousand (2,000) gallons of sewage per day, unless designed as an absorption system. The term "sewage treatment works" includes appurtenances such as interceptors, collection lines, outfall and the outlet sewers, pumping stations, and related equipment.

State Board: means the State Board of Health created by Section 25-1-103, C.R.S. 1973.

State Waters: means any and all surface and subsurface waters which are contained in or flow in or through this state, except waters in sewer systems, waters in treatment works of disposal systems, waters in potable water distribution systems, and all waters withdrawn for use, until all uses and treatments have been completed.

Suitable Soil: means a soil which will effectively filter effluent by removal of organisms and suspended solids before the effluent reaches any highly permeable earth such as joints in bedrock, gravel, or very vertical thickness of at least four (4) feet.

Systems Cleaner: means a person engaged in and who holds himself out as a specialist in the cleaning and pumping of sewage disposal systems and removal of the residues deposited in the operation thereof.

Systems Contractor: means a person engaged in and who holds himself out as a specialist in the installation, renovation, and repair of sewage disposal systems.

Uniformity Coefficient: means the ratio of 60% “finer than” size to the 10% “finer than” size (both by weight).

Vault: means a watertight, covered receptacle, which is designed to receive and store excreta or waters either from a sewer or from a privy and is accessible from a first stage treatment unit and which provides an additional degree of treatment.

Wastewater Pond: means a designed pond which receives exclusively wastewater from a first stage treatment unit and which provides an additional degree of treatment.

SECTION III ADMINISTRATION AND ENFORCEMENT

3.1 General Sanitation Requirements:

The owner of any structure where people live, work, or congregate shall insure that the structure contains adequate, convenient, sanitary toilet and sewage disposal systems in good working order. Under no conditions shall sewage or effluent be permitted to be discharged upon the surface of the ground, or into waters of the state, unless the sewage or effluent meets the minimum requirements of this regulation or the water quality standards of the Colorado Water Quality Control Commission, whichever are applicable.

3.2 Inspections and Right-of-Entry:

For the purpose of enforcing these regulations the Health Office is authorized to enter upon private property at reasonable times and upon reasonable notice for the purpose of determining whether or not sewage disposal facilities installed thereon are in compliance with these regulations. The owner or occupant of every property having an individual sewage disposal system shall give the Health Officer free access to the property for such survey or inspection. If access is denied, the Health Officer shall apply to the District Court for an order authorizing entry.

3.3 Permit Application Requirements:

A. Prior to commencing construction, any person who wishes to install, alter, or repair an individual sewage disposal system in the county shall obtain a permit from the Health Officer and shall furnish the following information to the Health Officer:

1. Owner of Property.
2. Owner’s property address and telephone number.
3. Subdivision lot number or variance resolution number.
4. Systems Contractor’s name, address and telephone number.
5. Plot plan and design features.

6. Type of building by use.
 7. Type of water supply.
 8. Soil percolation or hydraulic conductivity tests when necessary to the design of the disposal system.
 9. Ground conditions, depths to bedrock, depth to ground water table.
 10. Such additional information as may be required by the Health Officer.
 11. Owner's signature.
- B. A permit fee of __ (see fee schedule*) shall be required of Applicants for new sewage disposal systems, payable to Montezuma County. Where work, for which a permit is required, is started or proceeded with prior to obtaining said permit, the above fee shall be double, but the payment of such double fee shall not relieve any persons from fully complying with the requirements of these rules and regulations in the execution of the work nor from any other penalties prescribed herein. When any reinspection is required by the Health Officer, a fee of __ (see fee schedule*) shall be required.
- C. No permit fee shall be charged for alterations or repair of an existing sewage disposal system unless a percolation test is required.
- D. Owners of sewage disposal systems who are required to submit effluent test samples to the Department, shall pay a fee of __ (see fee schedule*) per sample for each sample taken by an employee of the Department. Any owner or occupant may request the collection and testing of an effluent sample at the above fee which may be done at the option of the Department. Said fee excludes any charges which will be made by the Laboratory doing said test.

3.4 Preliminary Investigations:

After receiving an application for an individual sewage disposal system permit, a Sanitarian or a Colorado Registered Professional Engineer shall visit the applicant's property to make a preliminary investigation on behalf of the Department, consisting of:

- A. Inspection of the premise.
- B. Soil percolation or hydraulic conductivity tests when necessary.
- C. General geological conditions.
- D. The determination of the suitability of the site and of the proposed design based upon the land use and population density in the area; the use to which the property is to be put; the size of the lot (three (3) acre minimum), depth verification of the ground water table, suitable soil, and depth to bedrock; the location of water supply systems; and the location of the disposal system with reference to well, streams, lakes, ditches, structures, and other geographical features.
- E. When specific evidence indicates that subsurface conditions exist that may endanger the state waters, additional hydrological, geological, or

engineering information provided by a Registered Professional Geologist may be required.

3.5 The Registered Professional Engineer or Sanitarian:

The Registered Professional Engineer or Sanitarian, acting on behalf of the Department, shall determine the type or types of sewage disposal systems which are suitable for the property, and may give a conditional approval for a permit for the proposed sewage disposal system; or may recommend disapproval of the application and denial of a permit if the proposed system can not be made to comply with these regulations. The conditional approval shall set forth conditions precedent to the issuance of a permit including effluent testing, cleaning or maintenance schedules, or other special conditions. No permit shall be issued to the applicant or to a subsequent owner until the conditions have been met. No permit shall be issued for the following systems unless they are designed by a Registered Professional Engineer and after they have been reviewed by the Department:

- A. Systems disposing of effluent into state waters;
- B. Systems disposing of effluent upon the ground;
- C. Systems which service commercial, business, institutions, industry, or multifamily dwelling;
- D. Absorption fields for which the location can not meet suitable soil or slope requirements;
- E. Experimental systems;
- F. Systems with a design capacity over 2,000 gallons of sewage per day;
- G. Systems on less than three (3) acres of ground;

3.6 Expiration of Permit:

The individual sewage disposal permit shall expire one (1) year after its issuance if construction has not commenced. Any change in plans or specifications after the permit has been issued, invalidates the permit unless approval is secured from the Health Officer for such changes. An expired permit may be extended or renewed if:

- A. There has been no change in the plans and specifications of the proposed system as set out in the original application; and
- B. The surrounding land, its use or zoning, have not changed so as to cause the original application not to be acceptable under these regulations; and
- C. The application for extension or renewal is submitted to the Department not more than thirty (30) days after the expiration of the original permit and meets all of the requirements of the original permit, including fees.

The property owner shall be responsible for proper maintenance of the system and for abatement of any nuisance arising from its failure.

3.7 The issuance of a permit does not constitute assumption by the Department or its employees of liability for the failure of any sewage disposal system.

3.8 When the sewage disposal system is substantially complete and ready to cover the system installer shall notify the Department and a representative of the Department

shall make final inspection within twenty-four (24) hours, or at a later time, after receipt of notice, Saturdays, Sundays, and holidays excepted. If the final inspection is not made within the time provided herein, the installer may proceed to cover or complete the installation with the subsequent submittal of certified photographs and affidavit of completion.

- 3.9 If upon final inspection of the system, the Health Office finds it installed in accordance with these regulations and the permit, the Health Officer shall issue final approval for the completed system. If the system has been designed by or constructed under the supervision of a Registered Professional Engineer, said construction shall at this time certify to the Department that construction and installation of the system has been completed in accordance with the terms of the permit and this regulation. If the inspection discloses any significant departure from the description or design of the system as stated in the application and permit, or of any aspect of the system fails to comply with this regulation, approval shall be withheld, and the original permit shall be revoked. Written notice of deficiencies causing the disapproval shall be given the installer and/or owner. The permit then may be renewed upon payment of the fee as provided in paragraph 3.3 B. Another inspection shall be made upon notification that the deficiencies have been corrected and the systems brought into compliance with this regulation.
- 3.10 Denial of a permit or disapproval of plans:
- A. Notice of denial: Written notice of the denial of a permit or of plans shall be served upon the applicant as provided by the Colorado Rules of Civil Procedures or by registered or certified mail, return receipt requested. Service by mail shall be complete upon receipt by the Department of the return receipt.
 - B. Appeal to the Board of Health: Any person who is denied a permit or whose plans for an individual sewage system are disapproved may appeal to the Board of Health as herein provided.
 - C. Variance on Appeal: Upon finding that strict enforcement of these regulations would not be injurious to public health, the Board of Health may authorize the issuance of a variance. The burden of proof is upon the applicant to show that the variance will not injure adjacent properties, will not conflict with the purposes of these regulations, and will not adversely affect the health of any person.
 - D. Time of Appeal: Every appeal must be filed within thirty (30) days from the date of denial.
 - E. Finality of Denial: Denial shall become final upon the expiration of time for filing an appeal, or when final action is taken upon an appeal, whichever is later.
- 3.11 Community Sewers:
- Permits to construct, extend or replace an individual sewage disposal system shall be denied if it is within a municipality, subdivision, or sanitation district, and a central sewer system exists within four hundred (400) feet of the applicant's dwelling, place

of business, or institution; and if the municipality, subdivider, or district agrees to provide sewer services.

3.12 Except for designs or types of systems which have been approved by the Colorado Department of Health, the Board of Health may approve an application for an Experimental Type system not otherwise provided for in these regulations only if the system has been designed by a Registered Professional Engineer, and only if the application provides for the installation of a back-up system of an approved type in case of failure of the primary system. The Board of Health 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.

3.13 Submission of Plans for Proposed Subdivisions:

Plans for proposed subdivisions shall be submitted to this department for the review of proposed sewage disposal systems by a Sanitarian of a Registered Professional Engineer in accordance with the requirements of this regulation. The Health Officer may require the subdivider to submit additional engineering or geological reports or data, and to conduct a study of the economic feasibility of the sewage treatment works prior to making his recommendations. No plan shall receive the approval of the Board of County Commissioners unless the Department has made a favorable recommendation regarding the proposed method of sewage disposal. (Appeal from an unfavorable recommendation hereunder shall be in accordance with those stated in paragraph 3.10.) See Fee Schedule*.

3.14 Regulations of Systems Contractors:

A. No person shall install, renovate, or repair an individual sewage disposal system except the owner doing his own installation unless he holds a valid System's Contractor's License. Employees of a valid licensed Systems Contractor shall not be required to be licensed. The fee for a Systems Contractor shall be _____ (see fee schedule*). License shall expire on June 30th, of each year and an annual renewal fee of _____ (see fee schedule*) shall be charged. Application for a new license for a Systems Contractor whose license has been revoked shall not be considered for at least one (1) year after revocation.

B. Standard of performance required of holders of Systems Contractors Licenses:

1. Applications for Systems Contractors Licenses or renewals shall be made upon forms supplied by the local health department.
2. Prior to the issuance or renewal of a license, the Health Officer may require the applicant to demonstrate adequate knowledge of these regulations.
3. Installation, renovation, or repair of any individual sewage disposal system shall be in compliance with regulations and with the conditions set out in the installation permit.
4. Notice of a requested inspection shall be given by the license holder or owner not less than twenty-four (24) hours before the inspection is to be made.

5. A license holder shall complete and deliver to the owner the installation permit within seven (7) days after the completion of a approved installation.
6. A license holder shall have in his possession the installation permit at the time construction begins, and shall make the permit available at the time of final inspection so that final approval may be endorsed upon it.
7. A license holder shall, within a reasonable time, return the installation permit to the applicant or property owner in the event the license holder ran not or does not desire to begin the installation, repair, or alteration of the individual sewage disposal system.

C. Revocation of a Systems Contractor's License:

1. A license may be revoked for failure to comply with these regulations. Revocation shall take place only after a hearing before the Board of Health. The license holder shall be given reasonable notice of the hearing and may be represented at the rearing by counsel.
2. Written notice of revocation, specifying the violation shall be served upon the holder of the Systems Contractor License and the owner. Service of notice as required in this section shall be as provided by the Colorado Rules of Civil Procedure, of by registered or certified mail, return receipt requested.
3. The Board of Health shall from time to time set qualifications standards for licensed Systems Contractors.

3.15 Regulation of System Cleaners:

- A. No person shall engage in the cleaning of sewage disposal systems or the transportation of sewage to a disposal site unless he holds a valid Systems Cleaner's License. Employees of a validly licensed Systems Cleaner shall not be required to be licensed. Licenses shall expire on June 30th, each year, and an annual fee of _____ will be charged each year. (See fee schedule*).
- B. Standard of Performance for Systems Cleaners:
 1. A license holder, when cleaning a septic tank or aeration plant shall remove the liquid, sludge, and scum, leaving no more than three inches depth of sewage in a non-backflowing system. In a backflowing type, cleaning shall be effective in reducing solids and scum to the point of a near-new system.
 2. A license holder shall maintain his equipment so as to insure that no spillage of sewage will occur during transportation, and that his employees are not subject to undue health hazards.
 3. A license holder shall dispose of the collected sewage only at a site designated by the County Health Department or the respective Sanitation District.
 4. A license holder shall report all malfunctioning sewage disposal systems to the Health Department.

5. Prior to the issuance of, or renewal of, a license, the Health Officer may require the applicant to demonstrate adequate knowledge of paragraph 3.15 A, B, and C.

C. Revocation of systems Cleaner's License:

The procedures as described in paragraph 3.14 C shall be followed for the revocation of a license.

3.16 Repair Permit:

The Health Officer may issue a repair permit and an emergency use permit to the owner or occupant of property on which a system is not functioning properly. Application for a repair permit shall be made by such owner or occupant to the Department within two (2) business days after receiving notice from the Health Officer that the system is not functioning in compliance with this regulation or otherwise constitutes a nuisance or hazard to public health. The permit shall provide for a reasonable period of time within which repairs shall be made, at the end of which period the system shall be inspected by the Health Officer to insure that it is functioning properly. Concurrently with the issuance of a repair permit, the Health Officer 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.

3.17 Notice of Violation:

Whenever the Health Officer determines that there has been a violation of any provision of this regulation, he shall give notice of such violation to the responsible person or persons. Such notice shall be in writing, and shall specify the violations, provide a reasonable time for correction, and be addressed to the owner and occupant of the property concerned. Service of such notice shall be as provided by the Colorado Rules of Civil Procedures, or by registered or certified mail, return receipt requested, deliverable to addressee only. Service by mail shall be complete upon receipt, by the Department, of the return receipt. If one or more persons can not be found or served after diligent effort to do so, service may be posted a notice, in which case the Health Officer shall include in the record a statement as to why the posting was necessary.

3.18 Cease and Desist Order:

The Health Officer may issue an order to cease and desist from the use of any system which is found by the Health Officer not to be functioning in compliance with this regulation or which otherwise constitutes a nuisance or hazard to public health and which has not received the timely repairs in accordance with the provisions of paragraph 3.16. Such an order may be issued only after a hearing which shall be conducted by the Health Department not less than 48 hours after written notice thereof is given to the owner or occupant of the property on which the system is located and at which the owner and occupant may be present, with counsel, and be

heard. The order shall require that the owner or occupant bring their system into compliance or eliminate the nuisance or hazard within a reasonable period of time, not to exceed thirty (30) days, or thereafter cease and desist from the use of the system.

3.19 Maintenance, Cleaning, and Effluent Testing Schedule:

In order to insure good working order the following minimum schedule shall apply to all individual sewage disposal systems:

A. TYPE OF TREATMENT	INSPECTION OR MAINTENANCE	CLEANED OR PUMPED	ROUTING EFFLUENT TESTING
Septic Tank	every 4 years	every 4 years	experimental only
Vaults, privy's	every 4 years	as necessary	none
Aeration plants	every 6 months	every 4 years	not more than 2 times per year

- B. The owner shall be responsible for the required maintenance and cleaning of his system. Samples may be taken at any time when necessary to implement paragraph 3.17 or 3.18 of these regulations.
- C. In addition to testing results conducted by the Department itself, the Department shall accept in lieu thereof, results conducted by the Colorado Department of Health, and results conducted by a certified laboratory of the owner's choice.
- D. Tests may be limited to those parameters which are necessary to determine the maintenance of the required standards for the disposal methods.

3.20 Prohibition of individual sewage disposal systems in unsuitable areas:

The Board of Health may conduct a public hearing, after written notice to all affected property owners as shown in the records of the County Assessor and publication of notice in a newspaper of general circulation at least ten (10) days prior to the hearing, to consider the prohibition of permits for individual sewage disposal systems in defined areas which contain or are subdivided for a density of more than one (1) dwelling per three (3) acres, or where other parameters are found unsuitable for individual sewage disposal systems. The Board of Health may order such prohibition upon a finding that the construction and use of additional individual sewage disposal systems in the defined area will constitute a hazard to the public health. In such a hearing, the Board of Health may request affected property owners to submit engineering and geological reports concerning the defined area and to provide a study of the economic feasibility of constructing a sewage treatment works.

3.21 General prohibitions:

- A. No individual sewage disposal systems presently in use which does not comply with the provisions of this regulation regarding minimum separation between the maximum seasonal level of the groundwater table and the bottom of an absorption system, shall be permitted to remain in use without compliance with this regulation.
- B. Construction of cesspools is prohibited.
- C. Not more than one (1) dwelling, commercial, business, institutional or industrial unit shall be connected to the same individual sewage disposal system unless

such multiple connection was specified in the application submitted and approved by the Board of Health.

- D. 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.

3.22 Penalties:

Any person who commits any of the following acts or violates any of the provisions of this article commits a class 1 petty offense, as defined in Section 18-1-107 C.R.S. 1973:

- A. Constructs, alters, or installs an individual sewage disposal systems in a manner without having first applied for and received a permit as provided for in Section 25-10-105 (i) (f) or Section 25-10-106.
- B. Constructs, alters, or installs an individual sewage disposal system in a manner which involves a knowing and material variation from the terms of specifications contained in the application or permit.
- C. Violates the terms of a cease and desist order which has become final under the authority of paragraph 3.18, or the terms of Section 25-10-106 (l) (k).
- D. Willfully fails to submit proof of proper maintenance and cleaning of a system as required by rules and regulations adopted pursuant to paragraphs 3.5, 3.15, or 3.19, or provided for in Section 25-10-106.

3.23 Jurisdiction:

These rules and regulations are promulgated by the Montezuma County Board of Health under the authority of 25-10-104 (2) (3) and (4) C.R.S., 1973, 23-10-105 (k) (f), of the C.R.S. 1963.

3.24 Severability:

If any regulation adopted herewith of its application to any person or circumstance is held invalid, unconstitutional, void, or inoperative, such holding shall not affect other provisions or applications of the regulations adopted hereunder. The Board of Health hereby declares that in these regards the regulations shall become effective forty-five (45) days after adoption by the Montezuma County Board of Health.

**SECTION IV
GENERAL TECHNICAL REQUIREMENTS**

4.1 Calculation of Sewage Flow:

Where values can be obtained by measurement of flow and strength of waste from existing facilities, those values shall be used. For new facilities, Table #1* may be used as a guide, which represents average flows. Maximum flow shall be considered as 150 percent of average flow and shall be the basis for design purposes unless otherwise established. For calculating the flow for multiple family dwellings and mobile homes, use a figure of 3.5 people per residence, or at least two (2) persons per bedroom. In no event may the system be designed such that the anticipated maximum daily sewage flow exceeds the capacity for which the system was

designed. The reduction in sizing of an individual sewage disposal system due to dosing and water conservation devices shall not exceed fifty (50) percent.

*See Table 1 on page 15.

TABLE 1 TABLE OF QUANTITIES AND BOD STRENGTH OF SEWAGE		
TYPE OF ESTABLISHMENT	GALLONS/PERSON/DAY (Average) (Unless otherwise Stated)	LBS. BOD ₅ PER PERSON/DAY (Unless otherwise Stated)
RESIDENTIAL		
Hotels & Motels without private bath	50	.15
Hotels & Motels with private bath	60	.15
Multiple Family Dwelling or Apartments	75	.20
Rooming Houses	50	.15
Single Family Dwellings	75	.20
COMMERCIAL & MISCELLANEOUS		
Airline Catering	3 gal/meal served	.03 lbs/meal served
Airports (not including food)	5 gal/passenger	.02 lbs/passenger
Airports	10 gal/employee/day	.06 lbs/employee/day
Bus Service Areas (not including food)	5	.02
Country Clubs (not including food)	30	.02
Day Workers at Office	15	.06
Drive-In Theaters (not including food)	10 gal/space/day	.06 lbs/space/day
Factories and Plants (excluding industrial wastes)	35	.08
Laundries, Self-Service	400 gal/washer/day	2.00 lbs/washer/day
Food Service Establishments (toilet & kitchen wastes)	10 gal/patron/day	.06 lbs/patron/day
Food Service Establishments (kitchen wastes)	3 gal/meal served	.03 lbs/meal served
Food Service Establishments (with paper service)	1.5 gal/meal served	.01 lbs/meal served
Additional for Bars & Cocktail Lounges	2	.02
Movie Theaters, Churches (not including food)	5 gal/seat/day	.03 lbs/seat/day
Stores	400 gal/public/toilet/day	2.00 lbs/public/toilet/day
Work or Construction Camps (semi-permanent) with flush toilets	50	.17
Work of Construction Camps (semi-permanent) without flush toilets	35	.02
Travel Trailer Parks with individual water & sewage hook-up	100 gal/unit/day	.50 lbs/unit/day
Travel Trailer Parks without individual water & sewage hook-up	50 gal/unit/day	.17 lbs/unit/day
INSTITUTIONAL		
Hospitals	250 gal/bed space/day	.20 lbs/bed space/day
Institutions other than Hospitals	125 gal/bed space/day	.17 lbs/bed space/day
Mobile Home Parks	75	.20
Schools, Boarding	100	.17

TYPE OF ESTABLISHMENT		LBS. BOD ₅ PER PERSON/DAY (Unless otherwise Stated)
Schools, Day (without cafeteria, gym or showers)	15	.04
Schools, Day (with cafeteria, but not gym or showers)	20	.08
Schools, Day (with cafeteria, gym & showers)	25	.10
RECREATIONAL & SEASONAL		
Camps, Day (no meals served)	15	.12
Camps, Luxury Resort	125	.17
Camps, Resort (night & day) with limited plumbing	50	.12
Camps, Tourist, Trailer or Campground Cottages & Small Dwellings (seasonal occupancy)	100 gal/unit/day 50	.50 lbs/unit/day .17
Country Club:		
Shower	500 gal/fixture/day	.48 lbs/fixture/day
Bath	300 gal/fixture/day	.29 lbs/fixture/day
Lavatory	100 gal/fixture/day	.25 lbs/fixture/day
Toilet	150 gal/fixture/day	.18 lbs/fixture/day
Urinal	100 gal/fixture/day	.06 lbs/fixture/day
Sink	50 gal/fixture/day	.51 lbs/fixture/day
Public Park (during hours when park is open):		
Flush Toilet	36 gal/fixture/hour	.04 lbs/fixture/hour
Urinal	10 gal/fixture/hour	.01 lbs /fixture/hour
Shower	100 gal/fixture/hour	.10 lbs/fixture/hour
Faucet	15 gal/fixture/hour	.04 lbs/fixture/hour
Swimming Pools and Bathhouses	10	.06
SEPARATE FLOW RESIDENTIAL USE		
Bath/Shower	14.7	.014
Dishwasher	1.8	.002
Kitchen Sink	4.4	.045
Additional for Garbage Grinder	1.4	.052
Laundry Washer	19.5	.037
Lavatory	8.4	.021
Water Closet	24.8	.029

TABLE 1 (CONTINUED)
TABLE OF QUANTITIES AND BOD STRENGTH OF SEWAGE

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4.2 Minimum Horizontal Distance Between Components of a System and Physical Features:

- A. Minimum horizontal distances from the various components of a system to pertinent terrain features, including streams, lakes, water courses, springs, wells, subsoil drains, cisterns, water lines,, suction lines, gulches, dwellings other occupied buildings and property lines, shall be in accordance with the following Table II of minimum horizontal distances.
- B. Wells, springs or potable water supply suction lines and all other constructed units listed in Table II shall be installed or located in accordance with the minimum distance requirements provided in the table or such increased distances provided by the local Board of Health Regulation. The minimum horizontal distance required from cut banks and fill areas to individual sewage disposal system components discharging effluent into or onto the surrounding soil shall be four (4) times the height of the bank, measured from the top edge of the bank. (See diagram below.)

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TABLE II
 TABLE OF MINIMUM HORIZONTAL DISTANCES IN FEET BETWEEN
 COMPONENTS OF A SEWAGE DISPOSAL SYSTEM INSTALLED AFTER NOVEMBER 15, 1973
 AND PERTINENT PHYSICAL FEATURES

	Spring Wells Suction Lines	Potable Water Supply Line	Potable Water Supply Cistern	Dwelling, Occupied Building	Property Lines	Subsoil Drains	Lake, Water Course, Irrigation Ditch or Stream	Dry Gulches	Se Ta
Dispersal Systems Utilizing Aerosol Methods	*** 100 ***	10	50	125	10	0	*** 25 ***	*** 10 ***	1
Seepage Pit or Slit Trench	100	50	25	20	25	10	50	25	
Absorption Trench, Seepage Bed, Sand Filter, or Sub- surface Dispersal System	*** 100	25	25	20	10	10	*** 50	*** 25	
Unlined Sand Filter in Soil With a Percolation Rate Slower than 60 Minutes per Inch	100	25	25	15	10	10	25	15	1
Unlined or Partially Lined Evapotranspiration System Wastewater Pond, or Surface Disposal System Other than Aerosol	100	25	25	15	10	10	25	15	1
Lined Sand Filter	60	10	25	15	10	10	25	10	
Lined Evapotranspiration Field or Lined Wastewater Pond	60	10	25	15	10	10	25	10	
Pit Privy or Vault Privy or Vault	50	10	25	15	10	10	25	10	

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TABLE II
 TABLE OF MINIMUM HORIZONTAL DISTANCES IN FEET BETWEEN
 COMPONENTS OF A SEWAGE DISPOSAL SYSTEM INSTALLED AFTER NOVEMBER 15, 1973
 AND PERTINENT PHYSICAL FEATURES

	Spring Wells Suction Lines	Potable Water Supply Line	Potable Water Supply Cistern	Dwelling, Occupied Building	Property Lines	Subsoil Drains	Lake, Water Course, Irrigation Ditch or Stream	Dry Gulches	Se Ta
Septic Tanks, Treatment Plants, Dosing Tanks of Effluent Lines	** 50 **	** 10	25	* 5	** 10	** 10 **	** 50 **	** 10 **	
Building Sewer	50	10	25	0	0	10	50	10	

NOTE: The minimum distances shown above shall be maintained between the system components and the physical 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. 1973, 25-8-206 in accordance with the authority prescribed by law and rules and regulations implemental of said section. For repair or upgrading of existing systems where the size of lots preclude adherence to these distances, repaired facility shall not be closer to water supply components than existing facilities.

* Components which are not water tight should not extend onto areas of the root system of nearby trees. Distance shown shall not apply to treatment plants of effluent lines where recycling is permitted.

** Crossing may be permitted where pipelines are constructed of sufficient strength to contain flow under pressure.

*** Add eight (8) feet additional distance for each 100 gallons per day of design flow over 1,000 gallons per day.

4.3 Soil Test

A. Location:

Soil percolation tests shall be performed in at least three (3) test holes in the area in which the absorption system is to be located, spaced uniformly over the proposed site, except there shall be no less than one (1) test hole in any twelve hundred (1,200) square foot area of the absorption system.

B. Dimension:

1. the percolation test holes shall be from four (4) to twelve (12) inches in width or diameter, and shall be terminated at the depth of the proposed absorption system.
2. One soil profile test hole at least eight (8) feet deep or to bedrock, must be completed to give an indication of the soil condition in the area including that soil zone at least four (4) feet below the bottom of the proposed absorption system.

C. Procedure: Percolation test holes shall be filled with water to a depth of fourteen (14) inches or more at least eight (8) hours, but not more than twenty four (24) hours, prior to making the water percolation test, and shall be refilled with water if necessary to a depth of at least fourteen (14) inches prior to final measurement. Measure the time for the water to drop one (1) inch within the lower twenty-five percent (25%) depth of the percolation test hole. The percolation rate shall be reported in minutes of time per inch drop.

D. The field percolation rate shall be the average rate of the percolation test after rate has stabilized in all the test holes observed in the proposed absorption area. A percolation rate of between five (5) and sixty (60) minutes per inch is required. A field percolation rate determined by the test shall be used in calculation the absorption area for the proposed system.

E. Performance of Percolation tests:

1. The percolation test shall be performed by or under the supervision of a Registered Professional Engineer or Sanitarian unless previous percolation tests made in a given area show a sufficiently suitable consistency.

F. Alternate Percolation Tests: Alternate percolation test or other soil rest procedures may be approved by the local Health Officer or his designated representative providing the test results of alternate procedures are substantially equivalent to those determined using the test procedure detailed in this section.

G. Water Table: In the absence of more restrictive regulations of the local Board of Health, a test hole evaluation showing a dry condition estimated or measured to be at least four (4) feet below the bottom of a proposed soil absorption system during the wettest months may be considered prima facie evidence that the maximum seasonal groundwater table will be sufficiently below the bottom of the proposed absorption system.

SECTION V COMPONENT DESIGN CRITERIA

5.1 Design Features (General):

- A. Reliability: Individual sewage disposal systems shall be designed and constructed such that each component shall function, when installed and operated, in a manner not adversely affected by the normal operation conditions including erosion, vibration, shock, climatic conditions, and usual household chemicals used: 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 to prevent the creation of nuisances and public health hazards and shall provide for efficient operation and maintenance.
- B. Plumbing Codes: Plumbing fixtures, greasetraps, 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 State Plumbing Code or other local plumbing code in force on the date of the I.S.D.S. Permit Application.
- C. Electrical Equipment, if used: All electrical work, equipment, and material shall comply with the requirements of the current National Electrical Code in force on the effective date of these guidelines, or those revisions of said code as are adopted by the State Electrical Code in force on the effective date of these guidelines, or those revisions of said code as are adopted by the State Electrical and Plumbing Board.
- D. Identification and Data Marking: A permanent type plate or other indelible marking on major components not constructed on the site where installed shall be provided, so inscribed as to be easily read and visible for the purpose of inspection. Said inscription shall include the following:
 - Name of manufacturer:
 - Model or serial number designation:
 - Maximum design capacity of the unit and the unit of measurement:
- E. Structural Integrity: Tanks shall be so constructed and installed as to withstand earth and hydrostatic pressures when full and when empty. All metal surfaces shall be properly coated to prevent corrosion. The State Health Department shall certify the structural integrity of all tanks, treatment units, and piping materials for use in I.S.D.S's. When the Department shall be satisfied and has issued certification, the local Board of Health shall be entitled to rely thereon.
- F. Watertight Requirement: Watertight tanks, vaults, or other units, shall not allow infiltration of groundwater or surface water and shall not permit the release of wastewater or liquids through other than designed openings.
- G. Accessibility for Inspection and Maintenance: Each treatment unit shall be equipped with an access manhole located to permit periodic physical inspection, collection and testing of samples and maintenance of all components and compartments including but not limited to submerged

bearings, moving parts, tubes, intakes, slots, filters, inlet and outlet baffles, and other devices.

- H. The Indicators of Failure of Systems Utilizing Mechanical Apparatus: A signal device shall be installed which will provide a recognizable indication or warning to the use that the system or component is not operating or is operating but malfunctioning. This indication or warning shall be in the form of a visual or audible signal, or both.
- I. Serviceability: Components shall be so designed and constructed that when installed in accordance with manufacturer's recommendations they shall be capable of being easily maintained, sampled, drained, pumped, inspected and cleaned.

TABLE III
SEPTIC TANK SIZE BASED UPON NUMBER OF BEDROOMS

<u>Number of Bedrooms</u>	<u>Minimum Effective Liquid Tank Capacity (gallons)</u>
2	750
3	1000
4	1250
Each Additional	250

- 2. Septic Tank Design Criteria:
 - a. Except for mini-systems the effective liquid capacity shall be no less than 750 gallons.
 - b. Inlet invert shall be at least three (3) inches higher than the outlet invert.
 - c. Outlet tee or baffle shall extend above the surface of the liquid to within one (1) inch of the underside of the tank top and shall extend at least fourteen (14) inches below the outlet invert.
 - d. The distance for the outlet invert to the underside of the tank top shall be at least ten (10) inches.
 - e. Liquid depth shall be a minimum of thirty (30) inches and the maximum depth shall not exceed the tank length or sixty (60) inches, whichever is less.
 - f. A septic tank shall have two or more compartments or more than one tank may be used in series to provide the following capacity arrangement. The first compartment of a septic tank shall hold no less than $\frac{1}{2}$ of the required capacity.
 - g. The transfer of liquid from the first compartment to the second or successive compartment shall be made at a liquid depth of at least fourteen (14) inches below the outlet invert but not in the sludge zone.
 - h. At least one (1) access no less than twenty (20) inches across shall be provided in each compartment of a tank.

- i. The opening cover of a septic tank manhole, inspection port, or sampling access port shall be no deeper than eight (8) inches below the finished grade.
- j. Cast iron pipe or pipe meeting ASTM standard 3034 properly supported to prevent failure by settling shall extend from the septic tank for a distance of at least five (5) feet from the inlet and outlet ends.*

B. Aerobic Sewage Treatment System:

- 1. General Design: The shape and design of an aeration compartment, its inlet and outlet arrangements, baffling and air application shall:
 - a. Allow for intimate mixing of applied sewage, return solids, and applied air.
 - b. Prevent excessive short circuiting of flow.
 - c. Prevent the deposition and buildup of solids in the aeration compartment.
- 2. Method of Aeration: The method of aeration shall be accomplished by mechanical aeration, diffused air, or a combination of these. The method of aeration shall at all times maintain aerobic conditions at the maximum organic loading in both the aeration and settling compartments.

5.3 Design Criteria (Second or Later Stage Treatment Units):

A. Soil Absorption System (General):

- 1. For a system treating and disposing of effluent through a soil absorption system, the method for calculating minimum absorption area shall be based upon the amount of suitable soil and the capacity of the soil to absorb liquids as established by the percolation test and upon design criteria and construction standards for such type of absorption system as set forth in these guidelines.
- 2. Unless designed by a Registered Professional Engineer and approved by the local Board of Health, ** no such system may be permitted in areas under any of the following conditions:
 - a. Where the soil percolation rate is slower than one (1) inch in sixty (60) minutes or faster than one (1) inch in five (5) minutes except that a percolation rate faster than one (1) inch in five (5) minutes in soils of sandy texture shall be permitted, or the percolation may be slowed by soil treatment.
 - b. Where the maximum seasonal level of the groundwater table is less than four (4) feet below the bottom of the proposed absorption system.
 - c. Where bedrock exists less than four (4) feet below the bottom of the proposed absorption system.

*PVC SDR 35 and Schedule 40 PVC Pipe both meet this standard.

**Except that such approval may be given by the local Health Department if authorized by regulations of the local Board of Health for such systems treating exclusively domestic wastes.

- d. Where the ground slope is in excess of thirty percent (30%).
3. Soil building or replacement will be permitted to bring the soil within the requirements of suitable soil.
 4. Absorption Area: The minimum absorbic area in square feet (A) for an individual sewage disposal system shall be determined as a function of the design flow of sewage in gallons per day (Q) and the percolation rate in minutes per inch (t), according to the formula:

$$A = \frac{Q}{5} \times \frac{1}{t}$$

Note: Where the percolation rate is found to be faster than five (5) minutes per inch in soils of sandy texture, the minimum value of the "t" for use in this formula shall not be less than "5".

5. Additional Area: The absorption area so calculated may be increased by not more than an additional twenty percent (20%) if wastes from a garbage grinder are discharged into the system and by not more than an additional forty percent (40%) if wastes from an automatic clothes washing machine are discharged into the system.
6. Adjustments for deep gravel: The length of an absorption trench of seepage bed may be calculated by allowance for the sidewall area of additional depth of gravel in excess of six (6) inches below the bottom of the distribution pipe according to the following formula:

$$L = \frac{\text{length required prior to adjustment}}{(W + 1 + 2d)} \times (W + 2)$$

Where: w = width of trench in feet
d = depth of gravel below distribution pipe in feet

7. the ground surface shall be graded to deflect precipitation or other outside water from the disposal area. The absorption area shall be protected against erosion.
8. A minimum sewage absorption system may be approved by the Health Officer as prescribed in the following table:

TABLE IV
SUBSURFACE ABSORPTION AREA FOR DWELLING USE

If the Percolation Rate is: (Minutes for water to fall)	The Minimum Absorption Trench area is: (Square feet of trench)	The Minimum Absorption Area Seepage Bed: (Square feet of bottom of bed per bedroom)
5 minutes per inch	150 sq. ft. of trench per bdrm.	200 square feet per bedroom
10 minutes per inch	175 sq. ft. of trench per bdrm.	230 square feet per bedroom
15 minutes per inch	200 sq. ft. of trench per bdrm.	260 square feet per bedroom
30 minutes per inch	275 sq. ft. of trench per bdrm.	365 square feet per bedroom
45 minutes per inch*	325 sq. ft. of trench per bdrm.	Not permitted
60 minutes per inch	Not permitted	Not permitted
Over 60 minutes	Not permitted	Not permitted

*Beds are not allowed when the percolation rate is slower than 30 minutes per inch.

- B. Absorption Trench and Seepage Bed: An absorption trench or seepage bed shall be of sufficient width and length of dimension to provide the required absorption area. The bottom of the trench or bed and distribution pipe which shall be required for an absorption trench or seepage bed shall be placed the entire length of the trench or bed and shall be surrounded by clean graded gravel, rock or material of equal efficiency which may range in size for ½ inch to 1 ½ inches and shall be placed from at least 2 inches above the top of the distribution pipe to at least 6 inches below the bottom of the distribution pipe. The separating distance between parallel distribution lines in a seepage bed shall not exceed 6 feet and a distribution line shall be located within 3 feet of each sidewall of the seepage bed. Pipe for gravity distribution shall be no less than 3 inches in diameter and preferably less than 100 feet in length. The terminal ends of lines shall be capped unless looped or air vented. If tile or other open joint pipe is used, the upper half of each joint shall be covered to prevent the entrance of outside graded material. The top of the placed gravel or such material used shall be covered with a layer of hay, straw, or similar pervious material. An impervious covering shall not be used. A final cover of soil suitable for vegetation at least 10 inches deep shall be placed from the top of the hay, straw or similar pervious material to the finished surface grade of an absorption trench or seepage bed. The final cover shall be graded to deflect runoff water away from the disposal area. In the

case of an above ground system such as a mounded system an impervious berm shall be constructed to prevent lateral flow of waste discharge outside of the absorption field. Machine tamping, rolling or hydraulic compacting of final cover shall not be permitted, however, hand tamping may be allowed where necessary to stabilize the soil to prevent erosion or the intrusion of extraneous water. Dosing is used in conjunction with an absorption trench or seepage bed system, the dosing chamber shall be sized to dose the field 3-4 times per day. A reduction of twenty five percent (25%) in the field size may be allowed.

1. Absorption or Seepage Pit: Absorption or seepage pits having adequate soil absorption may be permitted by the Local Health as an alternative where absorption fields are impracticable, and where the subsurface conditions are otherwise suitable for pit installations. The capacity of the pit shall be computed on the basis of percolation tests made in each vertical stratum penetrated. The weighted average of the results shall be used to obtain a design figure. Soil strata in which the percolation is slower than thirty (30) minutes per inch shall not be used for absorption or seepage. The effective area of the pit is the vertical wall area (based on dug perimeter) of the pervious strata below the inlet. No allowance shall be made for impervious strata or bottom area. Pits shall be separated by a distance equal to three (3) times the greatest lateral dimension of the largest pit. For pits over twenty (20) feet in depth, the minimum space between pits shall be twenty (20) feet. Pits shall be provided with both vertical sidewall and top supporting structural integrity. Adequate safety protection shall be provided to protect against personal injury during construction or use.

C. Serial Distribution System: A serial distribution system may be used in all situations where a soil absorption system is permitted and shall be used where the ground slope does not allow for suitable installation of a single level absorption field, unless a distribution box or dosing chamber is used. The horizontal distance from the side of the absorption system to the surface of the ground shall be adequate to prevent lateral flow and eruption of effluent above ground. When a serial distribution system is used, the following design and construction procedures shall be followed.

1. The bottom of each absorption field and its distribution line shall be level.
2. There shall be a minimum of ten (10) inches of ground cover over the gravel fill.
3. An absorption field shall follow approximately the ground surface contours so that variation in absorption field depth will be minimized.
4. There shall be a minimum of six (6) feet (horizontal measurement) of undisturbed earth between the septic tank or other treatment unit and nearest absorption field.
5. Adjacent absorption fields shall be connected with a relief line or a drop box arrangement such that each trench fills with effluent to the top of the gravel before flowing to succeeding trenches.

D. Evapotranspiration Disposal of Effluent: An evapotranspiration system may be used exclusively or in combination with a soil absorption system.

1. An evapotranspiration system shall be designed by a Registered Professional Engineer who shall furnish design data for a complete review of the design.
2. Data to be furnished shall include, but shall not be limited to: liner material and bedding, properties of the soil in the evapotranspiration bed, and provision for vegetation cover.
3. When high groundwater table, bedrock, fractured rock, or highly pervious material (percolation faster than five (5) minutes per one (1) inch) endanger the underground water, a durable and impermeable liner shall be installed in the bed to prevent the sewage effluent from entering the underlying formation or groundwater table.
4. An evapotranspiration system shall be located in an area where there is exposure to sunshine.
5. The system bed shall be crowned and covered with a minimum of four (4) inches of selected backfill material and with a vegetation cover.
6. Bed area shall be protected to prevent damage from vehicular or pedestrian travel. The ground surface shall be graded to deflect precipitation and other outside water away from the disposal area.
7. The following formula may be used as a minimum guide for determining the area necessary for total evapotranspiration of septic tank effluent:

$$\text{Area (in square feet)} = \frac{\text{Design Flow (in gallons per day} \times 237}{\text{Lake Evaporation Rate at the Site (in inches per year)}}$$

8. If sand is used in an evapotranspiration system it shall have an effective size between 0.25 mm and 1.0mm. The uniformity coefficient shall be 4.0 or less or as specified by the design engineer.

Note: Except for dwellings, if the system is designed for summer use only, as determined by the local Health Department, multiply the above area by 0.6 to obtain the required area.

E. Sand Filter:

1. The filtering material shall be clean, coarse sand all passing a screen having four (4) meshes to the inch. The sand shall have an effective size between 0.25 mm and 0.6 mm. The uniformity coefficient shall be 4.0 or less.
2. The sand shall be at least two (2) feet deep. The distributors and underdrain, if required by the local Board of Health, shall be surrounded by coarse screened gravel or crushed stone. All of the gravel or stone shall pass a 2½ inch screen and shall be retained on a ¾ inch screen. Fine gravel ¼ inch size or less may be used above and around the coarse material, both at the distributor and underdrains. The separating distance between parallel distribution lines shall not exceed six (6) feet, and a distribution line shall be located within three (3) feet of each filter sidewall. Pipe for gravity distribution shall be no less than four (4)

inches in diameter. The slope of the distributors shall be 0.4 percent where dosing tanks are not used, and the slope of the underdrains 0.5 to 0.1 percent. It is required that the sand be thoroughly settled by flooding or other means before the distributors are placed at the final grade. The distributor and underdrains may be of agricultural tile, of bell and spigot pipe, or perforated pipe. The top of the sand bed shall be no less than four (4) feet above the high ground water table for installations in which effluent percolates downward through the soil.

3. The minimum area for a sand bed shall be computed as a function of the maximum daily sewage flow according to the following table:

LOADING RATES FOR A SAND FILTER

<u>Type of Service</u>	<u>Application Rate Gallons per square foot per day</u>
Without Garbage Grinder	1.15
With Garbage Grinder	.95

4. A dosing tank shall be provided where the total filter area exceeds 1,800 square feet. The size of the dose, of the net capacity of the dosing tank, shall be at least 75 percent (75%) of the volume of the distributors

F. Wastewater Ponds:

1. A wastewater pond where permitted by the local Board of Health may be used to provide an additional degree of treatment following first stage treatment. The pond shall be designed for a loading not to exceed 0.45 pounds of BOD₅ per 1,000 square feet of water surface area. Special design shall be required in each case in which non-domestic kinds of individual sewage disposal system wastes will be received.
2. Maximum water depth in the pond shall not exceed three (3) feet. The inside slope of the pond, dike or embankment shall not be steeper than 3:1, (3 feet measured horizontally for each foot measured vertically). A center inlet shall be provided.
3. Unless constructed in impervious soil, the pond shall be sealed to prevent excess seepage of wastewater.
4. Adequate safety protection shall be provided, such as fencing, to protect against personal injury.
5. Surface runoff shall be diverted away from the pond except where controlled by design.

5.4 Design Criteria (Other Facilities):

- A. Mini-System: A mini-system shall meet at least all minimum design and construction standards for a septic tank system based on the amount and character of wastes for the fixtures and the number of persons to be served.
- B. Vault: A vault shall have a minimum 1,000 gallon effective capacity and may be permitted under limited use occupancy for water carriage sewage systems

on property which can not accommodate a sewage treatment system. A signal device shall be installed to indicate when pumping is necessary.

- C. Vault Privy: A vault privy, shall be built to include: fly-tight construction, a superstructure affording complete privacy, an earth mound around the top of the vault and below floor level, which slopes downward away from the superstructure base, a floor and riser of concrete or other impervious material, and with seats and covers of easily cleanable, impervious material, and hinged self-closing and fly-proof. All venting shall be fly-proof with No. 16 or tighter mesh screening. Effective capacity of the vault shall be no less than 400 gallons.
- D. Pit Privy: A pit privy construction in soil shall be built to include: fly-tight construction; a superstructure affording complete privacy; an earth mound around the top of the compartment and below the floor level, which slopes downward away from the superstructure base; a floor and riser of concrete or other impervious material, hinged, self-closing and fly-proof. All venting shall be fly-proofed with No. 16 or tighter mesh screening. Effective capacity of the pit shall be no less than 400 gallons. Pit shall be located in soil where the maximum seasonal level of the ground-water table will be no closer than four (4) feet below the bottom of the pit.
- E. Incineration and Chemical Toilets: An incineration toilet, which may be used in connection with a mini-system by permit for the local Board of Health, shall be designed and installed in accordance with all applicable federal, state, and local air-pollution requirements. A portable chemical toilet, which may be used by permit from the local Board of Health, shall have a superstructure which meets the requirements of the paragraph titled Vault Privy. Use of a portable chemical toilet in permanently occupied buildings shall be prohibited except during construction or under emergency circumstances as determined by the local Health Department.
- F. Slit Trench: a slit trench shall be located in suitable soil and shall be excavated approximately one (1) foot wide and two (2) feet deep for the required length. Excrement shall be covered with at least two (2) inches of soil at least once a day or more frequently if requested by the local Board of Health or its designated agent. A superstructure of a temporary nature shall be provided to afford privacy. A slit trench shall be considered a temporary convenience to be used no longer than seven (7) days, and shall be backfilled with at least one (1) foot of soil with additional allowance for settling to grade when use has been discontinued.
- G. Business, commercial, Industrial, Institutional or Multi-Family Dwelling Waste Systems:
 - 1. Performance criteria and construction standards for a system which will service commercial, business, institutional or industrial property, or multifamily dwellings shall conform to these guidelines.
 - 2. Such systems shall be designed by a Registered Professional Engineer. An application for such a system shall be reviewed by the local Board of Health unless disposal is through an absorption

system and the wastes are exclusively domestic type wastes, in which case review shall be by the local Health Department.

H. Systems for which data on design, operation and maintenance, based upon use in Colorado, are limited or undetermined:

1. Composting Toilets:

- a. Deposits of feces, urine, and readily decomposable household garbage that are not diluted with water or other fluids may be retained in a compartment, in which aerobic composting will occur. The compartment may be located, subject to local Board of Health or other applicable regulations or codes, within a dwelling or building provided the unit complies with the applicable requirements of these guidelines, and provided the installation will not result in conditions considered to be a health hazard as determined by the local Health Department. The effective volume of the receptacle must be sufficient to accommodate the number of persons served.
- b. Adequate additional volume shall be provided 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.
- c. Compartment and appurtenances related to the unit shall include fly-tight construction and exterior ventilation as required by the plumbing code.
- d. When the available effective volume is filled to seventy-five percent (75%) of capacity, residue from the unit shall be properly disposed of by acceptable solid wastes practices.
- e. No composting toilet may be installed to serve more than eight (8) persons per system.
- f. If a system will be installed where low temperatures may be a factor, design shall compensate for the effects of the low temperature.
- g. Manufactured composting toilets shall bear the seal of approval of the National Sanitation Foundation, or a equivalent testing program, and is otherwise approved by the Department.

2. Systems which recycle treated wastewater for non-potable purposes such as flushing water closets or urinals.

- a. That portion of the wastewater recycled for non-potable purposes such as flushing water closets or urinals must meet the treatment requirements of Article IX of these guidelines for effluent in which the possibility exists for occasional direct home contact.
- b. No cross-connection to a pipe, fixture, or supply containing potable water shall be permitted.

3. Systems which recycle treated wastewater for potable purposes:

- a. No system shall be permitted which will recycle wastewater for potable purposes except a system which shall consistently

meet all of the sanitation and maximum contaminant level requirements of rules, regulations, and standards of the Colorado Department of Health and of the local Board of Health.

TREATMENT SYSTEMS OTHER THAN THOSE DISCHARGING THROUGH A SOIL ABSORPTION OR SAND FILTER SYSTEM AND NON-DISCHARGING SYSTEMS

- 6.1 General: Those systems which will discharge effluent directly to the atmosphere, the ground surface or below ground, or which employ aerobic principles of sewage treatment or a dispersal system, may be permitted only if designed by a Registered Professional Engineer. This Article IX shall not apply to systems discharging below ground through a soil absorption system or sand filter system or to a non-discharging system.
- 6.2 Review of Application: the local Board of Health shall review all applications for such systems which may result in discharge or drainage of effluent from the property of origin. No permit shall be issued for such a system if the local Board of Health determines that a potential health hazard or private or public nuisance or undue risk of contamination exists. The local Board of Health may, by regulations, authorize the local Health Department to review applications and issue permits for systems which do not permit the drainage of effluent off the property of origin. For systems discharging to State Waters, see XI.
- 6.3 The following minimum performance criteria shall be required for all systems pursuant to the Article VII
- A. If effluent discharge is made into the atmosphere or upon the ground surface in areas in which the possibility exists for occasional direct human contact with the effluent discharge, the effluent at the point of sampling shall consistently meet each of the following standards:
 1. The fecal coliform density shall not exceed two (2) per one hundred (100) millimeters.
 2. The standard five (5) day biochemical oxygen demand (BOD₅) shall not exceed twenty (20) milligrams per liter.
 3. The total suspended matter shall not exceed forty (40) milligrams per liter.
 - B. If the effluent discharge is made into the atmosphere or upon the ground surface in an area so restricted as to protect against the likelihood of direct human contact with the discharged effluent, the effluent at the point of sampling shall consistently meet each of the following standards:
 1. The fecal coliform density shall not exceed five hundred (500) per one hundred (milliliters).
 2. The standard five (5) day biochemical oxygen demand (BOD₅) Shall not exceed twenty (20) milligrams per liter.
 3. The total suspended matter shall not exceed forth (40) milligrams per liter.

- C. If effluent discharge is made beneath the surface of the ground and discharge will not be made through suitable soil, either existing or constructed, or through a sand filter, the following standards shall be met:
 - 1. There shall be at least four (4) feet of soil between the maximum seasonal high water table level of effluent discharge.
 - 2. The standard five (5) day biochemical oxygen demand (BOD₅) shall not exceed sixty (60) milligrams per liter.
 - 3. The total suspended matter shall not exceed one hundred (100) milligrams per liter.
- 6.4 Methods of Analysis - Sampling Point: All effluent samples shall be analyzed according to the methods prescribed in the most recent edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association). The point of sampling shall be a location that is representative of final discharge from the system.

I MANUFACTURED UNITS UTILIZING MECHANICAL APPARATUS FOR TREATMENT OF SEWAGE

- 7.1 Individual Sewage Disposal Systems utilizing mechanical apparatus and furnished for installation in Colorado shall comply with the minimum requirements of criteria and construction standards set forth in these guidelines.
- 7.2 No such unit utilizing mechanical apparatus and which is designed for discharge either upon the ground or beneath the ground surface or which may adversely affect state waters shall be permitted unless (1) the system is installed within a geographic area wherein a public, quasi-public, or private entity, or political subdivision is continually responsible for the efficient operation and maintenance of said unit, or (2) the operator of the system insures an efficient operation of all mechanical and electrical component parts provided prior to and during continued use.

II APPROVAL OF SYSTEMS EMPLOYING TECHNOLOGY

- 8.1 For purposed of this Section VIII, a system employing new technology is a system based on improvements and developments in technology of sewage disposal and not otherwise provided for in Section 25-10-105 (1) (e) through (j).
- 8.2 Certification:
 - A. Except as provided for in paragraph F. of this Section VIII, upon application by a systems contractor, Registered Professional Engineer or manufacturer of an individual sewage disposal system employing new technology, the Division may hold a Public Hearing to determine whether the system for which application has been made has established a record of performance reliability which would justify approval of permits by the Health Officer in the same manner as which treat and dispose of effluent through an absorption system.
 - 1. In any case where the Division has received information that a system for which application for certification has been made is not

- reliable, the Division shall hold a hearing pursuant to subparagraph 8-2.A.
2. In no case shall the Division deny certification without holding a hearing pursuant to subparagraph 8-2.A.
 3. Notice of the time and place of such hearing shall be given at least once, at least twenty (20) days in advance thereof by publication in the Colorado Register and by mailing thereof to all local Boards of Health and to all persons who have expressed an interest therein or who have requested to be placed on a list for notification which shall be kept by the Division expressly for this purpose.
 4. Any person may participate in the public hearing by presenting written or oral testimony at the discretion of the Division. No person shall be denied an opportunity to participate at the hearing without good cause shown.
- B. If the Division determines, based upon reasonable performance standards and criteria that the system's reliability has been established, then the Division shall certify the system and shall notify each local Board of Health of said certificate.
 - C. Upon notice of certification, a local Health Officer of his/her designee shall be entitled to consider a permit application for the certified system in the same manner as applications for systems which treat and dispose of effluent through an absorption system.
 - D. The Division's determination on whether to grant certification shall be final agency action for the purposes of the State Administrative Procedure Act, Section 24-4-101 to 108, C.R.S. (1982).
 - E. A denial of certification shall be in writing with the reasons for denial contained therein.
 - F. The Division shall certify any system employing new technology for subsurface discharge without holding a public hearing pursuant to subparagraph 8-2.A when the system bears the National Sanitation Foundation Standard Forty (40) Certification of meets an equivalent testing program's standards.
 - G. Certification pursuant to this section shall not relieve the holder thereof or the user of a certified system from the responsibility of complying with these guidelines and any applicable rules and regulations adopted pursuant to law.
 - H. If, at any time after an individual sewage disposal system employing new technology has been certified pursuant to this Section VIII, the Division receives information that the system so certified does not meet the standards in the Guidelines or in any way constitutes a public health hazard, the Division may, in its discretion, hold a public hearing to revoke certification. In holding this hearing, the Division shall follow the same procedure as is laid out in paragraphs 8-2.A.3 & 8-2.A.4, of this Section VIII. The Division's decision to revoke certification after the hearing shall be final agency action for the purpose of the State Administrative Procedures Act.

- I. Pending a final decision by the Division on certification of a individual sewage disposal system employing new technology or revocation of certification previously issued pursuant to this Section VIII, local Boards of Health may determine whether to issue a permit for the system pursuant to regulations adopted under 25-10-106 (1) (g) if the Act.
- J. Certification of systems under this Section VIII, shall be specific to those model(s) certified pursuant to the above paragraphs in 8-2.

X EFFLUENT DISCHARGED TO STATE WATERS

Any system which will dispose of effluent by discharging into State waters shall be designed by a Registered Professional Engineer, and the application shall be submitted for preliminary approval to the local Board of Health. Once approved, the application shall be forwarded to the Division for issuance of a permit in compliance with all applicable regulations of the Water Quality Control Commission. Compliance with such a permit shall be deemed full compliance with all individual sewage disposal system regulations.

Installation

10.1 General: Treatment units shall be set on a firm and level base except as otherwise provided in these guidelines and shall be capable of accommodating flow with hydraulic efficiency.

10.2 Mechanical Components:

A. Ventilation and Air System: 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 accumulation.

B. Components Installation: Mechanical components installed in or at the unit must be protected against damage or impairment of their efficiency by flooding, foaming, or surcharge.

10.3 Covers, Barriers, or Other Protection: All systems must be installed to include protection of openings against entrance of insects and rodents. Barriers shall be provided to prevent entrance by unauthorized persons.

I Operation and Maintenance

11.1 Responsibility: The owner and the party in possession of real property upon which an individual sewage disposal system is used, shall be jointly and severally responsible for operation and maintenance of the system unless jurisdiction for responsibility has been transferred to a public, quasi-public or political subdivision. The person denying such responsibility shall bear the burden of proof for such denial upon establishment of ownership or possessory rights in the property served by the system.

11.2 Service Label: For treatment plants utilizing mechanical apparatus or under a service policy, a clearly visibly permanently attached label or plate giving instructions for obtaining service shall be placed at a conspicuous location.

11.3 Maintenance and Cleaning: When directed by the local Health Department, for the purpose of obtaining compliance with rules and regulations, the owner or user of a system shall provide for maintenance and cleaning of an individual sewage

disposal system and shall notify the local Health Department upon completion of any maintenance work and report to said Department and submit such evidence of compliance with any maintenance and cleaning schedule in the form and as the Department requires.

- a. The local Board of Health may adopt rules and regulations for the scheduling of maintenance and cleaning of systems and practices adequate to insure proper functioning of acceptable systems, and may require proof of proper maintenance and cleaning, pursuant to any such schedules and practices, to be submitted periodically to the local Department of Health by the owner of the system.

11.4 Monitoring and Sampling:

- a. Reasonable periodic collection and testing by the local Health Department of effluent samples from individual sewage disposal systems for which monitoring of effluent is necessary in order to insure compliance with the provisions of rules and regulations may be performed not more than two times a year, except when required by the Health Officer in conjunction with an enforcement action.
- b. Any owner or occupant of property on which an individual sewage disposal system is located may request the local Health Department to collect and test an effluent sample from the system. The local Health Department may perform such collection and testing services.
- c. A fee not to exceed _____ (see fee schedule*), may be charged by the local Health Department for each sample collected and tested, and payment of such charge may be stated in the permit as a condition for its continued use.

11.5 Disposal of Waste Materials:

Disposal of waste materials removed from a system in the process of maintenance or cleaning shall be accomplished at a site in a manner which does not create a hazard to the public health, a nuisance or an undue risk of pollution and which complies with state and local rules and regulations. (See Sludge Regulations and Solid Waste Regulations.)

11.6 No Discharge is Permitted Which Does not Comply with Rules and Regulations:

No sewage or effluent shall be permitted to be discharged into or upon the surface of the ground or into state waters unless the sewage system and effluent meets the minimum requirements of applicable rules and regulations.

11.7 Termination of Use of System:

The contents of a septic tank, vault or seepage pit, the use of which has been terminated, shall be properly disposed of whereupon the emptied tank, vault, or pit shall be filled with soil and rock.

II FINDING ON APPEAL

Upon review from denial by the local Board of Health as provided by Section 25-10-106 (1) (f) C.R.S. 1973, that an application for an individual sewage disposal system has demonstrated that said system will be constructed and used in such a manner as to comply with the declaration and intent of these guidelines and all applicable state and local rules and

regulations and required terms and conditions in any permit issued pursuant thereto, a permit may be issued therefor.

FEE SCHEDULE

PERMIT FOR SEPTIC SYSTEM INCLUDING FINAL INSPECTION	\$200.00
SYSTEM CONTRACTOR LICENSE	10.00
SYSTEM CLEANER LICENSE	10.00

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