



MISSOULA CITY-COUNTY HEALTH CODE

REGULATION 1

WASTEWATER TREATMENT AND DISPOSAL SYSTEMS

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## REGULATION 1: WASTEWATER TREATMENT AND DISPOSAL SYSTEMS

### 1. GENERAL.

#### (A) Prohibited activities and exceptions.

- (1) No person may construct, alter, extend, repair, use or increase the use of an on-site wastewater treatment and disposal system that may:
  - (a) contaminate any actual or potential drinking water supply;
  - (b) cause a public health hazard as a result of access to insects, rodents, or other possible carriers of disease to humans;
  - (c) cause a public health hazard by being accessible to persons or animals;
  - (d) violate any law or regulation governing water pollution or wastewater treatment and disposal in effect at the time of installation;
  - (e) pollute or contaminate state waters, in violation of 75-5-605, MCA;
  - (f) degrade state waters unless authorized pursuant to 75-5-303, MCA; or
  - (g) cause a nuisance due to odor, unsightly appearance or other aesthetic consideration;
  - (h) enter directly into subsurface groundwater. A wastewater system that discharges at an elevation at or below peak seasonal groundwater is presumed to discharge directly to groundwater.
- (2) Construction, repair, or alteration of systems connected to a cesspool, or increased use of a system without primary and secondary treatment is prohibited unless permitted in accordance with these regulations.
- (3) A person may not discharge wastewater onto the surface of the ground except for a permitted system designed for surface application and licensed septic tank pumpers discharging septic wastes onto disposal sites approved by the Department.
- (4) Unless an Underground Injection Control (UIC) permit is obtained from the U.S. Environmental Protection Agency pursuant to 40 CFR 144, a person may not install or use any sump, dry well, or septic system for disposal of waste fluids from the washing, servicing, maintenance, or storage of any vehicle, equipment or components that are associated with an internal combustion engine.
- (5) No person may use an on-site wastewater treatment and disposal system that is located in a floodplain unless the system was installed according to the regulations effective at the time of installation. No person may increase use to a septic system in the floodplain.

#### (B) System required.

- (1) Structures regularly occupied by people must maintain a system or other approved toilet facilities.
- (2) Structures must not be occupied unless:
  - (a) connected to a publicly owned sewage treatment system;
  - (b) a wastewater treatment and disposal system meeting all requirements of this regulation is installed and maintained to serve the structure; or
  - (c) there is access to an existing system or approved toilet facilities meeting all requirements of this regulation within 200 feet of the structure.

#### (C) Connection to public system.

- (1) All new and replacement sewage disposal facilities must be in compliance with the Uniform Plumbing Code, Section 1101, requiring connection to publicly owned sewage treatment plants.
- (2) No person owning real property with a structure that generates sewage may be issued a permit to install or replace a wastewater treatment and disposal system when public sewer:
  - (a) abuts the property, and is within 200 feet of the structure served; or
  - (b) is within 200 feet of any part of the subsurface disposal system, or
  - (c) a department-approved public collection and treatment system is readily available within a distance of 200 feet of the property line and the owner or managing entity of the public collection and treatment system approves the connection.
- (3) Existing cesspool or septic tank systems may remain in service until ordered disconnected by the Health Board or other jurisdiction, or until the system fails as defined in Section II of this regulation.
- (4) This section (C) does not apply when the public entity owning the public system refuses to allow connection or if the system has been permitted pursuant to section 11 (Experimental Systems) of this regulation.

(D) Circumvention.

- (1) A person may not knowingly make false statements, representations, or certifications in, or omit information from, or knowingly alter, conceal, or fail to file or maintain any notice, application, record, report, permit, plan or other document required to be filed or maintained in order to evade these regulations.
- (2) A person may not divide a property or properties in order to evade these regulations. Examples include but are not limited to phased or piecemeal development.

## 2. DEFINITIONS.

Absorption area: that area determined by multiplying the length and width of the bottom area of the disposal trench.

Absorption system: a secondary treatment system including conventional drainfields, alternative systems, and experimental systems used for subsurface disposal of pre-treated waste effluent.

Absorption trench: excavations less than or equal to three (3) feet in width where the distribution system is laid for the purpose of distributing pretreated waste effluent into the ground.

Adequate secondary treatment: secondary treatment that is similar to or better than the treatment provided by a drainfield meeting all requirements of Section 5(B) and (C). Absorption beds qualify when minimum separations are met and there is not enough room for a drainfield. Seepage pits qualify when minimum separations are met and there is not enough room for a drainfield or absorption bed. If a replacement system will not meet minimum separations, the Department can require elevated or alternative treatment systems.

Advanced exam: the exam that an installer must pass to become certified to install experimental systems and alternative systems.

Advanced secondary treatment: a system designed to lower BOD and TSS to 7 day averages of 40mg/L & 45mg/L or 30 day averages of 25mg/L & 30mg/L respectively, and when necessary, fecal coliform levels in wastewater effluent.

Alternative systems: wastewater treatment and disposal systems approved by the Department to be used in lieu of conventional systems.

Basic exam: the exam that an installer must pass to become certified to install conventional systems.

Bedrock: Material that cannot be readily excavated by hand tools, or material that does not allow water to pass through or that has insufficient quantities of fines to provide for the adequate treatment and disposal of wastewater.

Bedroom: any room that is or may be used for sleeping. An unfinished basement is considered as one (1) additional bedroom for initial system sizing. A separate building without plumbing or running water may be considered as one or more additional bedrooms to a structure with plumbing or running water. The Department has the sole discretion to determine if a room may be considered a bedroom.

Camping: the temporary placement of tents or cabins, or the parking of trailers or vehicles for the purpose of sleeping. A travel trailer or RV that has skirting installed or has been connected to either electrical or sewage services in a permanent manner is not considered camping.

Certified installers: installers of wastewater treatment and disposal systems who have passed an annual examination to ensure sufficient knowledge of the sewer regulation.

Certified site evaluators: an individual who has passed an examination administered by the Department to demonstrate knowledge of soils and how they relate to the design and function of subsurface wastewater treatment and disposal systems

Cesspool: a seepage pit without a septic tank to pre-treat the wastewater.

Community wastewater treatment and disposal system: a public wastewater treatment and disposal system which serves a non-transient population characterized by residential development.

### 2. Definitions

Construction Season: March 1st through November 30th.

Contaminate: an increase in the concentration of chemicals, viruses, or bacteria in water to a degree which is likely to affect present or future beneficial uses of the water or which violates any applicable ground water or surface water standard.

Conventional secondary treatment: treatment after a septic tank that consists of a drainfield, and includes systems that use infiltration chambers, gravity distribution, or pressure distribution.

Disposal Trench: an excavation in which the piping for an absorption system is laid for the purpose of distributing pre-treated waste effluent into the ground.

Distribution Box: a receptacle that receives septic tank effluent and distributes it equally into two (2) or more header pipes leading to the absorption area.

Dosing Tank: a water-tight receptacle placed after the septic tank or other treatment device approved by the Department, equipped with an automatic siphon or pump designed to discharge effluent.

Drainageway: a course or channel along which stormwater moves in draining an area.

Dwelling or residence: any structure, building, or portion thereof, which is intended or designed for human occupancy and supplied with water by a piped water system.

Equal Distribution: uniform distribution of septic effluent throughout an absorption system. Gravity systems with no more than ten (10) foot difference in lateral length or pressure distribution systems meet the definition of equal distribution for the purposes of this regulation.

Escarpment: any slope greater than 50 percent which extends vertically six (6) feet or more as measured from toe to top.

Experimental Systems: a wastewater treatment system, which is neither conventional nor alternative, which needs to be evaluated and approved by the Department using rigorous scientific methods.

Failed Wastewater Treatment and Disposal System: a system is a failed system whenever the absorption system fails to accept waste at the rate of application, no longer provides the treatment and/or disposal for which it was intended, when a septic tank suffers structural failure, or whenever a system violates section 1 (A) of this regulation.

Floodplain: that portion of land adjacent to a water-way which is inundated when the water-way overflows on an average frequency of once per one hundred (100) years, including all land area designated by the Federal Emergency Management Agency as being in the 100-year floodplain on the National Flood Insurance Rate map.

Flood-prone Areas: areas where information indicates that the land is subject to flooding in a one hundred (100)-year flood event but not included on Flood Insurance Rate maps.

Groundwater Table: the upper surface of the zone of water saturation of a geologic formation. The upper surface of a perched water table is included in this definition.

High Seasonal Groundwater: the depth from the natural ground surface to the upper surface of the zone of saturation, as measured in an unlined hole or perforated monitoring well during the time of year when the water table is the highest. The term includes the upper surface of a perched water table.

Holding tank: a watertight receptacle that receives wastewater for retention and does not, as part of its normal operation, dispose of or treat the wastewater.

Impervious layer: any layer of material in the soil profile that has a percolation rate slower than 120 minutes per inch.

Increased Use: the enlargement or change in use of a structure served by a wastewater treatment and disposal system where the enlargement or change in use would potentially increase the effluent flow from the structure in excess of approved limits. Increased use includes but is not limited to the enlargement of a residence by adding one or more spaces which can be used as bedrooms. It also includes increasing a room or building's total square footage in a way that could lead to increased use in the future. The Department has the sole discretion to determine if an enlargement or change in use is an increased use.

Individual Wastewater Treatment and Disposal System: any wastewater treatment and disposal system that serves one (1) single-family dwelling unit.

Leaching Chambers: plastic (often polyolefin) chambers with an open bottom, structurally designed to carry the earth loading. The Department considers leaching chambers to be conventional systems.

Limiting layer: bedrock, an impervious layer, or seasonally high groundwater.

Living unit: the area under one roof occupied by a household. For example, a duplex is considered two living units.

Lot: synonymous with "tract" or "parcel."

Mixing Zone: an area established in a permit or by a non-degradation analysis where water quality standards may be exceeded, subject to conditions imposed by the Montana Department of Environmental Quality and consistent with rules adopted by the Montana Board of Environmental Review.

Mobile Home: a transportable structure constructed without a permanent foundation.

Multi-User Wastewater Treatment and Disposal Systems: those wastewater treatment and disposal systems which serve or are intended to serve three (3) to fourteen (14) connections where the total number of people served does not exceed twenty-four (24). In estimating the population served, the Department shall multiply the number of living units times either the county or census tract average or persons per living unit based on the most recent census data.

Natural Soil: soil that has developed through natural processes, and where no fill material has been added.

Non-Community Public Wastewater Treatment and Disposal Systems: public wastewater treatment and disposal systems which serve a transient population such as a restaurant or bar.

Parcel: a part of land which is created by a division of land or a space in an area used for recreational camping vehicles or mobile homes.

Percolation Test: a standardized test used to determine soil permeability. This test is described in Appendix A of DEQ 4.

Permit: a written authorization issued by the Department, permitting the construction, alteration, extension, or operation of a wastewater treatment and disposal system under this regulation.

Primary Treatment: treatment provided in a septic tank containing one or more chambers.

Public Wastewater Treatment and Disposal Systems: those wastewater treatment and disposal systems which serve fifteen (15) or more connections or twenty-five (25) or more people for a period of at least 60 days of the calendar year. In estimating the population served, the Department shall multiply the number of living units times either the county or census tract average or persons per living unit based on the most recent census data.

Public Nuisance: any condition which affects an indefinite number of persons, or all the residents of a particular locality, or all persons coming within the extent of its range or operation by being injurious to health, annoying, or indecent or offensive to the senses, although the extent of the effect on individuals may vary.

Readily available: a public system is readily available if: any necessary easements are available, it is physically practical to connect, or the cost to connect is less than three times the cost of installation of an approvable system on the site.

## 2. Definitions (cont.)

Replacement System: a wastewater treatment and disposal system that is installed to replace an existing system.

Scarify: to break up and loosen the surface of the soil.

Sealed pit privy: an enclosed receptacle designed to receive non-water carried toilet wastes into a watertight vault for temporary storage.

Secondary Treatment: a biological wastewater treatment process occurring after solid/liquid separation in a septic tank or equivalent.

Seepage Pits: deep excavations used for the subsurface disposal of pre-treated effluent. Covered porous walled chambers are placed in the excavation and surrounded by rock.

Septic tank: a storage settling tank in which settled sludge is in immediate contact with the wastewater flowing through the tank while the organic solids are decomposed by anaerobic action.

Shared Wastewater Treatment and Disposal System: any wastewater treatment and disposal system that serves two (2) single-family dwelling units.

Significant alteration: when a structure has suffered fifty (50) percent or greater destruction and is being replaced or restored. The destruction can be intentional or unintentional, resulting from things like fire, flood, or remodeling. Replacement of a mobile home with a permanent structure is considered significant alteration. Replacement of a single wide mobile home with another single wide mobile home or replacement of a double wide mobile home with another double wide mobile home with the same number of bedrooms is not significant alteration.

Single family dwelling or residence: any individual structure supplied with water by a piped water system designed or used for human occupancy not occupied by more than one (1) family or other group of people living in common.

Site Evaluation: an evaluation to determine if a site is suitable for the installation of a subsurface wastewater treatment and disposal system.

Site Evaluator: Professional Engineers specializing in civil, environmental, sanitary, or agricultural engineering; persons with B.S. degrees in geology, hydrogeology, or soils science, and Registered Sanitarians with sufficient soils course work or specialized soils training are authorized to perform site evaluations. Other persons may be approved by the Department if they demonstrate sufficient knowledge of soils enabling them to perform satisfactory site evaluations.

Slope: the rate that a ground surface declines expressed as percent of grade.

Soil Profile: a description of the soil strata to a depth of ten (10) feet using the USDA soil classification system.

Soil Texture: the amount of sand, silt or clay, measured separately in a soil mixture. (For individual definitions, see Appendix A)

STEP: Septic Tank Effluent Pump

STEP Septic Tank: a septic tank designed to accept pumping equipment to pump effluent into a municipal sewer system which meets the design criteria established by the City of Missoula Public Works division.

Structure: that which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed or parts joined together in some definite manner, including but not limited to: dwelling units, mobile homes, sleeping quarters, business establishments, grandstands, amphitheaters, and warehouses.

Subdivision: means a division of land or land so divided that creates one or more parcels containing less than 20 acres, exclusive of public roadways, in order that the title to or possession of the parcels may be sold, rented, leased, or otherwise conveyed and includes any re-subdivision and any condominium or area, regardless of size, that provides permanent multiple space for recreational camping vehicles or mobile homes.

Surface water: any water on the earth's surface including, but not limited to: streams, lakes, ponds, reservoirs, irrigation drainage systems or other water on the earth's surface. Water bodies that are part of an approved sewage treatment or approved storm drainage system are not considered surface water for the purposes of this regulation.

Unsealed Pit Privy: a facility designed to receive non-water carried toilet wastes into a pit excavated into natural soil.

Useable acreage: the total area of a lot minus flood plain or flood prone area.

Wastewater: liquid waste which may include chemicals, household, commercial or industrial wastes, human excreta, animal and vegetable matter in suspension or solution, discharged from a dwelling, building, establishment, vehicle, or container.

Wastewater Treatment and Disposal System: any wastewater system including individual, multi-user, and public systems which receives human excreta, liquid waste, or both; treats the effluent; and disposes of the effluent through application into or onto the soil, or into any device, sealed vault, or holding tank. Included within the scope of this definition are pit privies, subsurface drainage systems, and alternative and experimental systems that are addressed by this regulation.

Zone of Saturation: that area beneath the ground in which all open spaces are filled with groundwater.

### **3. PERMITS.**

#### **(A) General Requirements for Permits.**

- (1) Parcels must be recorded with the County Clerk and Recorder before a permit is issued by the Department. Permits must be issued in the name of the parcel's owner, but may be picked up and executed by an authorized agent.
- (2) The Department shall issue a permit following the submittal of a complete and accurate permit application and site evaluation demonstrating compliance with all applicable regulations.
- (3) Notice of denial. When requested by an applicant, written notice that a permit has been denied must be given to the applicant by personal service or certified mail within ten (10) business days of receipt of a request. The notice must list deficiencies and reasons for the denial.
- (4) The Department may place any other provisions on a permit, which will facilitate compliance with the provisions of this regulation or subdivision approval.
- (5) A permit may not be issued for a system when use of the system would constitute a violation of any ordinance, rule, law or conditional approval including but not limited to a Certificate of Subdivision Approval.
- (6) Unapproved changes. Unapproved changes in plans or specifications after a permit has been issued or any falsification or significant error in information submitted by an applicant invalidates the permit.

#### **(B) Permit Required.**

- (1) No person may install, construct, extend, alter, repair, replace, or increase use of a wastewater treatment and disposal system within Missoula County without first obtaining a permit from the Department, except for repairs to piping between a structure and a septic tank or a septic tank and a header to an absorption system.
  - (a) Maintenance activities do not require a permit. Examples of maintenance activities include, but are not limited to: effluent filter cleaning, replacement of effluent pump(s) with an equivalent pump, removal of blockages not requiring substantial excavation of the drainfield, and pumping of the septic tank.
  - (b) Investigative activities to determine location of systems, dimension of installed systems, or to determine the cause of failure do not require a permit. A certified installer, property owner, or an authorized agent must contact the Department prior to any excavating of absorption area for investigative purposes.
- (2) No person may use a septic system that does not have a valid permit issued by the Department if one was required at the time of construction.
- (3) Applications. A completed application for a permit must be written on forms provided by the Department and must include the following information:
  - (a) Name and address of applicant and owner;
  - (b) A complete legal description and physical address of the property on which installation, repair, construction, alteration, temporary repair or extension is proposed;

### **3. Permits**

- (c) A site plan no larger than eleven (11) inches by seventeen (17) inches showing that the proposed site meets the minimum requirements in sections 1(A) and 5 of this regulation;
- (d) The number, type, location, and size verified by submission of relevant floor plans, including copies no larger than eleven (11) inches by seventeen (17) inches to be kept for records of all structures to be connected to the system;
- (e) Plan of the proposed wastewater treatment and disposal system to be installed, constructed, altered, or extended;
- (f) In the case of a new permit application:
  - (i) an acceptable site evaluation as described in section 4 or DEQ Certificate of Subdivision Approval;
  - (ii) evidence that non-degradation requirements of ARM 17.30.715 have been satisfactorily addressed; and
  - (iii) evidence indicating that zoning and building officials have been notified.
- (g) Other relevant information as required by the Department to substantiate that the proposed installation, construction, alteration, temporary repair or extension complies with the rules and regulations promulgated by the local or State Department of Environmental Quality.
- (h) The following additional information may be required when the system uses a pump or siphon:
  - (i) Pump chamber specifications, including dimensions and volume;
  - (ii) Elevation difference between the bottom of the dosing tank and the ground surface at the header line of the manifold;
  - (iii) Pump specifications, including pump curve or equivalent information to determine adequacy of pump;
  - (iv) Location of the system disconnect switch
  - (v) Type, size, and length of transport pipe and fittings;
  - (vi) Friction loss estimates for pipe and fittings;
  - (vii) Method of freeze protection for transport pipe;
  - (viii) Schematic of distribution trenches in drainfield;
  - (ix) Method to prevent siphoning between tank and drainfield;
  - (x) Length of drainfield or size of distribution system.
- (i) Payment of application fee.
- (4) Expiration and extension.
  - (a) A permit expires if the system for which the permit was issued is not installed, inspected, and approved by the Department within:
    - (i) one (1) year after issuance for an individual system; or
    - (ii) two (2) years after issuance for a multi-user or public system.
  - (b) A permit may be extended one (1) time by the Department for one (1) year if:
    - (i) the permit holder requests an extension from the Department before the permit expires;
    - (ii) the current requirements of this regulation are satisfied; and
    - (iii) any difference in permit application fees are paid in full.
- (5) All systems must receive final approval from the Department for a permit to remain valid.
- (6) Construction without permit. The Department shall charge a fee three (3) times the permit application fee when the construction or repair of a system starts prior to a valid permit being issued.
- (7) Permits for Temporary Repairs or Increased Use.
  - (a) The Department may issue a temporary repair permit for a failed seepage pit, cesspool, or drainfield in areas that have received construction grants or loans, and where a government entity is actively organizing the public funding, RSID or SID necessary to install public sewer interceptor or collector systems. Temporary repairs may be accomplished by the addition of absorptive area to a currently existing system. This practice is commonly called re-rocking.
  - (b) Department may issue a temporary permit for increased use or for the enlargement of a structure without requiring an upgrade to an existing seepage pit, cesspool, or drainfield in areas which have received construction grants or loans and where a government entity is actively organizing the public funding, RSID, or SID necessary to install public sewer systems. Such temporary increased use may be permitted by the Department only for systems which are currently accepting waste at the rate of application from the source.
  - (c) The Department shall charge a minimal administrative fee as established by the Board for a temporary repair or increased use permit. The Department is not required to inspect such repairs. Inspections must be performed by licensed installers and submitted to the Department.

- (d) Prior to the issuance of a temporary repair permit, the owner of the property must execute any contracts, petitions, or agreements required by the utility, the Department, or other entity for the creation of SIDs or RSIDs and must meet other conditions which the municipality, the Department, or utility may require. The homeowner shall sign a document indicating that he or she will connect to public sewer within 180 days after the installation of the sewer mains designed to service the property.
- (e) A temporary repair or increased use permit satisfies the requirements of Section 13, which establishes requirements for replacement systems.
- (f) Applicants for temporary permits may instead apply for a normal replacement permit, using the established fees and requirements of the Department.
- (g) The Department shall notify persons who obtain temporary repair or increased use permits that the granting of such a permit does not guarantee a life expectancy or operation of the system, the system will not be inspected by the department, and that if the system fails prior to availability of public sewer, further repairs or upgrades to the system may be required by the Department.

**4. SITE EVALUATIONS.** A site evaluation must be conducted in the location of each proposed system. The following factors must be evaluated: size and shape of the lot, soil conditions, slope of natural and finished grade, depth to groundwater, proximity to existing and approved proposed water supplies, proximity to existing systems, proximity to state water, floodplain and flood prone areas, escarpments, and area available for enlargement or replacement of the system.

(A) Soil conditions. Soil texture and structure must be determined for the site where the absorption system is to be located. Where the Department determines adequate soils information is not available, soil conditions must be obtained by digging two (2) holes, one to a depth of at least ten (10) feet and a second to a depth of at least five (5) feet, located at each end of the proposed absorption system site. The U.S. Department of Agriculture's "Soils Classification System" must be used to describe and determine soil texture. (see Appendix A)

(B) Soil Profile Observations. Soil pits are required for soil observation. The following factors must be included in any soils evaluation:

- (1) Thickness of layers or horizons of soil profile.
- (2) Texture (USDA Soils Classification System) and structure of horizons.
- (3) General color, and color variation (mottling).
- (4) Depth to water (if observed) or a statement that groundwater depth exceeds six feet throughout the entire year based on evidence from pits, borings, or other physical substantiation.
- (5) Depth to bedrock or impervious layer (if observed).
- (6) Other prominent features that would have a bearing on a site's compatibility for use as a wastewater absorption site. Additional soils information may be required. The site of the soil testing must be clearly identified by placing a perforated pipe to a depth of nine (9) feet in the soil profile hole.

(C) If the Department performs a site evaluation it may require as many soil profile holes be dug in the area of the proposed wastewater treatment field as the Department determines is necessary to describe and evaluate the soils of the site. A percolation test is not part of the site evaluation conducted by the Department. When required, percolation tests must be conducted by or under the supervision of an approved site evaluator.

(D) Any person performing a site evaluation on a parcel shall submit to the Department all data and locations on all test holes and percolation tests performed on the parcel.

(E) Percolation Tests and Exceptions.

- (1) A percolation test must be completed for all sites unless the soils information is provided by a Certified Site Evaluator.
- (2) Certified site evaluators may have percolation test requirements waived except for the following soil types:
  - (a) Soils finer than silt loam;
  - (b) Soils coarser than medium sand, unless a sand-lined, pressure distribution system will be installed;
  - (c) All extremely gravelly soil types unless a sand-lined, pressure distribution system will be installed;
  - (d) Compacted silt loam.
- (3) If a potential impervious layer is present less than six (6) feet below ground level, percolation tests are required to be conducted in this layer unless other testing (e.g. hydrometer, permeameter, or other approved hydraulic conductivity test) is provided that substantiate the layer is not impervious.

**4. Site Evaluations**

- (4) Three percolation tests must be conducted, when required, in accordance with DEQ 4, Appendix A on absorption system sites. Test holes must be evenly spaced throughout the area of the proposed absorption site.
  - (5) Percolation tests must be conducted by a Site Evaluators or a person under the direct supervision of a Site Evaluator.
- (F) When a site evaluation is required, the evaluation may be performed by a person approved by the Department to conduct site evaluations or the applicant may request that the Department perform the site evaluation.
- (1) If a site evaluation is conducted by a site evaluator, the Department may require access to the property where the proposed site is located to confirm information submitted by the applicant. The Department may reject a site evaluation if access is denied.
  - (2) The Department may refuse to accept site evaluations from persons who have a documented history of supplying incorrect site evaluations or incomplete information as required.
- (G) Non-degradation Mixing Zones All new and increased use systems must provide evidence that they comply with ARM 17.30.5 and ARM 17.30.7.

## 5. LOCATION, DESIGN AND INSTALLATION OF CONVENTIONAL SYSTEMS.

### (A) General.

- (1) All systems must be located and designed in accordance with DEQ 4, which is hereby incorporated by reference, unless a more specific or stringent requirement is included in this Code.
- (2) Applicants proposing a new system, or increased use of a system must designate a replacement area that meets all the criteria for the initial drainfield or absorption system. The Department may require that both the primary and replacement drainfield areas be identified by staking prior to construction.
- (3) All new individual wastewater systems and designated replacement areas serving individual dwellings or businesses must be located on the same lot as the dwelling or business served. This provision does not apply to new lots included as part of any Sanitation in Subdivision application submitted to the Department by December 31, 2009 or to new lots contained in subdivisions with preliminary plat approvals from the County Commissioners or City Council by December 31, 2009.
- (4) Equal distribution of septic tank effluent throughout the secondary treatment system is required.
- (5) A structure, movable or immovable, may not be located over, or moved onto, any part of the system. Vehicles may not be driven over the system after installation, except those portions properly designed to accept traffic loads. The drainfield or other absorption system must be located and protected in a manner that prevents vehicles from passing over or parking on top of the system. This area must be kept free of all obstructions, including pavement, which will prevent air from penetrating the soil.

### (B) Prohibited locations.

- (1) Slopes. No system or any portion of a system may be located on slopes that exceed 25 percent. Slopes greater than 15 percent preclude the use of subsurface wastewater treatment and disposal systems unless a registered professional engineer or a person qualified to evaluate and identify soil in accordance with the Natural Resource Conservation Service standards submits adequate evidence that conditions are such that there will be no visible outflow of effluent down slope from the installation of the system.
- (2) Floodplain or flood-prone areas. Subsurface wastewater treatment and disposal systems are not permitted within: 100 feet of a floodplain or flood-prone area, within a drainageway, or within a natural or manmade intermittent watercourse.
- (3) Groundwater. Groundwater depth at any time of less than six (6) feet from the natural ground surface precludes the use of conventional subsurface wastewater treatment and disposal systems. There must be a minimum separation of at least four (4) feet between the bottom of the drainfield and the maximum high groundwater elevation.
  - (a) The Department may require the applicant to provide one (1) year of groundwater monitoring conducted by the Department to delineate the highest groundwater level.
  - (b) If the groundwater is within ten (10) feet of the ground surface, or if there is any reason to believe that the groundwater will be within ten 10 feet of the natural ground surface during any time of the year, groundwater monitoring is required.

- (c) The applicant must provide groundwater test holes and piping to a depth of nine (9) feet within the boundary of the proposed drainfield to determine the high groundwater during its peak occurrence, unless shallow groundwater or an impervious layer is encountered during excavation of the test holes at a depth less than nine (9) feet.
  - (d) The Department may refuse to accept seasonal high groundwater data when total precipitation for the previous year (defined as May 1 of the previous year through April 30 of the current year), or April 1 snowpack water equivalent, measured at the nearest officially recognized monitoring station, is more than 20 percent below the historical average.
  - (e) The Department may consider soil morphology data and data from nearby groundwater monitoring sites with similar soil, geology and proximity to streams or irrigation ditches, if available, to determine maximum groundwater elevation. Morphology data may only be substituted if groundwater monitoring was conducted and precipitation or snowpack for the monitoring period is more than 20 percent below the historical average per 5(B)(3)(d). The Department may charge a fee to be determined by the Board for review of morphology data.
- (4) Bedrock and impervious layers. A six (6) foot separation between the natural ground surface and bedrock or an impervious layer must be maintained throughout the proposed drainfield site and replacement area. Absorption trenches must be located to maximize the vertical separation distance from the bottom of the absorption trench to the seasonally high groundwater level, bedrock, or other limiting layer, but under no circumstances may this vertical separation be less than four (4) feet.

(C) Location of systems including minimum horizontal setbacks from certain features.

Minimum horizontal setbacks are shown in Table 1, with clarifying statements shown in 1-12 below.

**TABLE 1**

Minimum Horizontal Setback Distances in Feet

FROM:	TO:		
	Sealed components	Other components	Absorption systems
Public or multi-user wells/springs	100	100	100
Other wells	50	50	100
Property Boundaries	10	10	10
Foundation Walls	10	10	10
Suction lines	50	50	100
Cisterns	25	25	50
Stream, Lake, or springs	50	50	100
Irrigation Ditches (11)	50	50	100
Roadcuts, escarpments	10	10	25
Floodplain or flood prone area (6)	10	100	100
Slopes > 25%	10	10	25
Subsurface drains	10	10	10
Water Lines	10	10	10
Drainfields/sand mounds	10	10	-
Surface water, springs	50	50	100

- (1) Sealed components include: sewer lines, sewer mains, septic tanks, grease traps, dosing tanks, pumping chambers, holding tanks and sealed pit privies. Sealed pit privies must be located at least ten (10) feet outside the floodplain or any openings must be at least two feet above the floodplain elevation.
- (2) Other components include the unsealed portions of intermittent and recirculating sand filters, package plants and evapotranspiration systems.
- (3) Absorption systems include absorption trenches, absorption beds, sand mounds, and other drainfield type systems that are not lined or sealed. This term also includes seepage pits and unsealed pit privies.
- (4) Sewer lines and sewer mains may be located in roadways and on steep slopes if the lines and mains are safeguarded against damage.
- (5) The minimum horizontal setback from a slope or escarpment applies to the slope down gradient of the absorption system.

**5. Location, Design and Installation of Conventional Systems**

- (6) Minimum distance to flood prone/floodplain areas only applies to septic tanks. Sealed transport lines may be located within the flood prone/floodplain area.
- (7) If the floodplain has not been designated and its level relative to a wastewater system is in question, the applicant must submit evidence adequate to allow the Department to establish the location of the floodplain.
- (8) Sealed components of a wastewater system located in a 100-year floodplain or area of high groundwater must be designed and constructed to prevent surface and ground water inundation. Pump lines must be pressure tested prior to use and must have a pressure rating of at least two (2) times the operating pressure or pump shutoff pressure, whichever is greater. Pipes must be tested at 1.5 times the operating pressure or pump shutoff pressure, whichever is greater, or must be tested as specified by the manufacturer.
- (9) Separation of Water and Sewer
  - (a) Horizontal separation of at least ten (10) feet is required between sewer and water mains, unless the sewer main must cross the water line. The distance shall be measured from the closest edge of each pipe.
  - (b) Sewer mains which must cross water mains shall be laid to provide a minimum distance of 18 inches between the outside of the pipes. Service lines shall be constructed in accordance with the Uniform Plumbing Code.
- (10) The Department may require greater horizontal separation distances than those specified in Table 1 if it determines that site conditions or water quality non-degradation requirements indicate a need for the greater distance.
- (11) Exceptions for Irrigation Ditches
  - (a) The setback distance from an irrigation ditch to an absorption system may be reduced to a minimum of 50 feet provided the ditch is sealed prior to construction of the system to prevent seepage of water out of the ditch and seepage of wastewater into the ditch. The setback distance may be reduced to a minimum of 10 feet based on a case by case evaluation of engineered plans for piping submitted to the department.
  - (b) If the top of the absorption system is to be placed at an elevation equal to or lower than the flow line of the ditch to prevent wastewater effluent from entering the ditch and groundwater monitoring during the peak season demonstrates that seepage of water from the ditch will not result in a depth to groundwater of less than six (6) feet in the area of the absorption system, the setback distance may be reduced to a minimum of 50 feet

(D) Maximum land application rates

- (1) Wastewater application into the soil of property or properties may not exceed 700 gallons/useable acre/day for any system or group of systems.
  - (a) Total area for the purpose of calculating the maximum land application rate may include lots, interior parks, and public right of ways within the subdivision, minus floodplain or flood-prone area.
  - (b) All parcels included within a proposed project may be considered to determine compliance with this section.
  - (c) For the purpose of calculating application rate limits each individual single family dwelling unit is considered to have a discharge of 350 gallons per day. The application rate for multi family units will be calculated using the flows shown in Table 2.
  - (d) Flow rates for industrial and non-residential establishments must be as determined by design in accordance with DEQ 4, Chapter 5.
- (2) Exception: Existing lots not being reviewed for subdivision to be used for single family dwelling(s) or multi family dwellings with 4 or fewer dwelling units do not have to meet the requirements of 5(D)(1), but must demonstrate adequate room for both a drainfield and full replacement area and meet all other requirements of these regulations.

(E) Certified Installers

- (1) Certification. All installation, construction, extension, alteration or repairs of wastewater treatment and disposal systems that requires a permit in accordance with Section 3 must be supervised by a person who has passed an examination as described in subsection (3) below to ensure they have sufficient knowledge and training to complete the work in compliance with this regulation. An installer is certified for the calendar year in which the exam was taken and passed. Certification expires annually on December 31st. A certified installer must be on site at all times during installation.
- (2) Certified installers must install systems according to all conditions on the permit and all applicable regulations.

- (3) To become certified, installers must take and pass a Basic exam, which allows the installation of conventional and replacement systems. Installers must take and pass an Advanced exam to become certified for the installation of experimental and alternative systems.
- (4) Applications for certification and certification renewal must be in writing on forms provided by the Department and must include the name, address and phone number of the applicant and the name of the business that the applicant is representing. Applications must be accompanied by an application fee determined by the Board to defray the costs for training and exams.
- (5) Certified installers must pass an annual exam for re-certification. These exams must be submitted to the Department with the application for re-certification.
- (6) Certified installers must have evidence of certification at the installation site available for inspection by the Department and a copy of the appropriate permit.
- (7) The Department may not approve a system if a certified installer is not present during the installation. The Department may approve the system if a certified installer completes the system or the uncertified installer takes and passes the required certification exam(s) and the system meets all requirements. When there is no certified installer on site during an inspection the Department may charge a reinspection fee to return and reinspect the system when a certified installer is on site. The Department may waive the requirement to have a certified installer on site during an inspection by arrangements made prior to the inspection.
- (8) Certification may be revoked by the Department from an individual or from a single employer and its employees for any of the following reasons:
  - (a) A single occurrence of installing or attempting to install a system without a valid permit.
  - (b) A single occurrence of deliberately falsifying an inspection.
  - (c) A single occurrence of failing to correct deficiencies noted on the inspection form.
  - (d) Repeated mistakes in installing a system with regards to the requirements of this regulation or failure to submit self-inspection forms in a timely manner. The Department must issue a written warning within a two (2) year period prior to revoking an installer's certification for repeated installation mistakes.
- (9) Revocation of certification may extend for up to one (1) year.
- (10) Installers who have their certification revoked may request a hearing before the Board in accordance with the provisions of this Code.

## **6. INSPECTIONS.**

- (A) Wastewater treatment and disposal systems require a final inspection prior to covering the system unless specific permission has been granted by the Department to backfill a portion of the system for a justified reason.
- (B) When final approval is withheld, a written notice of deficiencies and required corrective action shall be given to the applicant. The applicant or certified installer must notify the department upon correction of all deficiencies. A reinspection must be made to confirm the deficiencies have been corrected and the system is in compliance with these regulations. The Department may charge a re-inspection fee established by the Board.
- (C) The applicant or installer must notify the Department that an inspection is needed not less than one business day prior to completion.
- (D) Certified installers, after receiving permission from the Department, may inspect their own installations and certify the system is installed in compliance with these regulations on forms provided by the Department when Department personnel are unable to inspect the system within one (1) business day of the requested inspection time. The installer must submit a completed inspection of the system, including a drawing and location of the disposal system, must be filed with the Department within two (2) working days after receiving permission to self inspect.
- (E) Inspections of alternative and experimental systems shall be conducted as specified under the requirements for those specific systems. The Department must inspect these systems in accordance with Sections 9 and 11 of this Code.
- (F) When a signed copy of the 'as built' plans for an engineered system is required, the owner or authorized agent must submit the plans to the Department within 15 business days of the final inspection.

### **6. Inspections**

- (G) Acceptance of a permit by the applicant confers upon the Department the authority to access the installation site at reasonable times to collect samples. The Department may also inspect existing systems that have been subject to complaint(s), create health hazard(s), or have become public nuisances.
- (H) Deviations from the approved plans, which do not violate the regulation, may be approved by the Department. Approved deviations must be noted on the inspection form.

**7. PRIMARY TREATMENT REQUIREMENTS**

- (A) The primary treatment device must consist of a concrete septic tank or a septic tank installed using other materials and installation procedures approved by the Department. Septic tanks must conform to the design and installation requirements established by DEQ Circular 4 Chapter 7.
- (B) All new and replacement wastewater treatment systems must provide a primary treatment device prior to disposal in an absorption system.
- (C) Septic tanks located in groundwater based on available information and tanks used for multi-user or commercial systems must be water tested prior to use.
  - (1) For individual systems, a certificate from the tank manufacturer stating the tank has been water tested will satisfy this requirement
  - (2) The Department may require a tank to be water tested following installation if there is evidence the tank or seals have been damaged and may no longer be water tight.
- (D) Septic tanks shall be located where they are readily accessible for inspection and maintenance.
- (E) Sizing of Septic Tanks
  - (1) Residential
    - (a) For 3 bedrooms, the minimum size septic tank is 1,000 gallons.
    - (b) For 4 to 5 bedrooms, the minimum size septic tank is 1,500 gallons.
    - (c) For 6 to 7 bedrooms, the minimum size septic tank is 2,000 gallons.
    - (d) For 8 or more bedrooms, the minimum size septic tank is 2,000 gallons plus 250 gallons for each bedroom greater than 7 bedrooms (i.e. 8 bedrooms requires a 2,250 gallon tank; 9 bedrooms requires a 2,500 gallon tank).
  - (2) Non-Residential
    - (a) For non-residential flows of less than or equal to 1,500 gallons per day, the tank must have a capacity of at least 2.7 times the average daily flow.
    - (b) For non-residential flows of greater than 1,500 gallons per day, the tank must have a minimum capacity equal to 2.25 times the average daily flow.
  - (3) Dose tank volume is not included as part of the septic tank volume.
- (F) The pipe between the structure and the septic tank shall be schedule 40 PVC pipe and have a minimum inside diameter of four inches and lie on a slope of not less than 1/4 inch per foot unless pressurized. No single bend of more than 45° is allowed.
- (G) All liquid waste and wash water shall discharge into the primary treatment device. Roof, footing, garage, surface water drainage and cooling water shall be excluded. Pool and spa water must also be excluded unless the system is designed for the additional flow.
- (H) Inspection ports measuring at least eight 8 inches in diameter must be provided above each inlet and outlet and marked with rebar. An access at least 1.75 square feet in size (22 inch inside diameter) must be provided into each compartment. Each access must be extended to within 12 inches of the finished ground surface. Each access must be marked with rebar if not extended to the finished ground surface. An access to the effluent filter of a size large enough to maintain the filter must be provided and must be extended to the finished ground surface. Covers on all access and inspection ports must remain in place and be secured unless the tank or filter is being serviced.
- (I) The septic tank shall be set on undisturbed ground or properly bedded with sand to prevent settling of the tank. The tank shall be installed level and the inlet and outlets shall be sealed to prevent leaking.

(J) Septic tank outlets must include an effluent filter with an opening no larger than 1/8 inch or another approved device such as a screened pump vault. On combination septic/dosing tanks, the septic tank outlet is considered to be in the wall dividing the septic compartment(s) and the dosing compartment. All wastewater must pass through the effluent filter.

**8. CONVENTIONAL SECONDARY TREATMENT.**

(A) Drainfield wastewater flow rates.

(1) Design wastewater flow for residential dwelling units shall be in accordance with Table 2. Single-family dwelling units must be sized for a minimum of three (3) bedrooms. An unfinished basement is considered an additional bedroom. No more than one (1) bedroom may be constructed in the basement unless the system is designed for additional bedrooms or a permit for increased use is obtained. Any space or room such as a den, study, storage area, or any area that can easily be converted is considered an additional bedroom.

**TABLE 2**

1 bedroom	150 gpd
2 bedrooms	225 gpd
3 bedrooms	300 gpd
4 bedrooms	350 gpd
5 bedrooms	400 gpd
Each additional bedroom	add 50 gpd

(2) Wastewater flow rates for multi-user, non-residential, industrial, recreational and commercial establishments shall be determined by:

- (a) DEQ 4, Chapter 5; or
- (b) Applicable tables and charts found in the EPA Design Manual for Onsite Wastewater Treatment and Disposal Systems; or
- (c) Metered flow data which has been approved by the Department gathered from comparable facilities.

(B) Drainfield application rates.

(1) Application rates for residential and non-residential drainfields shall be determined using Table 3.

**TABLE 3**

<b>Texture</b>	<b>Est. Perc rate (min/in)</b>	<b>App. Rate (gpd/ft<sup>2</sup>)</b>
Gravelly to extremely gravelly sands, extremely gravelly loamy sands, coarse sands and coarser soils	< 3	0.8
Loamy sand, coarse & gravelly sands & gravelly loamy sands from above that perc 3 – 6 mpi	3 - < 6	0.8
Medium & very fine sand, sandy loam	6 - <10	0.6
Fine sandy loam, loam, silt loam	10 - <16	0.5
Sandy clay loam	16 - <31	0.4
Clay loam, silty clay loam	31 - <51	0.3
Sandy clay, clay, or silty clay	51 - <121	0.2
Clays, silts, silty clays (soil is reported throughout The soil profile) (USE EVTA BED)	≥ 121 (e)	0.15
Clays or silts, pan evaporation rates do not allow For EVTA use	≥ 121	Not Permitted

- (2) If the perc rate is less than three (3) minutes per inch the trench must be sand-lined and pressured-dosed or other treatment provided as approved by the Department.
- (3) If the soil for three (3) feet below the infiltrative surface is gravelly sand or very coarse sand **and** there is less than six (6) feet between the bottom of the trench and a limiting layer the trench must be lined with either medium sand, loamy sand, or sandy loam and pressured-dosed or other treatment provided as approved by the Department.
- (4) Pressure distribution is required if more than 1000 square feet of absorption area prior to the application of any reductions is needed.
- (5) The most conservative of soils profile report or percolation rate will be used to select applicable square footage.
- (6) EVTA bed systems require increased square footage because the trench sidewall is not available
- (7) The following formula must be used to determine the size in lineal feet of the drainfield.

$$\text{Lineal feet} = \frac{\text{gallons of effluent per day}}{\text{application rate} \times \text{width of trench in feet}}$$

(C) Drainfield construction details.

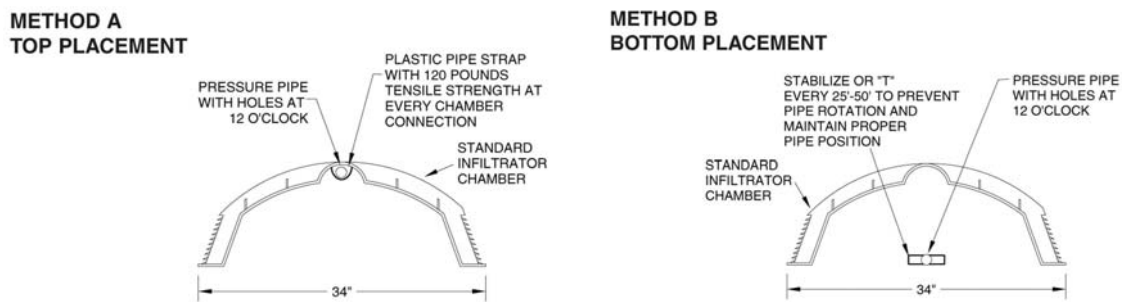
- (1) Drainfield construction details must conform to the standards found in Table 4 and below:
  - (a) Coarse material around drainfield pipes shall be clean, crushed stone, gravel, or similar permeable material placed six (6) inches below the drainpipe to two (2) inches above the drainpipe.
  - (b) Coarse material shall be covered with a minimum of two (2) layers of untreated building paper, synthetic drainage fabric or other approved material before backfill.
  - (c) For gravity fed systems, the pipe connecting the septic tank and the drainfield shall be properly bedded and consist of schedule 40 PVC pipe at least three inches in diameter and lie on a slope of not less than 1/8 inch/ft.
  - (d) Pipe used in gravity flow drainfields shall be perforated PVC pipe at least four (4) inches in diameter.
  - (e) Header pipes shall consist of solid PVC pipe.
  - (f) The ends of drainfield laterals shall be capped and include a metal location marker.
  - (g) Perforations in drainfield pipe shall be placed at five (5) and seven (7) o'clock.
  - (h) Perforated pipe connecting the ends of the drainfield laterals shall not be included when calculating absorption area sizing.
  - (i) When trenches have been excavated, the sides and bottom must be raked to scarify any smeared soil surfaces. Construction equipment not needed to construct the system must be kept off the absorption area to prevent soil compaction. Construction must not be initiated when the soil moisture content is high.

**TABLE 4**

	Units	Gravity Maximum	Gravity Minimum	Pressure Maximum	Pressure Minimum
Trench length	Feet	100	0	-	0
Trench width	inches	24	12	36	12
Trench depth	inches	36	18	36	18
Slope of drainfield lines	percent	0	0	0	0
Slope of trench bottom	percent	0	0	0	0
Slope of header pipe	percent	0	0	0	0
Depth of coarse material Under pipe	inches	-	6	-	6
Over pipe		-	2	-	2
Size of coarse material	inches	2.5	.75	2.5	.75
Space between centers	Feet	-	7	-	7

- (2) Distribution Boxes. When a drainfield cannot be installed level and still meet the minimum and maximum depth requirements of this regulation, a dosing distribution box is required as shown in Appendix C which conforms to all of the following requirements:
- The total length of perforated pipe of each connection to a distribution box must be approximately equal;
  - The bottom of all outlets of the distribution box must be level, and the bottom of the inlet must be at least one (1) inch above the outlets;
  - The distribution box must be adequately bedded to prevent settling;
  - The area where the distribution box is installed must be marked by an iron pipe or re-bar to facilitate locating the distribution box for maintenance and inspection;
  - At least five (5) feet of solid pipe must extend from a distribution box; and
  - An installer of a distribution box must test the distribution box before or at the time of inspection by filling it with water to ensure equal distribution.
- (3) Leaching Chambers. Figure 1 shows a typical cross section of a leaching chamber installed with pressure distribution.

**FIGURE 1  
CUTAWAY OF A TYPICAL LEACHING CHAMBER SYSTEM**



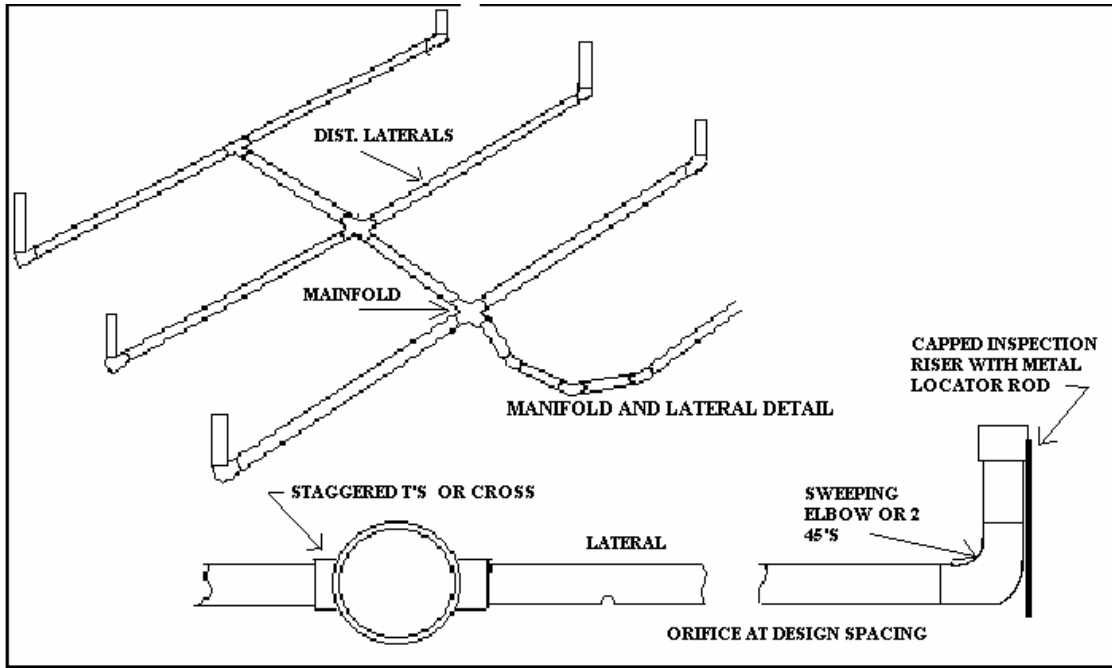
- Leaching chambers made of high density polyolefin or other approved material may be used in lieu of drain rock for systems using pressure distribution or drain rock and pipe in systems using gravity distribution.
- If chamber systems are used, maximum widths are 22 inches for gravity distribution and 34 inches for pressure distribution. These widths are equivalent to a 24 inch and 36 inch width drainfield respectively.
- The required absorption system size in square footage may be reduced by 25 percent if using leaching chambers.
- Installers must follow manufacturer's recommendations for construction, in addition to the construction requirements required by this section.
- Leaching chambers must have at least 12 inches of cover and be compacted by foot compression along the sides of the chamber to provide support for the chambers.
- In clay soils, the space between the louvers of chamber systems and the trench sidewall must be filled with loam or sandy soil. Clay type soil (soils finer than silt loam), including clay, sandy clay, silty clay, sandy clay loam, silty clay loam and clay loam may not be used to back fill the trenches.
- For installations with pressure distribution, the following requirements apply:
  - For installations with pipe hung in the top of the chamber (see Figure 1) the pipes must be secured with plastic strap with a minimum 120 pounds of tensile strength.
  - For installations with pipe placed directly on the trench bottom (see Figure 1) stabilizing T's must be installed every 25 to 50 feet to prevent pipe rotation and maintain orifice position. Stabilizing T's are only required when the lateral is more than 50 feet long.
  - Orifices must be placed at the 12 o'clock position, except orifices at each end of the lateral, and one orifice every 25 feet along the lateral must be faced down and have an orifice shield placed under them to allow for drainage of the pipe.
  - Access for pipe maintenance and flushing and a metal pipe cap or other metal location marker must be provided at the end of each lateral.

**(D) Pressure Distribution Secondary Treatment**

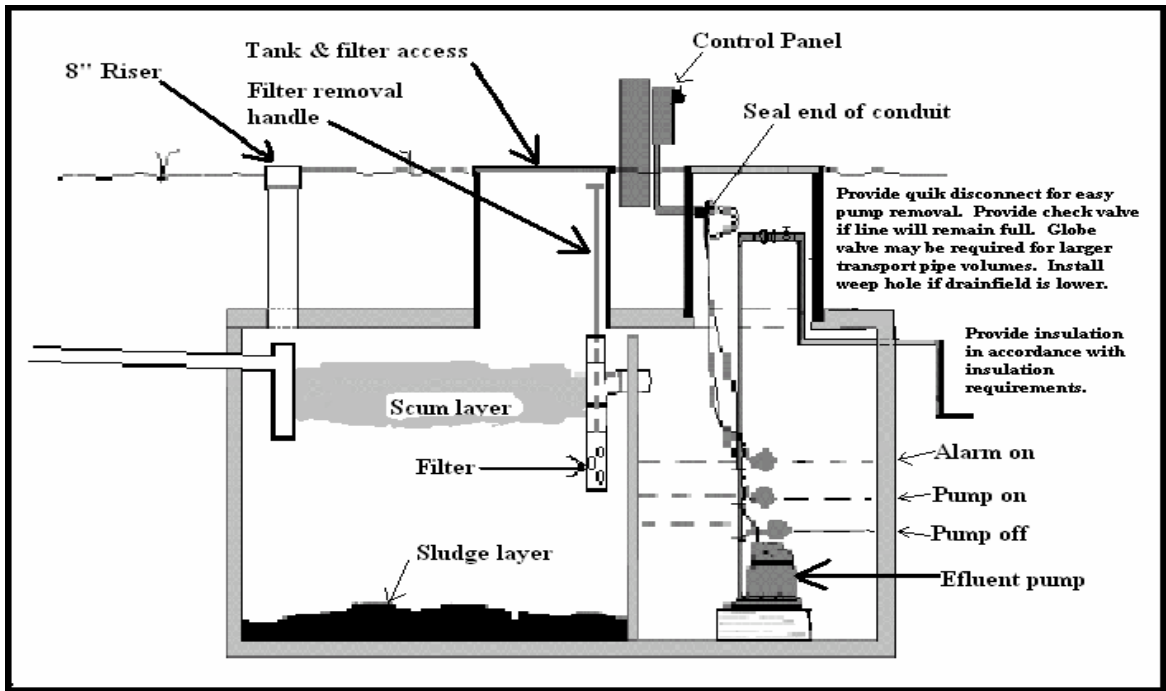
- (1) Pressure distribution of effluent to the absorption system is required:
  - (a) Whenever the design wastewater flow requires more than 1000 square feet of absorption area prior to the application of any sizing reductions.
  - (b) If an effluent pump is part of the system design.
  - (c) If a sand liner is required.
  - (d) If the percolation rate is faster than three (3) minutes per inch.
  - (e) For Shallow Drainfield and Elevated Mound systems.
  - (f) It may also be required in other alternative or experimental systems.
- (2) When pressure distribution is used, a three (3) foot trench width with four (4) foot separation between trench edges is allowed.
- (3) A pump or siphon may be used to provide pressure distribution. A typical layout for a pressure distribution system is depicted in Figure 2.
- (4) The distribution system must be designed by an engineer or someone experienced in the design of pressure distribution systems to ensure equal distribution and minimum squirt height throughout the drainfield.
- (5) Dosing tanks must have access ports sufficiently large to maintain the tank and pumps, and must be vented. Pumps, valves and other apparatus, which require maintenance, must be accessible from the surface without entering the tank or be located in a dry tank adjacent to the wet chamber. Pumps and controls must be corrosion resistant and meet National Electrical Code requirements.
- (6) The dose volume must be equal to the drained volume of the discharge pipe and manifold plus a volume between five (5) and ten (10) times the distribution pipe volume. If a programmable timer is used, the minimum dose size may be equal to two (2) times the distribution pipe volume.
- (7) Dosing pumps and siphons used for pressure distribution systems must be selected to provide a minimum of five (5) feet of head for 1/8 inch orifices, or three (3) feet of head for orifices 5/32 inch and larger at the end of each distribution line.
- (8) All lateral and manifold piping shall be Schedule 40 or stronger PVC pipe. The pipe must have a single row of perforations 1/8 inch diameter or larger in a straight line perpendicular to the ground surface. Maximum perforation spacing is five (5) feet. An equivalent design that assures uniform distribution and minimum squirt height may be provided with the approval of the reviewing authority.
- (9) A hydraulic analysis demonstrating uniform distribution and minimum required squirt height must be provided. The analysis must show no greater than ten 10 percent variation in distribution of dose across the entire drainfield.
- (10) Distribution pipes of pressure-distributed drainfields must have capped inspection risers that terminate no more than six (6) inches below ground surface. Inspection risers must be installed with a long-sweep elbow or single 45° bend. A metal location marker must be provided for each inspection riser.
- (11) Pressure distribution systems and controls must be field tested to demonstrate uniform flow distribution prior to approval of the system. The system must be tested by pressurizing it with water before covering the distribution pipe with gravel. Holes must be facing up for this test. The elevation of the spray from each hole must be a minimum of five (5) feet for 1/8 inch orifices or three (3) feet for 5/32 inch and larger orifices and maintain a maximum flow variance of 10 percent.
- (12) Dosing tanks, except those designed in accordance with the City of Missoula's Standard Installation Manual for Residential On-Site STEP System Sanitary Sewer Connection, must comply with the following requirements unless the Department approves alterations that have been justified by a Professional Engineer.
  - (a) The dosing tank must have adequate volume to provide storage for the necessary effluent dose, the transport line (if the line drains back) and the required reserve capacity.
  - (b) The reserve volume must be equal to at least 25 percent of the daily flow.
  - (c) Dosing tanks must be made of reinforced concrete meeting the same structural standards as those required for septic tanks in DEQ Circular 4 or an approved equivalent.
  - (d) Risers for pump access must be a minimum of 18 inch inside diameter and must be constructed of concrete, ribbed fiberglass or other approved non-corrosive durable material. The pump access must extend to finished grade and have a secure cover made of concrete or fiberglass.
  - (e) Pump vaults must be installed to allow for venting back through the septic tank. A vent with an activated carbon filter is recommended and is required if an odor nuisance is created.
- (13) Pumps must comply with the following requirements:
  - (a) Pumps used for pressure distribution systems must meet the specifications determined by the pressure distribution design criteria.

- (b) Pumping head must be within the manufacturer's recommended operating range for that pump. Pumping head is determined using the elevation distance between the lowest pumping level in the dosing tank and the highest level in the drainfield system and adding the total of the friction losses for the transport pipe and any fittings.
  - (c) Pumps must be designed and approved for intended use.
  - (d) The effluent must be screened through a 1/8 inch filter before it enters the pump chamber.
  - (e) Pumps must be installed to be easily removed without entering the access port. Pumps must be provided with an easy, readily available means of electrical and plumbing disconnect, and a non-corrosive lifting device as a means of removal for servicing.
  - (f) Pump systems must be designed to keep the pump motor submerged unless an explosion proof pump is installed that is acceptable for use in a hazardous environment in accordance with the National Electric Code ANSI/NFPA 70.
  - (g) Every new or replacement system requiring a pump must have an audible high water alarm installed in the pump chamber with a manual silencing switch located in or near the building served by the system. An electrical safety switch must be installed near this alarm. The alarm must be installed on a separate circuit from the pump. The electrical and alarm systems must be installed in accordance with the National Electric Code and other applicable rules.
- (14) Transport pipes must comply with the following requirements:
- (a) All pressure transport pipe and fittings must meet or exceed ASTM Specification D-2241. Polyvinyl chloride (PVC) or polyethylene (PE) transport pipe of one (1) inch or less shall have a minimum pressure rating of 200 pounds per square inch (psi). For diameters greater than one (1) inch, the minimum pressure shall be 160 psi.
  - (b) Continuously pressurized transport lines (systems with check valves) must be buried a minimum of 60 inches deep unless the line is insulated with two (2) inches of high density styrofoam insulation capable of providing a thermal resistance of 10.8 at 40°F mean temperature. Insulated lines may not be shallower than 24 inches. This requirement includes any portion of a pressurized line that is shallower than 60 inches. Transport lines designed to flow back after each dose must be buried at least two (2) feet deep.
  - (c) An isolation valve must be placed on a continuously pressurized transport pipe in or near the dosing tank to allow for repairs without flowback of sewage.
  - (d) Transport pipes must be installed to prevent siphoning of the drainfield back into the tank or the tank effluent into the drainfield. This may be accomplished using weep holes or anti-siphon valves.
- (E) Siphons must comply with the following requirements:
- (1) The specifications for the siphon including elevation difference between the tank and drainfield, and slope profile of the site must be submitted to the Department for review and approval for use in the specific application proposed.
  - (2) Siphons must use a minimum four (4) inch diameter external vent line which vents back to the dosing chamber.
  - (3) Siphons must be constructed of corrosion-resistant materials and installed according to manufacturer's recommendation.
  - (4) Effluent screens or filters with an outlet no larger than 1/8 inch must be installed to protect the siphon snifter tube from plugging.
  - (5) The owner of a system that uses a siphon is responsible for ensuring the ongoing proper operation of the siphon.
  - (6) All systems using siphons must be field tested prior to approval of the system. Pressure distribution systems using siphons must use orifices at least 5/32 inches in diameter and be tested by pressurizing the system with water before covering the distribution pipe. The elevation of the spray from each hole must be a minimum of three (3) feet and maintain a maximum flow variance of 10 percent.

**FIGURE 2  
PRESSURE DISTRIBUTION NETWORK**



**FIGURE 3  
COMBINATION SEPTIC TANK / PUMP VAULT**



**9. ALTERNATIVE TREATMENT SYSTEMS.**

- (A) Alternative wastewater systems may be approved by the Department to be used in lieu of conventional systems. Alternative treatment systems must meet the requirements prescribed in the Department's Alternative Systems Manual
- (B) The applicant shall provide substantial scientific field testing information concerning a particular system design for systems not in the Department's Alternative systems Manual before the system may be approved as an alternative. The information must indicate that the system will perform for the purpose for which it is designed over a period of years with proper maintenance.
- (C) Unless a regulation or provision in the Department's Alternative Systems Manual provides otherwise, all rules pertaining to conventional drainfields and septic tanks apply to alternative systems.
- (D) Alternative systems may require additional inspections during and after installation and an additional inspection fee may be charged for each inspection. The Department must provide a written report of each inspection to the system owner listing deficiencies of the system and corrections needed for the system.
- (E) Use of an alternative system may preclude future divisions of the property pursuant to State requirements. The applicant and future owners assume responsibility for any restrictions, liabilities or encumbrances that are caused by the use of an alternative system.
- (F) All alternative system designs must provide for replacement areas equivalent to those required for conventional systems in the event of system failure.
- (G) The Department may place any restrictions or requirements on the design, installation and operation of an alternative system that it deems necessary. Such restrictions or requirements include but are not limited to: temporary or ongoing monitoring, discharge limitations on pollutants, and provisions to ensure proper maintenance and operation of alternative systems. In such cases the Department is permitted access to the property to ensure such restrictions or requirements are implemented. Failure to properly follow permit restrictions or conditions, or failure to properly maintain an alternative system is a violation of this rule and grounds for permit revocation.
- (H) Design criteria for the alternative systems approved for use by the Department are available at the Environmental Health Division Office.

**10. HOLDING TANKS, WATERLESS SYSTEMS, AND CHEMICAL TOILETS.**

- (A) Holding tanks are not allowed.
- (B) Unsealed Pit Privies
  - (1) Unsealed pit privies are not allowed when the structures served have plumbing fixtures or running water. Unsealed pit privies are prohibited on small lots in areas characterized as residential or commercial developments.
  - (2) Unsealed pit privies must meet all setback distances of standard absorption trenches.
  - (3) Unsealed pit privies may be approved only for use in remote locations that are not accessible to septic tank pumpers.
- (C) Sealed Pit Privies
  - (1) Sealed pit privies may be used only at public recreational facilities operated by governmental institutions, recreational facilities located on government property operated under lease, licensed campgrounds, or to replace a legally installed unsealed pit privy in an area of high groundwater or fractured bedrock. A sealed pit privy may be required instead of permitting an unsealed pit privy if the Department determines that waste from the pit privy could potentially pollute groundwater or cause a nuisance. The use of sealed pit privies shall cease when the property on which they are located is no longer a public recreational facility operated by a governmental institution, a recreational facility located on government property operated under lease, a licensed campground, or conditions allowing the use of the original unsealed pit privy are no longer applicable.
  - (2) Sealed pit privy systems may be approved only if the structure to be served does not have a piped water supply. Permit applications for sealed pit privies must include plans for the proposed sealed pit. Sealed pit privy systems must meet the design and construction requirements in Department Circular DEQ-4.

**10. Holding Tanks, Waterless Systems, and Chemical Toilets.**

- (3) A sealed pit privy may be used in a floodplain, flood-prone, or high ground water area provided that the floor surface is one (1) foot above flood plain elevation and the mass of the structure is adequate to prevent the vault from floating during a flood when the vault is empty. Except for floodplain or flood-prone area separation, permanently sealed pit privies must follow the location requirements for septic tanks in section 5(C). This provision does not release the applicant from obtaining required floodplain permits.
- (4) Sealed pit privies must be emptied as needed by a licensed septic tank pumping service.
- (D) Composting or Waterless Toilets and Other Conservation Methods. The installation and use of waterless toilets is allowed. A properly sized septic tank/absorption system is also required if a piped water source is provided to the structure served by the waterless toilet.
- (E) Chemical Toilets. Chemical toilets may be used for temporary events, construction sites and at other locations where a permanent system is not required. Chemical toilets may not be used to serve as a permanent sewer system for structures.
- (F) Camping. The Department may require the submittal of a waste disposal plan meeting the requirements of these regulations when a tent, RV, camper, or other temporary structure is placed for the purpose of camping in one area for 30 or more days outside of a licensed campground or RV park.

**11. EXPERIMENTAL SYSTEMS.** Treatment systems not specifically allowed under this regulation may receive a permit as an experimental system.

- (A) Experimental systems may only be permitted under the following conditions:
  - (1) The applicant must provide adequate information to the Department that ensures the system will effectively treat wastewater in a manner that will prevent groundwater contamination and will meet all of the requirements in section 1(A) at all times. Failure to meet the requirements of section 1(A) or any permit conditions at any time shall invalidate the permit and be grounds to order cessation of use of the system and buildings that the system serves.
  - (2) The application must include a complete description of the scientific goals of the project and criteria used to evaluate the performance of the system. The evaluation process and requirements must be detailed in a contract or other written agreement between the evaluating entity and system owner, if different.
  - (3) The evaluation process must be conducted by a scientific, educational, governmental, or engineering organization.
  - (4) The applicant must provide any funding necessary for adequate design, installation, monitoring, and maintenance.
  - (5) The system must be designed by a Professional Engineer, sanitarian or other professional acceptable to the Department.
  - (6) A permit to construct an experimental system is not transferable from person to person.
  - (7) The Department may refuse to issue a permit for an experimental system for any reason related to the proposed system.
- (B) A maximum of three (3) experimental permits may be issued per year countywide.
- (C) The Department may place any requirements or restriction it deems necessary on a permit for an experimental system.
- (D) All provisions of Health Department regulations apply to experimental systems except those specifically exempted by the permit.
- (E) Applicants must provide for inspections to be made by persons approved by the Department. A performance and evaluation report must be submitted annually to the Department for up to five (5) years by the entity conducting the evaluation process.

(F) The Department may require a redundant conventional system. An existing connection to a publicly owned sewage treatment plant is considered a conventional system for purposes of this section. Systems required to connect to a publicly owned sewage treatment plant under section 1(C) of this regulation, but not connected as a provision of an experimental permit may be required to connect once the experiment ends or the permit is no longer valid.

(G) Any person who sells a property containing an experimental system must disclose all permit, monitoring and maintenance requirements to the buyer.

(H) An experimental system may be re-classified by the Department as an alternative system after submission of a final performance report demonstrating sufficient evidence has been collected to show that the system meets the performance and evaluation criteria of the permit and functions satisfactorily over time.

**12. REPLACEMENT SYSTEMS.**

(A) A person may not operate a wastewater treatment and disposal system that has failed, as defined in section 2 of this regulation. Failed systems must be replaced and meet the following requirements.

- (1) Replacement systems must be designed and constructed to allow the best treatment practicable and must meet all separation distances whenever possible. Drainfields are required where there is adequate room or there is potential for contamination of groundwater or surface water.
- (2) If room is unavailable for a drainfield, an absorption bed is required.
- (3) If room is unavailable for either a drainfield or absorption bed, a seepage pit may be allowed as a replacement system. Seepage pits may only be constructed or allowed to remain in use in situations where groundwater is shown to be a minimum of 25 feet below the bottom of the proposed seepage pit.
- (4) If a replacement system will not meet minimum separations in sections 5(B) & (C), the type of replacement system must conform to Table 5 below.

**TABLE 5**

Vertical Separation to groundwater (in feet)	Horizontal Separation to wells (in feet)			
	<25	25-50	50-100	>100
<1	Advanced with disinfection	Advanced with disinfection	Advanced with disinfection	Advanced with disinfection
1-2	Advanced with disinfection	Advanced	Advanced	Advanced
2-4	Advanced with disinfection	Advanced	Sand Mound	Sand Mound
>4	Advanced with disinfection	Advanced	Pressure	Drainfield or Absorption Bed
>25	Advanced with disinfection	Advanced	Pressure	Drainfield, Absorption Bed, maybe Seepage Pit

(B) Seepage pits may be permitted for replacement systems in areas that are expected to receive public sewer service within five (5) years, as determined by the Department. Seepage pit replacement permits will be temporary, and the owner must execute a deed restriction waiving the right to protest an SID or RSID for the installation of public sewer and agreeing to connect to public sewer within 180 days of its availability to serve the property, as required in Section 18(A)(1).

(C) Four (4) feet of separation between the bottom (floor) of any replacement absorption system and the high groundwater elevation or bedrock is required. Seepage pits require a 25-foot separation to groundwater from the bottom of the pit. Pump systems are required when these minimum separations cannot be met.

**12. Replacement Systems.**

- (D) Seepage pits and cesspools must be filled with soil, sand, concrete or other approved material when they are replaced with an absorption bed or drainfield.
- (E) Replacement of systems in floodplain.
- (1) A system in a floodplain or flood-prone area that was legally installed may be replaced with an elevated sand mound or a system that incorporates advanced secondary treatment. The bottom of the trench or drainfield must be above floodplain elevation, or the system must include advanced secondary treatment before wastewater is discharged into the soil.
  - (2) Replacement sealed pump chambers must be designed to prevent floating in a flood.
  - (3) A system that was not legally installed must be replaced with a system that is in full compliance with this Code.
- (F) Drainfields in Fill. Drainfields may be installed in fill only for replacement of failing systems.
- (1) Location
    - (a) Any parcel that will undergo land modification by filling must have enough area suitable for absorption system placement. The entire area necessary for the replacement absorption system must be filled with appropriate soils prior to final approval of the primary system.
    - (b) Fill systems may not be installed on soils with a percolation rate slower than 60 minutes per inch. Three percolation tests are required in the native material before fill is installed. Side slopes on the fill may not exceed 25 percent (4:1).
  - (2) Soils used for fill may not be finer than sandy loam with a maximum of 20 percent passing the No. 100 sieve
  - (3) Design
    - (a) Replacement drainfields in fill must use pressure distribution.
    - (b) System configuration, dimensions, and orientation must be approved by the Department prior to the placement of fill material.
    - (c) Fill must be of suitable depth to provide the minimum separation distances from the finished ground surface to a limiting layer. Fill shall not be used to overcome minimum vertical or horizontal separation distances in Sections 5 (B) and (C) of this regulation.
    - (d) Three (3) percolation tests evenly spaced across the completed fill must be performed at the depth of the proposed infiltrative surface as a basis for design application rate.
    - (e) The absorption system must be sized on the basis of the percolation rate for either the soil beneath the fill material or the percolation rate of the fill material, whichever is slower.
  - (4) Construction
    - (a) All vegetative cover must be removed for the area to be filled.
    - (b) Fill material must not be put in place when the fill or the original soil surface is frozen.
    - (c) Fill material must be placed in lifts specified by the engineer to obtain stable soil structure conditions.
    - (d) Absorption trenches must be set back at least 24 feet from the lower edge of the filled area on slopes of six (6) percent or greater. For slopes less than six (6) percent, absorption trenches must be set back at least three (3) feet on all sides prior to starting the side slope.
    - (e) The fill area must be seeded with a suitable grass to aid in stabilization.

### **13. EXISTING USE, INCREASED USE, CHANGES OF USE AND ENLARGEMENT OF STRUCTURES.**

- (A) The continued use or maintenance of a properly functioning existing wastewater treatment system legally installed according to regulations and standards in effect at the time of construction is allowed unless the system causes a violation of section 1(A) of this regulation or is ordered disconnected by the Health Board or other jurisdiction. Such a system may not be enlarged, repaired, subject to increased use, or altered in any manner unless the alteration(s) bring the system into compliance with current regulations.
- (B) No person may increase use to an existing system or operate an existing system that has increased use unless the system meets all current requirements of this regulation or a temporary increased use permit is granted pursuant to Section 3(B)(7). A properly functioning system originally permitted for three (3) bedrooms with a 1,000 gallon septic tank legally installed before May 20, 2004 may increase use to four (4) bedrooms without increasing septic tank capacity provided the tank is pumped prior to issuance of a permit. The drainfield may have to be modified to accept the increased use.

- (C) To increase use to an existing system in the MWTPSA, a person must file a waiver of protest as described in Section 18(A)(1) of this rule.
- (D) No person may install, cause to install or operate additional wastewater systems on a parcel of land or subdivide a parcel of land with a cesspool or other system that does not meet the requirements of Section 1(A) of this regulation. Substandard systems must be upgraded to meet Section 1(A), provide primary and secondary treatment, meet all separations in Section 5(B) & (C), and reserve a full replacement area that meets current requirements of this regulation.
- (E) No person may connect to a wastewater treatment and disposal system when the system or connection point (in the case of a multiple connection system) has been unused or disconnected from any residence or structure for more than one (1) year unless the system meets the requirements of Section 1(A) of this regulation; has primary and secondary treatment; and meets the separation requirements in 5(B) & (C) of this regulation.
- (F) No person may operate a system that serves a structure if the structure undergoes significant alteration unless the system meets the requirements of Section 1(A) and provides primary and adequate secondary treatment.
- (G) The following conditions apply to enlargement of structures:
- (1) No person may begin construction on a structure enlargement until Department issues either a septic permit or a written determination that no septic permit is needed for the proposed project, and;
  - (2) No person may build over any portion of a system except the pipe from the structure to the septic tank. The exit pipe must be schedule 40 PVC and adequately protected from settlement. Foundation walls must be at least ten (10) feet from the tank(s) and absorption system, and;
  - (3) An adequate replacement area must be preserved that is at least equivalent to what was available before the proposed enlargement, and;
  - (4) The system must provide primary and adequate secondary treatment, and;
  - (5) The system must meet Section 1(A)(1) of this regulation, and;
  - (6) If public sewer is available as described in Section 1(C), the applicant shall connect to public sewer.
- (H) Septic Determinations for Enlargement of Structures.
- (1) A completed application for a determination must be submitted on forms provided by the Department and must include the following:
    - (a) Applicant name and mailing address
    - (b) Property owner and mailing address
    - (c) Address and legal description of property
    - (d) A brief description of proposed project
    - (e) A site plan, on paper no larger than 11" x 17", accurately showing all buildings, wells, septic systems, replacement areas, surface water and floodplains on or within 100 feet of the property
    - (f) Detailed floor plans, on paper no larger than 11" x 17", showing the proposed project
    - (g) Other relevant information as required by the Department to clearly define the scope of the project and to ascertain compliance with this Code
    - (h) Evidence that zoning and building officials have been notified
    - (i) Septic determination application fee
  - (2) Unapproved changes in plans or specifications after a determination is issued or any falsification or significant error in information submitted by an applicant invalidates the determination.
  - (3) The Department may place conditions in a determination regarding future use of the enlarged structure to facilitate compliance with the provisions of this regulation.

#### **14. ABSORPTION BEDS.**

- (A) Absorption beds may be used as replacement wastewater systems on existing lots where standard absorption trenches cannot be used. Absorption beds may be used as replacement systems for seepage pits. Absorption beds may not be used on new lots unless the system existed before the proposed subdivision, has been in continuous use, and was permitted by the Department.
- (B) An absorption bed is constructed as shown in Appendix B. Since the operation of the absorption bed depends on the infiltration capacity of the bed bottom, bottom of the bed must not be compacted by equipment during construction.

#### **14. Absorption Beds.**

- (C) No person may install an absorption bed in soils finer than a silt loam or having a percolation rate slower than 60 minutes per inch
- (D) All the requirements for conventional drainfields apply to absorption beds except for specific requirements listed below.
  - (1) Absorption beds must have a minimum of two distribution lines.
  - (2) Absorption beds must be designed using the application rates shown in Table 3:
  - (3) The distribution lines within an absorption bed must be uniformly spaced no more than four (4) feet or less than thirty (30) inches apart. The distribution lines must be installed no more than two and one-half (2.5) feet or less than one and one-half (1.5) feet from the side wall of the bed.
  - (4) The depth of absorption beds must be no less than 12 inches and no more than 36 inches deep.
  - (5) The floor of the absorption bed and the distribution lines must be level.
  - (6) Pressure distribution must be used unless another method of distribution is approved by the department
  - (7) When the bed has been excavated, the sides and bottom of the bed must be raked to scarify any smeared soil surfaces and loose material must be removed.

**15. SEEPAGE PITS.** Seepage pits must be installed to meet the following requirements:

- (A) A seepage pit must have a concrete ring with a minimum diameter of three (3) feet and a minimum height of 3.5 feet.
- (B) Seepage pits must be sized according to the permeability of the soils where wastewater will be discharged.
- (C) A seepage pit that is excavated to four (4) foot depth and a five (5) foot diameter shall be equivalent to 50 square feet of absorption area.
- (D) Where more than one (1) set of rings is used, the minimum edge-to-edge separation between the edges of the rings is three (3) feet.
- (E) The area immediately surrounding the outside circumference of the chamber must be filled with a minimum average of three (3) feet of clean rock or gravel at least three (3) inches in diameter.
- (F) The conventional location requirements in section 5(C) must be used, if possible, for seepage pits.

**16. SAFETY AND ABANDONMENT OF WASTEWATER SYSTEMS.**

- (A) Whenever the use of a wastewater system is discontinued following connection to a public sanitary sewer, the replacement of a substandard system with a wastewater system that meets all requirements of this regulation, or will no longer be used, the existing system shall be considered abandoned and any further use of the system for any purpose is prohibited.
- (B) The following requirements apply when a system is abandoned:
  - (1) the septic tank, seepage pit, or cesspool must be pumped of its entire contents by a licensed seepage hauler; and
  - (2) the empty septic tank must be:
    - (a) filled with sand, gravel, or other suitable material; or
    - (b) broken into pieces with the resultant hole being filled with suitable material; or
    - (c) removed with the resultant hole being filled with suitable material.

**17. MULTI-USER OR PUBLIC SYSTEMS.**

- (A) Minimum Lot Size - Public or Multiple User Water or Wastewater System Required.
  - (1) If a proposed subdivision submitted to the Department pursuant to the Montana Sanitation in Subdivisions Act (MCA Title 74, Chapter 4) contains 15 or more parcels less than one (1) acre in size, or if the subdivision will serve 25 or more people in any and all phases for at least 60 days during a calendar year, a public water supply system or a public sewage system as defined in MCA 75-6-102 must be provided for the lots less than one (1) acre in size.

- (2) If a proposed subdivision contains three (3) through 11 parcels less than one (1) acre in size, the subdivision must provide one of the following for the lots less than one (1) acre in size:
  - (a) a public water system as defined in MCA 75-6-102 or a multiple family water supply system as defined in ARM 17.36.101 and designed by a professional engineer, or
  - (b) a public sewage system defined in MCA 75-6-102 or a multiple family sewage system as defined in ARM 17.36.101.
  
- (B) Plans for public and multi-user wastewater treatment and disposal systems must be approved and permitted by the Department. The applicant or installer must notify the Department not less than one business day prior to completion of the system that an inspection will be necessary. Public systems must also be approved by the State Department of Environmental Quality. Plans must be designed to comply with this regulation and with requirements of the State Department of Environmental Quality in effect at the time the plans are submitted.
  
- (C) Community wastewater disposal systems must be designed by a registered professional engineer. Written certification is required from a registered engineer that the system was installed according to plans. The property owner must file a copy of the "as built" plans with the Department within thirty days of inspection.
  
- (D) Multi-user, community, and non-community systems must be designed in accordance with DEQ Circular 4 and this rule. Multi-user and community systems built in the MWTPSA must also be designed and built to City standards. A maintenance and operation plan, designating who is responsible for maintenance and operation of the system, must be submitted to the Department. Maintenance and operation must be carried out according to the approved plans.
  
- (E) Multi-user, community, and non-community systems must have primary and secondary treatment installed for all parcels served before the system is put into use. In the case of a phased subdivision, the treatment system installed must be adequate to serve a particular phase before the system is put into use. Multi-user and community systems must be installed within two (2) years of permit issuance and before structures are occupied.
  
- (F) Any connection to a multi-user system which requires individual septic tanks must be permitted and inspected by the Department. Individual connections to a community system must be inspected by the certified operator for the system or by the design engineer.
  
- (G) Absorption systems proposed to serve separate buildings located on three (3) or more lots must satisfy the following requirements before a permit may be issued. These requirements ensure the system is installed according to plans, completed in time to serve any occupied structure, and properly operated and maintained with a designated person, partnership, corporation, district, association, or other entity identified as having a clear legal duty to operate and maintain the system.
  - (1) The applicant for a permit must provide a performance bond or other satisfactory security in the amount of the estimated cost of the proposed system, in favor of Missoula County, to secure performance of the installation of the system according to approved plans before occupancy of any structure to be served by the system and in any case within 24 months after issuance of the permit.
  - (2) The performance bond or other satisfactory security must remain in effect until the system is installed according to approved plans. A multi-user or public system must be installed, inspected, and approved within 24 months after issuance of the permit.
  - (3) "Other satisfactory security" may include, but is not limited to, one or more of the following: Special Improvement District, Rural Special Improvement District, county or municipal sewer district, performance or property bond, escrow agreement, lien on property, or similar security arrangement approved by the Department and made a condition of the permit.
  - (4) The performance bond or other satisfactory security shall be released following installation of the system in accordance with approved plans, after inspection by the Department.
  - (5) If the Department determines that installation of the system has not been in substantial compliance with approved plans, the Department must furnish the applicant with a written notice of specific deficiencies to be remedied within a reasonable time not to exceed two (2) months. Missoula County is entitled to retain sufficient security to ensure substantial compliance. Missoula County is entitled to proceed against the performance bond or other security and utilize the proceeds to construct the system in accordance with approved plans if the applicant fails to remedy all deficiencies within a reasonable time stated in the notice.

- (6) The applicant for a permit must provide the Department with information as to the ownership of the system and all components thereof. The applicant must provide to the Department satisfactory evidence that a designated person, partnership, corporation, district, association or other entity has a clear legal duty and the ability to operate the system. "Satisfactory evidence" may include, but is not limited to, a special improvement maintenance district, county or municipal sewer district, homeowners' association agreement, or a contractual obligation to operate and maintain the system together with the apparent means and ability to perform. A person designated as the operator of a public wastewater disposal system must be certified in accordance with Title 37 Chapter 42, Part 3 M.C.A. The ownership of the system and responsibility for operating and maintaining it must be designated on the permit as a condition thereof.
- (I) A multi-user and community system must be installed on a separate utility lot, in a common area, in an easement or on the same lot as all the structures served so that it can easily and legally be accessed by the system's users for maintenance and repair of the system.

**18. SPECIAL MANAGEMENT AREAS.**

(A) Missoula Wastewater Treatment Plant Service Area (MWTPSA). The purpose of the MWTPSA requirements are to place landowners on notice that permission to use wastewater disposal in this area is temporary and is intended to be replaced with discharge to a public sewage treatment plant. The following restrictions apply to all land within the Missoula Wastewater Treatment Plant Service Area depicted on the map in Appendix D:

- (1) The Department shall not issue a permit for an increased use, new wastewater absorption system permit, or a replacement seepage pit system in the MWTPSA unless the owner(s) execute a deed restriction waiving the right to protest the creation of a Special Improvement District (SID) or a Rural Special Improvement District (RSID) for the installation of public sewer, using the language set forth below. The filing of a deed restriction is not required if previously filed for the same parcel, or where similar language has been shown on an approved and filed subdivision plat.

"I/We, the undersigned, hereby certify that I/we are the owners of the real property located at (legal description) which is located in an area where public sewer is planned to be installed. I/we hereby waive any right to protest an RSIDs or SIDs affecting said property for the purpose of financing the design and construction of a public sewer benefiting said property. Further, my/our signatures on this waiver may be used in lieu of my/our signature(s) on an RSID or SID petition for the creation of one or more RSID or SID petitions for the purpose of financing the design and construction of a public sewer benefiting the above-described property. This deed restriction is granted to the County or City of Missoula in exchange for permission to discharge sewage into the ground until such time that public sewer is installed.

This deed restriction shall also constitute an agreement whereby the owner(s) must connect to public sewer within 180 days after public sewer mains are installed and available to the property.

This waiver shall run with the land and shall be binding on the transferees, successors, and assigns of the owners of the land described herein.

All documents of conveyance must refer to and incorporate this waiver."

- (2) All new divisions of land, including all subdivisions as defined in Section 2 within the MWTPSA must exhibit language consistent with section 18(A)(1) of this regulation on the face of the recorded plat or on a deed restriction recorded with the plat. Language approved by the City and County Attorney is available at the Department.
- (3) Any person installing a new or replacement septic tank in an area of the MWTPSA designated for STEP (shown in Appendix D) or approved for STEP via any applicable subdivision approval process must install a STEP septic tank with manway. A list of subdivisions containing lots which require STEP tanks as a condition of an applicable approval process is contained in Appendix G.

- (4) Multi-user or community septic tanks, and multi-user or community system mains and service lines installed in the MWTPSA must conform to the design criteria established by the City of Missoula Public Works Department. The design, installation and inspection of all mains, service lines connected to mains, STEP tanks, and related appurtenances must be approved by the City of Missoula Public Works Department in accordance with its design criteria for sewers. As-built plans for all multi-user, community, or dry laid systems must be submitted to the City of Missoula Public Works Department and the Department by the applicant within 60 days of installation.
  - (5) All new divisions of land, including all subdivisions as defined in Section 2, within the MWTPSA must provide easements as necessary to facilitate the connection of all parcels requiring facilities to public sewer service when sewer mains become available.
  - (6) If a property in the MWTPSA is part of a proposed division or subdivision of land, as defined in MCA 76-4-102 containing three (3) or more lots of less than five (5) acres per lot in all phases, the developer must provide a multi-user or community system that may be easily connected to public sewer when sewer mains are available to service the property except as follows. A properly designed, installed and inspected dry laid pressure or gravity main connecting the lots with appropriate easements may be used in areas where the division or subdivision of land contains no more than fourteen (14) lots in all phases approved after September 21st, 1994 when the City Engineer makes the following written findings provided to the Department:
    - (a) That the design of the dry-laid system meets City Public Works criteria for design of sewers; and,
    - (b) that a dry laid main is preferable in a given instance to a community or multi-family septic system for eventual connection to public sewer because:
      - (i) the dry laid system will be less expensive for future homeowners to connect to public sewer; or
      - (ii) because site characteristics make it infeasible to connect a community or multi family system to public sewer in the future.
  - (7) When the division of land includes perpetually dedicated common areas and wildlands or an area reserved from development by deed restriction until public sewer becomes available, the Department must divide the area of such dedicated land by the number of lots and add the result to each lot area for the purposes of determining applicability of this requirement.
  - (8) All portions of the proposed multi-user or community system, except for on lot service lines, shall be installed before the system may be used. Installation of the system may be phased with the Department's approval so long as the system is installed within two (2) years of final plat approval and an improvement guarantee approved by the Department is provided by the developer.
- (B) Rattlesnake Valley Special Management Area. The following restriction apply to wastewater treatment and disposal systems in the portion of the Rattlesnake Creek Drainage above the Mountain Water intake dam classified as A-closed by DEQ (see Appendix E). A wastewater treatment and disposal system serving one (1) single family dwelling or other use with flows less than or equal to a single family dwelling per lot or parcel will be allowed provided all other requirements are met. The Department may not issue any permits or approve any Certificates of Subdivision Approval for subsurface disposal of wastewater for any new divisions or subdivision of land inside the special management area.

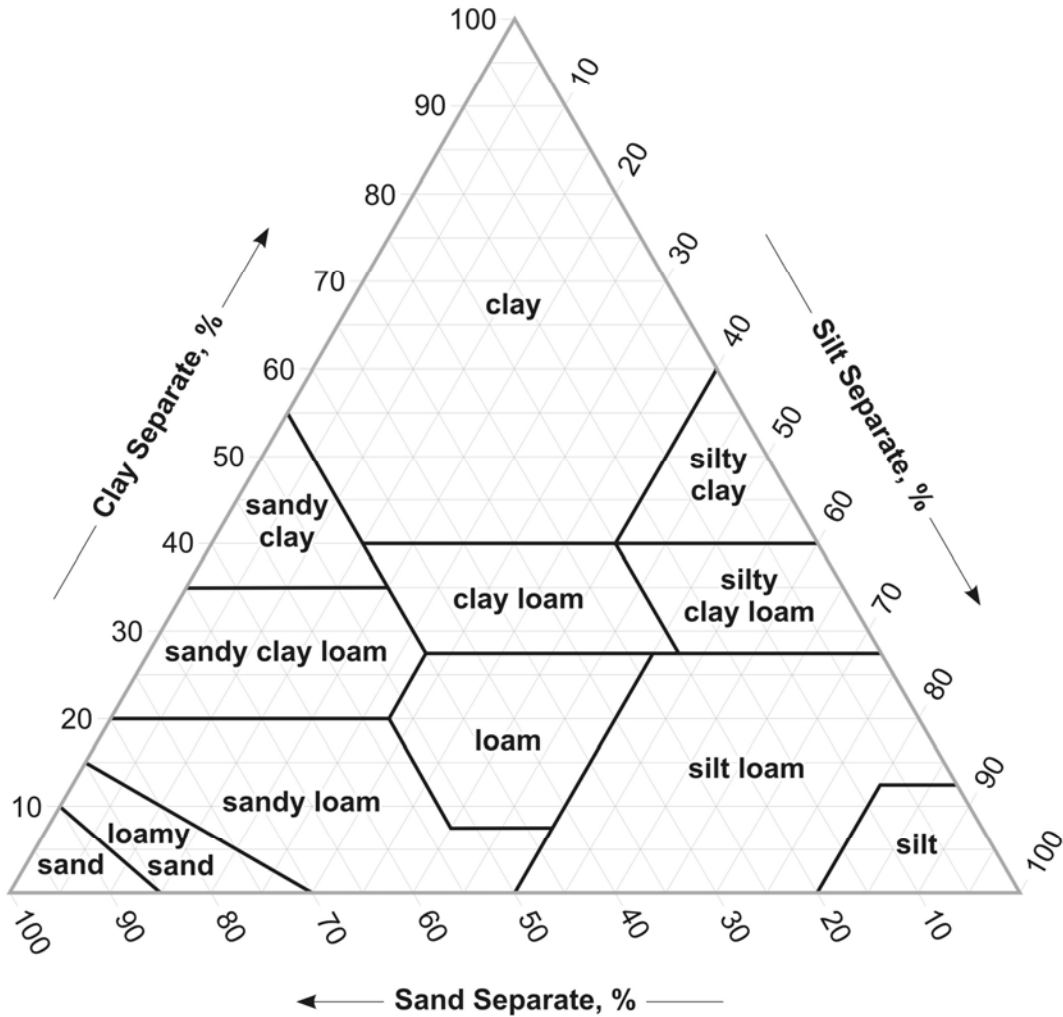
The Department may place any conditions on a wastewater treatment and disposal system permit it deems necessary to ensure compliance with the A-closed classification standards, including but not limited to requiring an alternative treatment system such as a sand filter, trickling filter or other system effective at removing pathogens.

- (C) Roman Creek/Touchette Lane Special-Management Area. The following restrictions shall apply to all land included within the E 1/2 of Section 29, W 1/2 of Section 27, Section 28, T15N, R21W, bordered on the north by the Frenchtown Irrigation Canal and bordered on the south by U.S. Interstate 90.
- (1) All parcels with existing plat approvals may install systems if the site meets the four (4) foot separation required from the bottom of the disposal trench to high seasonal groundwater. High groundwater testing may be required to satisfy this requirement.
  - (2) All parcels without existing plat approvals may only install one single family system if all other requirements of this regulation are met.
  - (3) The Department shall perform a preliminary inspection of the site with the excavator at the start of construction to ensure that:
    - (a) maximum depth is maintained; and
    - (b) the absorption system is located properly.

- (4) Wells must be grouted to a minimum twenty (20) feet. Bacterial samples are recommended and disinfection may be necessary to ensure a potable water supply. A copy of the well log shall be submitted to the Department showing adequate compliance with the plat approval and Montana DNRC Well Drilling Requirements.
  - (5) The Department may not approve further subdivisions which create lots that generate wastewater or require wastewater facilities in the area until the cause of water contamination is discovered and the problem corrected.
- (D) Wye/O'Keefe Special Management Area. The Wye/O'Keefe Special Management Area is west of the city of Missoula, in the lower O'Keefe Creek Drainage just north of the Wye (the intersection of I-90 and Hwy 93 North). It encompasses a portion of Sections 11, 12, 13, 14, 15, 21, 22 and 23 in Township 14 North, Range 20 West in the Spring Meadows drainage as depicted on the map in Appendix G. All new subdivisions and septic systems within the Special Management Area must meet the requirements in Appendix G.

## Appendix A Soils Information

# Soil Textural Triangle



**FIGURE 3-14**

U.S.D.A.	CLAY	SILT			SAND				GRAVEL			COB- BLES	STONES	
		fi.	co.	v.fi.	fi.	med.	co.	v.co.	fi.	med.	co.			
		.002		.05					2			76	250mm	
INTER- NATIONAL	CLAY	SILT		SAND		GRAVEL		STONES						
		.002		.02	fi.	co.			2			20mm		
UNIFIED	SILT OR CLAY		SAND			GRAVEL		COBBLES						
			.074					4.76			76mm			
AASHTO	CLAY	SILT		SAND			GRAVEL OR STONES		BOULDERS					
		.005		.074	fi.	co.		2			76mm			
PHI SCALE		.00195	.0078	.031	.125	.5	2	8	32	128	512mm			

Relationships among particle size classes of 5 different systems.

### Appendix A Soils Information (continued)

Verbal definitions of soil textural classes, defined according to size distribution of mineral particles less than 2 millimeters in diameter are as follows:

**Sand:** Soil that contains 85% or more of sand; and the percentage of silt, plus one-and-one-half times the percentage of clay, does not exceed 15%.

**Loamy sand:** Soil that contains at the upper limit 85% to 90% sand; the percentage of silt, plus one and one-half times the percentage of clay, is not less than 15%. At the lower limit it contains not less than 70% to 85% sand; the percentage of silt, plus twice the percentage of clay, does not exceed 30%.

**Sandy loam:** Soil that contains 20% clay or less, and the percentage of silt plus twice the percentage of clay exceeds 30% and 52% or more sand; (or) less than 7% clay, less than 50% silt and less than 52% sand.

**Loam:** Soil that contains 7% to 27% clay, 28% to 50% silt and less than 52% sand.

**Silt loam:** Soil that contains 50% or more silt and 12% to 27% clay (or) 50% to 80% silt and less than 12% clay.

**Silt:** Soil that contains 80% or more silt and less than 12% clay.

**Sandy clay loam:** Soil that contains 20% to 35% clay, less than 28% silt and 45% or more sand.

**Clay loam:** Soil that contains 27% to 40% clay and 20% to 45% sand.

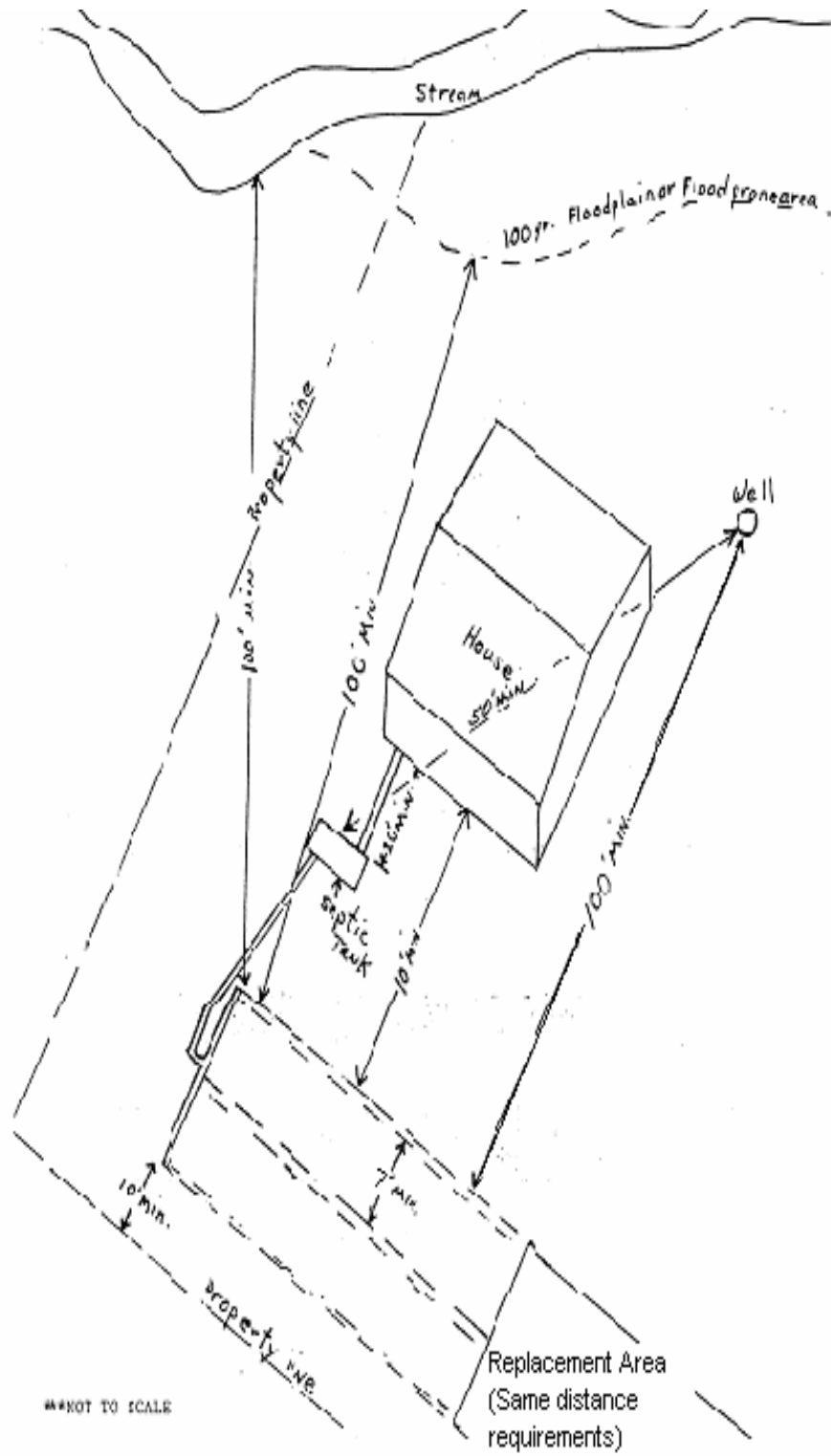
**Silty clay loam:** Soil that contains 27% to 40% clay and less than 20% sand.

**Sandy clay:** Soil that contains 35% or more clay and 45% or more sand.

**Silty clay:** Soil that contains 40% or more clay and 40% or more silt.

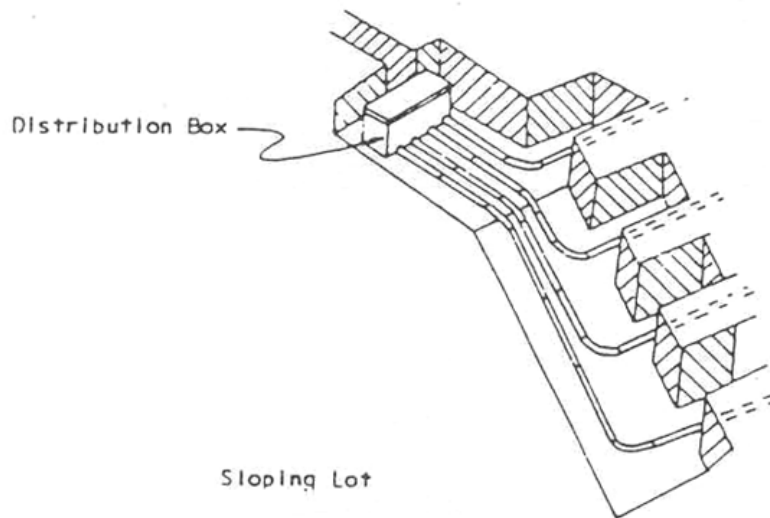
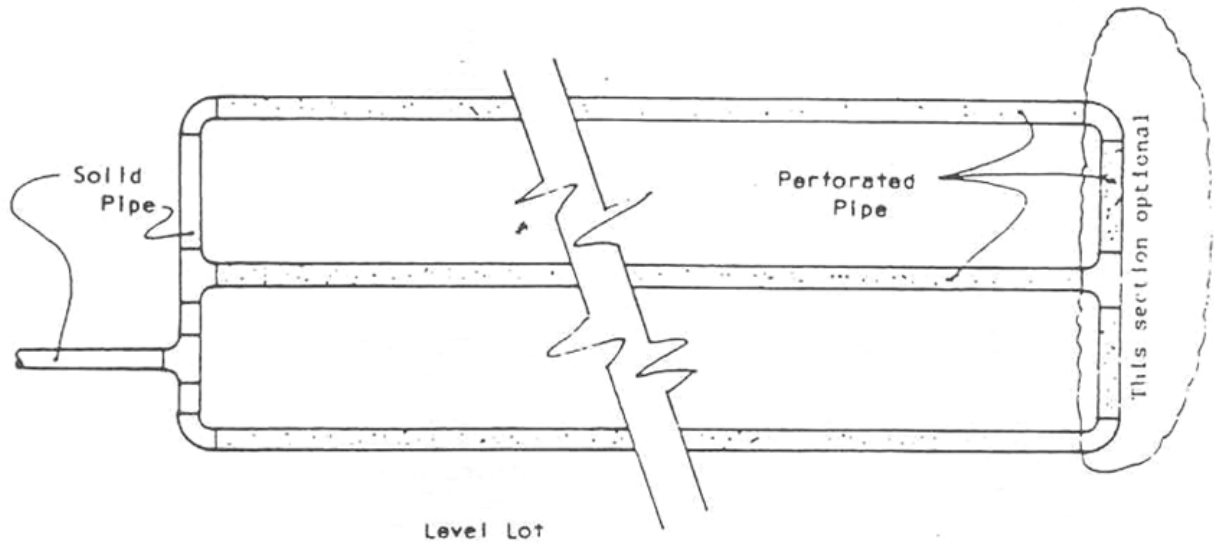
**Clay:** Soil that contains 40% or more clay, less than 45% sand and less than 40% silt.

Appendix B Absorption system Construction Detail



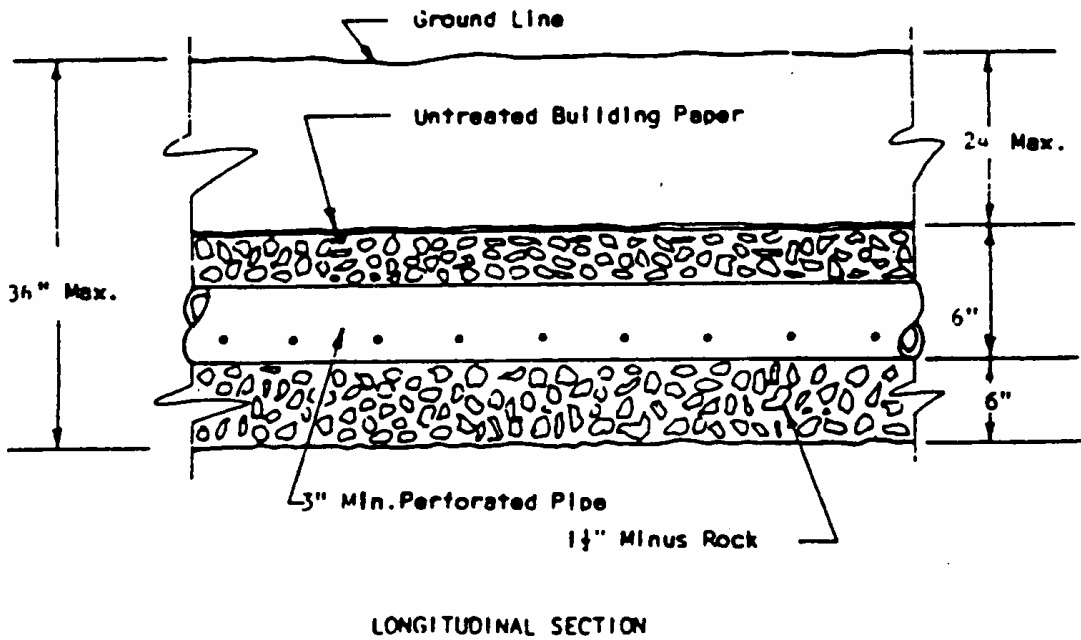
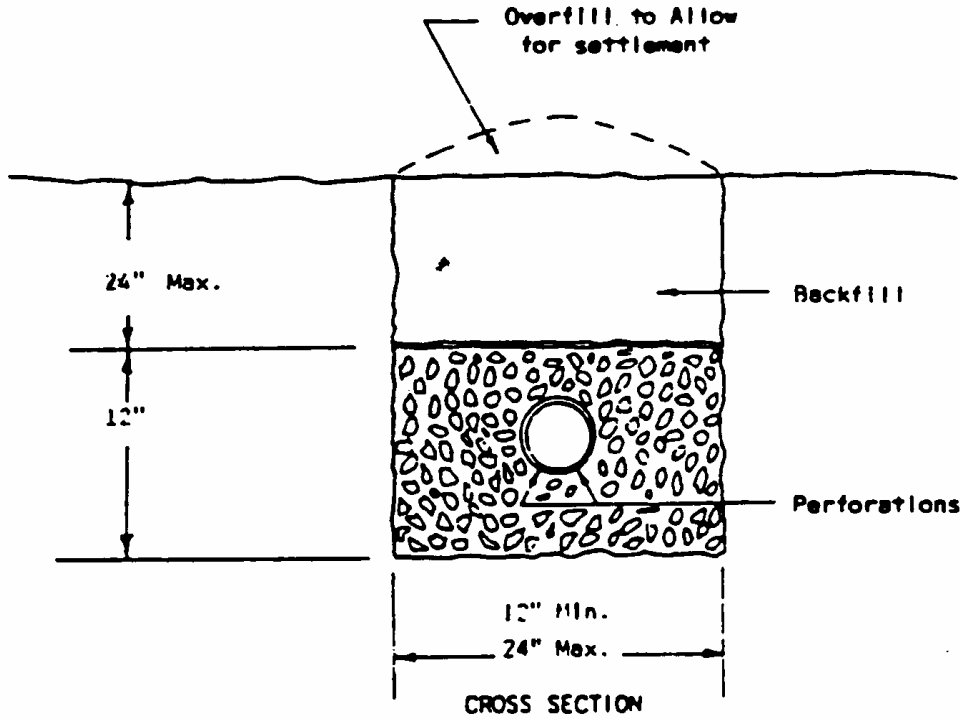
Appendix B Absorption system Construction Detail (continued)

Disposal Field Layout

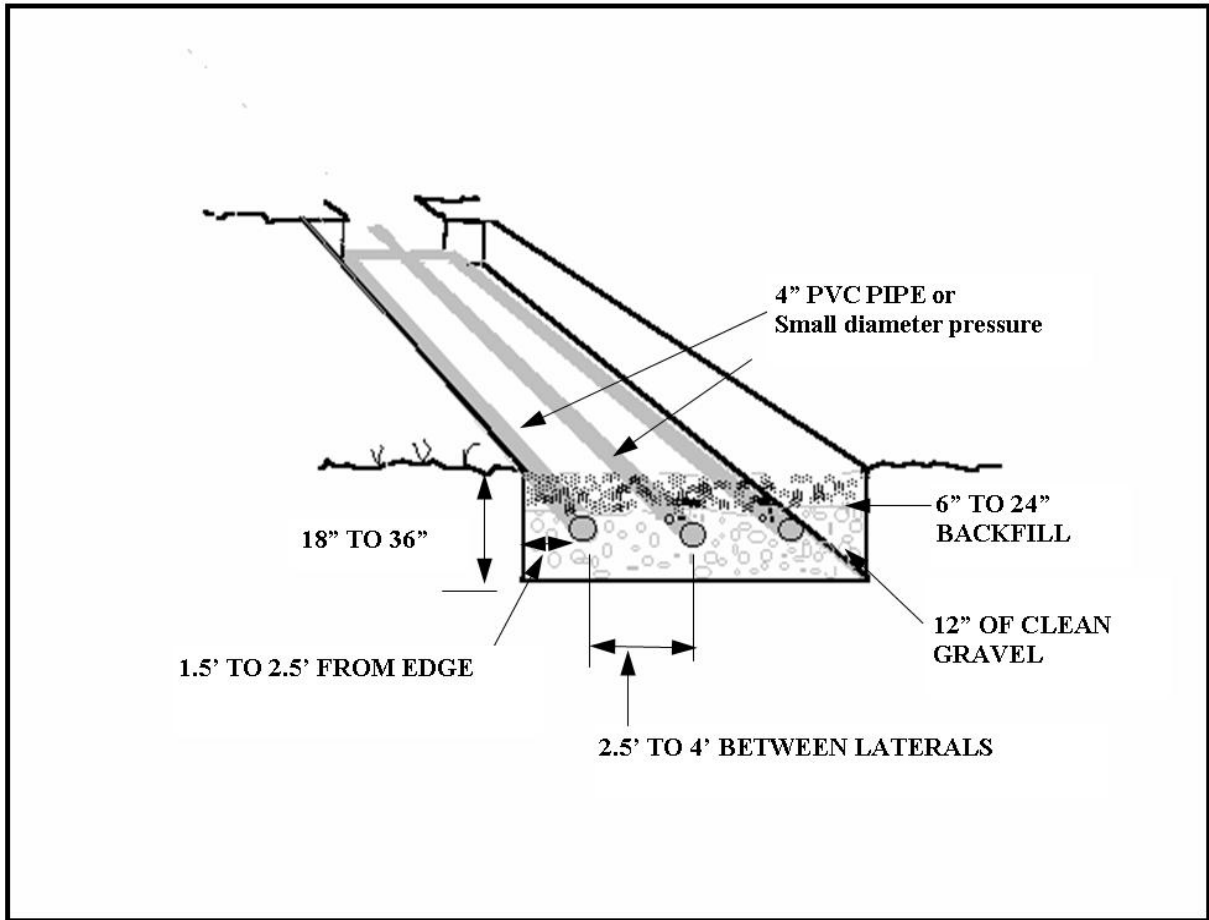


Appendix B Absorption system Construction Detail (continued)

Absorption trench Detail



### ABSORPTION BED



# Dosing Distribution Box

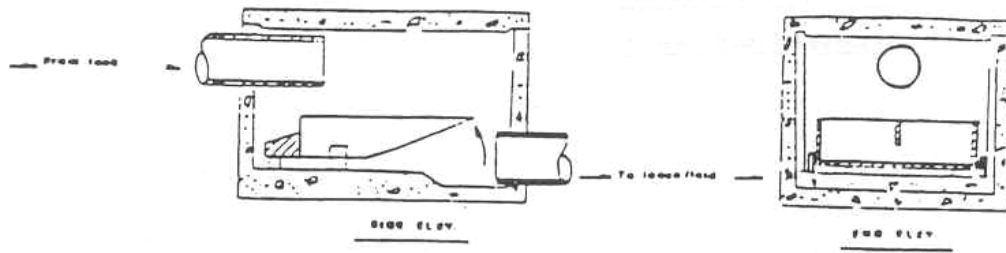


FIG 1 Flow from tank resumes.

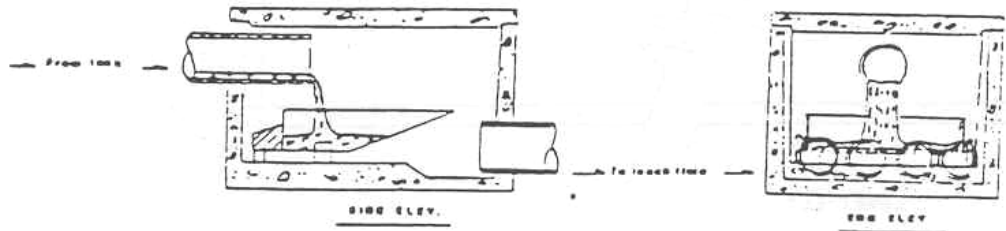


FIG 2 "STOPPER" approaches float valve of 2.3 gallons.

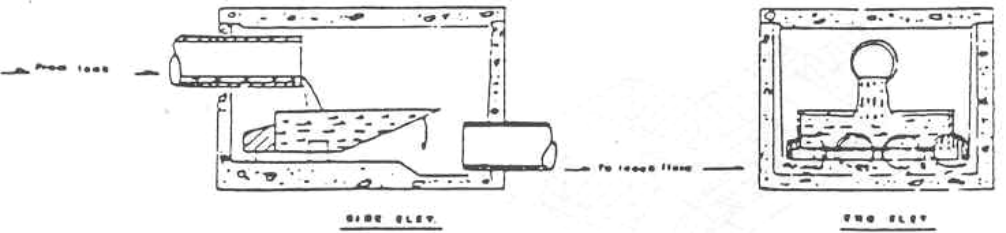
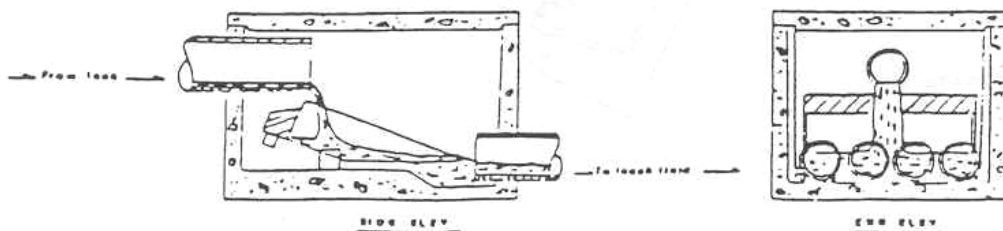
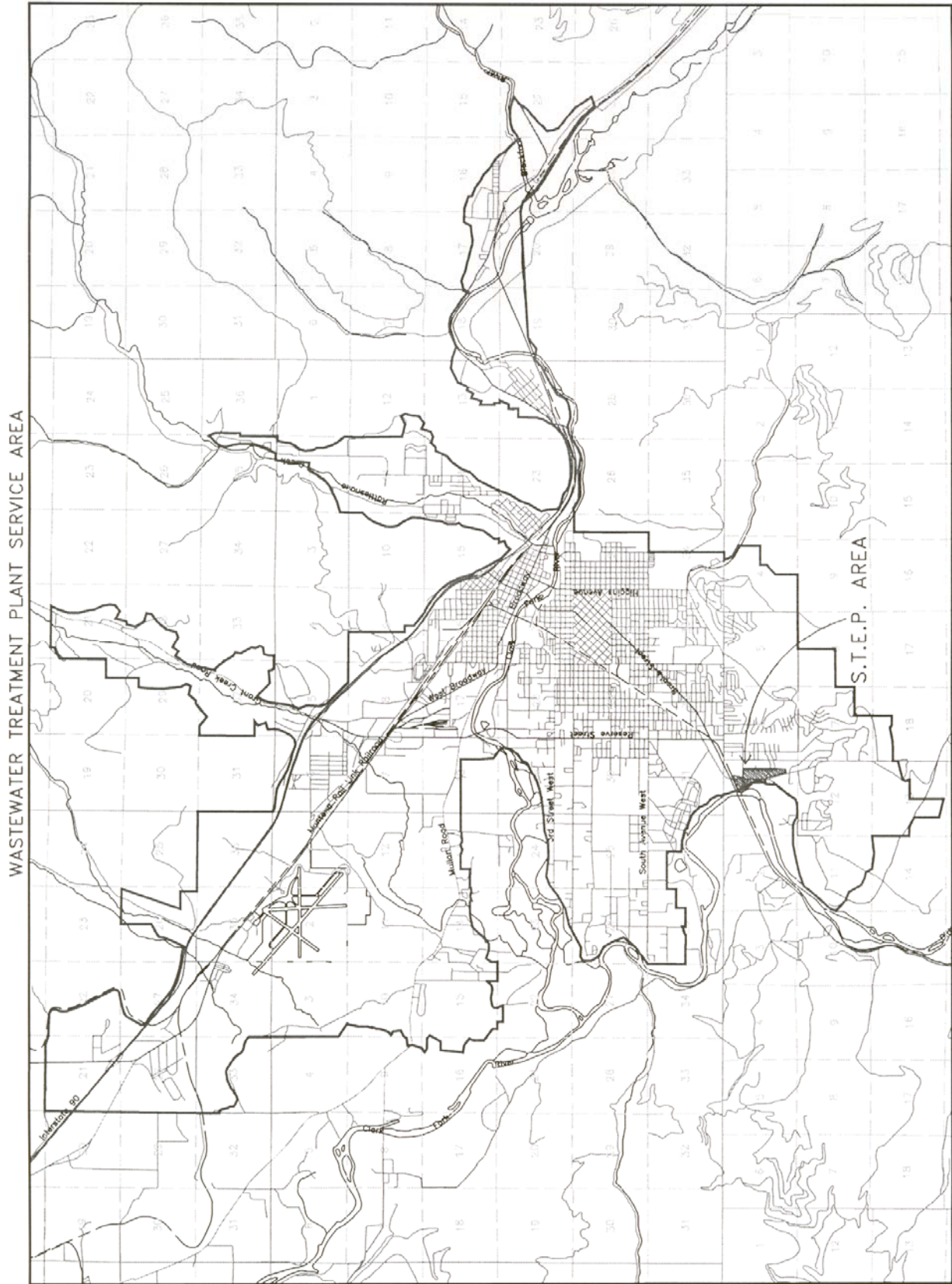


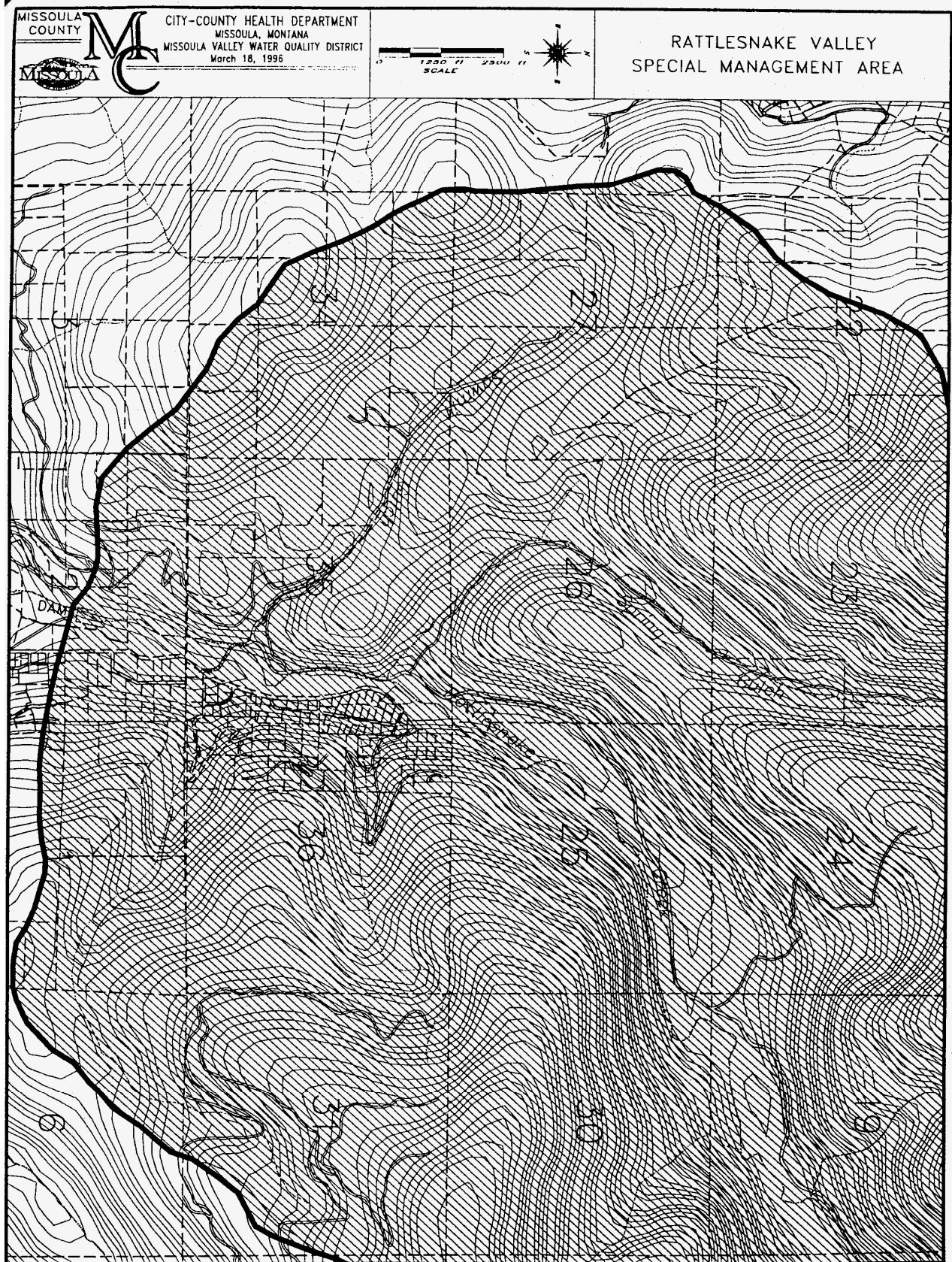
FIG 4 "STOPPER" drops forward, distributing 2.7 gallons in 1.8 seconds into the outlet flow.



Appendix D: Wastewater Treatment Plant Service Area



Appendix E: Rattlesnake Special Management Area



## Appendix F

### **SUBDIVISIONS WITH STEP TANKS REQUIRED**

Sandi Acres (3 lots) Located end of South Ave.

Catherine Addition (5 lots) Located on Humble Rd. near McCauley Butte.

D & E Homesites (5 lots) Located on Spurgin Rd. West of Reserve.

Pfau Acres (7 lots) Located on Spurgin Rd. West of Clements

Pfau Ranch (5 lots) located on Spurgin Rd. West of Clements.

Pilgrims Parcels (6 lots) Located on South 7th West, West of Tower St.

44 Ranch Estates, Located on Mullan Road

Country Crest 3, Located on Mullan Road

Country Crest 3A

Country Crest 3B

Papoose Ranch I, Located in the Rattlesnake Valley

Papoose Ranch II

Papoose Ranch III

Whitetail Park, Located in the Rattlesnake Valley

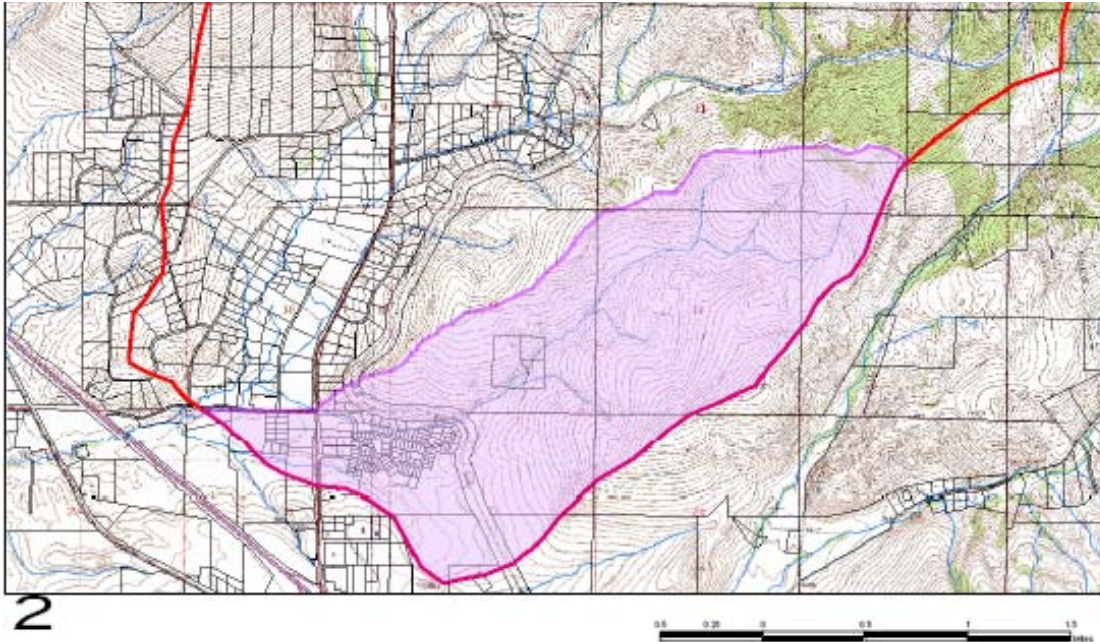
Braun Addition, Located in the Rattlesnake Valley

Castle Pines Estates, Located in the Rattlesnake Valley

Mountain Home Estates, Located in the Rattlesnake Valley

**The Department may add properties to this list when STEP tanks are required by an enforceable approval process including requirements approved: by DEQ, the Missoula City Council, the Missoula County Commission, pursuant to these rules or pursuant to the Montana Sanitation and Subdivision Act.**

## Appendix G Wye/O'Keefe Special Management Area



### New Subdivisions & Septic Systems

Before the Department can issue a subdivision approval or a septic permit for new or increased use in the Spring Meadows drainage, persons proposing the subdivision or septic system must demonstrate that nitrates from the proposed septic(s) will not increase nitrate levels in the well where the groundwater standard has been violated.

- This is different from (and in addition to) non-degradation requirements.
- This policy applies to all property in the drainage including but not limited to undeveloped parcels exempt from Subdivision and Sanitation Review and parcels with a DEQ Certificate of Subdivision Approval.
- The Department will evaluate each submittal on a case-by-case basis. The amount and type of information necessary is based on the project's proximity to the affected well, the density of development, whether wastewater will be concentrated in an area, proposed wastewater flows, etc.
- Information to be submitted must be signed off by a groundwater hydrologist or someone with similar expertise.
- Health Department acceptance of an argument that wastewater will not increase nitrate concentrations in the affected well is specific to each project. If the project changes, the Department may require a more strenuous justification (i.e., the Department does not have to automatically accept an argument that was accepted for a different project on the same parcel.)

### New Wells

All new subdivision proposals within the area outlined on the map must show that the drinking water source will reliably and consistently have nitrates below the standard. In some cases, the Department may require wells be drilled and tested before the subdivision will be approved. This decision will be based on submitted nitrate samples, proximity to wells that have shown high nitrates, and other relevant factors.

### Subdivisions in the rest of the O'Keefe Drainage, and other similar areas

Nitrate levels are a concern in this and similar drainages where complicated hydrogeology may lead to preferential flow paths, less dilution and poor treatment of septic system effluent. The Department and Water Quality District will evaluate subdivisions on a case-by-case basis. Subdivisions proposing multiple small lots, concentrated flows or that are close to areas of high nitrates may be required to do additional sampling or other work to show that groundwater and drinking water will be protected.