CHAPTER 25

SEPTIC TANKS, ~~AND/OR~~ SOIL ABSORPTION SYSTEMS, AND OTHER SMALL WASTEWATER SYSTEMS

Section 1. ~~General~~ Authority.

This rule is promulgated pursuant to Wyoming Statutes (W.S.) 35-11-101 through 35-11-1904, specifically 35-11-302(a)(iii).

Section 2. ~~Definitions~~ Objective.

~~(formerly Section 1)~~ This ~~part~~ Chapter contains the minimum standards for the design and construction of ~~sewerage~~ small wastewater systems~~, treatment works and disposal systems for domestic wastes and industrial wastes generated by facilities other than specifically covered by other parts of this Chapter~~ that are defined by W.S. 35-11-103(c)(ix). In addition, this Chapter contains the minimum standards for the design and construction of Underground Injection Control (UIC) Class V facilities 5C1-5C3, 5C6, 5D1, 5E1, 5E3-5E5 as defined in Chapter 27, Appendices C and D.

The following situations will require the application package to be sealed, signed, and dated by a professional engineer (PE): non-domestic wastewater from commercial and industrial facilities, high strength wastewater, individual permits to construct, or standard soil absorption systems with a soil percolation rate that is either less than 5 minutes per inch (mpi) or more than 60 minutes per inch (mpi).

These standards pertain to permits required pursuant to Chapters 3 and 25, Wyoming Water Quality Rules and Regulations. The installation of all components of a small wastewater system require a permit to construct. Permits to construct are specified throughout this chapter as general permits, described in Chapter 3, Section 7; permit by rule, described in Chapter 3, Section 8; or as individual permits to construct, described in Chapter 3, Section 6.

Section 3. ~~Design Flows~~ Timing of Compliance with These Regulations~~.~~

Any Chapter 3 permit-to-construct issued for facilities ~~otherwise~~ subject to this chapter prior to the effective date of these regulations, and any facility authorized under the Division's "General Permit to Construct, Install, Modify or Operate a Small Wastewater Facility" shall remain covered under those permits. New construction following the effective date of this regulation must obtain authorization under a new permit or modification of existing permitted facilities.

Section 4. ~~Isolation~~ Definitions.

(a) ~~"Absorption system" means a system constructed under the surface of the ground which receives and distributes effluent from a pretreatment device effectively filtering the effluent through soil or media~~. "**100 year floodplain**" means a tract of land throughout a watershed that has a one-in-one hundred chance or occurrence of flooding in any given year or a return period of once every 100 years, as determined by the United States Geological Survey (USGS), Federal Emergency Management Agency (FEMA) or a local planning and development authority.

(b) ~~"Aerobic unit" means a covered, watertight receptacle which receives wastewater. The unit removes settleable solids, floatable material, and a part of soluble organic matter by the use of aerobic biological treatment.~~ "**Absorption surface**" means the interface where treated effluent infiltrates into native or fill soil.

(c) ~~"Building drain" means the building drain is that part of the lowest piping of a drainage system which receives the discharge from soil, waste and other drainage pipes inside the walls of the building and conveys it to the building sewer beginning two feet (.6m) outside the building wall.~~ "**Bed**" means a soil treatment and dispersal system where the width is greater than three (3) feet.

(d) **"Bedrock"** means geological layers, of which greater than 50 percent by volume consist of unweathered in-place consolidated rock or rock fragments. Bedrock also means weathered in-place rock that cannot be hand augered or penetrated with a knife blade.

(e) **"Bedroom"** means any room that is or may be used for sleeping.

(f) ~~"Dosing system" means the system of tanks, pumps or syphons, and piping located between the septic tank and soil absorption system which is intended to apply a large quantity of settled wastewater to the absorption system in a short period of time.~~ **"Blackwater"** means water containing fecal matter and/or urine

(g) ~~"Hydrogeological study" means a study of the occurrence, distribution, quality and movement of the shallowmost groundwater of the site and the potential impact of wastewaters on the groundwater.~~ . **"Five day biochemical oxygen demand (BOD_5)"** means a measurement of the dissolved oxygen used by microorganisms in the biochemical oxidation of organic matter during a five (5) day period.

(h) ~~"Impermeable soil" means any soil which has a percolation rate greater than 60 minutes per inch.~~

~~Previously 2(d)~~ **"Building sewer"** means the ~~building sewer is that part of the horizontal piping~~ the pipe ~~of a drainage system which extends from the end of the building drain and conveys the building drain discharge to the septic tank or other onsite sewage disposal facility~~ that carries wastewater from the building.

(i) ~~"Pump Tank" means a tank in which the dosing pumps or syphons are installed.~~ **"Chamber"** means a domed open bottom structure that is used in lieu of perforated distribution pipe and gravel media.

(j) **"Delegated small wastewater program"** means a local governmental entity, delegated by the Administrator, with the authority to administer the provisions of W.S. 35-11-301(a) (iii) for small wastewater systems pursuant to the provisions of W.S. 35-11-304.

(k) **"Direct human consumption food crops"** are crops consumed directly by humans. These include, but are not limited to fruits, vegetables and grains grown for human consumption.

(l) **"Domestic wastewater"** means a combination of the liquid or water-carried wastes from residences, business buildings, institutions, and other establishments arising from normal living activities.

~~Previously 2(e)~~ (m) **"Domestic ~~sewage~~ septage"** ~~"Domestic"~~ means the liquid~~ and waterborne wastes~~ or solid material ~~derived~~ removed from ~~the ordinary living processes~~ a waste treatment vessel~~, free from industrial wastes, and of such character as to permit satisfactory disposal without special treatment~~ that has received only wastes from residences, business buildings, institutions, and other establishments arising from normal living activities.

(n) **"Dosing tank"** means a tank equipped with an automatic siphon or pump designed to discharge effluent on an intermittent basis.

(o) **"Effluent"** means a liquid flowing out of a septic tank, other treatment vessel or system.

(p) **"Effluent filter"** means a removable, cleanable device inserted into the outlet piping of a septic tank or other treatment vessel designed to trap solids that would otherwise be transported to the soil absorption system or other downstream treatment components.

(q) **"Evapotranspiration"** means the combined loss of water from soil by evaporation from the soil or water surface and by transpiration from plants.

(r) **"Greywater"** means untreated wastewater that has not been contaminated by any toilet discharge; that is unaffected by infectious, contaminated, or unhealthy bodily wastes: and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Greywater" includes but is not limited to wastewater from bathtubs, showers, washbasins, clothes washing machines (unless soiled diapers are serviced), laundry tubs, and kitchen sinks.

(s) **"Grease interceptor"** means a device designed to separate fats, oils, and grease from wastewater.

(t) **"Groundwater"** means subsurface water that fills available openings in rock or soil materials such that they may be considered water saturated under hydrostatic pressure.

(u) **"High groundwater"** means seasonally or periodically elevated levels of groundwater.

(v) **"High strength wastewater"** means a wastewater stream with a BOD_5 higher than 200 mg/L.

(w) "**Holding Tank"** means a watertight receptacle designed to receive and store wastewater.

(x) **"Manifold"** means a non-perforated pipe that distributes effluent to individual distribution pipes.

(y) **"Mound system"** means an onsite wastewater system where any part of the absorption surface is above the elevation of the existing site grade, and the absorption surface is contained in a mounded fill body above the grade.

(z) **"Mulch basin"** means an excavated area that has been refilled with a highly permeable media, organic and inorganic materials intended to distribute greywater to irrigate vegetation.

(aa) "**Pathogens"** are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

(bb) **"Percolation rate"** means the time expressed in minutes per inch required for water to seep into saturated soil at a constant rate.

(cc) **"Pipe invert"** means the bottom of the internal surface of the pipe.

(dd) **"Percolation test"** means the method used to measure the percolation rate of water into soil as described in Appendix A.

(ee) **"Permit by rule"** means an authorization included in these rules that does not require either an individual permit or a general permit. A facility which is permitted by rule must meet the requirements found in this chapter, but is not required to apply for and obtain a permit to construct and operate the facility.

(ff) **"Pressure distribution"** means a network of pipes in which effluent is forced through orifices under pressure.

(gg) **"Restrictive layer"** means a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide unfavorable root conditions. Examples are bedrock, cemented layers, dense layers, and frozen layers.

(hh) **"Septage"** means liquid or solid material removed from a waste treatment vessel that has received wastes from residences, business buildings, institutions, and other establishments.

(ii) **"Septic tank"** means a watertight tank designed and constructed to receive and treat raw wastewater.

(jj) **"Serial distribution"** means a group of trenches arranged so that the total effective absorption area of one trench is used before liquid flows into the next trench.

(kk) **"Service provider"** means a person authorized and trained by a system manufacturer or their vendor to operate and maintain any proprietary system.

(ll) **"Soil absorption system"** means a shallow, covered, excavation surface, or mound made in unsaturated soil into which wastewater effluent from the septic tank is discharged through distribution piping for application onto absorption surfaces through porous media or manufactured components.

(mm) **"Trench"** means an absorption surface with a width of three (3) feet or less.

Section 5. ~~Site Suitability~~ Design Flows.

~~(formerly Section 3) The sewerage system, treatment works and disposal system shall have a minimum absorption area based on the minimum peak design flows listed in Table 1 below.~~ The volume of wastewater shall be determined by one of the following:

(a) Tables 1 and 2 provided in this section.

(b) Metered water supply data from the facility.

(c) Metered water supply data from another facility where similar water demands have been demonstrated.

Table 1

~~Quantities of Domestic Sewage Flows~~

~~Type of Establishment~~	~~Flow (gallons per day per_____)~~
~~**Residential Units**~~	
~~Single Family Dwellings~~	~~150/~~bedroom
~~Multiple Family Dwelling (with laundry capabilities)~~	~~150/bedroom~~
~~Multiple Family Dwelling (without laundry capabilities)~~	~~120/bedroom~~
~~Cottages~~	~~50/person~~
Mobile Home ~~Parks~~	~~350/home*~~
~~**Commercial Facilities**~~	
Airports	4/~~passengers~~
Bar	~~3/patron~~
Bathhouses and swimming pools	10/person
Campgrounds ~~(individual sewer outlets available)~~	~~100/site~~
Campgrounds ~~(service building only)~~	~~75/site~~
~~Car or truck wash~~	~~200/vehicle~~
~~Church (no food preparation and/or dishwashing)~~	~~5/seat~~
~~Church (food preparation and/or dishwashing)~~	~~7/seat~~
Country Club	~~100/~~member
~~Factories~~	~~30/employee~~
Hospital	~~200/bed~~
Laundry (self-service)	~~600/machine or 50/cycle~~
Motels	~~80/double bed or 40/single bed~~
~~Office building~~	~~30/employee~~
~~Restaurant (toilet and kitchen wastes)~~	~~13/meal~~
~~Restaurant (kitchen wastes)~~	~~6/meal~~
~~Restaurant (additional for bars and lounges)~~	~~2/meal~~
~~Restaurant (kitchen wastes with disposable service)~~	~~2/meal~~
Rest Home	100/resident
Schools Boarding	100/resident student
~~Day, without gyms, cafeterias, or showers~~	~~15/student~~
~~Day, with cafeterias only~~	~~20/student~~
~~Day, with cafeteria, gym and showers~~	~~25/student~~
~~Service stations~~	~~10/vehicle served~~
~~Shopping Center~~	~~2/parking space~~
~~Store, Retail~~	~~30/employee~~
Theater~~s: Movie~~ ~~Drive-In~~	~~5/~~seat ~~15/vehicle space~~
~~Warehouses~~	~~30/employee~~

~~* Must consider flow into the soil absorption system from mobile homes where taps are allowed to run to prevent freezing.~~

Table 1. Residential Design Flow Rates per Bedroom (gallons per day, gpd)[1]

1 bedroom	150
2 bedrooms	280
3 bedrooms	390
4 bedrooms	470
5 bedrooms	550
6 bedrooms	630

[1]An unfinished basement is considered two (2) additional bedrooms.
[2]The design flow shall be increased by eighty (80) gpd for each additional bedroom over six (6).

Table 2. Non-Residential Wastewater Design Flow Rates[1]

Facility		Unit	Flow (gallons/unit/day)
Airports		person	4
Apartment		bedroom	120
Automobile Service Station		vehicle served	10
Bars		seat	20
Bathhouses and swimming pools		person	10
Campgrounds (w/ toilets only)		person	25
Campgrounds (w/shower facility)		person	45
Church		person	4
Country Club		member	25
Day School, Office Building, Retail Store, Warehouse (no showers)		person	15
Hospital		bed	250
Industrial Building (sanitary waste only)		employee	20
Laundry (self-service)		machine	450
Mobile Home		bedroom	See table 1
Motel, Hotel, Resort		bedroom	140
Recreational Vehicle		each	100
Rest Home, Care Facility, Boarding School		bed	100
Restaurant		meal	10

Restaurant (kitchen waste only)		meal	6
Theater		seat	3

[1]Values shown in the above table are the typical flow rates from *Wastewater Engineering Treatment and Reuse*, Metcalf and Eddy, 2003 Edition.

Section 6. ~~Building Sewer Pipes~~ Systems not Specifically Covered by This Rule.

This section is provided to encourage new technology and equipment and provide a process for evaluating and permitting designs that deviate from this rule. The proposed construction of facilities and processes not in compliance with this rule may be permitted provided that the facility, when constructed and operated, meets the objective of these rules.

(a) Each application for a permit to construct shall include an engineering design report, detailed construction plans, and technical specifications for all piping, tanks, and equipment. All of the documents shall have a suitable title showing the owner's name and the Wyoming registration number, seal, and signature of the engineer.

(b) Each application for a permit to construct will be evaluated on a case-by-case basis using the best available technology. The application shall include at least one of the following:

(i) Data obtained from a full scale, comparable installation that demonstrates the acceptability of the design.

(ii) Data obtained from a pilot plant operated under the design condition for a sufficient length of time to demonstrate the acceptability of the design.

(iii) Data obtained from the theoretical evaluation of the design that demonstrates a reasonable probability the facility will meet the design objectives.

(iv) An evaluation of the flexibility of making corrective changes to the constructed facility in the event it does not function as planned.

(c) If an applicant wishes to construct a pilot plant to provide data necessary to show the design will meet the purpose of the act, a permit to construct must be obtained.

Section 7. ~~Soil Absorption System Sizing~~ Site Suitability.

(a) ~~(Formerly 4(c) Location.~~ Small wastewater systems must be located where the surface drainage is sufficient to allow proper operation of the small wastewater system. ~~Formerly 10 (a)(iii) Runoff. Surface runoff shall be diverted around or away from all soil absorption systems.~~ Avoid depressions and bases of slopes and areas in the path of runoff from roofs, patios, driveways, or other paved areas unless surface drainage is provided. ~~Formerly 4(c))Absorption systems~~ Small wastewater systems shall not be located beneath buildings, parking lots, roadways, driveways, irrigated landscaping, or ~~other similarly~~ compacted areas.

(formerly 10(a)(i))(b) ~~Replacement area. An area shall be designated and shown on the plans for future installation of a replacement absorption system.~~ The site must include area for both the proposed soil absorption system and a future replacement soil absorption system. Both the proposed and replacement soil absorption systems shall be sized to receive one-hundred (100%) percent of the wastewater flow. If a trench system is used, the replacement ~~area~~ soil

absorption system may ~~include the area~~ be located between the trenches ~~of the proposed soil~~ absorption system if ~~sufficient spacing has been provided~~ there is at least nine (9) feet of spacing between trench sidewalls. ~~At least three feet of undisturbed soil shall remain between the existing and replacement trench side walls.~~

~~(formerly 5(c)) Groundwater protection and bedrock or impermeable soil separation.~~

~~(formerly 5(c)(i))~~ (c) ~~For single family homes,~~ For standard soil absorption systems ~~the~~ effective suitable soil depth ~~to bedrock or impermeable soil must be~~ shall extend at least four (4) feet ~~from~~ below the bottom of the absorption system ~~stone and the natural ground surface~~ to any restrictive layer, fractured rock, or highly permeable material.

~~(formerly 5(c)(i))~~(d) ~~The~~ The depth to ~~seasonally~~ high groundwater ~~must~~ shall be at least four (4) feet ~~from~~ below the bottom of the absorption ~~system~~ surface ~~stone and at least two feet from the natural ground surface.~~ for all treatment systems except pressure distribution. ~~(formerly 5(c)(ii)) For all systems other than single family homes up to 2000 gallons per day, the depth to bedrock or impermeable soil must be at least four feet from the natural ground surface. The depth to seasonally high groundwater must be at least four feet from the bottom of the absorption system stone and at least two feet from the natural ground surface. Also,~~ For pressure distribution systems, the depth to high groundwater shall be ~~a minimum of~~ at least three (3) feet of unsaturated soil shall be maintained between below the bottom of the absorption ~~system stone~~ surface ~~and the estimated groundwater mound imposed on the seasonally high groundwater table~~. if the percolation rate of the soil is five (5) minutes per inch or greater (5-60 mpi). ~~The height of the groundwater mound may be estimated from Figures 1 through 6. The average daily flow should be used and may be estimated as 0.6 times the flow determined from Table~~.

~~(formerly 5(c) (iii)) For all systems larger than 2000 gallons per day, a minimum of three feet of unsaturated soil shall be maintained between the bottom of the absorption system stone and the estimated groundwater mound imposed on the seasonally high groundwater table. The maximum height of the groundwater mound shall be estimated by the design engineer.~~

~~(formerly Section 5(e))~~(e) ~~Sloping ground installations~~ Slope

~~(formerly Section 5(e)(i))~~(i) ~~Absorption systems shall not be located in an area where the natural slope is steeper than stated below. The following~~ are Table 3 shows the maximum permissible slopes on which an absorption system may be constructed.

~~(formerly contained in Section 5(e)(i))~~Table 3. Slope and Percolation Rates for Absorption Systems

Percolation Rate (minutes/inch)	Maximum Slope[1]
~~Faster than~~ 5	25%
6-45	20%
46-60	15%

~~*~~[1] Flatter slopes may be required where the effluent ~~may surface~~ sufaces downslope.

~~(formerly 5(e)(ii) "Saturated thickness" Distance between the seasonally high groundwater table and the under-lying impervious layer such as clay, bedrock or soils with significantly lower~~

~~permeability.~~

~~(formerly 5 (e)(ii)) "Estimated Rise in Water Table": The estimated distance the water table will rise at the center of the absorption system above the initial water table when the indicated flow is applied daily.~~

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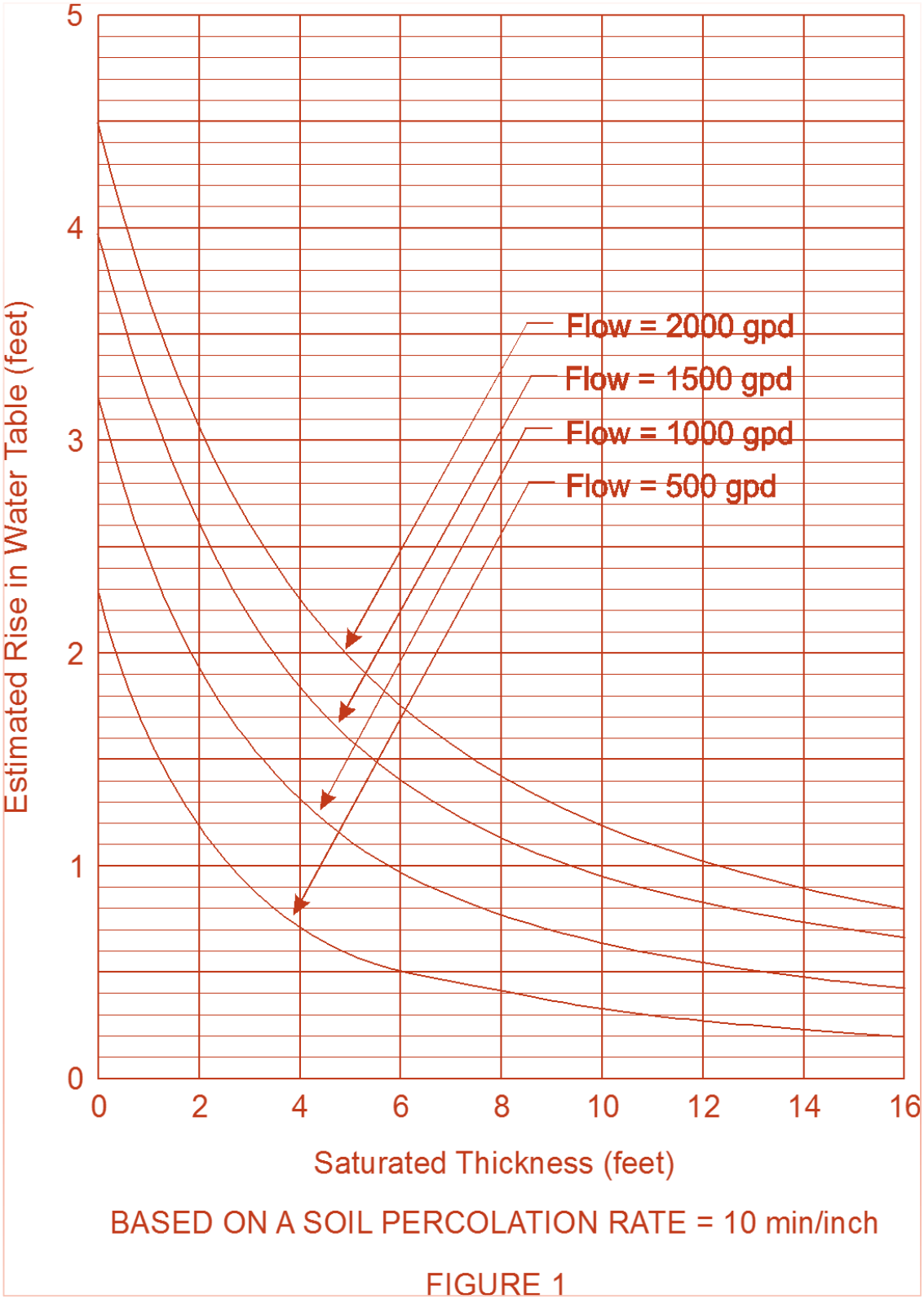

BASED ON A SOIL PERCOLATION RATE = 10 min/inch

FIGURE 1

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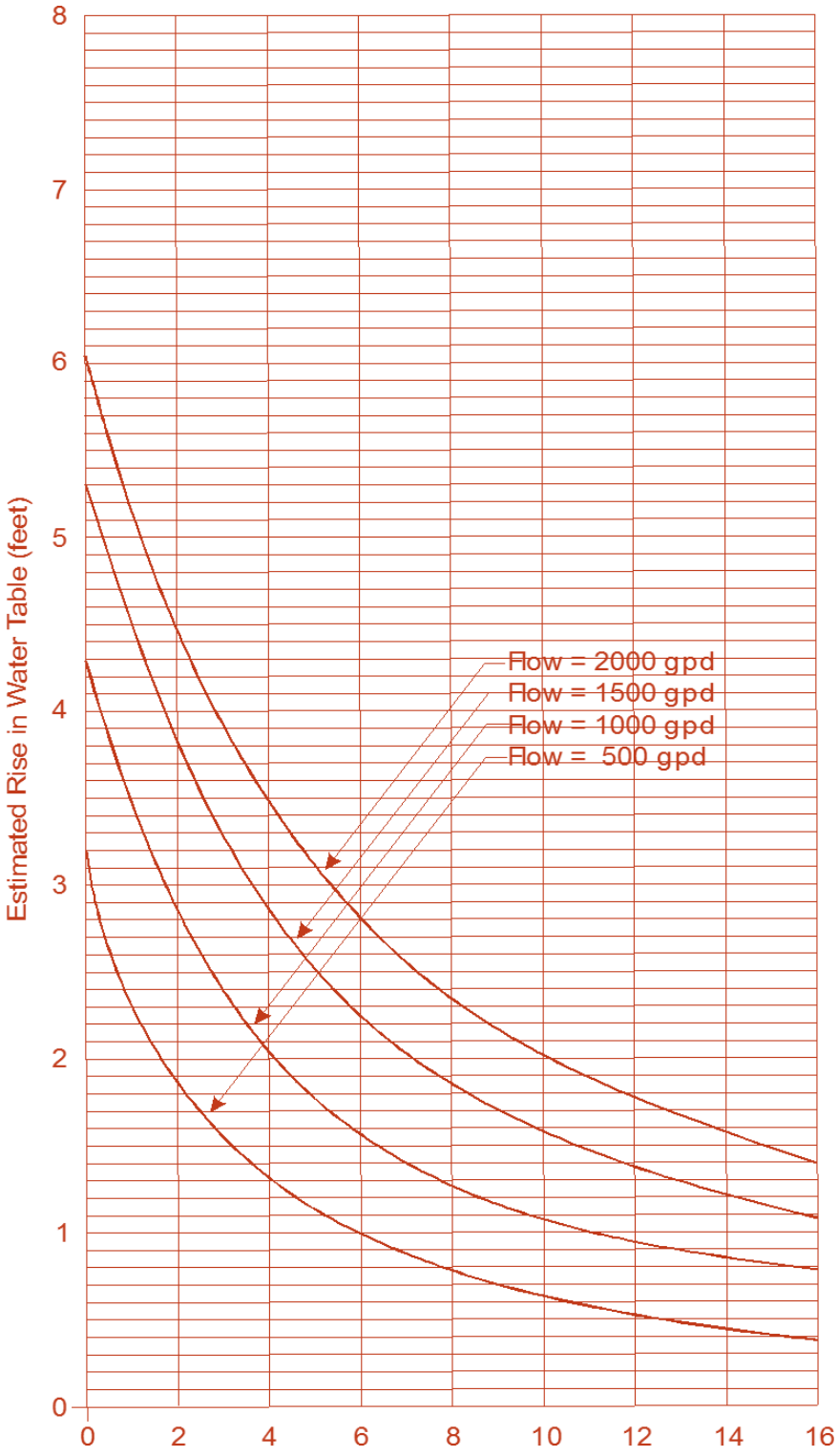
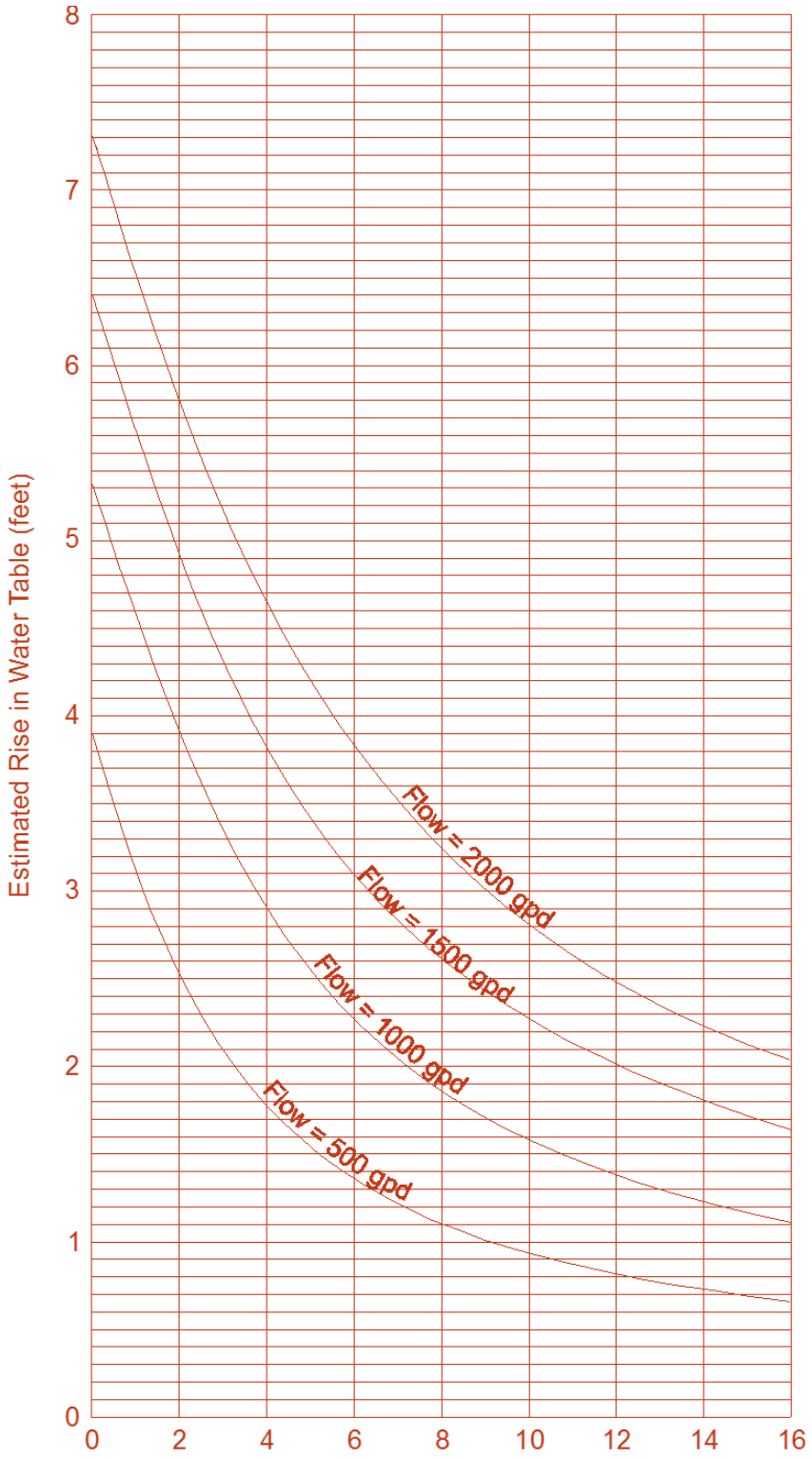
323



BASED ON A SOIL PERCOLATION RATE = 20 min/inch

FIGURE 2



BASED ON A SOIL PERCOLATION RATE = 30 min/inch

FIGURE 3

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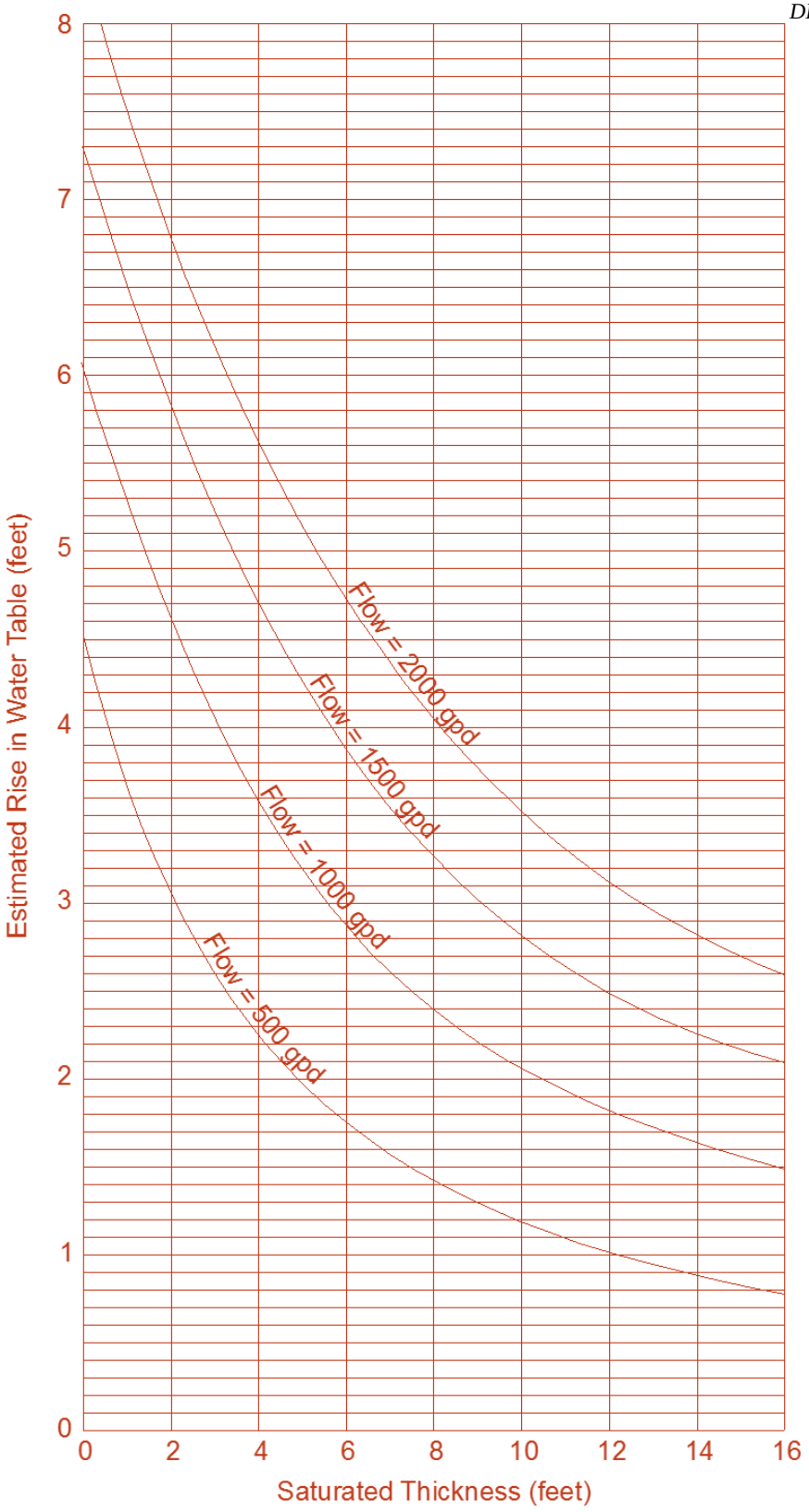

BASED ON A SOIL PERCOLATION RATE = 40 min/inch

FIGURE 4

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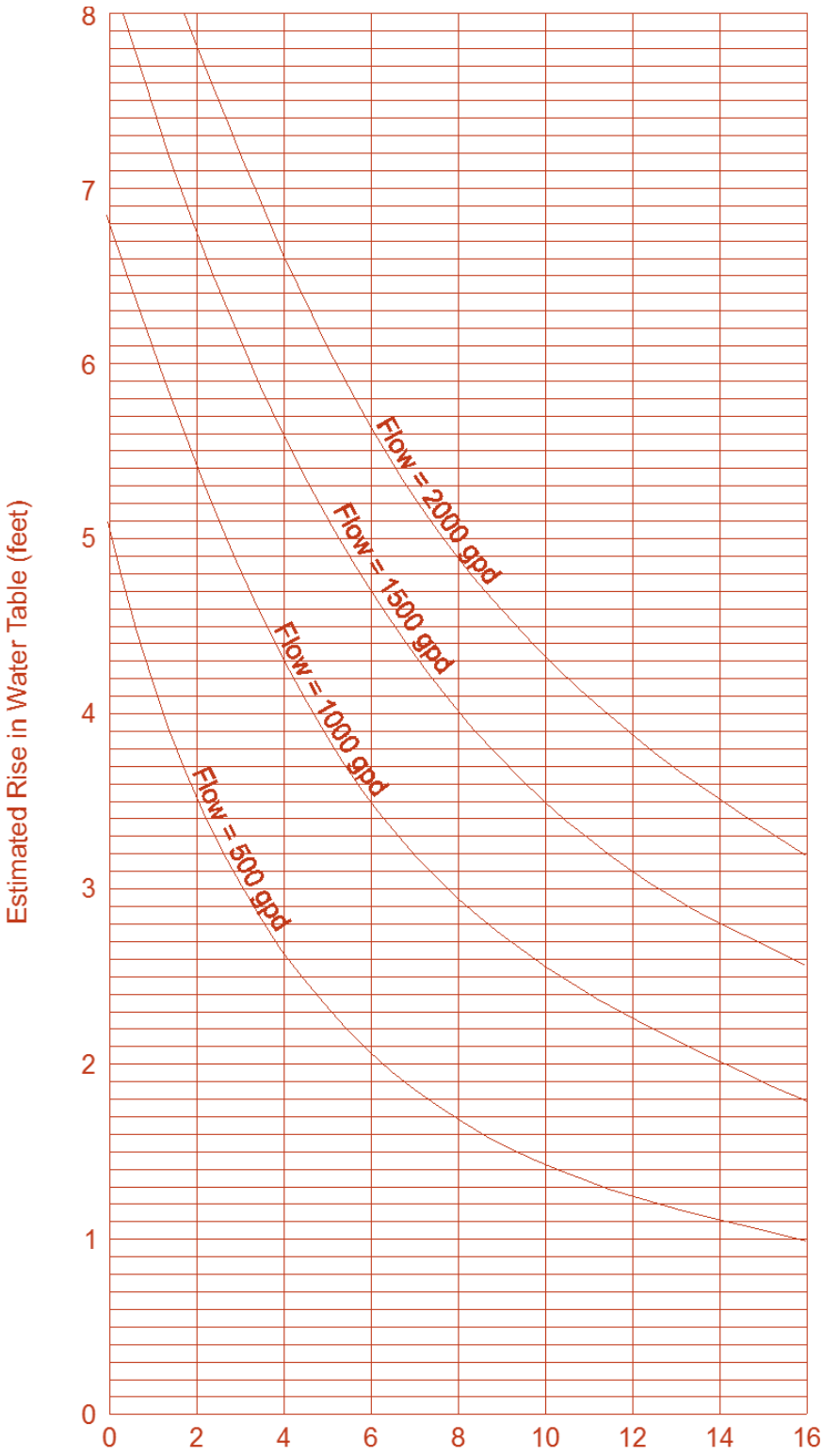
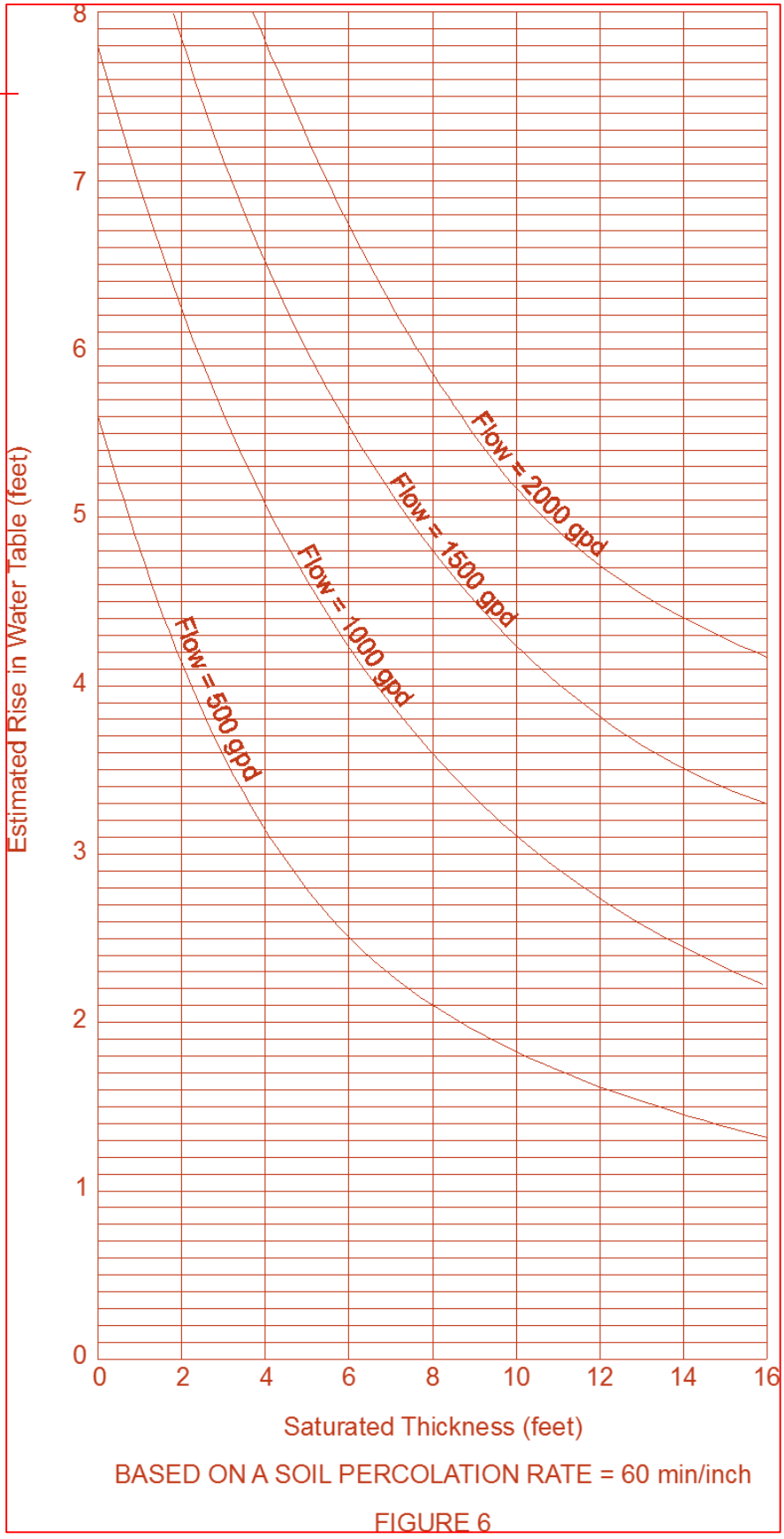
377



BASED ON A SOIL PERCOLATION RATE = 50 min/inch

FIGURE 5



BASED ON A SOIL PERCOLATION RATE = 60 min/inch

FIGURE 6

(ii) Serial distribution, with the use of drop boxes or approved fittings, is the preferred installation method for sloping terrain. The bottom of individual trenches shall be level and the trenches shall be constructed to follow the contours of the land.

(iii) The placement of multiple trenches, with each subsequent trench down slope of the previous trench shall be avoided when the addition of effluent to the soil absorption system trenches may lead to either an unstable slope or seepage down slope.

~~(formerly 5(e)(ii))~~(iv) All absorption surfaces must be located at least 15 horizontal feet from the top of any break in slope ~~which~~ that exceeds the maximum ~~allowed in subsection (i) above~~ slope allowed.

(f) Soil Exploration Pit and Percolation Tests

(i) Delegated small wastewater programs shall require a percolation test in addition to the soil exploration pit.

(ii) ~~(formerly 5(a)) Soil exploration. Soil exploration~~ A minimum of one soil exploration pit within the proposed soil absorption system location shall be excavated~~.~~ to a minimum depth of four (4) feet below the bottom of the proposed soil absorption system ~~shall be made to provide information on subsoil conditions~~ to evaluate the subsurface conditions.

~~(formerly 5(b)) Soil evaluation.~~

~~(formerly 5(b)(i)) No less than three percolation tests shall be run in the proposed absorption system location. The percolation tests shall be performed in accordance with Appendix A of this part. The type of soil encountered at the percolation test location shall be specified.~~

~~((formerly 5b)(ii))~~ (iii) The percolation test shall be performed in accordance with Appendix A of this chapter. An evaluation of the soil texture, in the proposed soil absorption system location, by a person experienced in soils classification, may be used as an additional tool to confirm the percolation rate. ~~but at least one percolation test shall be performed.~~

~~(formerly Section 4)~~(g) ~~Isolation~~ Minimum horizontal setback distances (in feet) are as follows:

~~(formerly 4(a)) Domestic wastewater. The isolation distances listed below apply when domestic wastewater is the only wastewater present.~~

~~(formerly 4(a)(i)) If the flow is less than 2000 gallons per day (gpd), the minimum isolation distance (in feet) shown in Table 2 shall be maintained.~~

~~(formerly Table 2)~~ **Table 4. Minimum Horizontal Setbacks for Domestic Wastewater in Feet[1, 2]**

From	To Septic Tank Or Equivalent	To Absorption System
Wells (includes neighboring wells)	50	100
Public Water Supply Well	100[2]	200[2]
Property Lines	10	10
Foundation Wall (w/o drains)	5	10
Foundation Wall (with drains)	5	25
Potable Water Pipes	25	25
Septic Tank	N/A	10
~~Stream or~~ Surface ~~Body of~~ Water, Spring (including seasonal and intermittent)	50	50
Cisterns	25	25

[1] ~~(formerly 4(b)) Non-domestic wastewater.~~ For disposal of ~~wastewaters other than domestic~~ non-domestic wastewater, the ~~isolation~~ setback distance shall be determined by a hydrogeological study in accordance with Section ~~15~~ 17(b) of Chapter 3, but shall not be less than the distances shown in Table 4.

[2] Small wastewater systems that discharge to the same aquifer that supplies a public water supply well and are located within Zone 1 or 2 (Attenuation) of the public water supply well, as determined by *Wyoming Department of Environmental Quality Source Water Assessment Project (2004)* or as established in Section 2 of the *Wyoming Wellhead Protection Guidance Document (1997)*,shall provide additional treatment. These systems will be required to obtain an individual permit to construct and will require that a PE sign, stamp, and date the application, as stated in Section 2 of this chapter. The additional treatment shall be in accordance with Chapter 3 Section 2(b)(ii). The treatment system shall be designed to reduce the nitrates to less than 10 mg/L of NO_3- as N and provide 4-log removal of pathogens before the discharge leaves the property boundary of each small wastewater system.

Section 8. ~~Pretreatment~~ Soil Absorption System Sizing.

~~(formerly Section 7(a))~~ (a) ~~Trench, bed and seepage pit systems.~~ The total ~~infiltrative~~ infiltration surface ~~of a soil absorption system~~ area of a soil absorption system shall be calculated ~~based on the flow rate as determined by the criteria stated in Section 3 and with the allowable loading rate as determined by using Figure 7.~~ by dividing the design flow rates (gpd) from Table 1 or Table 2 by the loading rate (gpd/ft^2) found in Table 5. ~~The total infiltrative surface is the sum of the sidewall and bottom areas of the absorption system below the invert of the distribution pipe.~~

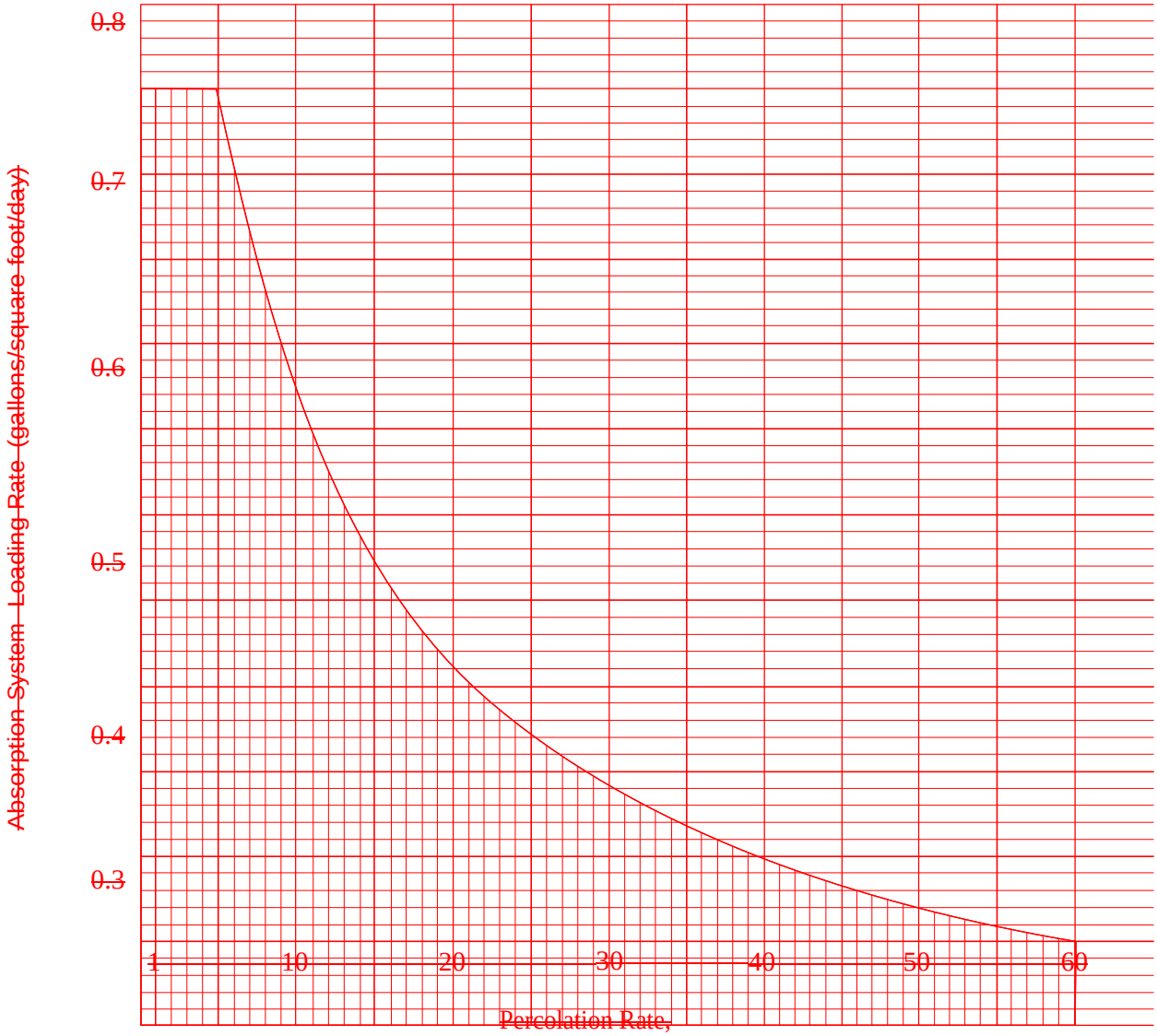

0.8
0.7
0.6
0.5
0.4
0.3
Absorption System Loading Rate (gallons/square foot/day)
1
10
20
30
40
50
60
Percolation Rate,
(min/inch)

FIGURE 7

Table 5. Rates of Wastewater Application for Soil Absorption System Areas

Percolation Rate (mpi)	Loading Rate (gpd/ft^2)	Percolation Rate (mpi)	Loading Rate (gpd/ft^2)
5	0.80	21	0.45
6	0.75	22	0.44
7	0.71	23-24	0.43
8	0.68	25	0.42
9	0.65	26-27	0.41
10	0.62	28-29	0.40
11	0.60	30-31	0.39
12	0.58	32-33	0.38
13	0.56	34-35	0.37
14	0.54	36-37	0.36
15	0.52	38-40	0.35
16	0.50	41-43	0.34
17	0.49	44-46	0.33
18	0.48	47-50	0.32
19	0.47	51-55	0.31
20	0.46	56-60	0.30

(b) ~~Soils with a percolation rate of 60 minutes per inch or greater are unacceptable for standard absorption systems~~. The total infiltration area shall be defined as follows:

(i) For standard trenches the total infiltration area shall be calculated based on the following formula:

$$A = L(W + 2S)$$

A = Total infiltration area

L = Total length of trench

W = Bottom width

S = Sidewall height of 12 inches or less

(A) The sidewall height is the depth below the flowline of the pipe to the bottom of the trench.

(B) The maximum credit for sidewall height shall not exceed twelve (12) inches even if the actual sidewall height exceeds twelve inches.

(ii) For chamber trenches, the total infiltration area shall be calculated based on the following formula:

$$A = L(E + 2S)$$

A = Total infiltration area

L = Total length of trench

E = Effective bottom width (Multiply width of the chamber by factor of 1.43 to get effective bottom width)

S = Sidewall height of 12 inches or less

(A) The factor of 1.43 incorporates a thirty percent (30%) reduction of the bottom area.

(B) The maximum credit for sidewall height shall not exceed twelve (12) inches even if the actual sidewall height exceeds twelve (12) inches.

(C) The sidewall height is the height of the slotted sidewall of the chamber or depth below the flow line of the inlet pipe, whichever is less.

(iii) For standard bed systems, the total infiltration area shall be calculated based on the following formula:

A = LW

A = Total infiltration area

L = Total length of bed

W = Width of the bed.

(A) The sidewall credit shall not be used in calculating the total infiltration area for a bed system.

(iv) For chamber bed systems, the total infiltration area shall be calculated based on the following formula:

A = L(E x R)

A = Total infiltration area

L = Total length of bed

E = Effective bottom width of the chamber (Multiply width of the chamber by factor of 1.43 to get effective bottom width)

R = Number of chamber rows (Multiply effective bottom width of chamber by number of chamber rows to get effective bottom width of bed.)

(A) The factor of 1.43 incorporates a thirty percent (30%) reduction of the bottom area.

~~(formerly 5(d))~~(c) ~~Excessively permeable soils.~~ Coarse sand or soils having a percolation rate ~~of~~ less than ~~one~~ one (1) minute per inch (mpi) ~~or less~~ are unsuitable for subsurface effluent ~~sewage~~ disposal. ~~These~~ These soils may be used if a ~~six inch~~ a one (1) foot layer of ~~soil~~ fine sand or loamy sand ~~having a percolation rate of five minutes per inch or greater~~ is placed ~~between~~

~~the leach system stone and the existing soil~~ below the constructed soil absorption system. The soil absorption system shall be sized based on the percolation rate of the fill material.

Section 9. ~~(formerly Dosing Systems Following Septic Tanks)~~ Building Sewer Pipes.

~~(formerly 6(a)) Building drain pipe. All building drain pipe shall comply with the standards published in theUniform Plumbing Code 1982 or other locally approved, nationally recognized plumbing code.~~

~~(formerly 6(b))~~ ~~Building sewer pipe.~~ All building sewers shall be installed in accordance with the ~~Uniform Plumbing Code 1982 or other locally approved, nationally recognized plumbing code~~ 2012 International Plumbing Code (IPC). In the absence of ~~an~~ a locally approved plumbing code, and in addition to the IPC, the building sewer shall comply with the following:

~~(formerly 6(b)(i))~~ (a) ~~(Material)~~ Suitable building sewer pipe materials are ~~P~~polyvinyl ~~C~~chloride (PVC) or ~~A~~cyrlonitrile~~-B~~utadiene-~~S~~tyrene (ABS) ~~cast or ductile iron, portland cement, or vitrified clay pipe shall be used for sewer pipes.~~ The septic tank inlet and outlet pipes shall be ~~cast or ductile iron or~~ schedule 40 PVC or ABS pipe and shall ~~extend past the septic tank excavation to solid ground~~ span the excavations for the septic tank and/or dosing chamber. American Society for Testing and Materials (ASTM) D-3034 Standard Dimension Ratio (SDR) 35 plastic pipe may be used if the void at the tank's side is filled with material that is granular, clean and compacted.

~~(formerly 6(b)(ii))~~ (b) ~~Size. Building sewer pipes shall not be smaller than four inches in diameter. They shall be sized to handle the peak hourly flow from the building.~~ Building sewer pipes shall be sized to handle the peak hourly flow from the building and shall not be smaller than four (4) inches in diameter. When two different sizes or types of sewer pipes are to be connected, a proper type of fitting or conversion adapter shall be used.

(c) Sewer pipe shall not decrease in size flowing downstream.

~~(formerly 6(b)(iii))~~(d) ~~Slope~~. Building sewer pipes ~~should~~ shall be laid at a ~~minimum~~ standard slope of 1/4 inch per foot~~, but~~ and shall not be flatter than 1/8 inch per foot.

~~(formerly 6(b)(iv)) Alignment. Building sewer pipes should be laid in a straight line. Any single change or cumulative change of alignment of 22 ½ degrees or greater shall be served by a cleanout.~~

~~(formerly 6(b)(v))~~(e) ~~Cleanouts.~~ Cleanouts shall be provided at branch connections, every change in alignment, and at least every 100 feet in straight runs ~~maximum~~.

~~(formerly 6(b)(vi))~~(f) ~~Backfilling~~. All sewer piping shall be laid on a firm bed throughout its entire length. It shall be protected from damage due to rocks, hard lumps of soil, debris and the like.

~~(formerly 6(b)(vi))~~(g) Special care shall be ~~utilized~~ used to prevent lateral movement or ~~ovalation~~ deformation during backfill. The backfill material shall be compacted to a density at least equivalent to the trench walls. Backfill over the pipe shall be of sufficient depth to protect the pipe from expected traffic loads and the wastewater from freezing.

Section 10. ~~Subsurface Treatment and Disposal Systems~~ Septic Tanks and Other Treatment Tanks.

~~(formerly 8(a))~~ (a) Septic tanks~~.~~

~~(formerly 8(a)(i))~~ (i) ~~Material. The~~ Septic tanks shall be fabricated or constructed of ~~durable~~ concrete, fiberglass, thermoplastic or an approved material ~~not subject to excessive corrosion or decay and structurally capable of supporting the loads to which it will be subjected.. The t~~Tanks shall be water tight and fabricated to constitute an individual structure, and shall be designed and constructed to withstand anticipated loads. As part of the application review process, Department of Environmental Quality, Water Quality Division (DEQ/WQD) or the delegated small wastewater program shall review the design of prefabricated septic tanks for compliance with applicable construction standards.

~~(formerly 8(a)(v))~~ (ii) ~~Installation~~. The septic tank shall be placed on a level grade and a firm bedding to prevent settling. Where rock or other undesirable protruding obstructions are encountered, the opening for the septic tank shall be over excavated, as needed, and backfilled with sand, crushed stone, or gravel to the proper grade.

(A) Septic tanks shall not be buried deeper than the tank manufacturer's maximum designed depth for the tank. The minimum depth of soil cover over the top of the tank is six (6) inches.

(B) Backfill around and over the septic tank shall be placed in such a manner as to prevent undue strain or damage to the tank or connected pipes.

(C) Septic tanks shall not be placed in areas subject to vehicular traffic unless engineered for the anticipated load.

~~(formerly 8(a)(ii))~~(iii) Size

~~(formerly 8(a)(ii)(A))~~(A) ~~Residential units serving no more than 4 families.~~ The minimum liquid volume of a septic tank~~s~~ shall be 1000 gallons for residences ~~through four bedroom capacity~~ up to a four (4) bedroom capacity. Additional capacity of ~~250~~150 gallons per bedroom shall be provided for each bedroom over four (4).

~~(formerly 8(a)(ii)(B))~~(B) ~~Commercial/industrial units.~~ Septic tanks for high strength wastewater or non-residential units shall have a minimum effective liquid capacity sufficient to provide at least ~~36~~ 48 hour retention at peak flow or 1,000 gallons, whichever is greater.

~~(formerly 8(a)(iii))~~(iv) Configuration

~~(formerly 8(a)(iii) (A))~~(A) ~~The~~ Single compartment septic tanks ~~shall have a length to width ratio of no less than two~~ (2) to one(1), or be so partitioned ~~as~~ to ~~provide protection~~ protect ~~against short circuiting of flow. The inlet pipe shall be at least three inches higher than the outlet pipe.~~

~~(formerly 8(a)(iii) (B))~~(B) ~~If the septic tank is partitioned,~~ For septic tanks with two (2) compartments or more ~~the volume of the first compartment must be at least 50 percent of the total required volume~~, the inlet compartment shall not be less than one-half (1/2) of the total capacity of the tank.~~.~~

~~(formerly 8(a)(iii) (A))~~ (C)~~The water depth shall be no less than four feet nor greater than six feet.~~ The liquid depth shall not be less than three (3) feet nor greater than six (6) feet.

~~(formerly 8(a)(iii)(C)) The outlet elevation shall be designed to provide a distance of 20 percent of the liquid depth between the top of the liquid and the bottom of the septic tank cover for scum storage.~~

~~(formerly 8(a)(iii) (B))~~ (D)~~The partition shall allow venting of the tank.~~ The tank partition shall allow the venting of gases between compartments and out through the vent stack on the plumbing system of the house. Gases generated during liquefaction of the solids are normally vented through the building's plumbing stack vent.

~~(formerly 8(a)(iii)(A))~~(E) The ~~septic tank~~ inlet ~~and~~ outlet on all tanks or tank compartments shall be provided with ~~a~~ open-ended sanitary tee~~s~~ ~~or~~ baffle~~s~~. ~~The outlet shall be provided with a tee or baffle that extends into the middle third of the water depth to prevent floating or settled solids from carrying over into the disposal field or bed~~ The inlet shall be provided with tee or baffle made of approved materials constructed to distribute flow and retain scum in the tank or compartments.

(I) The tees or baffles shall extend above the liquid level a minimum distance of five (5) inches.

(II) The inlet tees or baffles shall extend below the liquid level at least eight (8) inches but no more than 40% percent of the liquid level. The outlet tees or baffles shall extend below the liquid level at least ten (10) inches but no more than 45% of the liquid level.

(III) A minimum of one (1) inch of clear space shall be provided over the top of the baffles or tees for venting.

~~(formerly 8(a)(iii)(A))~~ (IV) The inlet pipe shall be at least ~~three~~ two (2) inches higher than the outlet pipe. ~~(formerly 8(a)(iii)(C))~~ The outlet elevation shall be designed to provide a minimum distance of nine (9) inches or twenty (20) percent of the liquid depth, whichever is greater, between the top of the liquid and the bottom of the septic tank cover for scum storage and the venting of gases.

(v) If additional septic tank capacity over 1,000 gallons is needed, it may be obtained by joining tanks in series provided the following requirements are met:

(A) The inlet of each successive tank shall be at least two (2) inches lower than the outlet of the preceeding tank, and shall have no tee or baffle except for the inlet to the first tank and the outlet for the last tank.

(B) The first tank or the first compartment of the first tank shall be equal to fifty percent (50%) or larger of the total septic tank system volume.

~~(formerly 8(a)(iv))~~(vi) ~~Access. A manway~~ An ~~access~~ opening shall be provided to each compartment of the septic tank for inspection and cleaning~~. A cleanout having a minimum~~

~~diameter of six inches shall be provided in each tank compartment and shall extend to the ground surface and be capped.~~

~~(formerly 8(a)(iv))~~ (A) The ~~manway~~ access opening(s) in the cover/lid of the tank shall have a minimum ~~opening~~ diameter ~~of~~ twenty ~~(~~20~~)~~ inches ~~in the least dimension.~~ Both inlet and outlet devices shall be accessible.

(B) The riser from the access opening shall terminate at a maximum of six (6) inches below the ground surface. Riser covers terminating above grade shall have an approved locking device.

(vii) Land application of domestic septage in remote areas that meet the conditions found in Appendix B will be permitted as a permit by rule. Delegated small wastewater programs may issue individual permits.

(viii) An effluent filter with an opening of 1/8-inch or smaller shall be provided on the outlet of a septic tank or other tank that precedes a small diameter pressure distribution system.

~~(formerly 8(b)) Aerobic units.~~

~~(formerly 8(b)(i)) Residential units serving no more than four dwelling units. Aerobic treatment units can be used as a pretreatment device for a single residential unit serving no more than four families provided the unit carries the seal of testing and approval from the National Sanitation Foundation (NSF) for the NSF Standard No. 40 – 1978. The unit shall be sized based on the flow quantities stated in Section 3. No reduction in the sizing of soil absorption systems or the final treatment systems shall be permitted if an aerobic unit is used instead of a septic tank.~~

~~(formerly 8(b)(ii))Commercial and residential units serving more than four families. Aerobic units treating wastewater generated from other than a single residential unit serving four families or less shall meet the design requirements of Part B or Part C of Chapter XI~~

~~(formerly 9(a))~~(b) ~~Pumping systems for flow up to 2000 gallons per day.~~Dosing Tanks

~~formerly 9(a)(i))~~ (i)~~Pump tank. Where only one pump is provided, the pump tank shall have the minimum volume as required in Table 4 below. The~~ Dosing tanks shall ~~comply with the~~ meet the same material and installation requirements ~~for~~ as septic tanks~~. The pump tank shall be vented. The vent shall have a downward turn that terminates at least 12 inches above ground and be provided with a screen. The pump tank shall have an access manhole provided with an opening at least 20 inches in least dimension.~~ Dosing tanks shall have a 20-inch diameter access opening and it shall have a riser from the access opening to the ground surface.

Table 4

Pump Tank
Volume (gallons) Required Between

AVERAGE FLOWS (gallons per day)	"OFF" & "ON" SWITCH	"ON" & "ALARM" SWITCH	"ALARM" SWITCH & TANK INLET	RECOMMENDED PUMP CAPACITY (gpm)
0-499	100	50	200	10
500-999	200	100	400	20
1000-1499	300	100	600	30
1500-2000	400	100	800	40

Table 6. Dosing Tank Volume (gallons)

Average Design Flows (gpd)	0-499	500-999	1000-1499	1500-2000
Between Pump "off" and Tank Inlet	350	700	1000	1300
Between Tank Inlet and Alarm Switch	200	400	600	800
Between Alarm switch and Pump "on"	50	100	100	100
Between Pump "on" and Pump "off"	100	200	300	400
Recommended Pump Capacity (gpm)	10	20	30	40

(formerly 9(a)(ii) Pumps.

(formerly 9(a)(ii)(A) Sizing. The pump shall have a flow rate of at least ten gallons per minute when installed. The pressure loss (feet of head) of the system can be calculated by adding: the elevation differencebetween the discharge outlet at the soil absorption system and the low water level in the pump tank; and the friction losses incurred in the pressure transfer pipe and distribution piping. Table 5 may be used to estimate the head loss of the pipe when pumping ten gallons per minute and using plastic pipe.

Table 5

Diameter (inches)	Head Loss per 100 feet of pipe (in feet)
1	12
1¼	4
1½	2

(B) Installation/removal. The pump shall be installed in the tank so that it can be removed without entering the tank. This can be accomplished by (1) looping the pipe up near the access manhole with a pipe union provided at the top of the loop, (2) using a quick disconnect sliding coupler, or (3) using a pitless adapter. Chains, cable, or piping can be used to lift the pump out of the tank if designed for this loading. Setting the pump on an 8-inch block

~~minimizes the transfer of any solids that may enter the pump tank.~~

~~(iii) Pressure transfer pipe. The pressure transfer piping between the tank and the leach system shall be designed to drain after each pump cycle to prevent freezing. This can be accomplished by either eliminating the check valve at the pump or by providing a weep hole in the pipe in the tank. If the pipe is long, the tank shall be enlarged by the volume of the pipe to accommodate the volume of liquid drained from the pipe.~~

~~(b) Syphons. Where automatic syphons are used, they shall be designed to empty the syphon tank in less than 20 minutes. The syphon tank shall be sized in accordance with Section 9(a)(i) above.~~

~~(c) For all systems exceeding 2000 gallons per day. The pumping system shall comply with the standards of Part B of Chapter XI.~~

~~(formerly 9(a)(ii)(C))~~ (ii) ~~Electrical controls. The electrical control system for the wastewater pump shall consist of a "pump off" switch, a "pump on" switch, and a "high water alarm" switch which shall be located to provide the necessary volumes as stated in Table 4.~~ High water alarms shall be provided for all tanks that use pumps or siphons. The alarm device shall be an audible alarm or an indoor illuminated alarm or both~~. All electrical controls (pump electrical cord, switches, etc.) shall comply with the National Electrical Code – 1981, Class 1, Group D, Division 1 locations. All openings around the cables or cords entering the tank shall be sealed.~~

(iii) The minimum effluent level shall achieve complete submergence of the pump.

(iv) Dosed systems using a siphon shall have a dose counter installed to check for continued function of the siphon.

~~(formerly Section 12)~~ (c) Holding tanks

(i) Holding tanks shall meet the same material requirements as septic tanks. Holding tanks shall have a twenty (20)-inch minimum diameter access opening. A riser shall be brought to ground surface from the access opening.

~~(formerly 12(a))~~ (ii) ~~Uses~~. Holding tanks shall not be used for residential systems when other alternative systems are available, except on a temporary, seasonal or intermittent basis, or when used to correct a failed ~~subsurface disposal~~ soil absorption system when other alternatives are unavailable.~~ Use of holding tanks for new construction is prohibited.~~

~~(formerly 12(b)) Acceptance. A letter of verification from the local receiving agency, denoting acceptance of the wastewater generated shall be submitted with the plans.~~

~~(formerly 12(c))~~ (iii) ~~Location. The location and construction of holding tanks shall meet the requirements for septic tanks in Sections 4(a)(i) and Section 8(a)(i) respectively.~~ Holding tanks must be located in an area readily accessible to the pump truck and where the tank itself will not float due to a high groundwater. If seasonal high groundwater may be present, the tank shall be properly anchored.

~~(formerly 12(a))~~ (iv) ~~Where holding tanks are allowed, they shall be sized on the basis of seven days storage at the flow rate determined from Table 1.~~The minimum liquid volume shall be the greater of 1,000 gallons or seven (7) days storage based upon flow rate determined from Section 5.

~~(formerly 12(d)) Vent. Each holding tank shall be provided with a two inch minimum diameter vent ending in a return elbow above final grade. The vent shall terminate at least 30 feet from any door, window, or fresh air inlet. The vent should be screened.~~

~~(formerly 12(e))~~ (v) ~~Alarm.~~ All holding tanks shall be equipped with a high water ~~level~~ alarm. The device shall be an audible alarm or an indoor illuminated alarm or both. The ~~alarm level shall be placed~~ device shall be installed so that the alarm is triggered when the water level reaches ~~at~~ 3/4 of the ~~depth of the~~ tank capacity.

~~(formerly 12(f)) Pumpout. A six inch pump out pipe which extends to the surface shall be provided. It shall be capped at all times.~~

(vi) A design package for holding tanks is provided online at the Division's website to assist the applicant in submitting a completed application for coverage under the general permit for small wastewater systems. The worksheet and calculations were prepared by a registered professional engineer employed by the Wyoming Department of Environmental Quality, Water Quality Division. The general design requirements stated in this section are incorporated into the worksheets such that by properly completing the forms and installing the components, the system will comply with these requirements.

~~(formerly 8(c))~~(d) Grease Interceptors ~~- grease, oil, silt and sand.~~

~~(formerly 8(c)(i))~~ (i) ~~When required. Liquid wastes containing grease, oil, or silt and sand~~ A commercial or institutional food preparation facility with a waste stream containing fat, oil, and grease (FOG) in excess of 25 mg/L shall ~~provide~~ install an exterior grease interceptor or a device approved by the delegated health department or county ~~before the septic tank. Waste streams from residential living units are exempt from this requirement.~~ Facilities that typically have waste streams high in FOG are, but not limited to, restaurants, cafeterias, slaughterhouses, and institutional kitchens.

~~(formerly 8(c)(ii))~~ (ii) ~~Material. The interceptor shall meet the material requirements of Section 8(a)(i).~~ Waste streams high in FOG shall be plumbed separately and directly to a grease interceptor prior to the waste treatment process.

(iii) Waste streams from sanitary facilities such as bathrooms, toilets, urinals, or other similar fixtures shall not be discharged into the grease interceptor. These sources must be connected at least four to six (4-6) feet downstream of the grease interceptor's discharge. The design shall prevent any backflow from the sanitary sources into the grease interceptor.

(iv) Only one source facility per grease interceptor shall be allowed.

~~(formerly 8(c)(v)) Access. The access shall meet the requirements of Section 8(a)(iv).~~

~~(formerly 8(c)(vi))~~ (v) ~~Location.~~Grease interceptors shall be located so that they are easily accessible for inspection, cleaning, and removal of the collected wastes.

~~Interceptors shall be placed as close as practical to the fixture it serves. The wastewater from fixtures not producing grease, oil, or sand and silt shall bypass the interceptor.~~ The interceptor shall not be closer than fifteen (15) feet from the last discharging fixture and no further away than thirty-five (35) feet.

~~(formerly 8(c)(iv))~~ (vi) ~~Configuration.~~ Grease ~~a~~ interceptors shall have ~~a minimum~~ at least ~~of~~ two (2) compartments with ~~the first compartment having at least 50 percent of the total required volume~~ a 20-inch minimum diameter access opening for each compartment for cleanout. ~~Each compartment shall be vented.~~ Each access opening shall have a riser brought to the surface and have a sealed lid that is rated for any anticipated load. There shall be a means provided to sample the effluent.

(vii) There shall be no internal cleanout tees or bypasses.

(viii) The inlet and outlet of the grease interceptor shall be vented. The vent pipe shall be at least two (2) inches in diameter. The inlet and outlet vents shall not be interconnected.

(ix) The outlet pipe invert shall be no more than two (2) inches lower than the inlet invert.

(x) The dividing wall between compartments shall be the same height as the other walls and the cover should contact the top of the dividing wall. If the partition/dividing wall does not contact the cover, the outlet tee or baffle shall extend below the liquid level, 40-50% of the total liquid depth.

(xi) The effluent from each compartment shall be drawn from the bottom of a riser pipe that terminates at least eighteen (18) inches below the inlet pipe invert of that same compartment.

(xii) Grease interceptors shall be accessible during normal business hours without interrupting normal business operations.

(xiii) Grease interceptors shall be installed in accordance with the manufacturer's instructions and applicable requirements of this section. A copy of the manufacturer's instructions shall be submitted with every permit to construct application submitted to DEQ/WQD.

~~(formerly 8(c)(iii))~~ (xiv) Grease interceptors shall be sized ~~using one of the~~ according to the following ~~formulas~~:

~~**Commercial kitchens (grease, garbage)**~~

~~Number of meals per peak hour~~	~~X~~	~~Waste Flow rate*~~	~~X~~	~~Retention time**~~	~~X~~	~~Storage factor***~~	=	~~Interceptor size(liquid capacity)~~

~~**Car wash (sand, silt, oil)**~~

~~Total washer equipment flow rate (GPM)~~	~~X~~	~~60~~	~~X~~	~~Retention time~~	~~X~~	~~Storage factor~~	=	~~Interceptor size (liquid capacity)~~

~~**Laundries (grease, lint, silt)**~~

~~Number of 2 cycles machines X per hour~~	~~X~~	~~Waste flow rate~~	~~X~~	~~Retention time~~	~~X~~	~~Storage factor~~	=	~~Interceptor size (liquid capacity~~

~~*Waste flow rate – see Table 1.~~

~~** Retention Times~~

~~Commercial kitchen waste:~~	
~~Dishwasher and/or disposal~~	~~2.5 hours~~
~~Single service kitchen:~~	
~~Single serving with disposal~~	~~1.5 hours~~
~~Car washers~~	~~2.0 hours~~
~~Laundries~~	~~2.0 hours~~

~~***Storage Factors~~

~~Fully equipped commercial kitchen~~	~~8 hr. operation: 1~~ ~~16 hr. operation: 2~~ ~~24 hr. operation: 3~~
~~Single service kitchen~~	~~1.5~~
~~Carwashers~~	~~self-serve: 1.5~~ ~~employee operated: 2~~
~~Laundries~~	~~1.5 (allows for rock filter)~~

~~Commercial~~ Kitchens (grease, garbage)

Number of meals per peak hour	**X**	Waste Flow rate*	**X**	Retention time**	**X**	Storage factor***	=	Interceptor size (liquid capacity)

*Waste flow rate – see Table 2.

**Retention times

Kitchen waste:	
Dishwasher and/or disposal	2.5 hours
Single service kitchen:	
Single serving with disposal	1.5 hours

***Storage factors

Fully equipped commercial kitchen	8 hr. operation: 1 16 hr. operation: 2 24 hr. operation: 3
Single service kitchen:	1.5

(A) The minimum volume shall not be less than 750 gallons

(e) Other Interceptors

(i) Interceptors are required for oil, grease, sand and other substances harmful or hazardous to the building drainage system, or the small wastewater treatment system.

(A) Laundries

(I) Commercial laundries, laundromats, and dry-cleaners shall be equipped with an interceptor in order to reduce the quantity of lint and silt that enter the collection system.

(II) The system must be of adequate size and design to allow for cool-down of wastewater so that separation can be more readily achieved.

(III) The interceptor must be installed with a wire basket or similar device, removable for cleaning, that prevents passage into the drainage system of solids ½ inch (12.7 mm) or larger in size, string, rags, buttons, or other materials that are detrimental to the waste treatment system.

(IV) Sizing must be in accordance with the following formula:

Laundries (grease, lint, silt)

Total gallons per cycle	**X**	Cycles per hour	**X**	Retention time*	**X**	Storage factor**	=	Interceptor

*Retention times

Institutional laundries	2.5 hours
Standard commercial laundry	2.0 hours
Light commercial laundry	1.5 hours

**Storage factors

8 hours of operation	1.0
12 or more hours of operation	1.5

(B) Car Washes

(I) Where automobiles are washed (including detail shops utilizing hand- wash practices), separators shall have a minimum capacity of 1000 gallons for the first bay, with an additional 500 gallons of capacity for every other bay.

(II) Additionally, wash racks must be constructed to eliminate or minimize the impact of run-off from rain/storm events. Minimum requirements are roofed structures with at least two walls and appropriate grading to prevent stormwater infiltration into the sanitary sewer.

(III) An effluent sampling point is required.

(f) Abandonment of Septic and Holding Tanks

The following is the procedure to abandon septic tanks and holding tanks when the system is upgraded, equipment replacement is necessary, or central sewer lines are made available.

(i) The abandoned tank should be pumped and the septage hauled to a licensed facility approved to receive the waste or the septage pumped into the newly constructed septic or holding tank. Discharging to a central sewer requires coordination with, and the approval of, the owner/operator of the sewer system.

(ii) Once the abandoned tank is empty, it should be removed and the excavation backfilled. As an alternative to removing the tank, the access covers can be removed; the bottom drilled or broken up sufficient to drain; and the tank filled with native soil, pit run, or sand.

(iii) If the abandoned tank is part of a Class V UIC facility, the abandonment must also be in compliance with Chapter ~~16~~ 27, Section ~~12~~ 19.

Section 11. ~~Evapotranspiration Beds~~ Effluent Distribution Devices.

~~Formerly Section 11(a) Sizing. The area of evapotranspiration beds shall be determined using the following formula:~~

$$\text{AREA} = 586 \left[\frac{Q}{\text{PET} - P} \right]$$

~~where:~~

~~Area = Area of the evapotranspiration bed at the ground surface in square feet~~

~~Q = Average daily sewage flow, gallons per day, (0.6 times the flow determined from Table 1) PET = Potential evapotranspiration rate in inches per year~~

~~P = Annual precipitation rate in inches per year.~~

~~Formerly 11 (b) Construction.~~

~~Formerly 11 (b) (i) If an impervious barrier is necessary for the protection of groundwater it shall be installed between the evapotranspiration bed and the native soil. It shall~~

~~be a polyvinyl chloride sheet with a minimum thickness of 20 mils or equivalent. A 3 inch layer of sand shall be placed under and over the liner.~~

~~Formerly 11 (b) (ii) The bottom 12 inches of the bed shall be filled with clean stone 1/2 - 2 1/2 inches in~~

~~Formerly 11 (b) (iii) Perforated pipe complying with Section 10(a)(v) shall be placed in the stone.~~

~~Formerly 11 (b) (iv) Four inches of pea gravel (less than 1/4 inch in diameter) or durable filter cloth shall be placed over the stone.~~

~~Formerly 11 (b)(v) A 24 inch uniform sand layer in the size range of D50 (0.10mm) shall be placed on top of the pea gravel or filter cloth.~~

~~Formerly 11 (b) (vi) A six inch layer of sandy topsoil shall be placed on top of the evapotranspiration bed.~~

~~Formerly 11 (b) (vii) The bed should be vegetated with small shrubs and/or grasses such as fescue, brome, or alfalfa.~~

~~Formerly 11 (b) (viii) The evapotranspiration bed shall be placed at a depth sufficient to prevent surcharging of the septic tank.~~

Distribution boxes and flow divider tees are suitable for level or nearly level ground and are installed before the soil absorption system with the goal of splitting flows equally between soil absorption system laterals. Drop boxes are suitable for sloping ground and are installed to achieve serial loading.

(a) Distribution Boxes

~~(formerly 10(a)((vii)~~(i) ~~Distribution box. If a~~ The distribution box ~~is used, it~~ shall be installed ~~to provide uniform distribution of the wastewater~~ on a level, stable base to ensure against tilting or settling ~~and shall be placed so that it will not be subject to~~ and to minimize movement from frost heave.

(ii) Boxes shall be watertight and constructed of concrete or other durable material.

(iii) Boxes shall be designed to accommodate the inlet pipe and the necessary distribution lines. The inlet piping to the distribution box shall be at least one (1) inch above the outlet pipes and all pipes shall have a watertight connection to the distribution box.

(iv) The box shall be protected against freezing and made accessible for observation and maintenance.

(v) Boxes shall have flow equalizers installed on each outflow.

(b) Flow divider tees may be used in place of distribution boxes.

(c) Drop boxes are suitable for sloping ground and are installed to achieve serial loading. The drop boxes shall meet the requirements in paragraphs (a)(i through v) of this section.

Section 12. ~~Holding Tanks~~ Standard Soil Absorption Systems.

~~(formerly 10(a)~~ (a) General Design ~~r~~Requirements:

(i) All soil absorption systems shall be designed in such a manner that the effluent is effectively filtered and retained below ground surface. The absorption surface accepts, treats, and disperses wastewater as it percolates through the soil.

~~(formerly 10(a)(ii)~~(ii) ~~Protection. Effort shall be made to protect the natural absorptive properties of the soil. Soil absorption systems shall not be installed during adverse weather or soil conditions. Rain, severely cold temperatures, or excessively moist soils are considered adverse weather or soil conditions. All smeared or compacted surfaces shall be restored to their original infiltrative conditions prior to placement of the stone.~~ Soil absorption systems shall not be excavated when the soil is wet enough to smear or compact easily. Open soil absorption system excavations shall be protected from surface runoff to prevent the entrance of silt and debris. All smeared or compacted surfaces shall be raked to a depth of one (1) inch, and loose material removed before filter or filler material is placed in the soil absorption system excavation.

~~(formerly 10(a)(iii) Runoff. Surface runoff shall be diverted around or away from all soil absorption systems.~~

(iii) Soil absorption systems shall be designed to approximately follow the ground surface contours so that variation in excavation depths will be minimized. The trenches may be installed at different elevations, but the bottom of each individual trench shall be level throughout its length.

~~(formerly 10(a)(ix))~~ (iv) ~~Earth cover.~~ Shallow soil absorption system depths are encouraged to promote treatment and evapotranspiration. ~~A minimum of 12 inches of earth shall be placed over the absorption system stone.~~ The minimum soil cover depth over the soil absorption system is one (1) foot. The maximum depth to the bottom absorption surface of a soil absorption system is five (5) feet. ~~The earth shall be permeable soil that will allow aeration of the system and will support the growth of grass. The earth cover shall be graded to insure that water will not pond on the surface.~~ Finished grading shall prevent ponding and promote surface water runoff.

(v) Pipes, chambers or other products shall be bedded on firm, stable material. Heavy equipment shall not be driven in or over soil absorption systems during construction or backfilling.

(vi) Standard trenches refer to perforated pipe embedded in aggregate-filled trenches that shall conform to the following:

~~(formerly 10(a)v))~~(A) ~~Gravity pipe. All plastic gravity absorption system~~ The perforated pipe~~s~~ shall have a minimum diameter of ~~four~~ 4 inches~~ and shall conform to ASTM standard D2729.~~ Suitable pipe materials include: ASTM D-2729-11 PVC, ASTM D-3034-08 PVC, Schedule 40 PVC ASTM d1784-11, and ASTM F810-07 PE. ~~Piping in all horizontally constructed absorption systems shall be layed with the holes centered around the vertical axis at the bottom of the pipe. All field tile pipe shall be spaced 1/4 inch apart. Piping in horizontally constructed absorption systems shall have a maximum slope of three inches per 100 feet.~~

~~(formerly 10(a)(vi)) Pressure pipe. All pressure distribution piping shall be designed to withstand the anticipated pressures with a safety factor of two, provide uniform application of the wastewater, and have non-clogging orifices.~~

~~(formerly 10(a)(iv))~~ (B) ~~Stone. Soil absorption system stone~~ The aggregate shall be crushed rock, gravel or other acceptable, durable and inert material that is free of fines,~~sized~~ and has an effective diameter between 1/2-inch to 2 1/2inches.

~~(formerly 10(a)(viii))~~(C) ~~Stone cover. A suitable cover such as untreated building paper, filter cloth, or straw shall be placed over the stone prior to backfilling the system.~~ Prior to backfilling, the aggregate shall be covered throughout with a woven/non-woven geotextile material or a three (3) inch layer of straw.

~~((formerly 10(a)(iv))~~ (D) ~~At least two inches of stone shall be placed over the distribution pipe, and at least six inches of stone shall be placed under and beside the distribution piping. A minimum of 12 inches of stone shall be placed between a seepage pit wall and structural liner. The stone shall be free from sand, silt, and clay.~~ Aggregate shall extend the full width and length of the soil absorption system to a depth of at least twelve (12) inches with at least six (6) inches of drain gravel under the distribution pipe and at least two (2) inches over the distribution pipe.

(E) Maximum width of trench excavation is three (3) feet.

~~(formerly 10(d))~~(F) ~~Special requirements for trench systems. A M~~inimum ~~separation~~ spacing of trenches(wall to wall) ~~of~~ is ~~three~~ (3) ~~feet or a horizontal distance equal to 1.25 times the vertical depth of the trenches, whichever is greater, of undisturbed soil shall be maintained between adjacent trench sidewalls.~~ Trench spacing shall be increased to nine (9) feet when the area between each trench is considered as reserve area. For clay loam soils that have percolation rates greater than 60 min/in., the nine (9) foot spacing shall also be required but it is not considered as reserve area.

~~(formerly 10(f))~~(vii) ~~Special requirement for bed systems. The distribution system piping shall be spaced no more than 10 feet apart.~~ Standard beds shall conform to the same pipe and aggregate requirements for trenches as found in subparagraphs (vi)(A through D) of this section. Standard beds shall also conform to the following:

~~(formerly 10(a)(x))~~ (A) ~~Levelness.~~ The soils shall have percolation rates less than 60 minutes per inch (5-60 mpi). The bottom of ~~soil absorption systems and each segment of a sidehill system~~ the bed ~~shall~~ must be level, therefore the site shall be relatively flat, sloping no more than one (1) foot from the highest to the lowest point in the installation area.

(B) Distribution laterals within a bed must be spaced on not greater than six (6) feet centers. Sidewalls shall not be more than three (3) feet from a distribution lateral.

(C) Beds must not be wider than twenty-five (25) feet if gravity distribution is used. Multiple beds must be spaced at one-half the bed width.

(D) Rubber tired vehicles must not be driven on the bottom surface of any bed excavation.

(viii) Chambered trenches, when used in lieu of perforated pipe and aggregate, shall be installed in conformance with the manufacturer recommendations. No cracked, weakened, modified, or otherwise damaged chamber units shall be used in any installation.

(A) All chambers shall be an open, arch-shaped structure of durable, non-degradable design, suitable for distribution of effluent without filter material.

(B) All chamber endplates shall be designed so that the bottom elevation of the inlet pipe is at least six (6) inches from the bottom of the chamber.

(C) Inlet and outlet effluent sewer pipes shall enter and exit the chamber endplates. Inspection ports shall be installed at all outlet effluent sewer pipes.

(D) All chambers shall have a splash plate under the inlet pipe or another design feature to avoid unnecessary channeling into the trench bottom.

(E) Maximum width of trench excavation is three (3) feet.

(F) Minimum spacing of trenches (wall to wall) is three (3) feet. Trench spacing shall be increased to nine (9) feet when the area between each trench is considered as reserve area. For clay loam soils that have percolation rates more than 60 min/in., the nine (9) foot spacing shall also be required but it is not considered as reserve area.

(ix) Chambered beds shall conform to the same requirements for chambered trenches as found in subparagraphs (viii)(A through D) of this section. Aggregate, as specified in subparagraph (vi)(B) of this section, or native soil shall be used to fill the space between the chambers.

~~(formerly 10(e)~~(x) ~~Special requirements for serial sidehill trench or bed systems.~~ Serial Sidehill Trench:

~~(formerly 10(e)(i))~~ (A) ~~Separation.~~ A minimum of ~~three~~ six (6) feet of undisturbed soil shall be maintained between adjacent trench or bed side walls.

~~(formerly 10(e)(ii))~~(B) ~~Levelness.~~ The bottom of each serial trench or bed system shall be level.

~~(formerly 10(e)(iii))~~(C) ~~Overflow.~~ The overflow pipe between serial soil absorption systems shall be set no higher than the mid-point of the upstream distribution pipe. The overflow pipe shall not be perforated.

~~(formerly 10(b) Special requirements for seepage pits. If a structural lining is needed to support stone in a seepage pit, it shall be constructed of durable material not subject to excessive corrosion or decay and structurally capable of supporting the loads to which it will be subjected. The lining shall be perforated or otherwise designed to allow the passage of wastewater. Seepage pits shall be separated by a minimum distance equal to 3 times their diameter.~~

(b) A design package for standard soil absorption systems is provided online at the Division's website to assist the applicant in submitting a completed application for coverage under the general permit for small wastewater systems. The worksheet and calculations were prepared by a registered professional engineer employed by the Wyoming Department of Environmental Quality, Water Quality Division. The general design requirements stated in this section are incorporated into the worksheets such that by properly completing the forms and installing the components, the system will comply with these requirements.

Section 13. ~~**Privies**~~ **Pressure Distribution Systems.**

(a) General Design Requirements:

(i) The basic elements of a pressure distribution system include a dosing tank, filter, and a means to deliver specified doses to a small diameter pipe network within a soil absorption system. Pressure distribution is required for mound systems or for bed systems with a width greater than twenty-five (25) feet.

(ii) Pumps must be sized to match the distribution system curve or demand. Pumps shall be designed for sewage pumping applications and be accessible from the ground surface.

(iii) The control system for the pump and dosing tank shall, at a minimum, consist of a "pump off" switch, a "pump on" switch, a "high liquid alarm".

(A) All electrical connections must be made outside of the chamber in either an approved weatherproof box or an explosion-proof junction box.

(B) The wiring from the junction box to the control box must pass through a sealing fitting to prevent corrosive gases from entering the control panel.

(C) All wires must be contained in solid conduit from the dosing chamber to the control box.

(iv) The pressure transport piping between the tank and the soil absorption system shall be designed to prevent freezing.

(A) The ends of lateral piping shall be constructed with long sweep elbows or an equivalent method to bring the end of the pipe to finished grade. The ends of the pipe shall be provided with threaded plugs, caps, or other devices to allow for access and flushing of the lateral.

(B) All joints in the manifold, lateral piping, and fittings shall be solvent-welded using the appropriate joint compound for the pipe material. Pressure transport piping may be solvent-welded or flexible gasket jointed.

(C) Where automatic siphons or other devices are used, they shall be designed to empty the dosing tank in less than ten (10) minutes.

(v) The pressure distribution system shall have a combination of at least three (3) vertical feet of filter sand and/or unsaturated native soil above the high groundwater level. The filter sand shall conform to ASTM C-33, with less than 2% passing the #200 sieve.

(b) A design package for pressure distribution systems is provided online at the Division's website to assist the applicant in submitting a completed application for coverage under the general permit for small wastewater systems. The worksheet and calculations were prepared by a registered professional engineer employed by the Wyoming Department of Environmental Quality, Water Quality Division. The general design requirements stated in this section are incorporated into the worksheets such that by properly completing the forms and installing the components, the system will comply with these requirements.

Section 14. ~~Chemical Toilets~~ Sand Mound Systems.

~~(formerly 14(a) General requirements. Chemical toilets shall only be used in the containment of body wastes. These requirements apply only to the use of chemical toilets for permanent structures.~~

~~(formerly 14(b) Greywater. If indoor plumbing is installed, a separate greywater disposal is required and shall meet the requirements of Section 3 through 12. The minimum design flows for greywater shall be obtained from Table 1 with a reduction of 33 percent allowed for the elimination of blackwater wastes.~~

~~(formerly 14(c) Disposal. All chemical toilet wastes shall be disposed of at an approved wastewater facility. A letter of verification from the receiving agency, denoting acceptance of the wastewater generated shall be submitted with the plans. These wastes shall not be discharged into a soil absorption system.~~

~~(formerly 14(d) Construction. Chemical toilets shall be constructed and installed to resist breakage or damage from routine usage. Outdoor chemical toilets shall be adequately stabilized and secured to prevent overturning. Materials used shall be resistant to the sewage wastes and the chemicals encountered. The holding compartment of the toilet shall be~~

~~constructed to prevent accessibility to the public and to disease transmitting vectors.~~

~~(formerly 14(e) Additives. No chemical or biological additive shall be placed in the toilet that may adversely affect the operation of a sewage treatment facility where the toilet waste will ultimately be disposed or that may adversely impact the quality of the groundwater as specified in Chapter VIII, "Quality Standards for Groundwater of Wyoming."~~

The sand mound consists of a sand fill, an aggregate bed and a soil cap.

(a) Selection Criteria:

The high groundwater level, bedrock or impervious clay layer is less than four (4) feet below the bottom of the soil absorption system excavation.

(b) Site Requirements:

(i) A minimum of one (1) foot of vertical separation of the native soil is required between the bottom of the sand fill and the top of the high groundwater level, any restrictive layer, or any highly permeable material.

(ii) The percolation rate of the native soil at the interface of the sand fill shall be greater than five (5) and less than sixty (60) minutes per inch (5-60 mpi). The percolation shall be measured in the top twelve (12) inches of native soil.

(formerly 10~~(c)~~) (c) ~~Special requirements for mounded systems.~~ General Design Requirements:

(formerly 10(c)~~(i)) Sizing~~ (i) Sand Layer

~~(A) The infiltrative surface between the stone and the fill material shall be sized based on the flow rate as determined by Section 3 and the allowable loading rate as determined by Figure 7 of Section 7 for the percolation rate of the fill. The total infiltrative surface is the sum of the sidewall and bottom areas of the stone - soil interface below the distribution pipe.~~

~~(B) The interface area between the fill soil and the native soil shall be sized based on the infiltration rate of the native soil as determined by Figure 7 of Section 38 but shall not be smaller than a system designed to the requirements of subsection (ii) below.~~

(A) Filter sand shall conform to ASTM C-33, with less than 2% passing the #200 sieve.

(B) The minimum depth of sand below the aggregate bed surface shall be one (1) foot.

C) The sand mound shall have a combination of at least four (4) vertical

feet of filter sand and unsaturated native soil above the high groundwater level.

(I) For sand mounds using pressure distribution systems, the depth to high groundwater shall be three (3) feet below the bottom of the absorption surface if the percolation rate of the soil is five (5) minutes per inch or greater (5-60 mpi).

(D) The top of the sand layer under the aggregate bed shall be level in all directions.

(E) The sand layer shall fill around the perimeter of and to the top of the aggregate bed.

(formerly 10(c)~~(ii)~~((F) ~~Grade. The finished grade shall extend at least three feet horizontally beyond the stone and then be sloped to the parent soil at a grade no steeper than four horizontal to one vertical.~~ The slope of all sides shall be three (3) horizontal to one (1) vertical or flatter.

(formerly 10(c)~~(i)(B))~~(G) The ~~interface~~ infiltration area ~~between the fill soil and the native soil~~ ,which is the bottom of the sand fill, shall be ~~sized~~ calculated ~~based on the infiltration rate of the native soil as determined by Figure 7 of Section 38~~ by dividing the design flowrates (gpd) from Table 1 or Table 2 by the loading rate (gpd/ft^2) found in Table 5.~~but shall not be smaller than a system designed to the requirements of subsection (ii) below.~~

(ii) Aggregate Bed

(A) The aggregate shall be crushed rock, gravel or other acceptable, durable and inert material that is free from fines, and has an effective diameter between one-half (1/2) inch and two and one half (2 ½) inch.

(B) The aggregate bed depth shall not be less than nine (9) inches with a minimum of six (6) inches of clean aggregate placed below the distribution pipe and two (2) inches above the distribution pipe. The aggregate shall be covered with an approved geotextile material after installation and testing of the pressure distribution system.

(C) The design shall be a long, narrow bed design with a maximum width of twenty-five (25) feet.

(D) The infiltration area, which is the bottom of the aggregate bed, shall be calculated by dividing the design flowrates (gpd) from Table 1 and Table 2 by the loading rate of 0.8 gpd/ft^2.

(iii) Soil Cover

(A) The soil cap shall be constructed of a sandy loam, loamy sand, or silt loam. The depth of the soil cap shall be at least six (6) inches at the edges to twelve (12) inches at the center. The slope of all sides shall be three (3) horizontal to one (1) vertical or flatter.

(formerly 10(c)~~(iii)~~)(B) ~~Fill soil. The fill soil that is~~ A layer of top soil at least six (6) inches thick shall be placed ~~between the native soil and the stone~~ over the entire sand mound area. ~~shall have a minimum percolation rate of five minutes per inch. Topsoil shall be placed over the mound to promote vegetative cover.~~ The sand mound should be planted with vegetation that does not require watering and will not establish deep roots. Native grasses are commonly used.

~~(formerly 10(c)(iv)) Preparation. All trees, roots, and other organic matter shall be removed from the area to be occupied by the mound.~~

(d) A design package for sand mound systems is provided online at the Division's website to assist the applicant in submitting a completed application for coverage under the general permit for small wastewater systems. The worksheet and calculations were prepared by a registered professional engineer employed by the Wyoming Department of Environmental Quality, Water Quality Division. The general design requirements stated in this section are incorporated into the worksheets such that by properly completing the forms and installing the components, the system will comply with these requirements.

Section 15. ~~Small Non-discharging Waste Stabilization Ponds~~ Small Wastewater Lagoons.

(a) ~~General requirements.~~ Selection Criteria:

(i) ~~The use of this section for small nondischarging waste stabilization ponds applies only to those systems defined as small wastewater systems. All other treatment systems shall meet the requirements of Part B or Part C of Chapter XI as applicable.~~ Lagoons shall only be considered in areas of Wyoming where the annual evaporation exceeds the annual precipitation during the active use of the lagoon.

(ii) ~~Non-discharging waste stabilization ponds~~ Lagoons shall only be ~~constructed in soils~~ allowed ~~where~~ when the percolation rate exceeds sixty (60) minutes per inch and the soil ~~is at least 1 foot thick on both the sides and bottom of the pond~~ extends vertically down at least two (2) feet from the bottom of the lagoon to the seasonal high groundwater table or bedrock formations. ~~If the 60 minute per inch percolation rate cannot be obtained, a sufficient clay shall be incorporated into the top foot of soil until the 60 minute per inch percolation rate is reached. An impermeable artificial liner of 20 mils in thickness may be substituted.~~

(iii) A lagoon shall not be constructed within the 100 year floodplain.

(b) General Design Requirements:

~~(formerly 15(b))~~ (i) ~~Isolation. The isolation distances shall meet the requirements for absorption systems as specified in Section 4(a)(i).~~ Beyond the horizontal setback distances

requirements specified in Section 7(g) of this rule, the lagoon shall not be placed within one hundred (100) feet of the owner's property line.

(ii) The use of a septic tank that meets the specifications in Section 9 of this rule shall be required before the small wastewater lagoon.

(iii) The lagoon shall be located and constructed so it will not receive surface runoff water.

(iv) The slope of the lagoon site shall not exceed five percent (5%).

(v) The lagoon site must be located in an area of maximum exposure to sun and wind.

(vi) The lagoon shall be designed for complete retention.

~~(formerly 15(d)) Sizing.~~ (vii) The area of the lagoon shall be calculated based on the following formula.

$$A = \frac{584\ x\ Q}{(365\ x\ S) + (E - P)}$$ ~~x 1.3~~

A = Area of the lagoon (in square feet) at the maximum operating depth of 5 ~~foot~~ feet ~~water level in square feet~~

Q = Average daily sewage flow, gallons per day. ~~(0.6 times the flow determined from Table 1)~~ (Multiply values from Table 1 or 2 by 0.6 to get average daily flow.)

E = Average annual lake evaporation ~~rate~~ in inches per year. (Note: lake evaporation is less than pan evaporation; lake evaporation equals pan evaporation times a pan coefficient of 0.7)

P = Average annual precipitation rate in inches per year.

S = ~~Soil permeability in inches per day "S" cannot be greater than 0.25 inches per day "S" shall equal zero for an artificial liner or for bedrock~~ Seepage rate in decimal form, in inches per day.

~~(formerly 15(e)) Construction requirements.~~

~~(formerly 15(e)(i))~~(viii) The slopes of the ~~inside~~ dikes shall not be steeper than three ~~(3)~~ horizontal to one(1) vertical ~~nor flatter than four horizontal to one vertical. The slopes of the outside dikes shall not be steeper than three horizontal to one vertical and shall not allow surface runoff to enter the pond. (formerly 15(e)(iv))~~The minimum ~~top~~ width of the top of the dike shall be ~~eight~~ four (4) feet.

~~(formerly 15(e)(iii))~~ (ix) All fill ~~material~~ shall consist of impervious material that is well compacted and free of rocks, frozen soil, or other large material.

(x) ~~(formerly 15(d)(ii)) A~~ The minimum ~~water level~~ operating depth ~~of at least two feet~~ shall be two (2) feet ~~maintained in the pond at all times, including start-up.~~ ~~(formerly~~

~~15(d)(iii)) A minimum free board of two feet shall be provided between the lowest embankment berm and the maximum water level. The maximum water level shall not be less than five feet.~~The dikes shall provide a minimum freeboard of two (2) feet.

~~(formerly 15(e)(ii))~~ (xi) ~~All organic material and debris shall be removed from the pond site prior to construction.~~ The floor of the lagoon shall be level and maintained free of all vegetation.

(xii) The influent line into the lagoon must discharge near the center.

(xiii) A cleanout or manhole shall be provided in the influent line near the dike.

(xiv) The area around the small wastewater lagoon shall be fenced to preclude the entrance of livestock, pets, and humans. The fence shall be equipped with a locking gate. The gate shall have a sign indicating "NO TRESPASSING – WASTEWATER LAGOON".

(c) A design package for a small wastewater lagoons is provided online at the Division's website to assist the applicant in submitting a completed application for coverage under the general permit for small wastewater systems. The worksheet and calculations were prepared by a registered professional engineer employed by the Wyoming Department of Environmental Quality, Water Quality Division. The general design requirements stated in this section are incorporated into the worksheets such that by properly completing the forms and installing the components, the system will comply with these requirements.

~~(formerly 15(c)) Groundwater protection and bedrock or impermeable soil separation.~~

~~(formerly 15(c)(i)) For single family homes, the depth to seasonally high groundwater shall be at least four feet from the bottom of pond.~~

~~(formerly 15(c) (ii))~~ ~~For all "small wastewater systems" other than single family homes, a minimum of three feet of unsaturated soil shall be maintained between the bottom of the pond and the estimated groundwater mound imposed on the seasonally high groundwater table. The height of the groundwater mound can be estimated from Figures 1-6, Section 5 in conjunction with the average daily sewage flow.~~

Section 16. ~~Commercial/Industrial Wastes~~ Privies or Outhouses.

Privies or outhouses that meet the requirements of this section are permitted by rule. A permit by rule requires the owner to submit the information contained in paragraph (g) of this section to the Wyoming Department of Environmental Quality, Water Quality Division prior to constructing or installing the facility. By submission of the required information, the owner acknowledges and certifies they will comply with the requirements contained in this section.

Pre-fabricated privies or outhouses shall be sealed, water-tight vaults and shall meet the following conditions.

~~(formerly 13(a))~~ ~~General requirements.~~

~~(formerly 13(a) (ii) If indoor plumbing is installed, the grey water disposal method shall meet the requirements of Section 3 through 12. The minimum design flow for grey water~~

~~shall be obtained from Table 1 with a reduction of 33 percent allowed for the elimination of black wastes.~~

~~(formerly 13(a) (iii) The privy shall consist of a vault and an outhouse building.~~

~~(formerly 13(b))~~(a) ~~Isolation.~~ The ~~isolation~~ horizontal setback distance requirements for sealed privies or outhouses shall comply with Section 7(g) for septic tanks.

~~(formerly 13(d)(ii))~~(b) The depth to seasonally high groundwater from the bottom of a water tight vault shall be sufficient to prevent floatation of the empty vault.

~~(formerly 13(c)) Soil exploration. Soil exploration to a minimum depth of 4 feet below the bottom of the proposed vault shall be made to provide information on subsoil condition.~~

(c) The vault must have sufficient capacity for the dwelling served, and must have at least 27 cubic feet or 200 gallons of capacity.

~~(formerly 13(a)(i))~~(d) ~~All privies shall be designed and constructed to prevent access by flies and rodents.~~ Privies or outhouses must be insect tight; must have a self-closing door; the privy or outhouse seat must include a cover; and all exterior openings, including vent openings, shall be screened.

~~(formerly 13(d)) Groundwater and bedrock separation.~~

~~(formerly 13(d)(i)) The depth to seasonally high groundwater and bedrock or impermeable soil shall be at least four feet from the bottom of an unlined vault.~~

~~(formerly 13(e)) Sizing. Vaults shall have a minimum capacity of 500 gallons per riser and shall be a minimum of 4.5 feet deep.~~

~~(formerly 13(f)) Construction.~~

~~(formerly 13(f)(i))The vault shall be constructed and installed to resist breakage and damage imposed by frost heave, uplift pressures from a fluctuating water table, loads imposed by the outhouse building and soils, and damage that may be caused by vandalism or rough cleaning procedures. The vault shall be constructed to prevent access by flies.~~

~~(formerly 13(f)(ii)) Materials used for vault construction shall be resistant to alkali attack, hydrogen sulfide gas, and other corrosive elements associated with decomposing waste.~~

~~(formerly 13(f)(iii)) A clean-out manhole shall be installed and shall have a minimum opening of 20 inches in the least dimension. The manhole shall be located outside of the outhouse building and be equipped with a tightfitting secure cover.~~

~~(formerly 13(f)(iv))~~(e) Privies or outhouses must be adequately vented. ~~The vault shall be ventilated to a point outside and above the outhouse building. The outhouse building shall have a set of vents installed near the floor on two opposite sides of the building and a roof vent that has a rain cap. All vents shall be screened.~~

~~(formerly 13(g)) Vault additives. No chemical or biological additive shall be placed in the~~

~~vault that may adversely effect the operation of a sewage treatment facility where the vault waste will ultimately be disposed or that may adversely impact the quality of the groundwater as specified in Chapter VIII, "Quality Standards for Groundwater of Wyoming".~~

(f) Privies or outhouses shall not be constructed within the 100 year floodplain.

(g) Owner's name, address, phone number, legal description of privy or outhouse (address, latitude/longitude, or ¼ ¼ section), and the date construction or installation will begin.

Section 17. Greywater Systems.

Greywater systems that meet the requirements of this section are permitted by rule. A permit by rule requires the owner to submit the information contained in paragraph (e) of this section to the Wyoming Department of Environmental Quality, Water Quality Division prior to constructing or installing the system. By submission of the required information, the owner acknowledges and certifies they will comply with the requirements contained in this section.

(a) Greywater Operation and Requirements

(i) Restrictions

(A) Greywater shall not leave the property on which it is generated. Ponding or runoff is prohibited.

(B) Greywater systems shall not be installed in a delineated floodplain.

(C) The volume of greywater shall not exceed an average of 2000 gallons per day.

(D) Greywater shall not come in direct contact with or adversely impact surface or groundwater.

(ii) Odor control of the greywater system shall meet the requirement of Wyoming DEQ Air Quality Regulations Chapter 2, Section 11.

(iii) If the greywater system is to be used during the winter, the greywater system shall be designed to prevent freezing.

(b) Estimating Greywater Discharge

(i) The greywater discharge for single family and multi-family dwellings shall be calculated by estimates of greywater use based on water use records, or the following procedure:

(A) The number of occupants of each dwelling unit shall be calculated as 2 occupants per bedroom.

(B) The estimated greywater flows of each occupant shall be calculated in gallons per day (gpd) as follows:

Showers, bathtubs and wash basins – 25 gpd/occupant

Laundry – 15 gpd/occupant

(ii) The total number of occupants shall be multiplied by the applicable estimated greywater discharge as provided above and the type of fixtures connected to the greywater system.

(c) Greywater System Configurations

(i) All greywater systems shall have a means to direct greywater to either the blackwater system or the greywater system.

(ii) Diverter valves shall not have the potential to allow backflow from the blackwater system into the greywater system.

(iii) Greywater used for surface irrigation should be disinfected. The disinfection should achieve a fecal coliform level of 200 cfu/100 mL or less.

(d) Setbacks

(i) A 30 foot buffer zone is required between the greywater application site and adjacent property lines and any public right-of-way. This buffer zone requirement may be met by the use of a subsurface drip irrigation system.

(ii) A 30 foot separation distance is required between greywater application sites and all surface waters.

(iii) A 100 foot separation distance is required between greywater application sites and all potable water supply wells.

(e) Owner's name, address, phone number, legal description of greywater system (address, latitude/longitude, or ¼ ¼ section), and the date construction or installation will begin.

Section 18. Operation and Maintenance.

(a) For any system that disposes of wastewater through land application or subsurface filtration, the owner shall not add any chemical or biochemical additive to the system that would adversely affect the quality of the groundwater as stated in the WDEQ Water Quality Rules & Regulations, Chapter 8.

(b) Septic tanks shall be pumped as needed to prevent solids carryover into the soil absorption system.

(c) Holding tanks and sealed vaults shall be pumped prior to reaching their maximum capacity. It is preferable that these types of tanks be pumped before the wastewater volume exceeds 75% of the tank's capacity.

(d) Any service provider that pumps septic tanks, holding tanks, or sealed vaults, shall dispose of the wastewater contents at a permitted wastewater treatment facility or in a manner approved by the Division or delegated authority.

(e) Damaged fittings and broken, crushed or plugged piping associated with any small wastewater system shall be replaced in a timely manner.

(f) Composting or non-discharging toilets where permitted shall have their waste disposed of at a permitted wastewater treatment facility or landfill, or in a manner approved by the Division or delegated authority.

Section 19. Commercial and Industrial Wastes and/or Domestic Wastes Greater Than 2000 Gallons per Day.

~~(formerly 16 (a))~~ (a) ~~General requirements. Those~~ Commercial/industrial wastewater systems or combination commercial/industrial and domestic wastewater systems are subject to applicable requirements listed in Section 1 through ~~12 and~~ 15 of this chapter, in addition to requirements in this section.

~~(formerly 16(b))~~ (b) ~~Hydrogeologic investigation.~~ If the wastewater is classified as, or determined to be hazardous and/or toxic and/or contain petroleum products, the applicant shall demonstrate to the administrator that any discharge or seepage from the wastewater facility will not cause a violation of the surface and/or groundwaters of the state in accordance with Chapter 1, "Quality Standards for Wyoming Surface Waters" and Chapter 8, "Quality Standards for Wyoming Groundwaters." Due to the wide variety of wastes, wastewater and site conditions, the latest available scientific information shall be used to demonstrate that violation will not occur.

~~(formerly 16(c))~~ (c) ~~Impact.~~ If the impact of the hazardous and/or toxic substance and/or petroleum products cannot be determined and mitigated, disposal of the wastewater using a soil absorption system shall be prohibited.

~~(formerly 16(d))~~ (d) ~~Pre-treatment.~~ Pre-treatment of the wastewater to remove the hazardous, ~~and/or~~ toxic, ~~substance(s)~~ and/or petroleum products shall be required prior to disposal if deemed necessary to protect the groundwater and surface water(s) of the state .

~~(formerly 4(a)(ii))~~ (e) ~~If the flow is greater than 2000 gpd but less than 10,000 gpd, the minimum isolation distances (in feet) shown in Table 3 shall be maintained.~~The minimum horizontal setback distances (in feet) shown in Table 7 shall be maintained for commercial and industrial wastes and/or wastes greater than 2000 gallons per day but less than 10,000 gallons per day.

~~(formerly Table 3)~~ **Table 7. Minimum Horizontal Setbacks for Commercial and Industrial Wastes in Feet[1]**

From	To Septic Tank Or Equivalent	To Absorption System
Wells (includes neighboring wells)	50	200
Public Water Supply Well	100[2]	500[2]
Property Lines	10	10
Foundation Wall (w/o drains)	5	10
Foundation Wall (with drains)	5	50
Potable Water Pipes	25	50
Septic Tank	N/A	10
~~Stream or~~ Surface ~~Body of~~ Water, Spring (including seasonal and intermittent)	50	100
Cisterns	50	50

[1] ~~(formerly 4(a)(iii))~~ For systems larger than 10,000 gallons per day, the isolation distance shall be determined by a hydrogeological study in accordance with ~~Section 15(b)~~ Section 17(b) of Chapter III, but shall not be less than those ~~in subsection two above~~ shown in Table 7.

[2] Wastewater systems that discharge to the same aquifer that supplies a public water supply well and are located within Zone 1 or 2 (Attenuation) of the public water supply well, as determined by *Wyoming Department of Environmental Quality Source Water Assessment Project (2004)* or as established in Section 2 of the *Wyoming Wellhead Protection Guidance Document (1997)*, shall provide additional treatment. These systems will be required to obtain an individual permit to construct and will require that a PE sign, stamp, and date the application, as stated in Section 2 of this chapter. The additional treatment shall be in accordance with Chapter III, Section 2(b)(ii). The treatment shall reduce the nitrates to less than 10 mg/L of NO_3 as N and provide 4-log removal of pathogens before the discharge leaves the property boundary of each small wastewater system.

APPENDIX A
Percolation Test Procedure

Section 1. Purpose

(a) Percolation tests are used to determine absorption system site suitability and to size the absorption system.

Section 2. Procedure

~~(formerly (a))~~ (a) ~~Location.~~General Requirements:

(i) Percolation tests shall not be conducted in test holes that extend into groundwater, bedrock, or frozen ground.

(ii) The percolation test shall be conducted only after the soil exploration pit has been dug and examined.

~~(formerly (a))~~ (iii)A minimum of three (3) percolation test holes are required.

~~(formerly (a))~~ (iv)The percolation test holes shall be spaced uniformly over the proposed soil absorption system site.

~~(formerly (b))~~ (b) Preparation.

~~(formerly (b))~~(i) A ~~four (4) inch to~~ twelve (12) inch diameter hole shall be dug or bored to the proposed depth of the soil absorption ~~field~~ system.

(ii) The walls shall be vertical, with the natural soil surface exposed without smearing.

(iii) ~~To expose a natural soil surface~~ The sides and bottom shall be ~~scraped~~ scarified with a sharp pointed instrument and the loose material shall be removed from the hole.

(iv) Two (2) inches of ~~Coarse sand or gravel~~ gravel or coarse sand shall be placed in the bottom of the hole to prevent it from scouring and sealing during water addition.

(c) Presoaking

~~(formerly (c))~~ (i) ~~Presoaking.~~ The purpose of presoaking is to have the water conditions in the soil reach a stable condition similar to that which exists during continual wastewater application. The minimum time of presoaking varies with soil conditions but must be sufficiently long so that the water seeps away at a constant rate. The following presoaking instructions are usually sufficient to obtain a constant rate.

~~(formerly (c)(i))~~ (A) ~~In sandy soils, place 12 inches of water in the hole~~ Fill each hole with clear water to a level at least eighteen (18) inches above the gravel or coarse sand ~~and allow it to seep away. Fill the hole again with 12 inches of water and if the water seeps away in ten minutes or less, it indicates that the soil is excessively permeable and~~

~~requirements in Section 5(d) of these regulations shall be followed.~~ If the eighteen (18) inches of water seeps away in eighteen (18) minutes or less, add eighteen (18) inches of water a second time. ~~If the water remains after ten minutes, additional saturation is necessary. Refer to Appendix A(c)(ii) below.~~. If the second filling of eighteen (18) inches of water seeps away in eighteen (18) minutes or less, this indicates the soil is sandy and is excessively permeable. The soil absorption system shall meet the requirements of Section 8 (c).

~~(formerly (c) (ii))~~ (B) ~~In other soils, maintain 12 inches of water in the hole for at least four hours.~~ If either the first or second fillings of eighteen (18) inches of water does not seep away in ninety (90) minutes, eighteen (18) inches of water must be maintained in the hole for at least four (4) hours to presoak the test hole. After the four (4) hours of water contact time~~, allow the soil to swell for~~ wait at least twelve (12) hours before starting the percolation rate measurement ~~as stated in Appendix A (d) below.~~

~~(formerly (d))~~ (d) Percolation Rate Measurement ~~The water level should be adjusted to six inches above the gravel initially and after each time interval measurement when necessary.~~

~~(formerly (i))~~(i) ~~In other soils, establish a fixed reference point and measure the drop in water level at constant intervals. The water level drop should be measured to the nearest 1/8 of an inch. The test may be terminated when the water drop is consistent for three consecutive measurements.~~ Fill each test hole with twelve (12) inches of water and allow the soil to rehydrate for 15 minutes prior to any measurements

(ii) Establish a fixed reference point to measure the incremental water level drop at constant time intervals. The water level drop should be measured to the nearest ⅛ of an inch and the minimum time interval is ten (10) minutes.

(iii) Refill the test hole to twelve (12) inches above the gravel before starting the measurements. Continue to measure the incremental water level drop at a constant time interval until a consistent incremental water level drop is achieved. A consistent water level drop is achieved when three (3) consecutive water level drops are within ⅛ inches of each other.

(iv) Before the water level drops below one (1) inch above the gravel, refill the test hole to twelve (12) inches and continue to measure the incremental water level drop.

~~(formerly d(ii))~~(v) The percolation rate ~~for each hole~~ is calculated ~~as follows~~ for each hole using the following formula:

Time Interval (Minutes)	=	Percolation Rate
Final Water Level Drop (inches)		(minutes/inch)

~~(formerly d(ii))~~ (vi) If only three to five percolation tests are performed, the design percolation rate for the absorption system is the slowest rate from all the holes tested. If six or more percolation tests are performed, the design percolation rate for the absorption system is the average of all the holes tested as determined by the above formula.

(e) The following information shall be recorded:

(i) Date(s) of test(s);

(ii) Location, diameter, and depth of each test hole;

(iii) Duration of presoak;

(iv) Time of day for beginning and end of each water-level drop interval;

(v) Each water-level drop measurement;

(vi) Calculated percolation rate;

(vii) Name and signature of person performing test;

(viii) Name of owner or project name; and

(ix) Certification that the percolation test was done in accordance with Wyoming Water Quality Rules and Regulations Chapter 25 Appendix A.

~~(Formerly Chapter 15, Appendix C)~~ APPENDIX B
~~General Statewide Permit~~
~~For~~ Land Application of Domestic Septage in Remote Areas

~~Department of Environmental Quality/Water Quality Division~~
~~Septage Land Application Worksheet~~

Section 1. Restrictions and Requirements

To qualify for the land application of domestic septage ~~(domestic septage being defined as either liquid or solid material removed from a septic tank result from normal household wastes)~~ in remote areas, the following conditions must be met.

~~DEFINITIONS~~

~~* "Permanent waterbody" means perennial streams, lakes, wetlands, etc. that have water throughout the year~~

~~* "Intermittent stream" means a stream or part of a stream that is below the local water table for some part of the year but is not a perennial stream.~~

~~* "Ephemeral stream" means a stream which flows only in direct response to precipitation in the immediaste watershed or in response to snow melt, and has a channel bottom that is always above the prevaling water table.~~

~~* "Wetland" means those areas having all three essential characteristics:~~
~~(A) Hydrophytic vegetation;~~

~~(B) Hydric soils;~~

~~(C) Wetlands hydrology.~~

(a) Location restrictions

(i) ~~Only domestic septage generated on the property owner's location may be land applied on the same property owner's location~~. Domestic septage generated on a specific property may be land applied on said property, and shall not be transported to another location for land application.

(ii) ~~A minimum distance of at least 1,000 feet must be maintained from all adjacent properties~~ No land application of domestic septage shall occur within 1,000 feet of all adjacent properties.

(iii) ~~No land application of domestic septage may occur within 300 feet of a permanent waterbody, intermittent stream, ephemeral stream or wetland.~~

~~No land application of domestic septage may occur within 300 feet of public road.~~

~~No land application of domestic septage shall occur within 300 feet of a public road,~~ permanent surface water body, or intermittent stream.

~~No land application of domestic sewage may occur within 1000 feet of a residence~~

(b) Site restrictions:

(i) The land application of domestic septage shall only occur on those sites with established vegetation such as rangeland, pasture or hay meadows.

(ii) No more than 5,000 gallons of domestic septage per acre per year shall be land applied.

(iii) ~~No land application of domestic septage may occur where the depth from the surface to groundwater is less than four (4) feet.~~

~~No land application of domestic septage may occur where site slopes exceed five percent (5%).~~

No land application of domestic septage shall occur where the site's slope exceeds five percent (5%) or where the depth to groundwater is less than four (4) feet.

(iv) The land application of domestic septage shall not occur between November 1 and May 1, or any other time when frozen or saturated ground conditions exits.

(v) No public access shall be allowed to any site where domestic septage has been applied for at least one (1) year following application. ~~to any site where domestic septage has been applied.~~

~~Lime stabilization of the septage to pH 12 for 30 minutes prior to land application is optional~~

(vi) No grazing animals shall be allowed access to any site where domestic septage has been land applied for at least thirty (30) days following application. ~~to any site where domestic septage has been land applied.~~

(c) Crop restrictions:

(i) No root crops shall be harvested from soils where domestic septage has been land applied for at least thirty-eight(38) months following application. ~~from soils where domestic septage has been land applied.~~

(ii) No truck crops (harvested parts touch land surface) shall be harvested from soils where domestic septage has been land applied for at least fourteen(14) months following application. ~~from soils where domestic septage has been land applied.~~

(iii) No commodity crops (other food, feed, and fiber crops whose harvested parts do not touch land surface) shall be harvested from soils where domestic septage has been land applied for at least thirty(30) days following application. ~~from soils where domestic septage has been land applied.~~

(iv) No turf shall be harvested from soils where domestic septage has been land applied for at least one(1) year following application. ~~from soils where domestic septage has been land applied.~~

(d) Reporting Requirements:

(i) The property owner shall notify the appropriate Department of Environmental Quality, Water Quality Division (DEQ/WQD) District ~~Office~~ Engineer prior to the land application of domestic septage to confirm the requirements and to arrange a possible DEQ/WQD inspection of the land application.

(ii) All records concerned with each septage application will be maintained for at least five (5) years.

(iii) There is a worksheet provided online at the Division's website that must be completed, signed and returned to the DEQ/WQD or the appropriate delegated local permitting authority within 15 days of the land application.

~~This worksheet must be completed, signed, and returned to the Department of Environmental Quality, Water Quality Division or the appropriate delegated local permitting authority within 15 days of the land application.~~

~~Provide the following information concerning your site. Enter NA if not applicable.~~

~~1. Date of the application: _____~~
~~2. Number of acres receiving septage: _____~~
~~3. Number of gallons of septage land applied: _____~~
~~4. Type of vegetation receiving: _____~~
~~5. Name, address and telephone number of septage hauler:~~
~~_____~~
~~_____~~
~~_____~~
~~_____~~
~~6. If septage was optionally alkali stabilized, please indicate what material was used for stabilization and how pH was measured: _____~~
~~_____~~

~~7) Please indicate that the site sketch on the back of this sheet has been completed and complies with the site restriction distances yes/no:~~
~~_____~~
~~8) Please indicate if photos of the land application site will be sent to the appropriate District Office: Yes/no._____~~
~~9) Please provide physical address or legal description of land application site: _____~~
~~_____~~
~~10) Please give the name of the DEQ/WQD representative contacted, and time and date. This contact needs to be made prior to the domestic septage land application: _____~~

~~SITE~~
~~SKETCH~~

~~REQUIRED ISOLATION~~
~~DISTA FROM LAND~~
~~APPLICATION SI~~

~~) 1,000 feet from adjacent properti~~
~~) 1,000 feet from any dwelling.~~
~~) 300 feet from any live~~
~~water, inte stream or~~
~~drainage~~

~~I certify that the information provided in this worksheet is accurate and meets the requirements set forth~~
~~her~~

~~ignature of landowner Date~~

~~_____~~
~~____ Name (printed)~~

~~_____ _____~~

~~ignature of applicator Date~~

~~Name (printed)~~