

<p><b>DESIGN INSTRUCTIONS and WORKSHEETS for a <u>LESS than 2000 Gallons Per Day</u> <u>GRAVITY SEPTIC SYSTEM</u> utilizing a <b>LEACHFIELD</b></b></p>	<p><b><u>For Office Use Only</u></b></p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------

A. General Information.

1. Name of Facility: Smith Residential Septic System
2. Location: County Carbon  
1/4 Section NW, Section 20, Township 16 N, Range 83 W
3. Subdivision or Tract: a) Name Septic System \*  
b) Lot # 4, c) Block # 2, d) Date Platted or Approved 4-17-93 \*  
e) Attach legal description of property ( from Sales Contract or Deed )
4. Is the proposed facility in compliance with a county approved subdivision or plat? Yes X, No \_\_\_\_.\*
5. Is the proposed facility located within an area covered by an approved water quality management plan? Yes X, No \_\_\_\_.\*  
( if No - skip to 7.)
6. a. Is the proposed facility consistent with an approved water quality management plan? Yes \_\_\_\_, No X.\*  
( if Yes - skip to 7.)  
b. If not, has a temporary exemption been approved? Yes X, No \_\_\_\_.\*
7. Is the proposed facility in conflict with an approved well-head protection program or source water protection program? Yes \_\_\_\_, No X.\*

\* Note: Your local county planning office or the appropriate DEQ District Office for your county can assist you with information relating to items 3, 4, 5, 6, and 7.

B. Site Information.

1. Lot Size: 330 ft. by 660 ft., Area: \_\_\_\_\_sf, or 5 acres
2. Water Supply: \_\_\_\_\_ community, or X private well
3. Ground Slope (at location of leachfield): \_\_\_\_\_ 2 ft./ 100 ft., or \_\_\_\_\_ %
4. Soil Description: \_\_\_\_\_ sand/loam/clay mixture \_\_\_\_\_
5. Percolation Rate in minutes per inch (mpi) as determined from *Percolation Test Procedure attachment*. ( The actual percolation test data must be submitted with the application )
  - a. **If 3 to 5 holes were tested**, the slowest rate (largest number) was 14 mpi
  - b. **If 6 or more holes were tested**, the average percolation rate was \_\_\_\_\_mpi
  - c. **If the percolation rate is less than 1 mpi or greater than 60 mpi**, this site is unsuitable for a typical leachfield. Please contact the nearest DEQ district office or your local small wastewater program administrator for assistance.
6. The seasonally high groundwater level is 6 1/2 feet below the ground surface.

How and where was this determined? Describe what you did & found

***The depth to the seasonally high groundwater level(the highest level during the year - not just the level when you check the well or backhoe cut) can be determined by monitoring the water level during the period of high groundwater with either a shallow well or backhoe cut. Also, a trained soils person(such as a geologist, engineer, sanitarian, or similar) can detect "mottling" in the soil which indicates where high groundwater levels have been historically. A backhoe cut is required for this analysis. The depth of water in an in-service well is not always reliable and should not be used. Sometimes a detailed well drillers log can be used to make a reasonable estimate.***

Who determined this? Dave Adams/ engineer, Date 10-15-99

7. The depth to bedrock or an impermeable soil layer (perk rate greater than 60 mpi) is more than 12 feet below the ground surface. (If the depth to bedrock is greater then 12 feet, the exact depth is not necessary - answer: more than 12 ft.)

How was this determined?

by looking at drilling logs of my water well drilled in May 1999

Who determined this and qualifications? Max Jones/well driller

8. Complete the blank *Site Plan detail sheet* included herein.

C. Septic Tank Information.

1. Tank size: 1000 gallons, 1 compartment \_\_\_\_\_, or 2 compartment X
2. Manufacturer: The Concrete Company, Model 1000 gallon
3. Supplier: "Big R" Store, Phone # 555-1234
4. *Standard Septic Tank detail sheet* must be completed.

D. Absorption system (leachfield) size calculations.

1. Design wastewater volume ( circle a, b, or c - and complete that section):
  - a. Permanent Structure: 150 gpd/bedroom x 3 bedrooms = 450 gpd
  - b. Mobile home: 1 or 2 bdrms = 350, 3 bdrms = 500, 4 bdrms = 650gpd (circle one )
  - c. Non-residential design loads ( show calculations as appropriate)

Office building with 20 employees maximum at 30 gallons /  
person / day = 600 gallons per  
day \_\_\_\_\_

2. The absorption system loading rate is: 0.54 gpd/sf.

(The loading rate is determined from your percolation rate and the "Loading Rate Table", Appendix PT, in the *Percolation Test Procedure attachment*.)

3. The minimum required infiltrative surface area is calculated as follows:

$$\begin{array}{l} \text{Wastewater volume (D.1.)} = \frac{450 \text{ gpd}}{0.54 \text{ gpd/sf}} = 833 \text{ sf} \\ \text{Loading rate (D.2.)} = \end{array}$$

E. Absorption system layout ( Leachfield ):

1. Type of system: ( check one )

Rock and perforated pipe **Trench** X complete part E.2.

Rock and perforated pipe **Bed** \_\_\_\_\_ complete part E.3.

**Chamber Trench** system \_\_\_\_\_ complete part E.4.

**Chamber Bed** system \_\_\_\_\_ complete part E.5.

2. Trench Design for Washed Rock and Perforated Pipe: (Distinct trenches with at least 3 feet of undisturbed soil between trenches)

a. Minimum infiltrative surface area required = 833 sf from D.3.

Choose your trench dimensions:

b. Total depth = 42 inches

c. Width = 24 inches

d. Depth below bottom of pipe = 6 inches ( 6" minimum)

Calculate minimum length of trench needed:

e. Square feet per linear foot =

(side [E.2.d.] + bottom [E.2.c.] + side [E.2.d.]) / 12 = 3 sf / foot

f. Total minimum trench length = E.2.a. / E.2.e. = 278 linear feet

g. Trench layout Depending on the total minimum trench length required (E.2.f.);  
- (check one) choose one of the following:

\_\_\_\_\_ 1 single trench see *Single Trench Pipe Leachfield detail sheet*

\_\_\_\_\_ 2 trenches see *Two Trench Pipe Leachfield detail sheet*

X 4 trenches see *Four Trench Pipe Leachfield detail sheet*

\_\_\_\_\_ Multiple trenches see *Multiple Trench Pipe Leachfield detail sheet*  
(requires "D" Box)

3. Bed Design for Washed Rock and Perforated Pipe: ( one continuous excavation - no distinct trenches)

a. Minimum infiltrative surface area required = 833 sf from D.3.

Choose your bed dimensions (must always be more than the minimum area required.)

b. Width 20 ft. Length 45 ft. = Total square feet 900 sf.

c. Bed layout: Complete *Bed Type Pipe Leachfield detail sheet*

4. Trench Design for Chamber Leachfield Systems: (Distinct trenches with at least 3 feet of undisturbed soil between trenches)
- a. Minimum infiltrative surface area required = 833 sf from D.3.
- b. Choose your make and model of leachfield Chamber:  
 Manufacturer Infiltrator, Model EQ 36  
 Width 18 inches, Height 12 inches, Length 8' 5" feet & inches
- c. Equivalent area per unit = 42.0 (See *Chamber Systems attachment*)
- d. Minimum number of units required is:  
 (Minimum area [E.4.a.] / Equivalent unit area [E.4.c.]) =  
 (833 / 42.0) = 20 units [round up]
- e. Number of units to be used = 20 (same or more than E.4.d.)
- f. Trench layout - Depending on the number of units to be used, choose one of the following:
- |                 |                                          |                                                              |
|-----------------|------------------------------------------|--------------------------------------------------------------|
| <u>        </u> | 1 single trench:                         | see <i>Single Trench Chambered Leachfield detail sheet</i>   |
| <u>        </u> | 2 trenches                               | see <i>Two Trench Chambered Leachfield detail sheet</i>      |
| <u>  X  </u>    | 4 trenches                               | see <i>Four Trench Chambered Leachfield detail sheet</i>     |
| <u>        </u> | Multiple trenches<br>(requires "D" Box): | see <i>Multiple Trench Chambered Leachfield detail sheet</i> |
5. Bed Design for Chamber Leachfield Systems: (one continuous excavation - no distinct trenches)
- a. Minimum infiltrative surface area required = 833 sf from D.3.
- b. Choose your make and model of leachfield Chamber:  
 Manufacturer Infiltrator, Model Standard  
 Width 34 inches, Height 12 inches, Length 6' 3" feet & inches
- c. Equivalent bed area per unit = 35.4 (See *Chamber Systems attachment*)
- d. Minimum number of units required is:  
 (Minimum area [E.5.a.] / Equivalent unit area [E.5.c.]) =  
 (833 / 35.4) = 24 units [round up]
- e. Number of units to be used = 28 (same or more than E.5.d.)
- f. Bed layout: Complete *Bed Type Chambered Leachfield detail sheet*

F. *Site Plan and detail sheets:*

A site plan sheet (site sketch) of your property showing the septic system and leachfield layout along with detail sheets which are appropriate for your specific system must be completed and submitted with these worksheets. Sheets which do not apply to your system need not be submitted. Empty boxes will appear throughout the plan and detail sheets. These boxes require that you fill in information and/or dimensions that apply to your specific design. Much, but not all, of this information can be obtained from the blanks you have just filled out throughout the worksheets. Please select and complete the appropriate sheets for your system.

G. Installer Information:

Agent or Contractor's Name: Mike Plumber

Business Name (if applicable): ABC Backhoe

Mailing Address: Street Address Or

PO Box

City, State Zip

Phone number: (307) 555-9876

H. General Comments:

Such as unusual site conditions or physical limitations, special requests, or any other pertinent information not previously explained in the worksheets.

---

I include whatever unusual site conditions, problems, special circumstances, or other site restrictions that you feel are relevant to this particular project.

---