

# Grand Forks County

## Planning and Zoning

Approval: \_\_\_\_\_ Denial: \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_  
Zoning Administrator/Building Official

### Septic System Permit Application – Standard System

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#### Applicant(s):

Name(s) \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone # \_\_\_\_\_ Fax # \_\_\_\_\_

Cell # \_\_\_\_\_ Email \_\_\_\_\_

#### Installer/Designer:

Name(s): \_\_\_\_\_

License Number: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone #: \_\_\_\_\_ Cell #: \_\_\_\_\_

#### Parcel Information:

PID#(s): \_\_\_\_\_ Parcel Acreage: \_\_\_\_\_

Complete Legal Description: \_\_\_\_\_

\_\_\_\_\_.

## Septic System Design Information:

1. Septic Tank Capacity: \_\_\_\_\_ gallons. (See Table 1.)

**Table 1. CAPACITY OF SEPTIC TANKS \***

Single-Family Dwellings - Number of Bedrooms	Multiple Dwelling Units or Apartments - One Bedroom Each	Other Uses - Maximum Fixture Units Served	Minimum Septic Tank Working Capacity in Gallons
1-3		20	1000
4	2	25	1200
5 or 6	3	33	1500
7 or 8	4	45	2000
	5	55	2250
	6	60	2500
	7	70	2750
	8	80	3000
	9	90	3250
	10	100	3500

Extra bedroom, 150 gallons each.  
 Extra dwelling units over 10, 250 gallons each.  
 Extra fixture units over 100, 25 gallons per fixture unit.

\* NOTE: Septic tank sizes in this table include sludge storage

2. Soils.

Depth to restrictive layer or mottled soils: \_\_\_\_\_ feet.

Maximum depth of system: \_\_\_\_\_ feet. (Depth to restrictive layer or mottled soils - 2')

Soil Classification or Texture: \_\_\_\_\_.

Percolation rate: \_\_\_\_\_ MPI.

Soil Loading Rate: \_\_\_\_\_ gal/ft<sup>2</sup>/day. (See Table 3 on next page)

Percent Land Slope: \_\_\_\_\_ %.

**Septic System Design Information (Continued):**

**Table 3. Effluent loading rate of an absorption trench based on soil texture. A registered soil classifier should determine the soil texture at the depth where the bottom of the trench will be located.**

Soil Texture	Percolation Rate (minutes/inch)	Depth of rock below the distribution pipe			
		6"	12"	18"	24"
<b>Square feet of trench bottom per bedroom</b>					
Sand and loamy sand	1 to 5	125	100	85	70
Sandy loam	6 to 15	190	150	125	110
Fine sand, very fine sand, loam	16 to 30	250	200	165	145
Silt and silt loam	30 to 45	300	240	200	170
Clay loam, sandy clay, silty clay loam	45 to 60	330	265	220	190
Clay	60 to 120	650	515	440	375
<b>Trench bottom area loading rate, gal/ft<sup>2</sup>/day</b>					
Sand and loamy sand	1 to 5	1.2	1.5	1.8	2.1
Sandy loam	6 to 15	0.8	1.0	1.2	1.4
Fine sand, very fine sand, loam	16 to 30	0.6	0.75	0.90	1.05
Silt and silt loam	30 to 45	0.5	0.63	0.75	0.90
Clay loam, sandy clay, silty clay loam	45 to 60	0.45	0.57	0.68	0.80
Clay	60 to 120	0.23	0.29	0.34	0.4

**3. Trench or Absorption Bed Area.**

Estimated Design Flow: \_\_\_\_\_ gallons per day. (See Table 4.)

Number of Bedrooms	Gallons Per Day
2	300
3	450
4	600
5	750
6	900

Trench Bottom Area Calculation:

\_\_\_\_\_ gpd(Design Flow) / \_\_\_\_\_(**Loading Rate**) = \_\_\_\_\_ ft<sup>2</sup>(Trench Bottom Area).

Width of Trench: \_\_\_\_\_ ft.

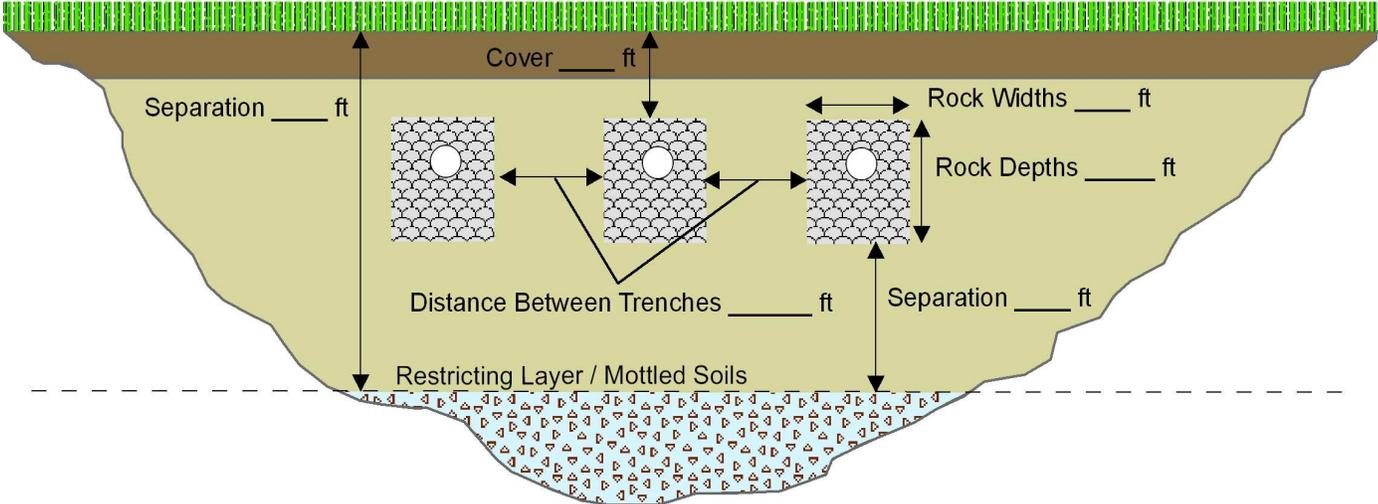
Length of Trench(s) Calculation:

\_\_\_\_\_ ft<sup>2</sup> (Trench Bottom Area) / \_\_\_\_\_ ft (Trench Width) = \_\_\_\_\_ ft (Lineal Feet).

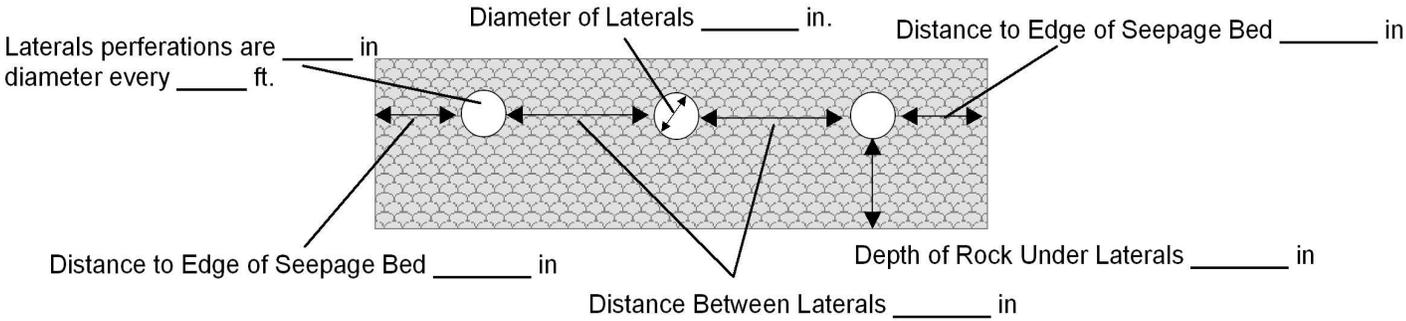


# Trench Cross-Section

(for seepage beds also complete cross-section below)



# Seepage Bed Cross-Section



# Soil Boring Log

Client: \_\_\_\_\_

Address: \_\_\_\_\_

Date: \_\_\_\_\_

Location: \_\_\_\_\_

Soil Type: \_\_\_\_\_

Disturbed/ Compacted  yes  no

# of Bedrooms: \_\_\_\_\_

Type of observation: Probe Pit Boring

Garbage Disposal:  yes  no

Type: I II III IV

Flow: \_\_\_\_\_

Parent Material: Till Outwash Loess Bedrock Alluvium

Vegetation: Wet Dry Unknown

Slope Form: \_\_\_\_\_

Slope: \_\_\_\_\_ %

Drainage: Good Problems Solutions \_\_\_\_\_

Floodplain:  yes  no

Elevation of Boring: \_\_\_\_\_

Depth of Water: \_\_\_\_\_

Depth to Bedrock: \_\_\_\_\_

Depth of Sat. Soil: \_\_\_\_\_

Max Depth of System: \_\_\_\_\_

Soil Sizing Factor: \_\_\_\_\_

Linear Loading Rate: \_\_\_\_\_

Well Information:

Location: \_\_\_\_\_

Depth: \_\_\_\_\_

Casing Depth: \_\_\_\_\_

10' of Imp. material:  yes  no

Depth (inches)	Texture	Color	Structure
			Blocky Platy Prismatic None

Additional Notes: \_\_\_\_\_

Preliminary design:

Trench \_\_\_\_\_ Bed \_\_\_\_\_ Atgrade \_\_\_\_\_ Mound \_\_\_\_\_ Holding Tank \_\_\_\_\_

Gravity Dist. \_\_\_\_\_ Pressure Dist. \_\_\_\_\_

Sand: Serial \_\_\_\_\_ Pressure \_\_\_\_\_ Liner \_\_\_\_\_ Clay: Liner \_\_\_\_\_

# PERCOLATION TEST SHEET

Test hole location \_\_\_\_\_ Hole # \_\_\_\_\_ Date test hole was prepared: \_\_\_\_\_

Depth of hole bottom: \_\_\_\_\_ inches Diameter of hole: \_\_\_\_\_ inches

Soil Data from test hole:

depth, inches	soil texture:	soil color
_____	_____	_____
_____	_____	_____
_____	_____	_____

Method of scratching sidewall: \_\_\_\_\_ Depth of pea size gravel in bottom of hole: \_\_\_\_\_ inches

Date and hour of initial water filling: \_\_\_\_\_ Depth of initial water filling: \_\_\_\_\_ above hole bottom

Method used to maintain 12" of water depth in hole for 4 hours: \_\_\_\_\_

Percolation test conducted by: \_\_\_\_\_ Percolation test started at \_\_\_\_\_ (am / pm).

Maximum water depth above hole bottom during test: \_\_\_\_\_ inches

TIME	INTERVAL (MINUTES)	WATER DEPTH	WATER DROP (fraction)	WATER DROP (decimal)	PERC RATE CALCULATION
____	START	_____	_____	_____	$\frac{\text{DROP}}{\text{TIME}} = \text{PERC}$ <b>A</b>
____	REFILL	_____	_____	_____	$\frac{\text{DROP}}{\text{TIME}} = \text{PERC}$ <b>B</b>
____	REFILL	_____	_____	_____	$\frac{\text{DROP}}{\text{TIME}} = \text{PERC}$ <b>C</b>
____	REFILL	_____	_____	_____	$\frac{\text{DROP}}{\text{TIME}} = \text{PERC}$ <b>D</b>
____	REFILL	_____	_____	_____	$\frac{\text{DROP}}{\text{TIME}} = \text{PERC}$ <b>E</b>
____	REFILL	_____	_____	_____	$\frac{\text{DROP}}{\text{TIME}} = \text{PERC}$ <b>F</b>
____	REFILL	_____	_____	_____	$\frac{\text{DROP}}{\text{TIME}} = \text{PERC}$ <b>G</b>
____	REFILL	_____	_____	_____	$\frac{\text{DROP}}{\text{TIME}} = \text{PERC}$ <b>H</b>

conversions

- 1/16 = .06
- 1/8 = .13
- 3/16 = .19
- 1/4 = .25
- 5/16 = .31
- 3/8 = .38
- 7/16 = .44
- 1/2 = .5
- 9/16 = .56
- 5/8 = .63
- 11/16 = .69
- 3/4 = .75
- 13/16 = .81
- 7/8 = .88
- 15/16 = .94

### Ten Percent Calculation \*

**A,B,C**

Largest # of ABC \_\_\_\_\_ Smallest # of ABC \_\_\_\_\_

Smallest # of ABC  $\times 0.10 =$  \_\_\_\_\_

**C,D,E**

Largest # of CDE \_\_\_\_\_ Smallest # of CDE \_\_\_\_\_

Smallest # of CDE  $\times 0.10 =$  \_\_\_\_\_

**E,F,G**

Largest # of EFG \_\_\_\_\_ Smallest # of EFG \_\_\_\_\_

Smallest # of EFG  $\times 0.10 =$  \_\_\_\_\_

**B,C,D**

Largest # of BCD \_\_\_\_\_ Smallest # of BCD \_\_\_\_\_

Smallest # of BCD  $\times 0.10 =$  \_\_\_\_\_

**D,E,F**

Largest # of DEF \_\_\_\_\_ Smallest # of DEF \_\_\_\_\_

Smallest # of DEF  $\times 0.10 =$  \_\_\_\_\_

**F,G,H**

Largest # of FGH \_\_\_\_\_ Smallest # of FGH \_\_\_\_\_

Smallest # of FGH  $\times 0.10 =$  \_\_\_\_\_

\* If the top number in each set of boxes is larger than the bottom number, take another reading. If the top number is equal to or smaller than bottom number, average the 3 numbers for the perc rate.

