Field Information and Data Recording Sheets

Soil Evaluation Form

Location: _____

Date: _____

Name: _____

Depth (in.)	Soil Texture (USDA)	Sand Size	Coarse Fragments % by Volume		Soil Structure	Mottles		Comments
			Gravel	Cobbles & Stones		Color	%	

Depth: Record depth of layer in inches

Soil Texture: Determine the soil texture using the USDA textural triangle (i.e., soil loam, clay loam)

Sand Size: If the soil texture is sand, loamy sand, or sandy loam, determine the size of the sand grains

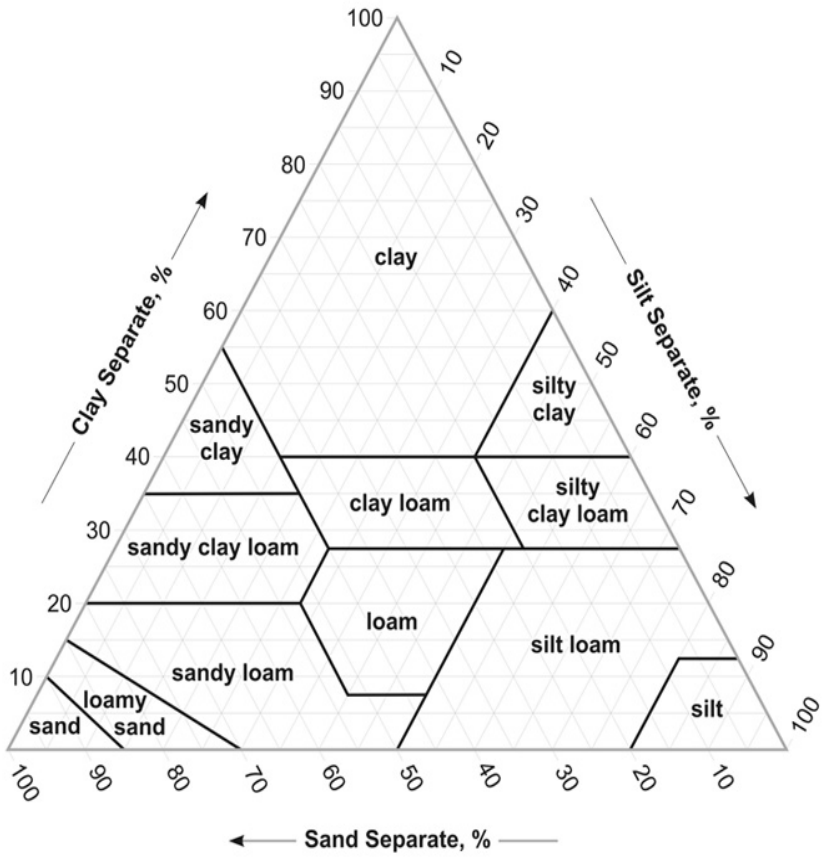
Coarse Fragments: Estimate the percent of gravel by volume

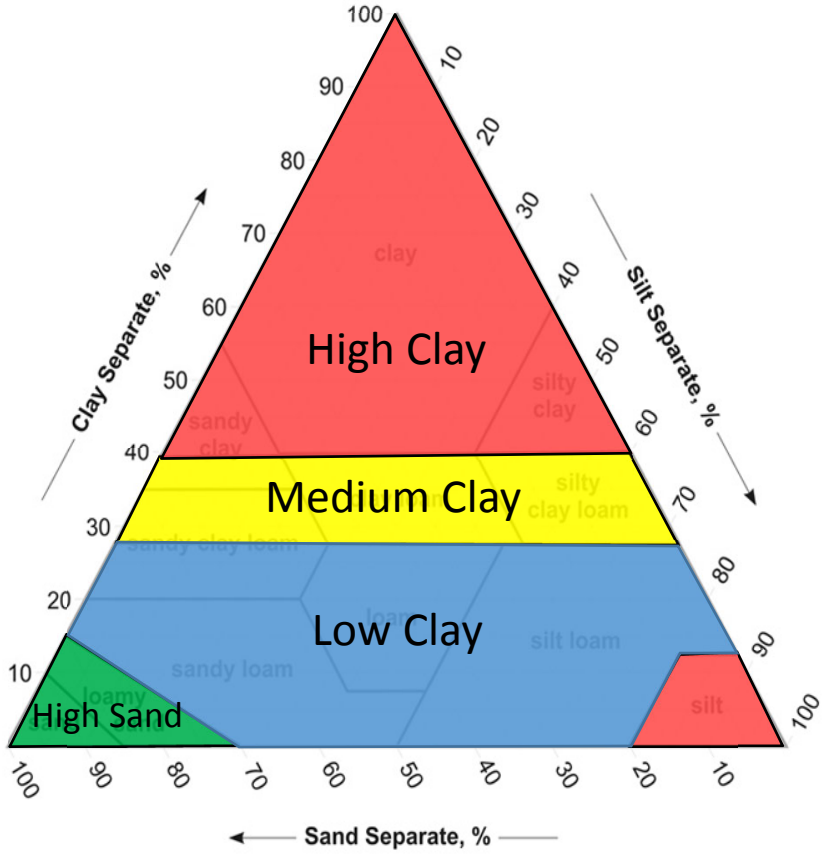
Gravel = 0.1” to 3” in diameter
Cobble = 3” to 10” in diameter
Stone = greater than 10” in diameter

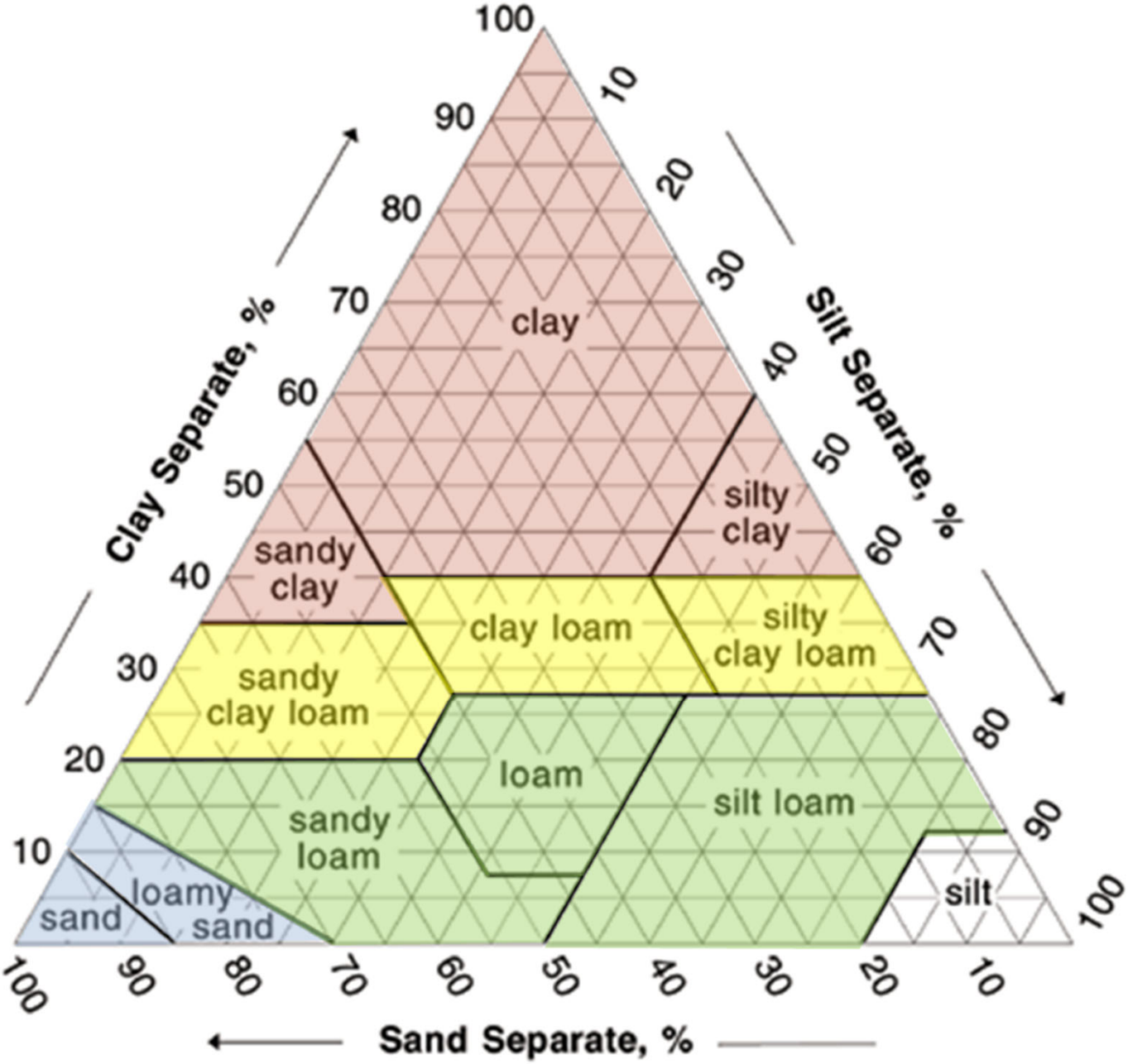
Soil Structure: Determine the dominant structure in the layer (granular, blocky, prismatic, or platy). If the soil is classified as a sand using the USDA textural triangle, list the structure as single grain. If no structure exists, list the structure as massive

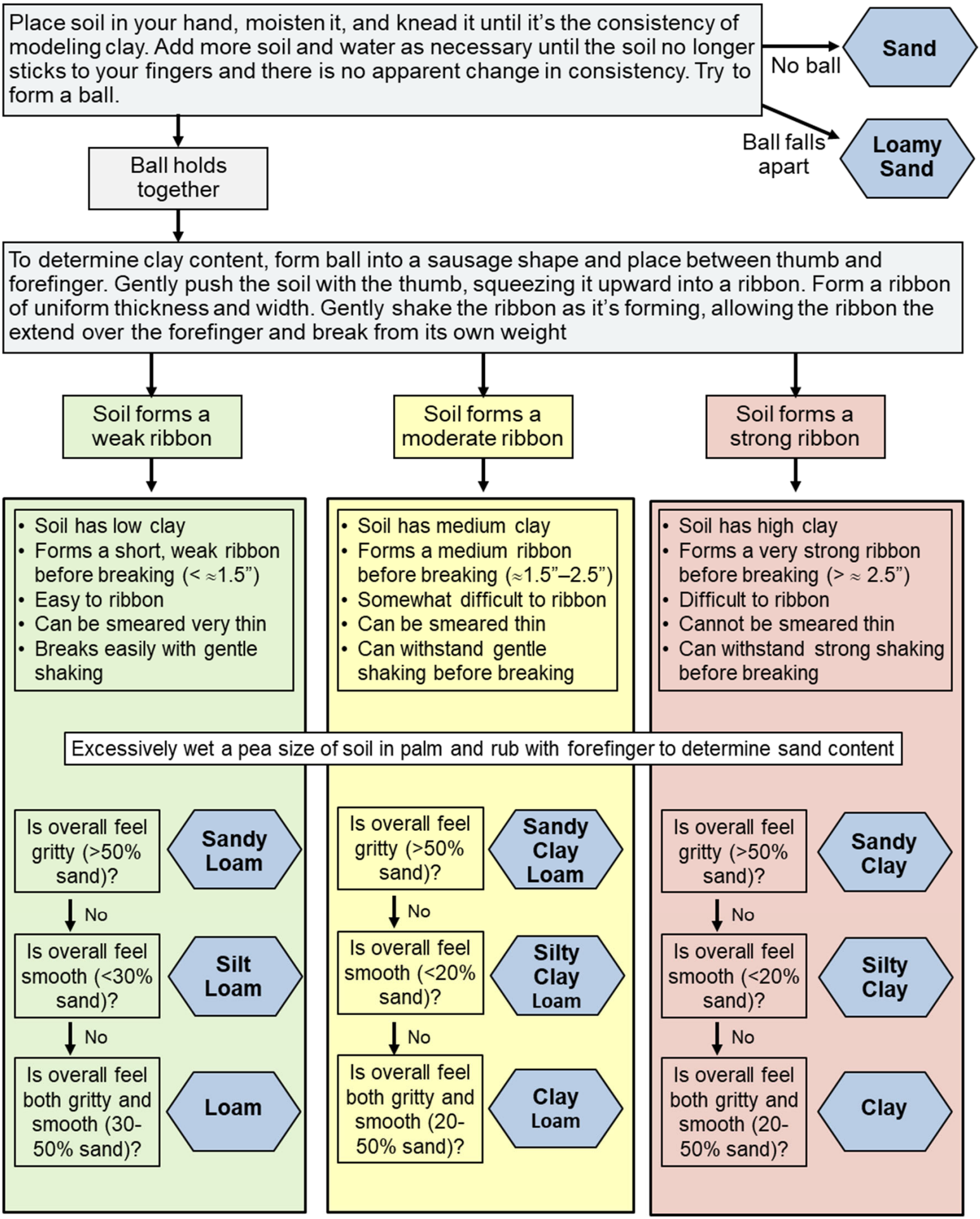
Mottles: Indicate whether or not mottles exist in the layer, along with the color (red or grey) and %

Few: less than 2 % of the exposed surface is occupied by mottles
Common: from 2 % to 20 % of the exposed surface is occupied by mottles
Many: more than 20 % of the exposed surface is occupied by mottles


clay
silty clay
sandy clay
clay loam
silty clay loam
sandy clay loam
loam
silt loam
sandy loam
loamy sand
sand
silt
Clay Separate, %
Silt Separate, %
Sand Separate, %


High Clay
Medium Clay
Low Clay
High Sand
Clay Separate, %
Silt Separate, %
Sand Separate, %


Clay Separate, %
Silt Separate, %
Sand Separate, %
100
90
80
70
60
50
40
30
20
10
clay
silty clay
sandy clay
clay loam
silty clay loam
sandy clay loam
loam
silt loam
sandy loam
loamy sand
sand
silt


Place soil in your hand, moisten it, and knead it until it's the consistency of modeling clay. Add more soil and water as necessary until the soil no longer sticks to your fingers and there is no apparent change in consistency. Try to form a ball.
No ball
Sand
Ball falls apart
Loamy Sand
Ball holds together
To determine clay content, form ball into a sausage shape and place between thumb and forefinger. Gently push the soil with the thumb, squeezing it upward into a ribbon. Form a ribbon of uniform thickness and width. Gently shake the ribbon as it's forming, allowing the ribbon the extend over the forefinger and break from its own weight
Soil forms a weak ribbon
Soil forms a moderate ribbon
Soil forms a strong ribbon
• Soil has low clay
• Forms a short, weak ribbon before breaking (< ≈1.5")
• Easy to ribbon
• Can be smeared very thin
• Breaks easily with gentle shaking
• Soil has medium clay
• Forms a medium ribbon before breaking (≈1.5"–2.5")
• Somewhat difficult to ribbon
• Can be smeared thin
• Can withstand gentle shaking before breaking
• Soil has high clay
• Forms a very strong ribbon before breaking (> ≈ 2.5")
• Difficult to ribbon
• Cannot be smeared thin
• Can withstand strong shaking before breaking
Excessively wet a pea size of soil in palm and rub with forefinger to determine sand content
Is overall feel gritty (>50% sand)?
Sandy Loam
No
Is overall feel smooth (<30% sand)?
Silt Loam
No
Is overall feel both gritty and smooth (30-50% sand)?
Loam
Is overall feel gritty (>50% sand)?
Sandy Clay Loam
No
Is overall feel smooth (<20% sand)?
Silty Clay Loam
No
Is overall feel both gritty and smooth (20-50% sand)?
Clay Loam
Is overall feel gritty (>50% sand)?
Sandy Clay
No
Is overall feel smooth (<20% sand)?
Silty Clay
No
Is overall feel both gritty and smooth (20-50% sand)?
Clay

Record Sheet for Conducting Percolation Tests

Property Owner Name:	Date:
Property Address:	Perc. Tester:

Soils Evaluation Log #:	Test Start Time:	Perc. Test Hole Diameter:
Percolation Test #:	Time Saturation Period Ended:	Perc Test Hole Sidewall Height:
Depth of Hole Bottom From Surface:	Time Soils Allowed to Swell:	Depth to Water Table:

Successive Reading #	Initial Depth to Water	Beginning Time	Final Depth to Water	Ending Time	Distance Water Dropped	Elapsed Time	Perc Rate (Minutes/Inch)
1							
2							
3							
4							
5							
6							
7							
8							

Final Stabilized Percolation Rate: (specified in minutes per inch)	

Sketch of perc test location.

I certify that percolation tests have been conducted on the above property in accordance with requirements specified in R317-4, Utah Administrative Code, and that percolation rates, calculated as specified by said rule, are true and correct.

_____ _____

Signature Date

Percolation Test Procedure

- Prepare test hole and insert reference marker
- Add gravel

For All Soils (Except Type 1 and Type 2)

Fill hole with 12" of water (above gravel)

Maintain 12" level for 4 hours

After 4 hours, allow soil to swell for 16 – 30 hours

Perform percolation test

- Adjust water level to 6" (above gravel)
- Record distance from the fixed reference point to the water surface
- Measure water drop (to 1/16") at 30 minute intervals for 4 hours or until 2 successive water level drops do not vary by more than 1/16"
- Refill hole to 6" of water after each reading
- Record each water drop and time interval
- If 6" of water seeps away in less than 30 minutes, shorten the time interval between measurements to 15 minutes
- If 6" of water seeps away in less than 15 minutes, a shorter time interval of 5 minutes between measurements may be used. If no stabilization occurs, the smallest drop shall be used.

For Type 1 and Type 2 Soils (Sandy or Gravelly)

Fill hole with 12" of water (above gravel)

Determine how long it takes water to drain

If water takes less than 10 minutes to drain, fill hole again with 12" of water. If water drains again in less than 10 minutes, continue with this test. If it takes longer than 10 minutes, use the test for all soils (requires saturation and swelling period)

Perform percolation test

- Adjust water level to 6" (above gravel)
- Record distance from the fixed reference point to the water surface
- Measure water drop (to 1/16") at 10 minute intervals for 1 hour
- Refill hole to 6" of water after each reading
- Record each water drop and time interval
- If 6" of water seeps away in less than 10 minutes, shorten the time interval between measurements to 5 minutes

Conversion of Fractions to Decimals

Divide the numerator (top number) by the denominator (bottom number)
Example 7/16 – 7 divided by 16 is 0.44

1/16	=			0.06
2/16	=	1/8	=	0.13
3/16	=			0.19
4/16	=	1/4	=	0.25
5/16	=			0.31
6/16	=	3/8	=	0.37
7/16	=			0.44
8/16	=	1/2	=	0.50
9/16	=			0.56
10/16	=	5/8	=	0.63
11/16	=			0.69
12/16	=	3/4	=	0.75
13/16	=			0.81
14/16	=	7/8	=	0.87
15/16	=			0.94
16/16	=			1.00

Calculated Percolation Rates

(decimals)

	Percolation Rate			
Inches Dropped	30 Minute Reading	15 Minute Reading	10 Minute Reading	5 Minute Reading
0.06	480.00	240.00	160.00	80.00
0.13	240.00	120.00	80.00	40.00
0.19	160.00	80.00	53.33	26.66
0.25	120.00	60.00	40.00	20.00
0.31	96.00	48.00	32.00	16.00
0.38	80.00	40.00	26.67	13.34
0.44	68.57	34.29	22.86	11.43
0.50	60.00	30.00	20.00	10.00
0.56	53.33	26.67	17.78	8.89
0.63	48.00	24.00	16.00	8.00
0.69	43.64	21.82	14.55	2.08
0.75	40.00	20.00	13.33	6.67
0.81	36.92	18.46	12.31	6.16
0.88	34.29	17.15	11.43	5.72
0.94	32.00	16.00	10.67	5.34
1.00	30.00	15.00	10.00	5.00
1.06	28.24	14.12	9.41	4.71
1.13	26.67	13.34	8.89	4.45
1.19	25.26	12.63	8.42	4.21
1.25	24.00	12.00	8.00	4.00
1.31	22.86	11.43	7.62	3.81
1.38	21.82	10.91	7.27	3.64
1.44	20.87	10.44	6.96	3.48
1.50	20.00	10.00	6.67	3.34
1.56	19.20	9.60	6.40	3.20
1.63	18.46	9.23	6.15	3.08
1.69	17.78	8.89	5.93	2.97
1.75	17.14	8.70	5.71	2.86
1.81	16.55	8.28	5.52	2.76
1.88	16.00	8.00	5.33	2.67
1.94	15.48	7.74	5.16	2.58
2.00	15.00	7.50	5.00	2.50
2.06	14.55	7.28	4.85	2.43
2.13	14.12	7.06	4.71	2.36
2.19	13.71	6.86	4.57	2.29
2.25	13.33	6.67	4.44	2.22
2.31	12.97	6.49	4.32	2.16
2.38	12.63	6.32	4.21	2.11
2.44	12.31	6.66	4.10	2.05
2.50	12.00	6.00	4.00	2.00
2.56	11.71	5.86	3.90	1.95
2.63	11.43	5.72	3.81	1.91
2.69	11.16	5.58	3.72	1.86
2.75	10.91	5.46	3.64	1.82
2.81	10.67	5.34	3.56	1.78
2.88	10.43	5.22	3.48	1.74
2.94	10.21	5.11	3.40	1.70
3.00	10.00	5.00	3.33	1.67

	Percolation Rate			
Inches Dropped	30 Minute Reading	15 Minute Reading	10 Minute Reading	5 Minute Reading
3.06	9.80	4.90	3.27	1.64
3.13	9.60	4.80	3.20	1.60
3.19	9.41	4.71	3.14	1.57
3.25	9.23	4.62	3.08	1.54
3.31	9.06	4.53	3.02	1.51
3.38	8.89	4.45	2.96	1.48
3.44	8.73	4.37	2.91	1.46
3.50	8.57	4.29	2.86	1.43
3.56	8.42	4.21	2.81	1.41
3.63	8.28	4.14	2.76	1.38
3.69	8.14	4.07	2.71	1.36
3.75	8.00	4.00	2.67	1.34
3.81	7.87	3.94	2.62	1.31
3.88	7.74	3.87	2.58	1.29
3.94	7.62	3.81	2.54	1.27
4.00	7.50	3.75	2.50	1.25
4.06	7.38	3.69	2.46	1.23
4.13	7.27	3.64	2.42	1.21
4.19	7.16	3.58	2.39	1.20
4.25	7.06	3.53	2.35	1.18
4.31	6.96	3.48	2.32	1.16
4.38	6.86	3.43	2.29	1.15
4.44	6.76	3.38	2.25	1.13
4.50	6.67	3.34	2.22	1.11
4.56	6.58	3.29	2.19	1.10
4.63	6.49	3.25	2.16	1.08
4.69	6.40	3.20	2.13	1.07
4.75	6.32	3.16	2.11	1.06
4.81	6.23	3.12	2.08	1.04
4.88	6.15	3.08	2.05	1.03
4.94	6.08	3.04	2.03	1.02
5.00	6.00	3.00	2.00	1.00
5.06	5.93	2.97	1.98	0.99
5.13	5.85	2.93	1.95	0.98
5.19	5.78	2.89	1.93	0.97
5.25	5.71	2.86	1.90	0.95
5.31	5.65	2.83	1.88	0.94
5.38	5.58	2.79	1.86	0.93
5.44	5.52	2.76	1.84	0.92
5.50	5.45	2.73	1.82	0.91
5.56	5.39	2.70	1.80	0.90
5.63	5.33	2.67	1.78	0.89
5.69	5.27	2.64	1.76	0.88
5.75	5.22	2.61	1.74	0.87
5.81	5.16	2.58	1.72	0.86
5.88	5.11	2.56	1.70	0.85
5.94	5.05	2.53	1.68	0.84
6.00	5.00	2.50	1.67	0.83

Calculated Percolation Rates

(1/16ths)

Inches Dropped	Percolation Rate			
	30 Minute Reading	15 Minute Reading	10 Minute Reading	5 Minute Reading
1/16	480.00	240.00	160.00	80.00
2/16	240.00	120.00	80.00	40.00
3/16	160.00	80.00	53.33	26.66
4/16	120.00	60.00	40.00	20.00
5/16	96.00	48.00	32.00	16.00
6/16	80.00	40.00	26.67	13.34
7/16	68.57	34.29	22.86	11.43
8/16	60.00	30.00	20.00	10.00
9/16	53.33	26.67	17.78	8.89
10/16	48.00	24.00	16.00	8.00
11/16	43.64	21.82	14.55	2.08
12/16	40.00	20.00	13.33	6.67
13/16	36.92	18.46	12.31	6.16
14/16	34.29	17.15	11.43	5.72
15/16	32.00	16.00	10.67	5.34
1	30.00	15.00	10.00	5.00
1 1/16	28.24	14.12	9.41	4.71
1 2/16	26.67	13.34	8.89	4.45
1 3/16	25.26	12.63	8.42	4.21
1 4/16	24.00	12.00	8.00	4.00
1 5/16	22.86	11.43	7.62	3.81
1 6/16	21.82	10.91	7.27	3.64
1 7/16	20.87	10.44	6.96	3.48
1 8/16	20.00	10.00	6.67	3.34
1 9/16	19.20	9.60	6.40	3.20
1 10/16	18.46	9.23	6.15	3.08
1 11/16	17.78	8.89	5.93	2.97
1 12/16	17.14	8.70	5.71	2.86
1 13/16	16.55	8.28	5.52	2.76
1 14/16	16.00	8.00	5.33	2.67
1 15/16	15.48	7.74	5.16	2.58
2	15.00	7.50	5.00	2.50
2 1/16	14.55	7.28	4.85	2.43
2 2/16	14.12	7.06	4.71	2.36
2 3/16	13.71	6.86	4.57	2.29
2 4/16	13.33	6.67	4.44	2.22
2 5/16	12.97	6.49	4.32	2.16
2 6/16	12.63	6.32	4.21	2.11
2 7/16	12.31	6.66	4.10	2.05
2 8/16	12.00	6.00	4.00	2.00
2 9/16	11.71	5.86	3.90	1.95
2 10/16	11.43	5.72	3.81	1.91
2 11/16	11.16	5.58	3.72	1.86
2 12/16	10.91	5.46	3.64	1.82
2 13/16	10.67	5.34	3.56	1.78
2 14/16	10.43	5.22	3.48	1.74
2 15/16	10.21	5.11	3.40	1.70
3	10.00	5.00	3.33	1.67

Inches Dropped	Percolation Rate			
	30 Minute Reading	15 Minute Reading	10 Minute Reading	5 Minute Reading
3 1/16	9.80	4.90	3.27	1.64
3 2/16	9.60	4.80	3.20	1.60
3 3/16	9.41	4.71	3.14	1.57
3 4/16	9.23	4.62	3.08	1.54
3 5/16	9.06	4.53	3.02	1.51
3 6/16	8.89	4.45	2.96	1.48
3 7/16	8.73	4.37	2.91	1.46
3 8/16	8.57	4.29	2.86	1.43
3 9/16	8.42	4.21	2.81	1.41
3 10/16	8.28	4.14	2.76	1.38
3 11/16	8.14	4.07	2.71	1.36
3 12/16	8.00	4.00	2.67	1.34
3 13/16	7.87	3.94	2.62	1.31
3 14/16	7.74	3.87	2.58	1.29
3 15/16	7.62	3.81	2.54	1.27
4	7.50	3.75	2.50	1.25
4 1/16	7.38	3.69	2.46	1.23
4 2/16	7.27	3.64	2.42	1.21
4 3/16	7.16	3.58	2.39	1.20
4 4/16	7.06	3.53	2.35	1.18
4 5/16	6.96	3.48	2.32	1.16
4 6/16	6.86	3.43	2.29	1.15
4 7/16	6.76	3.38	2.25	1.13
4 8/16	6.67	3.34	2.22	1.11
4 9/16	6.58	3.29	2.19	1.10
4 10/16	6.49	3.25	2.16	1.08
4 11/16	6.40	3.20	2.13	1.07
4 12/16	6.32	3.16	2.11	1.06
4 13/16	6.23	3.12	2.08	1.04
4 14/16	6.15	3.08	2.05	1.03
4 15/16	6.08	3.04	2.03	1.02
5	6.00	3.00	2.00	1.00
5 1/16	5.93	2.97	1.98	0.99
5 2/16	5.85	2.93	1.95	0.98
5 3/16	5.78	2.89	1.93	0.97
5 4/16	5.71	2.86	1.90	0.95
5 5/16	5.65	2.83	1.88	0.94
5 6/16	5.58	2.79	1.86	0.93
5 7/16	5.52	2.76	1.84	0.92
5 8/16	5.45	2.73	1.82	0.91
5 9/16	5.39	2.70	1.80	0.90
5 10/16	5.33	2.67	1.78	0.89
5 11/16	5.27	2.64	1.76	0.88
5 12/16	5.22	2.61	1.74	0.87
5 13/16	5.16	2.58	1.72	0.86
5 14/16	5.11	2.56	1.70	0.85
5 15/16	5.05	2.53	1.68	0.84
6	5.00	2.50	1.67	0.83