

Universal Soil Erosion Prediction (USLE)
Used for HEL, NRI, and other Designated Programs
THIS IS NOT CURRENT EROSION PREDICTION TECHNOLOGY

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Estimating Soil Loss Resulting From Water Erosion (Sheet and Rill)

The Universal Soil Loss Equation, $A = R K L S C P$, is used to estimate sheet and rill erosion.

- A = the predicted average annual soil loss expressed in tons per acre per year.
- R = the rainfall factor. It is the number of erosion-index units in a normal year's rainfall. When other factors are constant, storm losses from rainfall are directly proportional to the product of the total kinetic energy of the storm times its maximum 30-minute intensity (see Figure 1).
- K = the soil-erodibility factor. It is the erosion rate per unit of erosion index for a specific soil in cultivated continuous fallow on a 9 percent slope 72.6 feet long. Soil properties that influence erodibility by water are (1) those that affect the infiltration rate, permeability, and total water capacity, and (2) those that resist the dispersion, splashing, abrasion, and transporting forces of the rainfall and runoff (see Section II, FOTG).
- L = the slope length factor. It is the ratio of soil loss from the field slope length to that from a 72.6 foot length on the same soil type and gradient. Slope length is the distance from the point of origin of overland flow to (1) the point where the slope decreases to the extent that deposition begins or (2) the point where runoff enters a defined channel.
- S = the slope-gradient factor. It is the ratio of soil loss from the field gradient to that from a 9 percent slope. The relation of soil loss to gradient is influenced by density of vegetal cover and by soil particle size. L and S are combined to make the LS Factor for use in mathematical solution of USLE (see Table 1).
- C = the cropping management factor on cropland and other land uses, is the ratio of soil loss from a field with a specified cropping and management or plant cover to that from the fallow condition on which the factor K is evaluated. This factor measures the combined effect of all the interrelated cover, and management variables, plus the growth stage and vegetal cover at the time of the rain (see Tables 2 - Cropland; 3 Pasture; 4 - Woodland; and 5 Mulched Areas).
- P = the erosion control practice factor. It is the ratio of soil loss with contouring, strip cropping, or terracing to that with straight row farming up-and-down the slope (see Tables 6, 7, 8A, 8B, 8C, and Figure #3).
- T = the soil tolerance expressed in tons per acre per year (see Section II, FOTG).

Reference: Agriculture Handbook 537, TSC –Technical Note.

Instructions for Determining Soil Loss by Water Erosion

- A. Determine the R factor for the area (Figure 1).
- B. Determine soil series and texture for site where soil loss is to be calculated (soils map).
- C. Determine soil erodibility factor "K" and soil loss tolerance factor "T" (Section II - FOTG).
- D. Determine slope length and percent. Obtain the "LS" factor from Table 1.
- E. Determine "C" factor for land use. Tables 2, 3, 4 or 5.
- F. Determine P factor. Tables 6, 7, 8A, 8B, 8C and Figure 3.
Use USLE Formula $A = R \times K \times LS \times C \times P$

EXAMPLE:

Morley clay loam, 6 percent, 300 ft. slope length

R = 150 – Figure 1, Madison County, Ohio

Rotation: continuous corn, spring plow, residue left.

Determine average annual soil loss using soil loss prediction tables.

- a. Determine T and K factors (Section II, FOTG)
 $T = 3$ $K = .43$
- b. Determine LS factor (Table 1) = 1.16
- c. Determine P factor
Farming operations up and down hill – P factor = 1
- d. Determine C factor (Table 2)
 $C = .28$
- e. Determine average annual soil loss using USLE Equation
 $A = R \times K \times LS \times C \times P$
 $150 \times .43 \times 1.16 \times .28 \times 1 = 21 \text{ tons}$

Alternative 1:

Use a rotation of corn-soybeans-wheat where the corn is no-tilled in wheat residue; soybeans are no-tilled in corn stalks and wheat is drilled in disked residues. Small grain and corn stalk residue is assumed to be 80 percent after planting corn and soybeans, respectively, and the disked soybean residue is assumed to be 20 percent after drilling wheat.

Use the single year C values in Table 2 to calculate the C factor for this rotation and tillage system.

Corn after small grain, no-till, 80 percent cover	=	.04
Soybeans after corn, no-till, wide row, 80 percent cover	=	.06
Small grain after soybeans, disked with 20 percent cover	=	<u>.11</u>
		.21 / 3 yrs .07

Calculate Alternative 1 using the USLE Formula:

$$150 \times .43 \times 1.16 \times .07 \times 1 = 5.2 \text{ tons/acre}$$

Alternative 2:

Use rotation of corn-corn-oats-hay-hay, spring plow residue left for corn. Disk with 20 percent cover for oats with grass-legume-hay seeded in the oats.

Calculate average annual soil loss using Soil Loss Prediction Table

- a. Determine C factor using procedure described above using Table 2

$$C = .13 + .24 + .09 + .004 = 468 - 5 = \underline{.09}$$

Calculate Alternative 2 using USLE

$$150 \times .43 \times 1.16 \times .09 \times 1 = 6.7 \text{ ton/acre}$$

Table 1 – Universal Soil Loss Equation
Values of the Topographic Factor, LS, for Specific Combinations of Slope Length and Steepness

Slope Length (Feet)	Percent of Slope																				
	.2	.5	.8	1.0	2.0	3	4	5	6	8	10	12	14	16	18	20	25	30	40	50	60
25	.06	.07	.09	.09	.13	.19	.23	.27	.34	.50	.68	.90	1.15	1.42	1.72	2.04	2.94	3.98	6.33	8.91	11.58
50	.07	.08	.10	.10	.16	.23	.30	.38	.48	.70	.97	1.28	1.62	2.01	2.43	2.88	4.16	5.62	8.95	12.60	16.37
75	.07	.09	.11	.12	.18	.26	.36	.46	.58	.86	1.19	1.56	1.99	2.46	2.97	3.53	5.10	6.89	10.96	15.44	20.05
100	.08	.10	.11	.13	.20	.29	.40	.53	.67	.99	1.37	1.80	2.29	2.84	3.43	4.08	5.89	7.95	12.65	17.82	23.15
125	.08	.10	.12	.14	.21	.31	.44	.60	.75	1.11	1.53	2.02	2.56	3.17	3.84	4.56	6.59	8.89	14.15	19.93	25.88
150	.09	.10	.12	.15	.23	.32	.47	.66	.82	1.21	1.68	2.21	2.81	3.48	4.21	5.00	7.21	9.74	15.50	21.83	28.35
175	.09	.11	.13	.15	.24	.34	.50	.71	.89	1.31	1.81	2.39	3.03	3.75	4.54	5.40	7.79	10.52	16.74	23.58	30.63
200	.09	.11	.13	.16	.25	.35	.53	.76	.95	1.40	1.94	2.55	3.24	4.01	4.86	5.77	8.33	11.25	17.89	25.21	32.74
225	.09	.11	.13	.16	.26	.37	.55	.80	1.01	1.49	2.05	2.71	3.44	4.26	5.15	6.12	8.83	11.93	18.98	26.73	34.73
250	.10	.11	.14	.17	.26	.38	.58	.85	1.06	1.57	2.16	2.85	3.63	4.49	5.43	6.45	9.31	12.57	20.01	28.18	36.60
275	.10	.12	.14	.17	.27	.39	.60	.89	1.11	1.64	2.27	2.99	3.80	4.71	5.69	6.76	9.77	13.19	20.98	29.56	38.39
300	.10	.12	.14	.18	.28	.40	.62	.93	1.16	1.72	2.37	3.12	3.97	4.92	5.95	7.06	10.20	13.77	21.91	30.87	40.10
350	.10	.12	.14	.19	.29	.42	.66	1.00	1.26	1.85	2.56	3.37	4.29	5.31	6.42	7.63	11.02	14.88	23.67	33.34	43.31
400	.10	.13	.15	.20	.30	.43	.70	1.07	1.34	1.98	2.74	3.61	4.59	5.68	6.87	8.16	11.78	15.91	25.30	35.65	46.30
500	.11	.13	.16	.21	.33	.46	.76	1.20	1.50	2.22	3.06	4.03	5.13	6.35	7.68	9.12	13.17	17.78	28.29	39.85	51.77
600	.11	.14	.16	.22	.34	.49	.82	1.31	1.65	2.43	3.35	4.42	5.62	6.95	8.41	9.99	14.43	19.48	30.99	43.66	56.71
700	.12	.14	.17	.23	.36	.51	.87	1.42	1.78	2.62	3.62	4.77	6.07	7.51	9.08	10.79	15.58	21.04	33.48	47.16	61.25
800	.12	.14	.17	.24	.37	.54	.92	1.51	1.90	2.80	3.87	5.10	6.49	8.03	9.71	11.54	16.66	22.49	35.79	50.41	65.48
900	.12	.15	.17	.25	.39	.55	.96	1.60	2.02	2.97	4.11	5.41	6.88	8.51	10.30	12.24	17.67	23.86	37.96	53.47	69.45
1000	.13	.15	.18	.26	.40	.57	1.00	1.69	2.13	3.13	4.33	5.70	7.25	8.97	10.86	12.90	18.63	25.15	40.01	56.36	73.21
1100	.13	.15	.18	.26	.41	.59	1.04	1.77	2.23	3.29	4.54	5.98	7.61	9.41	11.39	13.53	19.53	26.38	41.96	59.11	76.78
1200	.13	.16	.19	.27	.42	.60	1.08	1.85	2.33	3.43	4.74	6.25	7.95	9.83	11.89	14.13	20.40	27.55	43.83	61.74	80.20

1/ LS values for slopes greater than 20 percent and/or slopes exceeding 1000 feet are speculative.

Table 2 – C Factors for Cropland (Single Year) ^{1/}
E.I. Curve - 16

Crop Sequence	<u>2/</u> Clean Tillage <u>Fall</u>		<u>2/</u> Clean Tillage <u>Spring</u>		<u>3/</u> Fall Chisel or Disk % Cover after plant				<u>3/</u> Spring Chisel, Disk or Ridg % Cover after plant				<u>3/</u> No-Till % Cover after plant								
	Rdr	Rdl	Rdr	Rdl	20	30	40	50	20	30	40	50	20	30	40	50	60	70	80	90	
CORN:																					
After Corn	.46	.35	.35	.28	.20	.14	.12	.10	.16	.11	.10	.08	----	.11	.10	.08	.07	.06	.04	.03	
After corn 2 yrs after meadow	.45	.32	.31	.24	.19	.16	.15	.14	.15	.13	.12	.11	----	.13	.11	.08	.07	.05	.04	.03	
After corn silage	.55	----	.38	----	.47	----	----	----	.38	----	----	----	.22	----	----	----	----	----	----	----	
After corn silage & cover crop	----	----	----	.29	----	----	----	----	.16	.13	.11	.10	----	----	----	----	.10	.09	.07	.05	
After soybeans	----	.41	----	.35	.32	.29	----	----	.26	.23	----	----	.25	.16	.12	----	----	----	----	----	
After soybeans & cover crop	----	----	----	.29	----	----	----	----	.16	.13	.11	.10	----	----	----	----	.10	.09	.07	.05	
After small grain	----	.37	----	.30	.23	.20	.16	.13	.18	.16	.13	.10	----	.15	.12	.09	.08	.06	.04	.03	
After meadow (grass/legume)	----	.17	----	.13	.12	.16	.09	.08	.10	.08	.07	.06	----	----	----	----	----	.02	.02	.01	
After meadow (legume only)	----	.20	----	.16	.14	.12	.11	.10	.12	.10	.08	.07	----	----	----	----	----	.02	.02	.01	
CORN SILAGE:																					
After Corn	.50	.39	.39	.32	.24	.18	.16	.14	.20	.15	.14	.12	----	.15	.14	.12	.11	.10	.08	.07	
After corn 2 yrs after meadow	.49	.37	.34	.30	.23	.17	.15	.13	.19	.14	.13	.12	----	.16	.13	.12	.11	.09	.08	.07	
After corn silage	.60	----	.46	----	.52	----	----	----	.48	----	----	----	.27	----	----	----	----	----	----	----	
After corn silage & cover crop	----	----	.34	----	----	----	----	----	.20	.17	.15	.14	----	----	----	----	.14	.13	.11	.09	
After soybeans	----	.45	----	.40	.36	.34	----	----	.30	.27	----	----	.30	.24	.19	----	----	----	----	----	
After soybeans & cover crop	----	----	----	.33	----	----	----	----	.20	.17	.15	.14	----	----	----	----	.13	.12	.10	.09	
After small grain	----	.41	----	.34	.27	.24	.19	.13	.22	.20	.17	.14	----	.19	.16	.13	.11	.10	.08	.07	
After meadow (grass/legume)	----	.23	----	.18	.16	.14	.13	.12	.14	.12	.11	.10	----	----	----	----	----	.06	.06	.05	
After meadow (legume only)	----	.26	----	.21	.18	.16	.15	.14	.16	.14	.13	.12	----	----	----	----	----	.06	.06	.05	

Table 2 – C Factors for Cropland (Single Year) ^{1/}
E.I. Curve - 16

Crop Sequence	<u>2/</u> Clean Tillage Fall		<u>2/</u> Clean Tillage Spring		<u>3/</u> Fall Chisel or Disk % Cover after plant				<u>3/</u> Spring Chisel, Disk or Ridg % Cover after plant				<u>3/</u> No-Till % Cover after plant							
	Rdr	Rdl	Rdr	Rdl	20	30	40	50	20	30	40	50	20	30	40	50	60	70	80	90
CORN SILAGE & AERIAL SEEDED COVER CROP																				
After Corn	.48	.37	.37	.30	.21	.15	.13	.11	.17	.14	.11	.09	----	.14	.11	.09	.08	.07	.05	.04
After corn 2 yrs after meadow	.47	.35	.35	.28	.20	.14	.12	.10	.16	.11	.10	.08	----	.13	.10	.09	.08	.06	.05	.04
After corn silage	.58	----	.44	----	.49	----	----	----	.40	----	----	----	.24	----	----	----	----	----	----	----
After corn silage & cover crop	----	----	.42	----	----	----	----	----	.17	.14	.12	.11	----	----	----	----	.11	.10	.08	.06
After soybeans	----	.43	----	.38	.33	.31	----	----	.27	.25	----	----	.27	.23	.16	----	----	----	----	----
After soybeans & cover crop	----	----	----	.31	----	----	----	----	.17	.14	.12	.11	----	----	----	----	.10	.09	.07	.06
After small grain	----	.39	----	.32	.24	.21	.16	.10	.19	.17	.14	.11	----	.16	.13	.10	.08	.06	.05	.04
After meadow (grass/legume)	----	.21	----	.16	.13	.11	.10	.09	.11	.09	.08	.07	----	----	----	----	----	.03	.03	.02
After meadow (legume only)	----	.24	----	.19	.15	.13	.12	.11	.13	.11	.10	.09	----	----	----	----	----	.03	.03	.02
SOYBEANS: (wide row) 20" rows																				
After Corn	.46	.40	.36	.34	.20	.16	.13	.12	.16	.13	.10	.09	----	.13	.10	.09	.08	.07	.06	.03
After corn 2 yrs after meadow	.45	.36	.35	.27	.18	.15	.12	.10	.14	.12	.10	.08	----	.12	.09	.08	.07	.06	.04	.03
After corn silage	.58	----	.48	----	.48	----	----	----	.46	----	----	----	.25	----	----	----	----	----	----	----
After corn silage & cover crop	----	----	----	.36	----	----	----	----	.20	.18	.15	.14	----	----	----	----	.13	.12	.10	.08
After soybeans	----	.42	----	.41	.37	.35	----	----	.30	.28	----	----	.26	.20	.16	----	----	----	----	----
After soybeans & cover crop	----	----	----	.35	----	----	----	----	.22	.18	.15	.13	----	----	----	----	.12	.11	.09	.08
After small grain	----	.40	----	.34	.24	.17	.15	.14	.19	.14	.12	.11	----	.14	.12	.11	.10	.09	.06	.03
After meadow (grass/legume)	----	.20	----	.15	.12	.10	.09	.08	.10	.08	.07	.06	----	----	----	----	.03	.02	.01	.01
After meadow (legume only)	----	.24	----	.18	.14	.12	.11	.10	.12	.10	.08	.07	----	----	----	----	.04	.02	.01	.01

Table 2 – C Factors for Cropland (Single Year) ^{1/}
E.I. Curve - 16

Crop Sequence	<u>2/</u> Clean Tillage Fall		<u>2/</u> Clean Tillage Spring		<u>3/</u> Fall Chisel or Disk % Cover after plant				<u>3/</u> Spring Chisel, Disk or Ridg % Cover after plant				<u>3/</u> No-Till % Cover after plant							
	Rdr	Rdl	Rdr	Rdl	20	30	40	50	20	30	40	50	20	30	40	50	60	70	80	90
SOYBEANS: (wide row) and Aerial seeded cover crop in Standing soybeans																				
After Corn	.42	.37	.33	.31	.17	.13	.10	.09	.13	.11	.09	.08	----	.11	.09	.08	.07	.06	.05	.02
After corn 2 yrs after meadow	.45	.33	.32	.24	.15	.12	.09	.07	.11	.09	.07	.05	----	.09	.08	.07	.06	.05	.03	.02
After corn silage	.55	----	.45	----	.45	----	----	----	.44	----	----	----	.24	----	----	----	----	----	----	----
After corn silage & cover crop	----	----	----	.33	----	----	----	----	.17	.15	.12	.10	----	----	----	----	.09	.08	.07	.06
After soybeans	----	.39	----	.38	.34	.32	----	----	.27	.25	----	----	.25	.19	.15	----	----	----	----	----
After soybeans & cover crop	----	----	----	.32	----	----	----	----	.19	.15	.12	.10	----	----	----	----	.09	.08	.07	.06
After small grain	----	.37	----	.31	.18	.14	.12	.11	.16	.11	.09	.08	----	.11	.09	.08	.07	.06	.05	.02
After meadow (grass/legume)	----	.17	----	.12	.09	.07	.06	.05	.07	.05	.04	.03	----	----	----	----	.02	.01	.01	.01
After meadow (legume only)	----	.20	----	.14	.11	.08	.07	.06	.08	.06	.05	.04	----	----	----	----	.02	.01	.01	.01

Table 2 – C Factors for Cropland (Single Year) ^{1/}
E.I. Curve - 16

Crop Sequence	<u>2/</u> Clean Tillage Fall		<u>2/</u> Clean Tillage Spring		<u>3/</u> Fall Chisel or Disk % Cover after plant				<u>3/</u> Spring Chisel, Disk or Ridg % Cover after plant				<u>3/</u> No-Till % Cover after plant							
	Rdr	Rdl	Rdr	Rdl	20	30	40	50	20	30	40	50	20	30	40	50	60	70	80	90
SOYBEANS: (wide row) and COVER CROP seeded in prepared seedbed																				
After Corn	.46	.40	.36	.34	.22	.18	.15	.14	.18	.15	.12	.11	----	.18	.15	.14	.13	.12	.08	.05
After corn 2 yrs after meadow	.45	.36	.35	.27	.20	.17	.14	.12	.16	.14	.12	.10	----	.17	.15	.13	.10	.08	.06	.05
After corn silage	.58	----	.48	----	.30	----	----	----	.48	----	----	----	.26	----	----	----	----	----	----	----
After corn silage & cover crop	----	----	----	.36	----	----	----	----	.22	.20	.17	.16	----	----	----	----	.17	.14	.12	.10
After soybeans	----	.42	----	.41	.39	.37	----	----	.32	.38	----	----	.28	.22	.18	----	----	----	----	----
After soybeans & cover crop	----	----	----	.35	----	----	----	----	.24	.20	.17	.15	----	----	----	----	.22	.18	.15	.11
After small grain	----	.40	----	.34	.26	.19	.17	.16	.21	.16	.14	.13	----	.19	.17	.14	.12	.11	.08	.05
After meadow (grass/legume)	----	.20	----	.15	.14	.12	.11	.10	.12	.10	.09	.08	----	----	----	----	.05	.04	.03	.03
After meadow (legume only)	----	.24	----	.18	.17	.14	.13	.12	.14	.12	.11	.10	----	----	----	----	.06	.05	.04	.04
SOYBEANS: (drilled) <20" rows																				
After Corn	.37	.31	.29	.25	.18	.14	.11	.10	.14	.11	.09	.08	----	.11	.09	.08	.07	.06	.05	.03
After corn 2 yrs after meadow	.35	.27	.29	.22	.15	.13	.11	.10	.12	.10	.09	.08	----	.10	.08	.07	.06	.05	.04	.03
After corn silage	.52	----	.42	----	.42	----	----	----	.40	----	----	----	.22	----	----	----	----	----	----	----
After corn silage & cover crop	----	----	----	.27	----	----	----	----	.18	.15	.13	.11	----	----	----	----	.10	.08	.07	.06
After soybeans	----	.38	----	.30	.31	.30	----	----	.25	.24	----	----	.20	.16	.13	----	----	----	----	----
After soybeans & cover crop	----	----	----	.26	----	----	----	----	.20	.16	.13	.12	----	----	----	----	.16	.13	.10	.08
After small grain	----	.39	----	.25	.19	.16	.13	.12	.15	.13	.10	.09	----	.13	.10	.09	.08	.06	.05	.03
After meadow (grass/legume)	----	.15	----	.12	.11	.09	.08	.07	.09	.07	.06	.05	----	----	----	----	.03	.02	.01	.01
After meadow (legume only)	----	.18	----	.14	.13	.11	.10	.08	.11	.08	.07	.06	----	----	----	----	.04	.02	.01	.01

Table 2 – C Factors for Cropland (Single Year) ^{1/}
E.I. Curve - 16

Crop Sequence	<u>2/</u> Clean Tillage Fall		<u>2/</u> Clean Tillage Spring		<u>3/</u> Fall Chisel or Disk % Cover after plant				<u>3/</u> Spring Chisel, Disk or Ridg % Cover after plant				<u>3/</u> No-Till % Cover after plant							
	Rdr	Rdl	Rdr	Rdl	20	30	40	50	20	30	40	50	20	30	40	50	60	70	80	90
SOYBEANS: (drilled) and Aerial seeded COVER CROP in standing soybeans																				
After Corn	.34	.28	.26	.22	.15	.11	.08	.07	.11	.08	.06	.05	----	.08	.07	.06	.05	.04	.03	.02
After corn 2 yrs after meadow	.32	.24	.26	.22	.12	.10	.08	.07	.09	.07	.06	.05	----	.07	.06	.05	.04	.03	.03	.02
After corn silage	.49	----	.39	----	.39	----	----	----	.37	----	----	----	.21	----	----	----	----	----	----	----
After corn silage & cover crop	----	----	----	.24	----	----	----	----	.15	.11	.10	.08	----	----	----	----	.08	.07	.06	.05
After soybeans	----	.35	----	.27	.28	.27	----	----	.22	.21	----	----	.19	.15	.12	----	----	----	----	----
After soybeans & cover crop	----	----	----	.23	.17	.13	.10	.09	.17	.13	.10	.09	----	----	----	----	.08	.07	.06	.05
After small grain	----	.36	----	.22	.16	.13	.10	.09	.12	.11	.07	.06	----	.11	.10	.09	.07	.05	.04	.02
After meadow (grass/legume)	----	.12	----	.09	.08	.06	.05	.04	.06	.04	.03	.02	----	----	----	----	.02	.01	.01	.01
After meadow (legume only)	----	.14	----	.11	.10	.07	.06	.05	.07	.05	.04	.02	----	----	----	----	.02	.01	.01	.01

Table 2 – C Factors for Cropland (Single Year) ^{1/}
E.I. Curve - 16

Crop Sequence	^{2/} Clean Tillage Fall		^{2/} Clean Tillage Spring		^{3/} Fall Chisel or Disk % Cover after plant				^{3/} Spring Chisel, Disk or Ridg % Cover after plant				^{3/} No-Till % Cover after plant							
	Rdr	Rdl	Rdr	Rdl	20	30	40	50	20	30	40	50	20	30	40	50	60	70	80	90
SOYBEANS: (drilled) and COVER CROP seeded in a prepared seedbed																				
After Corn	.37	.31	.29	.25	.20	.16	.13	.12	.16	.13	.11	.10	----	.13	.11	.10	.09	.08	.06	.04
After corn 2 yrs after meadow	.35	.27	.29	.22	.17	.15	.13	.12	.14	.12	.11	.10	----	.12	.10	.09	.08	.07	.06	.05
After corn silage	.52	----	.42	----	.44	----	----	----	.42	----	----	----	.24	----	----	----	----	----	----	----
After corn silage & cover crop	----	----	----	.27	----	----	----	----	.20	.17	.15	.13	----	----	----	----	.11	.10	.09	.08
After soybeans	----	.38	----	.30	.33	.32	----	----	.27	.26	----	----	.22	.18	.15	----	----	----	----	----
After soybeans & cover crop	----	----	----	.26	----	----	----	----	.22	.18	.15	.14	----	----	----	----	.13	.12	.11	.10
After small grain	----	.39	----	.25	.21	.18	.15	.14	.17	.15	.12	.11	----	.15	.12	.11	.10	.08	.07	.05
After meadow (grass/legume)	----	.15	----	.12	.13	.11	.10	.09	.11	.09	.08	.07	----	----	----	----	.05	.04	.03	.03
After meadow (legume only)	----	.18	----	.14	.15	.13	.12	.11	.13	.11	.10	.08	----	----	----	----	.06	.05	.04	.04
SMALL GRAIN (fall seeded): ^{4/}																				
After Corn, Sm. Grain, Sorghum	.13	.11	----	----	.09	.08	.07	.06	----	----	----	----	----	.09	.08	.07	.06	.05	.04	.03
After soybeans	----	.14	----	----	.11	.10	.09	.07	----	----	----	----	.08	.07	.05	----	----	----	----	----
After corn silage	.14	----	----	----	.14	----	----	----	----	----	----	----	.13	----	----	----	----	----	----	----
After meadow (grass/legume)	----	.07	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
After meadow (legume only)	----	.08	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Table 2 – C Factors for Cropland (Single Year) ^{1/}
E.I. Curve - 16

Crop Sequence	<u>2/</u> Clean Tillage Fall		<u>2/</u> Clean Tillage Spring		<u>3/</u> Fall Chisel or Disk % Cover after plant				<u>3/</u> Spring Chisel, Disk or Ridg % Cover after plant				<u>3/</u> No-Till % Cover after plant							
	Rdr	Rdl	Rdr	Rdl	20	30	40	50	20	30	40	50	20	30	40	50	60	70	80	90
SMALL GRAIN (spring seeded): ^{4/}																				
After Corn, Sm. Grain, Sorghum	.19	.13	.11	.10	----	----	----	----	.09	.08	.07	.06	----	.08	.08	.07	.06	.06	.05	.05
After soybeans	----	----	----	.15	----	----	----	----	.10	.09	----	----	----	.10	.09	----	----	----	----	----
After corn silage	----	----	----	----	----	----	----	----	.10	----	----	----	----	----	----	----	----	----	----	----
After meadow (grass/legume)	----	----	----	.05	----	----	----	----	----	.04	----	----	----	----	----	----	----	----	----	----
After meadow (legume only)	----	----	----	.06	----	----	----	----	----	.05	----	----	----	----	----	----	----	----	----	----
SMALL GRAIN (fall) and DOUBLE CROP SOYBEANS with the following tillage for the Double Crop Beans																				
Plow for Dbl. Crop Soybeans	----	.28	----	----	----	.23	----	----	----	----	----	----	----	----	----	----	----	.20	----	----
Chisel/Disk – Dbl. Crop Beans	----	.16	----	----	----	.10	----	----	----	----	----	----	----	----	----	----	----	.08	----	----
No-till Double Crop Soybeans	----	.13	----	----	----	.07	----	----	----	----	----	----	----	----	----	----	----	.04	----	----
MEADOW																				
Without nurse crop (spring):																				
After Corn, Sm. Grain, Sorghum	----	----	----	.17	----	----	----	----	----	.11	.10	.08	.07	----	----	----	.04	.03	.02	.01

Table 2 – C Factors for Cropland (Single Year) ^{1/}
E.I. Curve - 16

Crop Sequence	^{2/} Clean Tillage Fall		^{2/} Clean Tillage Spring		^{3/} Fall Chisel or Disk % Cover after plant				^{3/} Spring Chisel, Disk or Ridge % Cover after plant				^{3/} No-Till % Cover after plant							
	Rdr	Rdl	Rdr	Rdl	20	30	40	50	20	30	40	50	20	30	40	50	60	70	80	90
MEADOW Without nurse crop (fall):																				
After Corn, Sm. Grain, Sorghum	----	.13	----	----	.09	.08	.06	.05	----	----	----	----	----	----	----	----	.03	.02	.02	.01
MEADOW (Established full yr.)																				
Grass – Legume .004																				
Legume only .02																				
VEGETABLE CROPS:																				
Tomatoes	----	----	----	.39																
Peppers	----	----	----	.49																
Cucumbers or Mellows	----	----	----	.31																
Potatoes	----	----	----	.38																
Potatoes and Cover Crop	----	----	----	.36																
Strawberries	----	----	----	.20																
Strawberries and mulch	----	----	----	.14																
TOBACCO																				
After Tobacco	----	----	.53	----																
After Tobacco 2 yrs aft. meadow	----	----	.50	----																
After Meadow	----	----	.30	----																
TOBACCO & COVER CROP seeded 9/15																				
After Tobacco	----	----	.48	----																
After Tobacco 2 yrs aft. meadow	----	----	.40	----																
After Meadow	----	----	.26	----																

Table 2 – C Factors for Cropland (Single Year) ^{1/}
E.I. Curve - 16

Crop Sequence	^{2/} Clean Tillage Fall		^{2/} Clean Tillage Spring		^{3/} Fall Chisel or Disk % Cover after plant				^{3/} Spring Chisel, Disk or Ridg % Cover after plant				^{3/} No-Till % Cover after plant							
	Rdr	Rdl	Rdr	Rdl	20	30	40	50	20	30	40	50	20	30	40	50	60	70	80	90
SUNFLOWERS After corn, Sm. Grain, Sorghum	----	----	----	.42																
CANOLA (rape seed): After small grain		.30			.20	.18	.16	.14										.10		
CANOLA & NO-TILL DOUBLE CROP SOYBEANS After small grain		.35			.23	.21	.19	.17										.15		

FOOTNOTES:

^{1/} Values in this table are based on high level management with yield s exceeding the following:

Corn – 100 bu./ac.; soybeans – 40 bu./ac.; wheat – 45 bu./ac.; oats – 60 bu./ac.; meadow – 3 tons/ac.

^{2/} Rdr = residue removed; Rdl = residue left. Residue removed following corn harvested for grain assumes 65-85 percent of the crop residue is removed by bailing or other removal from the field.

^{3/} For ridge till systems adjust the “C” factors by the following factors:

- Ridge till system, rows on the contour multiply the reduced till “C” factor by 0.7.
- Ridge till system, rows up and down the slope < 12 percent slope, multiply the reduced till “C” factor by 0.8.
- Ridge till system, rows up and down the slope > 12 percent slope, multiply the reduced till “C” factor by 0.9.

Use these adjustments in addition to the appropriate “P” adjustments.

^{4/} The same factors are used for small grain with or without meadow seedings. No establishment year is used for meadow seedings made in a small grain nurse crop.

To develop a “C” factor for an entire crop rotation, select single-year factors from the table for the crop sequence and tillage system for each crop in the rotation. Add these single-year factors together and divide by the number of years in the rotation to obtain the average “C” factor for the rotation.

Table 3 – “C” Factors for Permanent Pasture, Idle Land, or Grazed Woodland ^{1/}

Type and Height of Raised Canopy ^{2/}	Canopy Cover ^{3/} Percent	Type ^{4/}	Percent Ground Cover ^{5/}					
			0	20	40	60	80	95-100
No appreciable canopy		G	.45	.20	.10	.042	.013	.003
		W	.45	.24	.15	.091	.043	.011
Canopy of tall grasses or bushes with average drop[height of 3 ft. or less	25	G	.36	.17	.09	.038	.013	.033
		W	.36	.20	.13	.083	.041	.011
	50	G	.26	.13	.07	.035	.012	.003
		W	.26	.16	.11	.076	.039	.011
	75	G	.17	.10	.06	.032	.011	.003
		W	.17	.12	.09	.068	.038	.011
Appreciable brush or bushes with average drop height of 6 ½ ft.	25	G	.40	.18	.09	.040	.013	.003
		W	.40	.22	.14	.087	.042	.011
	50	G	.34	.16	.08	.038	.012	.003
		W	.34	.19	.13	.082	.041	.011
	75	G	.28	.14	.08	.036	.012	.003
		W	.28	.17	.12	.078	.040	.011
Trees but no appreciable low brush with average drop height of 13 ft. or more	25	G	.42	.19	.10	.041	.013	.003
		W	.42	.23	.14	.089	.042	.011
	50	G	.39	.18	.09	.040	.013	.003
		W	.39	.21	.14	.087	.042	.011
	75	G	.36	.17	.09	.039	.012	.033
		W	.36	.20	.13	.084	.041	.011

^{1/} The listed “C” values assume that the vegetation and mulch are randomly distributed over the entire area. For grazed woodland with high buildup of organic matter in the topsoil under permanent forest conditions, multiply the table values by 0.7.

^{2/} Canopy height is measured as the average fall height of water drops falling from the canopy to ground. Canopy effect is inversely proportional to drop fall height and is negligible if fall height exceeds 33 feet.

^{3/} Portion of total area surface that would be hidden from view by canopy in a vertical projection (a bird’s-eye view).

^{4/} G: Cover at surface is grass, grass-like plants, or duff.

W: Cover at surface is mostly broadleaf herbaceous plants (as weeds with little lateral-root network near the surface) or litter, or both.

^{5/} The portion of a grass or weed cover that contacts the soil surface during a rainstorm and interferes with water flow over the soil surface is included in “Cover at the surface.” The remainder is included in canopy cover.

Examples: A tall fescue pasture with an excellent stand of grass would have no appreciable raised canopy, the type of cover that contacts the surface is grass “G” and the percent ground cover is 95-100 percent. The “C” factor is .003.

A poorly managed bluegrass pasture having a 25 percent canopy cover of 3 feet or less and a 60 percent grass cover “G” that contacts the surface. The “C” factor would be .038.

Table 4 – “C” Factors for Undisturbed Forestland ^{1/}

Percent of Area 3/ Covered by Duff	Percent of Area Covered by Canopy of Trees and Undergrowth	Factor C ^{2/}
100 – 90-	100 – 75	.0001 - .001
85 - 75	70 – 45	.002 - .004
70 – 40	40 – 20	.003 - .009

^{1/} Where effective duff cover is less than 40 percent or canopy cover is less than 20 percent, use Table 4. Also use Table 4 where woodlands are being grazed, harvested, or burned.

^{2/} The ranges in listed “C” value are caused by the ranges in the percent of forest duff, canopy covers, and by variations in effective canopy heights.

^{3/} Duff will be used as the primary indicator of the “C” factor. Duff is the more or less firm organic or humus layer found in a forest soil between the litter above and mineral soil below.

Examples:

Undisturbed forestland 80 percent canopy cover, 90 percent of the area cover by duff C factor = .001.

Table 5 – “C” Factors for Annual cover, and Various Quantities of Mulch

Trees and Undergrowth	“C” Factor
Bare Areas	1.0
¼ ton straw mulch	.52
½ ton straw mulch	.35
¾ ton straw mulch	.24
1 ton straw mulch	.18
1 ½ tons of straw mulch	.10
2 tons straw mulch	.06
3 tons straw mulch	.03
4 tons straw mulch	.02
Annual Cover	.15

Contour P Factor Values for the Universal Soil Loss Equation (USLE)

Guidelines for Users

The following method for determining Contour P Factors can be applied to both contour farming and cross-slope farming. However, the use of the procedure with cross-slope farming should involve careful judgment. The planner should ensure that both the row grade and the USLE downhill slope values accurately describe the predominant critical area used to plan the field or treatment area.

The predominant critical area is that landscape unit which is the most erosive significant landscape area in the field. Areas of insignificant size which are eroding at rates exceeding that of the predominant critical area may be ignored. The planned management system is designed to treat the predominant critical area.

The Contour P Factor procedure should be used where a significant attempt has been made to contour the field or where a majority of the field is farmed at or near the contour. However, with highly dissected fields or with complex topography, USLE slopes may face many different directions in relation to row direction. The result may be a wide range of P values on the various slopes in the field. In this case, the Contour P Factor procedure should not be used and a P value of 1.0 would be appropriate.

Directions for Use

To obtain Contour P Factor values, first determine the appropriate 10-year storm EI value for the area from Figure 3. These values have been developed jointly by NHQ and state specialists. Next, select the Contour P Factor tables having that 10-year storm EI value. Finally, select the appropriate table corresponding to the ridge or oriented roughness height, or the appropriate tillage and management system being evaluated.

Contour P Factor Values for Low Ridge Heights:

Use Table 8A for tillage and cropping systems performed across the slope or on the contour that typically have a low ridge (or oriented roughness) height of about 1-3 inches. Such systems include: first year meadow and no-till seeded across slope or on the contour.

Example:

Given: Small grain crop, 2-inch oriented roughness height, 10-year storm EI of 100, 10 percent downhill slope, 2 percent row grade.

Solution: From Table 8A, 10-year storm EI of 100, at the intersection of 10 percent downhill slope and 2 percent row grade, read a Contour P Factor value = 0.90

Contour P Factor Values for Moderate Ridge Heights:

Use Table 8B for tillage and cropping systems that typically have a moderate ridge (or oriented roughness) height of about 3-5 inches.

Example:

Given: Row crop, 4 inch oriented roughness height, 10 year storm EI of 100, 10 percent, downhill slope, 2 percent row grade.

Solution: From Table 8B, 10 year storm EI of 100, at the intersection of 10 percent downhill slope and 2 percent row grade, read a Contour P Factor Value = 0.75

Contour P Factor Values for Ridge Systems:

Although this example is developed for ridge systems, this procedure may be applied to any system where significant changes in ridge height occur during the year. Calculation of weighted average "P" is optional, depending on the user's judgement.

Use Table 8C for ridge systems such as ridge-till, hipping and bedding. Because the values in the table represent the average annual Contour P Factor for this system, they do not account for the times in which the ridges are partially or completely destroyed, the user may develop a weighted average. For the time period in which the ridges are built up the value of the Contour P Factor from Table 8C is multiplied by the %EI for the time from the table at the bottom of Figure 3. Depending on the height of the ridges or oriented roughness, the value from either Table 8A or Table 8B is weighted by the %EI occurring during the remainder of the year. These weighted values are added together to give a yearly Contour P Factor value.

Example:

Given: Ridge System (corn, ridge-till)
10-year storm EI of 100
Ann. EI distribution area of 16 (from AH-537) 2 percent row (furrow) grade
May 1 – Planting date with sweeps removing 2" from ridge, leaving a 4" ridge height.
June 15 – Re-ridge at cultivation, creating a 6" ridge height.

Solution:

Dates	Downhill Slope	Row Grade	Ridge Height	Seasonal P	Percent An. EI	P * EI
5/1 – 6/15	10	2	4" Mod.	0.75 (1)	20	0.12
6/15 – 5/1	10	2	6" High	0.55 (2)	80	<u>0.46</u>
Average Annual Contour P Factor Value =						0.58
Rounded =						0.60

Footnotes:

- (1) Value obtained from Table 8B 10-year EI of 100
(2) Value obtained from Table 8C 10-year EI of 100

Contour P Factor Values for Crop Rotations:

Example:

Soil loss determination for a crop rotation with cross-slope farming using an annual weighted "CP"

Given: Crop rotation of corn, soybeans, wheat, meadow, meadow using fall moldboard plow for all crops. Ten-year storm EI equals 100, downhill slope equals 10 percent; row grade equals 2 percent. (Corn and soybeans have moderate ridge/wheat and meadow low ridge.)

Solution:

Rotation	Crop	C	P	CP	
Year 1	Corn	0.17	0.75	0.1275	R = 225
Year 2	Soybeans	0.40	0.75	0.3000	K = 0.37
Year 3	Wheat	0.14	0.90	0.1260	LS = 0.5
Year 4	Meadow	0.08	0.90	0.0720	
Year 5	Meadow	0.01	0.90	<u>0.0100</u>	CP = 0.13
				0.6355	A = 5.4 T/A/Y

"CP" = 0.6355 / 5 years = 0.1271 (.13)

Contour Farming and Contour Stripcropping

Table 6 – Slope Length Limits for Contouring

Land Slope Percent	Maximum USLE Slope Length of Field Feet ^{1/} ^{2/}
1 to 2.9	400
3 to 5.9	300
6 to 8.9	200
9 to 12.9	120
13 to 16.9	80
17 to 20.9	60
21 to 25	50

Footnotes Table 7D:

^{1/}Limit may be increased by 25 percent if residue cover after crop planting will regularly exceed 50 percent.

^{2/}If slope length exceeds the maximum, contouring should be used in combination with terraces or some other means of breaking up the slope, P = 1.0 if the maximum length is exceeded.

Multiply the P factor obtained using the "contour" procedure by the following stripcropping subfactor values:

- A. Rotations with ½ row crop or close grown crop and ½ meadow have a subfactor value of 0.50.
- B. Rotations with ½ row crop, ¼ close grown crop, and ¼ meadow have a subfactor value of 0.75
- C. Alternate strips of row crop and winter small grain have a subfactor value of 1.0 (no strip effect).

Table 7 – Maximum Strip Widths and Slope Length Limits for Contour Stripcropping

Land Slope (Percent)	Strip Width (Feet) ^{1/}	Maximum USLE Slope Length of Field (Feet) ^{2/} ^{3/}
1 to 2.9	130	800
3 to 5.9	100	600
6 to 8.9	100	400
9 to 12.9	80	240
13 to 16.9	80	160
17 to 20.9	60	120
21 to 25	50	100

Footnotes Table 7E.

^{1/}Adjust strip-width limit, generally downward, to accommodate widths of farm equipment.

^{2/}Limit may be increased by 10 percent if residue cover after crop planting will regularly exceed 50 percent.

^{3/}If slope length exceeds the maximum, contour stripcropping should be used in combination with terraces or some other means of breaking up the slope.

10 Year EI - 50 "P" Factor Tables 8A, 8B, 8C

Table 8A Contour P Factor Values Low (1-3") Ridge or oriented roughness height

10 year EI = 50

Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00
0	1.00																
2	0.65	0.85	0.90	0.95	1.00												
4	0.60	0.75	0.80	0.85	0.90	0.90	0.95	0.95	1.00								
6	0.55	0.70	0.75	0.75	0.80	0.85	0.85	0.90	0.90	0.95	1.00						
8	0.55	0.65	0.70	0.75	0.75	0.80	0.80	0.85	0.85	0.90	0.95	0.95	1.00				
10	0.55	0.65	0.70	0.75	0.75	0.80	0.80	0.80	0.85	0.85	0.90	0.90	0.95	0.95	1.00		
12	0.60	0.70	0.75	0.75	0.75	0.80	0.80	0.80	0.85	0.85	0.90	0.90	0.95	0.95	0.95	1.00	
14	0.70	0.75	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95
16	1.00																

Table 8B Contour P Factor Values Moderate (3-5") Ridge or oriented roughness height

10 year EI = 50

Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	12.00	14.00	18.00
0	1.00																	
2	0.35	0.70	0.80	0.90	1.00													
4	0.25	0.55	0.65	0.70	0.80	0.85	0.90	0.95	1.00									
6	0.25	0.50	0.55	0.65	0.70	0.75	0.80	0.80	0.85	0.95	1.00							
8	0.30	0.50	0.55	0.60	0.65	0.70	0.75	0.75	0.80	0.85	0.90	0.95	1.00					
10	0.35	0.50	0.55	0.60	0.65	0.65	0.70	0.75	0.75	0.80	0.85	0.90	0.95	0.95	1.00			
12	0.35	0.50	0.55	0.60	0.60	0.65	0.70	0.70	0.75	0.75	0.80	0.85	0.90	0.90	0.95	1.00		
14	0.40	0.50	0.55	0.60	0.60	0.65	0.65	0.70	0.70	0.75	0.80	0.80	0.85	0.85	0.90	0.95	1.00	
16	0.40	0.50	0.55	0.60	0.60	0.65	0.65	0.70	0.70	0.75	0.75	0.80	0.85	0.85	0.90	0.90	0.95	1.00
18	0.50	0.55	0.60	0.65	0.65	0.65	0.70	0.70	0.70	0.75	0.80	0.80	0.80	0.85	0.90	0.90	0.95	1.00
20	0.60	0.65	0.70	0.70	0.70	0.75	0.75	0.75	0.75	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.95	0.95
22	0.75	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95
24	1.00																	

Table 8C **Contour P Factor Values** **Ridge Systems with ridge height > = 6"**
10 year EI = 50 **Row Grade (Percent)**

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	24.00
0	1.00																	
2	0.25	0.65	0.80	0.90	1.00													
4	0.15	0.45	0.55	0.65	0.75	0.80	0.90	1.00										
6	0.10	0.35	0.45	0.55	0.60	0.70	0.75	0.85	0.90	1.00								
8	0.10	0.35	0.40	0.50	0.55	0.60	0.65	0.75	0.80	0.90	1.00							
10	0.10	0.30	0.40	0.45	0.50	0.55	0.60	0.65	0.75	0.80	0.90	1.00						
12	0.10	0.30	0.40	0.45	0.50	0.50	0.55	0.65	0.70	0.75	0.85	0.90	1.00					
14	0.15	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.80	0.85	0.95	1.00				
16	0.15	0.30	0.35	0.40	0.45	0.50	0.50	0.60	0.65	0.65	0.75	0.80	0.90	0.95	1.00			
18	0.20	0.30	0.40	0.40	0.45	0.50	0.50	0.55	0.60	0.65	0.75	0.80	0.85	0.90	0.95	1.00		
20	0.25	0.35	0.40	0.45	0.50	0.50	0.55	0.60	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
22	0.30	0.40	0.45	0.50	0.50	0.55	0.55	0.60	0.65	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0.95	1.00
24	0.35	0.45	0.50	0.55	0.55	0.55	0.60	0.65	0.65	0.70	0.75	0.75	0.80	0.85	0.90	0.90	0.95	1.00
30	0.65	0.70	0.70	0.70	0.75	0.75	0.75	0.75	0.80	0.80	0.80	0.85	0.85	0.90	0.90	0.90	0.95	0.95
33	1.00																	

10 Year EI - 60 "P" Factor Tables 8A, 8B, 8C

Table 8A Contour P Factor Values Low (1-3") Ridge or oriented roughness height
10 year EI = 60 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00
0	1.00																
2	0.75	0.85	0.90	0.95	1.00												
4	0.65	0.75	0.80	0.85	0.90	0.90	0.95	0.95	1.00								
6	0.60	0.75	0.75	0.80	0.85	0.85	0.90	0.90	0.95	0.95	1.00						
8	0.60	0.70	0.75	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.95	0.95	1.00				
10	0.65	0.70	0.75	0.75	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.95	0.95	1.00			
12	0.70	0.75	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.95	0.95	0.95	1.00	
14	0.80	0.80	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	1.00
16	1.00																

Table 8B Contour P Factor Values Moderate (3-5") Ridge or oriented roughness height
10 year EI = 60 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	12.00	14.00	18.00
0	1.00																	
2	0.40	0.70	0.80	0.90	1.00													
4	0.30	0.55	0.65	0.75	0.80	0.85	0.90	0.95	1.00									
6	0.30	0.50	0.60	0.65	0.70	0.75	0.80	0.85	0.85	0.95	1.00							
8	0.35	0.50	0.60	0.65	0.65	0.70	0.75	0.80	0.80	0.85	0.90	0.95	1.00					
10	0.40	0.55	0.60	0.60	0.65	0.70	0.70	0.75	0.75	0.80	0.85	0.90	0.95	1.00				
12	0.40	0.55	0.60	0.60	0.65	0.70	0.70	0.75	0.75	0.80	0.85	0.85	0.90	0.95	0.95	1.00		
14	0.45	0.55	0.60	0.60	0.65	0.65	0.70	0.70	0.75	0.75	0.80	0.85	0.85	0.90	0.90	0.95	1.00	
16	0.50	0.55	0.60	0.65	0.65	0.70	0.70	0.70	0.75	0.75	0.80	0.80	0.85	0.85	0.85	0.95	0.95	1.00
18	0.55	0.60	0.65	0.65	0.70	0.70	0.75	0.75	0.75	0.80	0.80	0.80	0.85	0.85	0.85	0.90	0.95	1.00
20	0.65	0.70	0.75	0.75	0.75	0.75	0.80	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.90	0.90	0.95	1.00
22	0.80	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	1.00
24	1.00																	

Table 8C Contour P Factor Values Ridge Systems with ridge height > = 6"
10 year EI = 60

Downhill Slope	Row Grade (Percent)																	
	0.00	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	24.00
0	1.00																	
2	0.30	0.65	0.80	0.90	1.00													
4	0.15	0.45	0.60	0.65	0.75	0.80	0.90	1.00										
6	0.10	0.35	0.50	0.55	0.65	0.70	0.75	0.85	0.90	1.00								
8	0.10	0.35	0.45	0.50	0.55	0.60	0.65	0.75	0.80	0.90	1.00							
10	0.15	0.35	0.40	0.45	0.50	0.55	0.60	0.70	0.75	0.80	0.90	1.00						
12	0.15	0.30	0.40	0.45	0.50	0.55	0.55	0.65	0.70	0.75	0.85	0.90	1.00					
14	0.15	0.30	0.40	0.45	0.50	0.50	0.55	0.60	0.65	0.70	0.80	0.85	0.95	1.00				
16	0.20	0.35	0.40	0.45	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.85	0.90	0.95	1.00			
18	0.20	0.35	0.40	0.45	0.50	0.50	0.55	0.60	0.65	0.65	0.75	0.80	0.85	0.90	0.95	1.00		
20	0.30	0.40	0.45	0.45	0.50	0.55	0.55	0.60	0.65	0.65	0.75	0.80	0.85	0.90	0.90	0.95	1.00	
22	0.35	0.45	0.50	0.50	0.55	0.55	0.60	0.60	0.65	0.70	0.75	0.80	0.85	0.85	0.90	0.95	0.95	1.00
24	0.45	0.50	0.55	0.55	0.60	0.60	0.65	0.65	0.70	0.70	0.75	0.80	0.85	0.85	0.90	0.90	0.95	1.00
30	0.70	0.75	0.75	0.75	0.80	0.80	0.80	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.90	0.95	0.95	0.95
33	1.00																	

10 Year EI - 70 "P" Factor Tables 8A, 8B, 8C

Table 8A Contour P Factor Values Low (1-3") Ridge or oriented roughness height
10 year EI = 70 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00
0	1.00																
2	0.80	0.90	0.95	0.95	1.00												
4	0.70	0.80	0.85	0.90	0.90	0.95	0.95	1.00									
6	0.65	0.75	0.80	0.85	0.85	0.90	0.90	0.90	0.95	0.95	1.00						
8	0.65	0.75	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.95	0.95	0.95	1.00				
10	0.70	0.75	0.80	0.80	0.85	0.85	0.85	0.85	0.90	0.90	0.95	0.95	0.95	1.00			
12	0.75	0.80	0.80	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	1.00	
14	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	1.00	
16	1.00																

Table 8B Contour P Factor Values Moderate (3-5") Ridge or oriented roughness height
10 year EI = 70 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	12.00	14.00	18.00
0	1.00																	
2	0.45	0.75	0.85	0.90	1.00													
4	0.35	0.60	0.70	0.75	0.80	0.85	0.90	0.95	1.00									
6	0.35	0.55	0.60	0.70	0.75	0.75	0.80	0.85	0.90	0.95	1.00							
8	0.40	0.55	0.60	0.65	0.70	0.75	0.75	0.80	0.80	0.85	0.90	0.95	1.00					
10	0.45	0.55	0.60	0.65	0.70	0.70	0.75	0.75	0.80	0.85	0.85	0.90	0.95	0.95	1.00			
12	0.45	0.55	0.60	0.65	0.70	0.70	0.75	0.75	0.75	0.80	0.85	0.85	0.90	0.90	0.95	1.00		
14	0.50	0.60	0.65	0.65	0.70	0.70	0.70	0.75	0.75	0.80	0.80	0.85	0.85	0.90	0.90	0.95	1.00	
16	0.55	0.60	0.65	0.65	0.70	0.70	0.75	0.75	0.75	0.80	0.80	0.85	0.85	0.90	0.90	0.95	0.95	1.00
18	0.60	0.65	0.70	0.70	0.75	0.75	0.75	0.75	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.90	0.95	1.00
20	0.70	0.75	0.75	0.80	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	1.00
22	0.85	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00
24	1.00																	

Table 8C Contour P Factor Values Ridge Systems with ridge height > = 6"
10 year EI = 70 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	24.00
0	1.00																	
2	0.35	0.65	0.80	0.90	1.00													
4	0.20	0.45	0.60	0.70	0.75	0.80	0.90	1.00										
6	0.15	0.40	0.50	0.55	0.65	0.70	0.75	0.85	0.90	1.00								
8	0.15	0.35	0.45	0.50	0.55	0.60	0.65	0.75	0.80	0.90	1.00							
10	0.15	0.35	0.40	0.50	0.55	0.60	0.60	0.70	0.75	0.80	0.90	1.00						
12	0.15	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.85	0.90	1.00					
14	0.20	0.35	0.40	0.45	0.50	0.55	0.55	0.60	0.65	0.70	0.80	0.85	0.95	1.00				
16	0.20	0.35	0.40	0.45	0.50	0.50	0.55	0.60	0.65	0.70	0.75	0.85	0.90	0.95	1.00			
18	0.25	0.40	0.45	0.45	0.50	0.55	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00		
20	0.30	0.40	0.45	0.50	0.55	0.55	0.60	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.90	0.95	1.00	
22	0.40	0.50	0.50	0.55	0.55	0.60	0.60	0.65	0.70	0.70	0.75	0.80	0.85	0.85	0.90	0.95	0.95	1.00
24	0.50	0.55	0.60	0.60	0.65	0.65	0.65	0.70	0.70	0.75	0.80	0.80	0.85	0.85	0.90	0.95	0.95	1.00
30	0.75	0.80	0.80	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95
33	1.00																	

10 Year EI - 80 "P" Factor Tables 8A, 8B, 8C

Table 8A Contour P Factor Values Low (1-3") Ridge or oriented roughness height
10 year EI = 80 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00
0	1.00																
2	0.85	0.90	0.95	0.95	1.00												
4	0.75	0.85	0.90	0.90	0.95	0.95	0.95	1.00									
6	0.70	0.80	0.85	0.85	0.90	0.90	0.90	0.95	0.95	0.95	1.00						
8	0.70	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.90	0.95	0.95	1.00					
10	0.75	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	1.00			
12	0.80	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	1.00		
14	0.85	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00		
16	1.00																

Table 8B Contour P Factor Values Moderate (3-5") Ridge or oriented roughness height
10 year EI = 80 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	12.00	14.00	18.00
0	1.00																	
2	0.50	0.75	0.85	0.95	1.00													
4	0.40	0.60	0.70	0.75	0.80	0.85	0.90	0.95	1.00									
6	0.40	0.55	0.65	0.70	0.75	0.80	0.80	0.85	0.90	0.95	1.00							
8	0.45	0.60	0.65	0.70	0.70	0.75	0.80	0.80	0.85	0.90	0.90	0.95	1.00					
10	0.50	0.60	0.65	0.70	0.70	0.75	0.75	0.80	0.80	0.85	0.90	0.90	0.95	0.95	1.00			
12	0.50	0.60	0.65	0.70	0.70	0.75	0.75	0.75	0.80	0.80	0.85	0.90	0.90	0.95	0.95	1.00		
14	0.55	0.65	0.65	0.70	0.70	0.75	0.75	0.75	0.80	0.80	0.85	0.85	0.90	0.90	0.90	0.95	1.00	
16	0.60	0.65	0.70	0.70	0.75	0.75	0.75	0.75	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.95	0.95	1.00
18	0.65	0.70	0.75	0.75	0.75	0.80	0.80	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.90	0.95	0.95	1.00
20	0.75	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	1.00
22	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00
24	1.00																	

Table 8C **Contour P Factor Values** **Ridge Systems with ridge height > = 6"**
10 year EI = 80 **Row Grade (Percent)**

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	24.00
0	1.00																	
2	0.35	0.70	0.80	0.90	1.00													
4	0.20	0.50	0.60	0.70	0.75	0.85	0.90	1.00										
6	0.15	0.40	0.50	0.60	0.65	0.70	0.75	0.85	0.90	1.00								
8	0.15	0.35	0.45	0.50	0.60	0.65	0.65	0.75	0.80	0.90	1.00							
10	0.20	0.35	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.90	1.00						
12	0.20	0.35	0.40	0.50	0.50	0.55	0.60	0.65	0.70	0.75	0.85	0.95	1.00					
14	0.20	0.35	0.40	0.45	0.50	0.55	0.55	0.65	0.70	0.70	0.80	0.85	0.95	1.00				
16	0.25	0.35	0.45	0.45	0.50	0.55	0.55	0.60	0.65	0.70	0.75	0.85	0.90	0.95	1.00			
18	0.30	0.40	0.45	0.50	0.50	0.55	0.60	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00		
20	0.35	0.45	0.50	0.55	0.55	0.60	0.60	0.65	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0.95	1.00	
22	0.45	0.50	0.55	0.60	0.60	0.60	0.65	0.65	0.70	0.75	0.75	0.80	0.85	0.90	0.90	0.95	0.95	1.00
24	0.55	0.60	0.60	0.65	0.65	0.70	0.70	0.70	0.75	0.75	0.80	0.85	0.85	0.90	0.90	0.95	0.95	1.00
30	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95
33	1.00																	

10 Year EI - 90 "P" Factor Tables 8A, 8B, 8C

Table 8A Contour P Factor Values Low (1-3") Ridge or oriented roughness height
10 year EI = 90 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00
0	1.00																
2	0.85	0.95	0.95	1.00													
4	0.80	0.85	0.90	0.90	0.95	0.95	0.95	1.00									
6	0.75	0.85	0.85	0.90	0.90	0.90	0.95	0.95	0.95	0.95	1.00						
8	0.75	0.80	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	1.00					
10	0.80	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	1.00			
12	0.80	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	1.00		
14	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00			
16	1.00																

Table 8B Contour P Factor Values Moderate (3-5") Ridge or oriented roughness height
10 year EI = 90 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	12.00	14.00	18.00
0	1.00																	
2	0.55	0.75	0.85	0.95	1.00													
4	0.45	0.65	0.70	0.80	0.85	0.90	0.90	0.95	1.00									
6	0.45	0.60	0.65	0.70	0.75	0.80	0.85	0.85	0.90	0.95	1.00							
8	0.50	0.60	0.65	0.70	0.75	0.75	0.80	0.80	0.85	0.90	0.95	0.95	1.00					
10	0.50	0.65	0.65	0.70	0.75	0.75	0.80	0.80	0.80	0.85	0.90	0.90	0.95	0.95	1.00			
12	0.55	0.70	0.70	0.70	0.75	0.75	0.80	0.80	0.80	0.85	0.85	0.90	0.90	0.95	0.95	1.00		
14	0.60	0.70	0.70	0.70	0.75	0.75	0.75	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.95	0.95	1.00	
16	0.60	0.70	0.70	0.75	0.75	0.75	0.80	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.90	0.95	0.95	1.00
18	0.70	0.75	0.75	0.80	0.80	0.80	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	1.00
20	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	1.00
22	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00		
24	1.00																	

Table 8C **Contour P Factor Values** **Ridge Systems with ridge height > = 6"**
10 year EI = 90 **Row Grade (Percent)**

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	24.00
0	1.00																	
2	0.40	0.70	0.85	0.90	1.00													
4	0.25	0.50	0.60	0.70	0.75	0.85	0.90	1.00										
6	0.20	0.40	0.50	0.60	0.65	0.70	0.75	0.85	0.90	1.00								
8	0.20	0.40	0.45	0.50	0.60	0.65	0.70	0.75	0.80	0.90	1.00							
10	0.20	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.90	1.00						
12	0.20	0.35	0.40	0.50	0.55	0.55	0.60	0.65	0.70	0.75	0.85	0.95	1.00					
14	0.25	0.40	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.90	0.95	1.00				
16	0.25	0.40	0.45	0.45	0.50	0.55	0.60	0.65	0.65	0.70	0.80	0.85	0.90	0.95	1.00			
18	0.30	0.45	0.45	0.50	0.55	0.55	0.60	0.65	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00		
20	0.40	0.50	0.50	0.55	0.60	0.60	0.60	0.65	0.70	0.70	0.75	0.80	0.85	0.90	0.95	0.95	1.00	
22	0.45	0.55	0.55	0.60	0.65	0.65	0.65	0.70	0.70	0.75	0.80	0.85	0.85	0.90	0.90	0.95	0.95	1.00
24	0.55	0.65	0.60	0.65	0.70	0.70	0.70	0.75	0.75	0.80	0.80	0.85	0.85	0.90	0.90	0.95	0.95	1.00
30	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	1.00
33	1.00																	

10 Year EI - 100 "P" Factor Tables 8A, 8B, 8C

Table 8A Contour P Factor Values Low (1-3") Ridge or oriented roughness height
10 year EI = 100 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00
0	1.00																
2	0.90	0.95	0.95	1.00													
4	0.85	0.90	0.90	0.95	0.95	0.95	0.95	1.00									
6	0.80	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	1.00							
8	0.80	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	1.00					
10	0.80	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	1.00				
12	0.85	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	1.00			
14	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00				
16	1.00																

Table 8B Contour P Factor Values Moderate (3-5") Ridge or oriented roughness height
10 year EI = 100 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	12.00	14.00	18.00
0	1.00																	
2	0.60	0.80	0.90	0.95	1.00													
4	0.45	0.65	0.75	0.80	0.85	0.90	0.90	0.95	1.00									
6	0.45	0.60	0.70	0.75	0.75	0.80	0.85	0.85	0.90	0.95	1.00							
8	0.50	0.65	0.70	0.70	0.75	0.80	0.80	0.85	0.85	0.90	0.95	0.95	1.00					
10	0.55	0.65	0.70	0.75	0.75	0.80	0.80	0.80	0.85	0.85	0.90	0.90	0.95	0.95	1.00			
12	0.60	0.70	0.70	0.75	0.75	0.80	0.80	0.80	0.85	0.85	0.90	0.90	0.90	0.95	0.95	1.00		
14	0.60	0.70	0.70	0.75	0.75	0.80	0.80	0.80	0.80	0.85	0.85	0.90	0.90	0.90	0.95	0.95	1.00	
16	0.65	0.70	0.75	0.75	0.80	0.80	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	1.00
18	0.75	0.75	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	1.00
20	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	1.00
22	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00			
24	1.00																	

Table 8C **Contour P Factor Values** **Ridge Systems with ridge height > = 6"**
10 year EI = 100 **Row Grade (Percent)**

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	24.00
0	1.00																	
2	0.45	0.75	0.85	0.90	1.00													
4	0.25	0.50	0.60	0.70	0.80	0.85	0.90	1.00										
6	0.20	0.45	0.50	0.60	0.65	0.70	0.75	0.85	0.95	1.00								
8	0.20	0.40	0.50	0.55	0.60	0.65	0.70	0.75	0.85	0.90	1.00							
10	0.20	0.40	0.50	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.90	1.00						
12	0.25	0.40	0.45	0.50	0.55	0.60	0.60	0.65	0.75	0.75	0.85	0.95	1.00					
14	0.25	0.40	0.45	0.50	0.55	0.55	0.60	0.65	0.70	0.75	0.80	0.90	0.95	1.00				
16	0.30	0.40	0.45	0.50	0.55	0.55	0.60	0.65	0.70	0.70	0.80	0.85	0.90	0.95	1.00			
18	0.35	0.45	0.50	0.55	0.55	0.60	0.60	0.65	0.70	0.70	0.80	0.85	0.90	0.90	0.95	1.00		
20	0.40	0.50	0.55	0.60	0.60	0.60	0.65	0.70	0.70	0.75	0.80	0.85	0.85	0.90	0.95	0.95	1.00	
22	0.50	0.60	0.60	0.65	0.65	0.65	0.70	0.70	0.75	0.75	0.80	0.85	0.85	0.90	0.90	0.95	0.95	1.00
24	0.60	0.65	0.70	0.70	0.70	0.75	0.75	0.75	0.80	0.80	0.85	0.85	0.90	0.90	0.90	0.95	0.95	1.00
30	0.85	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00
33	1.00																	

10 Year EI - 110 "P" Factor Tables 8A, 8B, 8C

Table 8A Contour P Factor Values Low (1-3") Ridge or oriented roughness height
10 year EI = 110 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00
0	1.00																
2	0.90	0.95	0.95	1.00													
4	0.85	0.90	0.95	0.95	0.95	0.95	1.00										
6	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	1.00							
8	0.80	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	1.00					
10	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	1.00				
12	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00			
14	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00					
16	1.00																

Table 8B Contour P Factor Values Moderate (3-5") Ridge or oriented roughness height
10 year EI = 110 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	12.00	14.00	18.00
0	1.00																	
2	0.60	0.80	0.90	0.95	1.00													
4	0.50	0.70	0.75	0.80	0.85	0.90	0.95	0.95	1.00									
6	0.50	0.65	0.70	0.75	0.80	0.80	0.85	0.90	0.90	0.95	1.00							
8	0.55	0.65	0.70	0.75	0.75	0.80	0.80	0.85	0.85	0.90	0.95	0.95	1.00					
10	0.60	0.70	0.70	0.75	0.80	0.80	0.80	0.85	0.85	0.90	0.90	0.95	0.95	0.95	1.00			
12	0.65	0.70	0.75	0.75	0.80	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.95	0.95	0.95	1.00		
14	0.65	0.70	0.75	0.75	0.80	0.80	0.80	0.85	0.80	0.85	0.90	0.90	0.90	0.95	0.95	0.95	1.00	
16	0.70	0.75	0.75	0.80	0.80	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	1.00	
18	0.75	0.80	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	1.00
20	0.85	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00
22	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00						
24	1.00																	

Table 8C Contour P Factor Values Ridge Systems with ridge height > = 6"
10 year EI = 110 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	24.00
0	1.00																	
2	0.50	0.75	0.85	0.90	1.00													
4	0.25	0.55	0.65	0.70	0.80	0.85	0.90	1.00										
6	0.20	0.45	0.55	0.60	0.65	0.70	0.75	0.85	0.95	1.00								
8	0.20	0.40	0.50	0.55	0.60	0.65	0.70	0.75	0.85	0.90	1.00							
10	0.25	0.40	0.50	0.55	0.60	0.60	0.65	0.70	0.75	0.80	0.90	1.00						
12	0.25	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.95	1.00					
14	0.30	0.40	0.45	0.50	0.55	0.60	0.60	0.65	0.70	0.75	0.80	0.90	0.95	1.00				
16	0.30	0.45	0.50	0.50	0.55	0.60	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00			
18	0.35	0.50	0.50	0.55	0.60	0.60	0.65	0.65	0.70	0.75	0.80	0.85	0.90	0.90	0.95	1.00		
20	0.45	0.55	0.55	0.60	0.60	0.65	0.65	0.70	0.70	0.75	0.80	0.85	0.85	0.90	0.95	0.95	1.00	
22	0.55	0.60	0.65	0.65	0.70	0.70	0.70	0.75	0.75	0.80	0.80	0.85	0.90	0.90	0.95	0.95	0.95	1.00
24	0.65	0.70	0.70	0.75	0.75	0.75	0.75	0.80	0.80	0.80	0.85	0.85	0.90	0.90	0.95	0.95	0.95	1.00
30	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00	
33	1.00																	