P Factor (Support Practice)
The P factor value is a ratio of the soil loss in a field with support practices compared to tillage up and down slope. The support practice will affect erosion by:

- Modifying the flow pattern
- Redirecting runoff
- Reducing the rate of runoff
- Reducing the amount of runoff
- Causing sediment deposition

Three types of support practices are considered in the P factor for cropland:

1. Contouring
2. Stripcropping
3. Terraces

An overall P factor is computed as a product of the combination of the three support practices (P subfactor) Support practices are often used in combination. As an example, practices like contouring and terracing often go together.

Contouring
Contour tillage with ridges will redirect the runoff and modify the flow pattern. When the runoff is designed to follow a reduced grade, soil detachment and transport capacity are reduced as compared to flowing directly downhill. The effectiveness of contouring increases as ridge height increases. As the grade of the contour increase, the effectiveness of contouring will decrease.

Variables controlled by the operator such as the ridge height, row grade and the cover-management conditions will affect the contouring subfactor. Environmental variables such as storm severity, soil infiltation and slope steepness will also affect the contouring subfactor.

Contouring is usually less effective for a large storm due to overtopping of the ridges. The RUSLE program uses a 10-year frequency EI value rather than the R factor. Using the 10-year frequency allows for better predictive P values. Models show that if contouring is < 0.5% grade, the deposition in furrows more than offsets the erosion in the concentrated flow areas.

Contouring loses its effectiveness at long slope lengths. The point where contouring loses its effectiveness is called the critical slope length. A maximum value of 1000 feet is the RUSLE critical slope length. The critical slope length changes with the hydrologic soil group, EI value, cover management condition, and the slope steepness.

Stripcropping
Densely populated vegetation that induce sediment deposition are assigned a P factor value. The deposition must occur on the hillside where crops are routinely grown for the practice to obtain a low P factor value.
The P factor gives credit for:

1. Stripcropping
2. Grass Buffer Strips

Stripcropping has a low P factor value due to the following characteristics:

- Crops are rotated among the strips.
- Crops receive the benefit of sediment depostion.
- The vegetation reduces the amount of sediment moving down hill.

Stripcropping is defined as having alternating strips of equally spaced clean tilled crops with strips of closely growing vegetation such as grasses or legumes. The characteristic of the vegetative cover must allow runoff to reduce its velocity, reduce its transportation capacity, and allow deposition of sediment in the field. The crops must be rotated sequentially so eventually a crop is planted on each strip. Stripcropping works best when the upper edge of the strip is perfectly on the contour.

Buffer strips are perennial strips of vegetation, predominantly grasses, that is not in a crop rotation, and are usually narrower than the strips of cultivated land.

Filter strips usually are not considered a support practice because it is located at the base of a slope, or at the edge of a field, where its primary purpose is to reduce sediment from reaching a receiving water body. This has a very minimal effect on the P factor.
Typically, each or all the crops in a stripcropping rotation is accounted for in both the C and P factors, while permanent or perennial vegetation in buffers is not accounted for in the C factor.

The benefit of the deposition given by RUSLE depends on the amount and location. If the deposition is far down slope, less benefit is given. If the soil is deposited on the upper slopes of the field, more benefit is given.

Terraces
Terraces reduce the slope length and that benefit is credited in the LS factor. Terraces with a very low channel grade that causes deposition within the channel will be given a P factor benefit by RUSLE. Benefit is given because the deposited sediment is assumed to be redistributed on the field and thus reduces soil deterioration. The amount and location of deposition are important in assigning a P factor value.

For conservation planning, only a part of the deposition is credited as protecting the soil resource. As the terrace spacing increase, the amount of credit taken for deposition is decreased.

Planning Considerations for the P Factor

Keep the following ideas in mind when planning:

- The closer the channel grade is to the contour, the more P credit
- Terraces need to be designed <1% grade for P credit
- Terrace intervals of >375 feet receive no P credit
- Higher ridge heights receive more P credit

The following instructions were provided by the West NTC. Tables and figures that did not apply to Hawaii were omitted. The worksheet was provided by the Hawaii State Office of NRCS. Use the RUSLE software to calculate additional factors or call the NRCS State Office for more information.

RUSLE SUPPORTING PRACTICE INSTRUCTIONS, TABLES, AND FIGURES

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Worksheet

P Factor Worksheet

RUSLE P SUBFACTOR VALUES FOR CONTOURING

Step 1. Gather appropriate information.

a) Identify the hydrologic soils group for the selected soil from RUSLE soil data table.
b) Determine the length and slope gradient of the landscape profile and grade along the furrows.
c) Identify the 10-year storm erosivity (10-yr. EI) value for the site using appropriate EI 10 year value.
d) Select the Cover-Management Condition using Table 1, “Cover-Management Conditions."
e) Select the appropriate ridge height using Table 2, “Guidelines For Selecting Ridge Heights For Contouring With RUSLE.”

Step 2. Determine the P subfactor for contouring “on-grade.”

a) With 10-yr. EI value, Cover-Management Condition, ridge height, and hydrologic soils group, select the appropriate table within Table 3, “RUSLE Contour P Subfactor Tables For On-Grade Condition.”
b) Enter the selected table proceeding along the row for the hydrologic soil group and read the value in the column for the slope steepness. The resulting value is the P subfactor value for contouring “on-grade.”

Step 3. Adjust contouring P subfactor for furrow grade.

a) Calculate the ratio of the field’s average furrow grade to its landscape profile slope. Round the ratio to the nearest 0.1.
b) For ratio values less than 0.05, go to step 4 as no adjustment is required for this “off-grade” contouring.
c) For ratio values of 0.05 and larger, go to Table 4, “Contouring P Subfactor Value Adjusted for Furrow Grade.”
d) In the left-most column of Table 4, locate the P-factor value for “on-grade” contouring obtained from step 2 above.
e) If the P factor value is an odd number, round in the opposite direction than you did when rounding the furrow grade to landscape profile slope ratio to the nearest 0.1 in step 3a.
f) Move right along the row to the column for the appropriate ratio of furrow grade to slope steepness of the landscape profile.
g) The value at the intersection is the RUSLE P subfactor value for “off-grade” contouring where the slope is less than the critical slope.
h) Beyond the critical slope length, the practice loses effectiveness quickly.

Step 4. Determine the critical slope length.

a) For Cover-Management Condition 1 and hydrologic soils groups A through D, the critical slope length equals 1000 feet.
b) For Cover-Management Condition 2 and hydrologic soils group A, the critical slope length is 1000 feet.

c) Refer to Figures 1-23 for the remaining combinations of Cover-Management Conditions and Hydrologic Soils Groups.
d) On the selected figure, locate the landscape profile slope on the horizontal axis.
e) Project a vertical line up to intersect the curve with the appropriate 10-yr. EI value (EI10) for the site.
f) From that intersection project a horizontal line to the left and read the critical length. This is the maximum slope for which the previously determined P subfactor value applies.
g) Use the previously determined P subfactor value for slopes less than or equal to critical.
h) Stripcropping increases the effectiveness of contouring. When used in conjunction with contouring, increase the critical slope length by multiplying the value from b (above) by 1.5.

Step 5. Adjust the contouring P subfactor where the landscape profile exceeds the critical slope length.

a) Where landscape profile slope exceeds the critical, divide the landscape profile slope length by the critical slope length. Be sure to increase the critical slope length if stripcropping applies. (The P subfactor value increases as a function of the ratio of landscape profile slope length to critical length where the ratio exceeds a value of one.)
b) To select the appropriate figure for adjusting the contouring P subfactor, the rill/interrill ratio for the site must be determined.
c) If the topographic (LS) factor value was previously determined for the site, use the same rill/interrill ratio as was used in that determination.
d) Otherwise select the ratio from the following:
    - Low, when most of the situations where consolidated soil is resistant to erosion;
    - Medium, when the interrill erosion and rill erosion are “balanced” which is the case for most cultivated cropland in row crops and small grains;
    - High where most of the erosion is rill erosion, which is often the case for construction sites immediately after disturbance.
e) Go to Figures 36-38. Select the figure with the appropriate rill/interrill ratio and the percent slope.
f) From the slope length/critical length ratio on the horizontal axis of the selected figure, project a vertical line to intersect the curve for the P subfactor value determined in step 2 or 3 above.
g) From that intersection project a horizontal line to the left and read the P effective subfactor value. This value is the corrected contouring P subfactor for the entire landscape profile slope length.

RUSLE P SUBFACTOR VALUES FOR STRIPCROPPING

Call agronomist at the State Office if stripcropping will be used. Additional tables need to be developed, with the exact crop rotation and landscape profile.

Step 1. Gather appropriate information. Note that much of the information is also used for evaluating contouring.

a) Identify the hydrologic soils group for the selected profile soil.

b) Determine the length and slope gradient of the landscape profile, and grade along the strip boundaries.
c) Identify the 10 year storm erosivity (10-yr. EI) value for the site.
d) Determine the number of strips to be evaluated on the landscape profile.
e) For each strip, select the Cover-Management Condition using Table 1, “Cover-Management Conditions.”

Step 2. Determine the P subfactor for stripcropping.

a) With 10-yr. EI value, hydrologic soils group, landscape profile slope, and furrow grade (grade along the strip boundaries), select the appropriate table within Table 5, conditions, your state office will assist in the development of an appropriate subfactor for stripcropping.)
b) Enter the selected table proceeding along the row for the number of strips and read the value in the column for the Cover Management Conditions of the strips.
c) This value is the stripcropping P subfactor for slopes where the landscape profile length is less than, or equal to, the critical slope length.

Step 3. Determine critical slope length.

a) For Cover-Management Condition 1 and hydrologic soils groups A through D, the critical slope length equals 1000 feet.
b) For Cover-Management Condition 2 and hydrologic soils group A, the critical slope length is 1000 feet.
c) Refer to Figures 1-23 for the remaining combinations of Cover-Management Conditions and hydrologic soils groups. Use the most erosive Cover-Management Condition of the opposing strip pairs proposed for, or existing on, the slope.
d) Enter the selected figure at the profile slope on the horizontal axis and project a vertical line up to intersect the 10-yr. EI value (EI_{10}) for the site.
e) From that intersection project a horizontal line to the left and read the critical length.
f) Stripcropping increases the effectiveness of the contouring. Therefore, adjust the critical slope length from the figure by multiplying the value by 1.5.
g) The adjusted critical length is the maximum slope length for which the previously determined stripcropping P subfactor value applies.
h) Use the previously determined stripcropping P subfactor value (from step 2) where the landscape slope is equal to or less than the adjusted critical slope length.

Step 4. Adjust the stripcropping P subfactor where the landscape profile exceeds the critical slope length.

a) Where landscape profile slope exceeds the critical, divide the landscape profile slope length by the critical slope length. Be sure to increase the critical slope length if stripcropping applies. (The P subfactor value increases as a function of the ratio of landscape profile slope length to critical length where the ratio exceeds a value of one.)
b) To select the appropriate figure for adjusting the contouring P subfactor, the rill/interrill ratio for the site must be determined.
c) If the topographic (LS) factor value was previously determined for the site, use the same rill/interrill ratio as was used in that determination.
d) Otherwise select the ratio from the following:
    - Low, when most of the soil loss is caused by interrill erosion, which is the case for pasture lands, and situations where consolidated soil is resistant to erosion;
    - Medium, when the interrill erosion and rill erosion are “balanced” which is the case for most cultivated cropland in row crops and small grains;

- High where most of the erosion is rill erosion, which is often the case for construction sites immediately after disturbance.

e) Go to Figures 36-38. Select the figure with the appropriate rill/interrill ratio and the percent slope.
f) From the slope length/critical length ratio on the horizontal axis of the selected figure, project a vertical line to intersect the curve for the P subfactor value determined in step 2 or 3 above.
g) From that intersection project a horizontal line to the left and read the effective P subfactor value. This value is the corrected contouring P subfactor for the entire landscape profile slope length where stripcropping is applied.

Step 5. Multiply the contour P subfactor times the stripcropping P subfactor to get the composite P factor.

a) When the critical slope is exceeded for stripcropping, adjust the stripcropping P subfactor value.
b) Select the appropriate figure from Figures 36-38.
c) Enter the figure with the ratio of slope length to critical length for stripcropping (this is the same ratio used to adjust the contouring P subfactor).
d) Project a vertical line up intersection, project a horizontal line to the left and read the P effective value. This value is the adjusted P subfactor value for stripcropping.
e) This value is multiplied by the adjusted contour P subfactor to calculate the composite P subfactor for contoured strips where the slope exceeds the critical.

Example A:

Step 1. Gather appropriate information for use in RUSLE.

a) Hydrologic soils group B.
b) Landscape profile slope = 8%, slope length = 600 feet. Strip boundary grade (furrow grade) = 2%.
c) For the site near Wolf Point, Montana, the 10-yr. EI = 60, and the R value applies to the site.
d) Four strips are to be evaluated with alternating Cover-Management Conditions 3 and Cover-Management Conditions 6.

Step 2. Determine stripcropping P subfactor.

a) In Table 5, select the table with 10-yr. EI = 60, hydrologic soils group B, slope gradient of 8%, and furrow grade of 2%.
b) Find the row for four strips and the column for Cover-Management Conditions 3,6.
c) Read the stripcropping P subfactor value of 0.84 at the row/column intersection. This is the stripcropping P subfactor value for slopes less than or equal to critical.

Step 3. Determine critical slope length.

a) Select Figure 10 for hydrologic soils group B, and Cover- Management Condition 6.
b) Enter with 8% slope, read up to the intersection of $(EI)_{10}$ = 60 and across to find the critical length of 360 feet.
c) Multiply 1.5 X 360 to calculate the stripcropping critical length of 540 feet.
d) The 600-foot slope length at the site is greater so the stripcropping P subfactor value of 0.82 must be adjusted to apply to the entire landscape profile slope length.

Step 4. Adjust the stripcropping P subfactor for critical slope length.

a) The slope length/critical length ratio is 600/540 = 1.1.
b) A rill/interrill ratio of medium is selected for this cropland farmed to small grain. (Medium, when the interrill erosion and rill erosion are "balanced" which is the case for most cultivated cropland in row crops and small grains.)
c) Select Figure 37 which applies to the 8% slope and the medium rill/interrill ratio applicable to the cropland at the site.
d) From the slope length/critical length ratio of 1.1 on the horizontal axis, project a vertical line to intersect the previously determined P subfactor value of 0.82 for the site.
e) From that intersection, project a horizontal line to the left and read the P effective subfactor value of 0.85. The value of 0.85 is the stripcropping P subfactor value which applies to the entire slope length

Step 5. Multiply contour P subfactor times stripcropping P subfactor to get composite P factor.

a) Multiply the stripcropping P subfactor value of 0.85 times a previously determined P effective subfactor value for contouring.
b) The resulting value is the composite P subfactor for these contoured strips.

RUSLE P SUBFACTOR VALUES FOR TERRACING

Step 1. Gather appropriate information for use in RUSLE.

a) Determine the slope gradient of the landscape profile.
b) Will the slope gradient change with the construction of the terraces? If yes, determine the new slope gradient.
c) Identify the R value for site being evaluated.
d) Determine what supporting conservation practice will accompany the terraces, e.g. contouring or contour stripcropping
e) Determine terrace horizontal spacing interval using Table 2 from page 600-2, NHCP, Terrace conservation practice standard, as a guide.
f) Check maximum and minimum spacing requirements for the proper slope and R value ranges.
g) Minimum spacing interval given at bottom of Table 2.
h) If terraces will be used in conjunction with contour stripcropping, read across to spacing interval in feet under With Contour Stripcropping column.
i) Decide whether terraces will have an open or closed outlets.
j) If open outlets, determine the channel grade of the terraces at the outlet end.

Step 2. Determine terrace P subfactor.

a) Enter Table 1 on page 600-2, NHCP, Terrace conservation practice standard.
b) Select the horizontal spacing interval row.
c) Read across to the selected outlet type. If an open outlet is the design choice, select the appropriate terrace channel grade column.
d) Read the P subfactor value at the row/column intersection.

Step 3. Determine composite P factor for terracing when used in combination with contouring alone, or with contouring and stripcropping.

a) When terraces are used in conjunction with contouring, multiply terrace P subfactor times the contouring P subfactor to get the composite P factor.
b) When terraces are used in conjunction with both contouring and stripcropping, multiply all three P subfactors together to get the composite P factor.

Step 4. Recalculate the LS where the terrace horizontal spacing interval is less than the landscape profile slope length.

a) Enter appropriate LS table with terrace spacing interval length by going across table column heading until slope length in feet approximates terrace interval.
b) Read down the column until you intersect the correct percent slope. This is the new adjusted LS factor value.
c) Enter this value in place of the original value estimated before terraces were used to split the original landscape profile.
d) If terrace spacing falls between two slope length column headings, interpolate for more precision, if desired.

Table 1. COVER MANAGEMENT CONDITIONS
Select the cover management condition that best describes the condition during the ¼ of the year when rainfall and runoff are most erosive and the soil is most susceptible to erosion. Since the P factor effects are approximate, no provision is made for varying the cover-management condition class during the year.
Description of cropland cover-management conditions used in RUSLE for estimating P factor values.

Cover-Management Condition

Code 1. Established meadow	In this condition, the grass is dense and runoff is very slow, about the slowest under any vegetative condition. When mowed and baled, this condition is condition 2.
Code 2. 1st year meadow, hay.	In this condition, the hay is a mixture of grass and legume just before cutting. The meadow is a good stand of grass that is nearing the end of the first year. When mowed and baled, this condition becomes a condition 4.
Code 3. Heavy cover and/or very rough.	Ground cover for this condition is about 75 to 95%. Roughness would be like that left by a high clearance moldboard plow on a heavy textured soil. Roughness depressions would have the appearance of being 7 inches deep and deeper. Vegetative hydraulic roughness would be like that from a good legume crop, such as lespedeza, that has not been mowed.
Code 4. Moderate cover and/or rough.	The ground cover for this condition is about 40 to 65%. This roughness is like that left by a moldboard plow in a medium textured soil. Depressions would have the appearance of being about 4 to 6 inches deep. Vegetative hydraulic roughness would be much like that produced by winter small grain at full maturity.
Code 5. Light cover and/or moderate roughness	Ground surface cover is between 10 to 35% and the surface roughness is like that left by the first pass of a tandem) disk over a medium texture soil that has been moldboard plowed. This roughness could also be much like that left after a chisel plow through a medium textured soil at optimum moisture conditions for tillage. Roughness depressions would have the appearance of being on the order of 2 to 3 inches. In terms of hydraulic roughness produced by vegetation, this condition is much like that produced b) spring small grain at about three fourths maturity.
Code 6. No cover and/or minimal roughness	This condition is very much like the condition typically found in row cropped fields after the field has been planted and exposed to a moderately intense rainfall. Ground cover is less than about 5% and the roughness is that characteristic of a good seedbed for corn or soybeans. The surface is rougher than that of a finely pulverized seedbed for seeding vegetables.
Code 7. Clean-tilled, smooth, fallow	This condition is where the surface is essentially bare, 5% or less of cover. The soil has not had a crop grown on it in the last 6 months or more such that many of the residual effects of previous cropping have disappeared. The surface is smooth, much like the surface that develops on a very finely pulverized seedbed exposed to several intense rainfalls. One would most likely find this condition in fallowed and vegetable fields.

Table 2 Guideline for selecting ridge heights for contouring with RUSLE

Select the ridge height that best describes the condition during the ¼ of the year when rainfall and runoff are most erosive and the soil is more susceptible to erosion.

1. VERY LOW (0.5 - 2 in.) RIDGES	Fields that have been rolled, pressed or dragged after planting Conventionally drilled spring small grain and clear seeded hay that leaves a very low ridge
2. -LOW (2 - 3 in.) RIDGES	Conventionally planted row crops with no row cultivation Conventionally drilled crops when erosive rains occur during or soon after planting Conventionally drilled winter small grain when erosive rains are uniformly distributed throughout the year Winter small grain when runoff from snowmelt occurs during winter and early spring Transplanted crops, widely spaced
3. MODERATE (3 - 4 in.) RIDGES	Conventionally (clean) tilled row crops with row cultivation High yielding winter small grain crops when erosive rains are concentrated in the late spring after plants have developed a stiff, upright stem Transplanted crops that are closely spaced and/or in narrow row
4. HIGH (4 - 6 in.) RIDGES	Ridge tilled crops with high (4-6”) ridges during periods of erosive rain
5. VERY HIGH (Greater than 6 in.) RIDGES	Ridge tilled crops with very high (6+”) ridges during periods of erosive rains Hipping, bedding or ridging with very high ridges during period of erosive rains

Table 4 CONTOURING P SUBFACTOR VALUE ADJUSTED FOR FURROW GRADE

Furrow Grade/Profile Grade

On Grade Contourin g FactorP	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.04	0.34	0.47	0.57	0.65	0.72	0.78	0.84	0.90	0.95	1.00
0.06	0.36	0.48	0.57	0.65	0.72	0.79	0.85	0.90	0.95	1.00
0.08	0.37	0.49	0.58	0.66	0.73	0.79	0.85	0.90	0.95	1.00
0.10	0.38	0.50	0.59	0.67	0.74	0.80	0.85	0.90	0.95	1.00
0.12	0.40	0.51	0.60	0.68	0.74	0.80	0.86	0.91	0.95	1.00
0.14	0.41	0.52	0.61	0.68	0.75	0.81	0.86	0.91	0.96	1.00
0.16	0.43	0.54	0.62	0.69	0.75	0.81	0.86	0.91	0.96	1.00
0.18	0.44	0.55	0.63	0.70	0.76	0.82	0.87	0.91	0.96	1.00
0.20	0.45	0.56	0.64	0.71	0.77	0.82	0.87	0.92	0.96	1.00
0.22	0.47	0.57	0.65	0.71	0.77	0.82	0.87	0.92	0.96	1.00
0.24	0.48	0.58	0.66	0.72	0.78	0.83	0.88	0.92	0.96	1.00
0.26	0.49	0.59	0.67	0.73	0.78	0.83	0.88	0.92	0.96	1.00
0.28	0.51	0.60	0.67	0.74	0.79	0.84	0.88	0.92	0.96	1.00
0.30	0.52	0.61	0.68	0.74	0.79	0.84	0.89	0.93	0.96	1.00
0.32	0.54	0.62	0.69	0.75	0.80	0.85	0.89	0.93	0.97	1.00
0.34	0.55	0.64	0.70	0.76	0.81	0.85	0.89	0.93	0.97	1.00
0.36	0.56	0.65	0.71	0.76	0.81	0.86	0.90	0.93	0.97	1.00
0.38	0.58	0.66	0.72	0.77	0.82	0.86	0.90	0.93	0.97	1.00
0.40	0.59	0.67	0.73	0.78	0.82	0.86	0.90	0.94	0.97	1.00
0.42	0.60	0.68	0.74	0.79	0.83	0.87	0.91	0.94	0.97	1.00
0.44	0.62	0.69	0.75	0.79	0.84	0.87	0.91	0.94	0.97	1.00
0.44	0.63	0.70	0.76	0.80	0.84	0.89	0.91	0.94	0.97	1.00
0.48	0.64	0.71	0.76	0.81	0.85	0.88	0.92	0.95	0.97	1.00
0.50	0.66	0.72	0.77	0.82	0.85	0.89	0.92	0.95	0.97	1.00

Table 4 (continued) CONTOURING P SUBFACTOR VALUE ADJUSTED FOR FURROW GRADE

Furrow Grade/Profile Grade

Factor Value										
p	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.52	0.67	0.73	0.78	0.82	0.86	0.89	0.92	0.95	0.98	1.00
0.54	0.69	0.75	0.79	0.83	0.87	0.90	0.92	0.95	0 98	1.00
0.56	0.70	0.76	0.80	0.84	0.87	0.90	0.93	0.95	0.98	1.00
0.58	0.71	0.77	0.81	0.85	0.88	0.91	0.93	0.96	0.98	1.00
0.60	0.73	0.78	0.82	0.85	0.88	0.91	0.93	0.96	0.98	1.00
0.62	0.74	0.79	0.83	0.86	0.89	0.91	0.94	0.96	0.98	1.00
0.64	0.75	0.80	0.84	0.87	0.89	0.92	0.94	0.96	0.98	1.00
0.66	0.77	0.81	0.85	0.88	0.90	0.92	0.94	0.96	0.98	1.00
0.68	0.78	0.82	0.86	0.88	0.91	0.93	0.95	0.97	0.98	1.00
0.70	0.79	0.83	0.86	0.89	0.91	0.93	0.95	0.97	0.98	1.00
0.72	0.81	0.85	0.87	0.90	0.92	0.94	0.95	0.97	0.99	1.00
0.74	0.82	0.86	0.88	0.90	0.92	0.94	0.96	0.97	0.99	1.00
0.76	0.84	0.87	0.89	0.91	0.93	0.95	0.96	0.97	0.99	1.00
0.78	0.85	0.88	0.90	0.92	0.94	0.95	0.96	0.98	0.99	1.00
0.80	0.86	0.89	0.91	0.93	0.94	0.95	0.97	0.98	0.99	1.00
0.82	0.88	0.90	0.92	0.93	0.95	0.96	0.97	0.98	0.99	1.00
0.84	0.89	0.91	0.93	0.94	0.95	0.96	0.97	0.98	0.99	1.00
0.86	0.90	0.92	0.94	0.95	0.96	0.97	0.98	0.99	0.99	1.00
0.88	0.92	0.93	0.95	0.96	0.96	0.97	0.98	0.99	0.99	1.00
0.90	0.93	0.94	0.95	0.96	0.97	0.98	0.98	0.99	0.99	1.00
0.92	0.95	0.96	0.96	0.97	0.98	0.98	0.99	0.99	1.00	1.00
0.94	0.96	0.97	0.97	0.98	0.98	0.99	0.99	0.99	1.00	1.00
0.96	0.97	0.98	0.98	0.99	0.99	0.99	0.99	1.00	1.00	1.00
0.98	0.99	0.99	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 5-STRIPCROPPING SUBFACTOR TABLE

10 - year EI = 10 Soil Hydrologic Group - B
Landscape Slope Gradient=8% Furrow Grade - 2%

Cover -Management of the Strips**

No. of Strips	3,4	3,5	3,6	4,5	4,6	5,6	5,7
2	.96	.91	.88	.95	.90	.94	.96
4	.92	.84	.82	.89	.85	.91	.94

STRIPCROPPING SUBFACTOR TABLE

10 - year EI =60 Soil Hydrologic Group = B
Landscape Slope Gradient = 8% Furrow Grade = 2%

Cover Management Conditions of the Strips**

No. of strips	3,4	3,5	3,6	4,5	4,6	5,6	5,7
2	**.97**	**.92**	**.88**	**.95**	**.91**	**.94**	**.91**
4	**.98**	**.89**	**.84**	**.92**	**.86**	**.92**	**.88**

Table is based on the indicated number of strips occupying the total landscape slope length, the total landscape slope length is less than or equal to critical length, strips are positioned so that each strip occupies an equal portion of the slope and only two cover-roughness conditions exist on the slope at any given time.

**

3. heavy cover and/or very rough
4. moderate cover and/or moderately rough
5. light cover and/or moderately rough
6. no cover and/or minimum roughness

clean tilled, smooth, fallow

Table 6-Terrace P Factor (NHCP-600-2-1)

Horizontal Interval	Closed Outlet*	Open outlets with % grade of**				
		0.1 - 0.3	0.4 - 0.7	0.8		
< 110	0.5	0.6	0.7	1		
110 - 140	0.6	0.7	0.8	1		
140 - 180	0.7	0.8	0.9	1		
180 - 225	0.8	0.8	0.9	1		
225 - 300	0.9	0.9	1	1		
> 300	1	1	1	1		

Note: If contouring or stripcropping P factors are appropriate, they can be multiplied by the terrace P factor for the composite P factor.

*P factors for closed outlet terraces also apply to teraces w/ underground outlets and to level terraces with open outlets.

**The channel grade is measured on the 300 ft of terrace or the 1/3 of total terrace length closest to the outlet, whichever distance is less.

Table 7-Maximum Horizontal spacing for Terraces (NHCP-600-2-2)

Slope	USLE R Factor of			W/ contour stripcropping	For concentrated flow control	
	0 - 35	35 - 175	> 175			
Percent	ft	ft	ft	ft	ft	
0 - 2	700	500	450	600	700	
2-4	700	400	300	600	700	
4-6	600	400	200	600	600	
6-9	400	300	150	400	500	
9-12	400	250	150	250	500	
12-18	250	200	150	150	400	
> 18	250	200		150	300	
Minimum spacing required for all slopes						
	200	150	90	90	200	

P Factor Worksheet- Basic Data that is Required
Record or circle appropriate item on worksheet.

1. **Soil Map Unit**_______,_______,________,_______

2. **Soil Hydrologic group** A B C D

3. **Landscape profile**
   - Slope Length ______
   - Slope Grade (%)_______
   - Furrow grade _______
   - Furrow grade/slope grade ratio ________

4. **EI 10 year value from appropriate map**______

5. **Cover management Condition** (see table 1 for more details)
   Select the worse case condition

Code 1	• Established grass • Slowest runoff condition
Code 2	• Hay, grass nearing first year
Code 3	• Ground cover 75-95% Or if tilled: • Roughness depression > 7 inches • Vegetative hydraulic roughness like alfalfa
Code 4	• Ground cover about 40-65% Or if tilled: • Depressions 4-6 inches deep • Vegetative roughness like sunn hemp
Code 5	• Ground cover between 10-35% Or if tilled: • Roughness depression 2-3 inches • Vegetative roughness like 3/4 mature sunn hemp
Code 6--	• No cover to 5% or if tilled • Looks like cropped field after planting • A little rougher than a rotor tilled field, • Minimal roughness
Code 7-	• No cover • Clean tilled • Smooth

P Factor Worksheet- Basic Data that is Required (continued)
Record or circle appropriate item on worksheet.

6. **Ridge height** (see Table 2 for more details)
   Select most suspectible condition when erosion is the most severe.

Very low (0.5 to 2 inches)
Low (2 to 3 inches)
Moderate (3 to 4 inches)
High (4 to 6 inches)
Very High (> 6 inches)

Contouring Worksheet

1. P subfactor for contouring on grade

Select the P subfactor value for contouring on grade (Table 3 RUSLE contour P factors for on-grade condition) by selecting the appropriate:

- EI 10 year storm
- ridge height
- cover management condition
- _________

2. Adjust for furrow grade

- Obtain ratio of furrow grade/slope grade from step 3 of the Basic Data Worksheet_______
- Use the value from above, **P subfactor for contouring on grade**, then refer to
  a) Table 4 Contouring P
  b) find appropriate value subfactor value adjusted for furrow grade
- _________

3. Determine critical length of slope

- For cover management condition 1 and hydrologic soil groups a-d, the critical slope length is 1000 ft
- For cover management condition 2 and hydrologic soils group a, the critical slope length is 1000 ft.
- Use Figures 1-23 for the remaining combination of cover management conditions and hydrologic soil groups
- ___________

If slope length does not exceed critical length, use the P subfactor values in step 1 or 2. If the critical length is exceeded, go to step 4.

If strip cropping, increase the critical slope length by 1.5 times.

4. Slope length exceeding critical length

- Slope length (from step 3, Basic Data)________
- Critical length (from above)_________
- Ratio of slope length/critical length________
- Rill/interrill ratio selected for LS factor
  Low (pasture)
  Moderate (cropland)
  High (construction site)
- Use Figure 37-39 RUSLE P Subfactor Adjustment for contouring or stripcropping
  Select slope length range for rill/interrill ratio
  Select slope length/critical length ratio on horizontal axis
  Select P curve using values from A or B

This value is the corrected contouring P subfactor for the entire slope length.

If stripcropping subfactor values are needed, please call the agronomist.
Information needed to calculate the subfactor:

- **EI 10 Year value**
- **Soil Hydrologic Group**
- **Slope Grade**
- **Furrow Grade**
- **Number of vegetative strips in field**
- **Cover Management Conditions Pattern (table 1)**

P subfactor worksheet for terracing

Information Required

1. Slope gradient__________
2. R factor value___________
3. Other support practices to be used________
4. Determine terrace horizontal spacing interval from table 2 NHCP (attached)
   Enter table 1 NHCP (attached), use appropriated factors and select value for P
   ____
5. If terraces used with contouring, stripcropping:
   multiply all factors to obtain composite P
6. Adjust LS factor if terracing changed value