

length at the site so the P subfactor value of 0.56 applies to the entire landscape profile slope length.

### Example B:

#### Step 1. Gather information

- a) Hydrologic soils group C.
- b) Landscape profile slope = 6%, slope length = 450 feet. Furrow grade = 1.0%.
- c) For the cropland site near Lewiston, Maine, the 10-yr EI = 60.
- d) When row cropped, clean tilled corn is grown. This is Cover-Management Condition 6.
- e) Only a ridge height of 2-3 inches is formed by tillage and planting equipment on this soil, a Low Ridge.

#### Step 2. Determine the P subfactor for contouring "on grade."

- a) In Table 3, Condition 6, EI=60, select the table for Low Ridge Height (2-3" Ridges).
- b) Find the column for hydrologic soils group C and the value in the intersected row for 6% slope. Read the P subfactor value of 0.40.

#### Step 3. Adjust contouring P subfactor for furrow grade

- a) Calculate the furrow grade/slope grade ratio by dividing  $1/6 = 0.167$ , round to 0.2.

- b) Go to Table 4 as ratio indicates a correction applies.
- c) Enter Table 4 with the on-grade contouring P subfactor value of 0.40. Read across to the furrow grade/slope grade ratio of 0.2; find 0.67. The P subfactor value of 0.67 is for "off grade" contouring where the slope is less than the critical slope.

#### Step 4. Determine the critical slope length.

- a) Select Figure 16 for hydrologic soils group C, and Cover-Management Condition 6.
- b) Enter with the 6% slope, read up to intersection of (EI)10 = 60 and across to find a critical length of 380 feet. The profile slope length of 450 feet does exceed the critical slope length so adjust the P subfactor value of 0.67.

#### Step 5. Adjust the contouring P subfactor for critical slope length.

- a) The slope length/critical length ratio is  $450/380 = 1.2$ .
- b) Select figure 30 that applies to the slope range (4.1%-12%) and the medium Rill/Interrill Ratio used to describe row cropped cropland.
- c) From the slope length/critical length ratio of 1.2 on the horizontal axis, project a vertical line to intersect the previously determined P subfactor value of 0.67 for the site. From that intersection project a horizontal line to the left and read the P effective subfactor value of 0.75. The value of 0.75 is the contouring P subfactor

value that applies to the entire landscape profile slope length.

### EXAMPLE C:

**Step 1. Gather information about crop rotation. Include the length in years, crops grown, ridge height, if any, created during the production year, and the cover management condition produced by the crop production practices used to grow the crop.**

- a) Crop rotation is 8 years long.
- b) Crops are clean tilled corn after hay; no-till corn after corn; mulch till, 40% cover, soybeans after corn; mulch till spring oats, 10% cover, after soybeans; summer seeded alfalfa-timothy into oat stubble, 30% cover; followed by four years of alfalfa-timothy hay production years.
- c) Landscape profile is 10 percent, slope length = 300 feet. Average furrow grade = 1%. 10-yr EI = 70. Soil hydrologic group is B.
- d) Ridge height = 3-4" for corn after hay, 2-3" for no-till corn after corn, 3-4" for soybeans after corn, 0.5-2" for oats after soybeans, 0.5-2" for hay seeding into oat stubble, and 4 years of alfalfa-timothy hay = no ridges.
- e) Cover management condition of corn after hay = 6, corn after corn = 3, soybean after corn = 4, oats after soybeans = 5, alfalfa-timothy into oat stubble = 5, and alfalfa-timothy hay/haylage = 2.

### Step 2. Calculate the contour P subfactor

**for each year where cover management condition or ridge height change.**

- a) Furrow grade/profile grade =  $1/10 = 0.1$  for all crops where ridges are formed.
- b) Corn after hay, on-grade P = 0.28. Off-grade P = 0.51. Critical slope length = 240 feet. Correct for exceeding critical slope, contour P subfactor = 0.63, where  $300/240 = 1.25$ .
- c) Corn after corn, on-grade P = 0.30. Off-grade P = 0.52. Critical slope length = 1000 feet.
- d) Soybeans after corn, on-grade P = 0.22. Off-grade P = 0.47. Critical slope length = 1000 feet.
- e) Oats after soybeans and alfalfa-timothy into oat stubble, on-grade P = 0.54. Off-grade p = 0.69. Critical slope length = 560 feet.
- f) Alfalfa-timothy hay. No ridges present. Contour P subfactor = 1.0.

**Step 3. Multiply each different yearly contour P subfactor times the number of years it occurs in the crop rotation.**

$$0.63 \times 1 = 0.63, 0.52 \times 1 = 0.52, \\ 0.47 \times 1 = 0.47, 0.69 \times 1 = 0.69, \\ \text{and } 1.0 \times 4 = 4.0.$$

**Step 4. Sum the values calculated in step 3 and divide by the total number of years in the crop rotation to get the average annual contour P subfactor for the rotation.**

$$\text{a) Sum of the values in step 3. } 0.63 + \\ 0.52 + 0.47 + 0.69 + 4.0 = 6.31.$$

- b) Divide 6.31 by the number of years in the crop rotation (8). Average annual contour P subfactor for the crop rotation =  $6.31/8 = 0.79$ .