To Manage Water, We Want to Know How Often a Flow Is Equaled or Exceeded

DURATION CURVE - % of Time a Flow Is Equaled or Exceeded

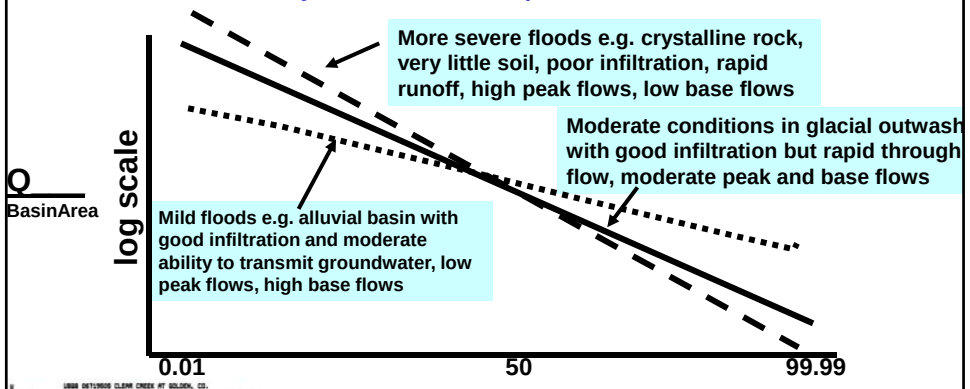
Plot of Discharge vs Probability of Occurrence

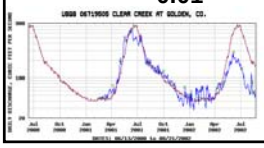
To create: Rank Flows, as m, From Highest to Lowest 1 to N

If 2 Values Are Equal, Assign Separate Rank

P = 100 * (m/(n+1))

Normalize flow by basin area to compare basins of different size





Steeper curve indicates more severe floods

Estimate Velocity With Manning Equation

$$V = \frac{1.49\ R^{2/3}\ S^{1/2}}{n}$$

where: V = average velocity in fps

R = hydraulic radius (flow area [ft^2]/wetted perimeter[ft])

S = slope of energy gradient

n = Manning friction factor

R = (40ft * 0.75ft) / (40ft + 0.75ft + 0.75ft) = 0.72

$$S = \frac{(5816\text{ft} - 5775\text{ft})}{550\text{m}\ \frac{1\text{ ft}}{12\text{in}}\ \frac{39.3\text{in}}{1\text{m}}} = 0.02276$$

n ~ 0.05

V ~ 3.6 ft/sec

Q ~ 109 cfs