Snowmelt Flood Factors

Snowmelt Flooding can be caused by the below factors. Some factors may tend to increase the risk of snowmelt flooding while others may tend to decrease it. Thus, all of the below factors should be considered in assessing the overall threat.

1. High water content of existing snow cover.

Unseasonably deep snow cover contributes to the flood potential as follows:

- Widespread heavy snow cover usually delays spring warming, thus increasing the potential for heavier rains and a more rapid melt.
- Heaviest snowfalls usually occur in late February or March.

2. High soil moisture in the preceding Fall season.

October and November precipitation are most significant because:

- Seasonably less evapotranspiration occurs.
- Less time is available for the moisture to soak deeper into the ground prior to freeze-up.

3. Deep frost depths in the ground.

Deep, frozen ground prevents percolation during melt period and can be caused by:

- Cold temperatures prior to heavy snowfall.
- Normal or above normal soil moisture (for ground hardness).

4. Elevated stream levels.

- Elevated stream levels increase the risk of flooding because the streams do not have to rise as much for flooding to begin.

5. Moderate to heavy rain during melting.

- Contributes additional water content to the snow pack.
- Particularly significant if ground is still frozen near the surface.

6. Rapid, continuous melting of the snow.

- Warm, rainy period with high dew point temperatures and above freezing temperatures at night leads to a more rapid snow melt
- Usually occurs when melt period is later than normal in the spring season. Ice jam flooding is more likely when flows are above normal.

7. Ice jams.

- Pieces of floating ice carried with a stream's current can accumulate at any obstruction to the stream flow. The water that is held back may cause flooding or flash flooding upstream. If the obstruction suddenly breaks then flash flooding may occur downstream.
- Three to five consecutive days with daily maximum temperatures in the 40s typically create enough melting to cause ice breakup on streams.
- If rain does fall then three to five consecutive days with daily maximum temperatures only in the middle 30s around the same time may result in ice breakup. Ice jams may occur within a day or two after the rain begins.

For more information visit the National Weather Service in Des Moines, Iowa at
http://www.weather.gov/desmoines