Soos Creek Fine Sediment TMDL – Conceptual Model

Washington State Department of Ecology

The following steps describe the pathway along which land use changes can impair the health of benthic macroinvertebrates:

1. **Development**

   As the population in a watershed increases, the pressure to convert vegetated areas (e.g., forests, meadows, wetlands) to a built environment increases.

2. **Impervious cover**

   Hard surfaces, such as buildings, roads, parking lots, increase with development. These surfaces reduce the ability of the landscape to infiltrate stormwater.

3. **Stormwater runoff**

   Older stormwater infrastructure is built to deliver runoff to streams efficiently, preventing stormwater infiltration into soils and resulting in high stream flows during rain events.

4a. **Stream flashiness**

   Stormwater runoff increases instream flows to levels that are mish higher than those that would have occurred before development. These flows can be of short duration but intense.

4b. **Instream erosion**

   Increased instream flows due to stormwater runoff increase erosive forces and mobilize fine sediment from stream banks and stream bed.

5. **Upland sediment**

   Stormwater also carries fine sediment to streams from developed areas that are upland in the watershed.

6. **Fine sediment**

   Fine sediment from upland and formed through erosion settle on the stream bed and clog the spaces between cobbles and rocks.

7. **Benthic invertebrates**

   The fine sediment that clogs interstitial spaces between stream bed cobbles degrades habitat for benthic macroinvertebrates.