Stream Connectivity and Water Quality Threats to the Middle White River Watershed

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Connectivity of Streams & Wetlands to Downstream Waters: A Review & Synthesis of the Scientific Evidence
Mountain headwater streams flow swiftly down steep slopes and cut a deep V-shaped valley. Rapids and waterfalls are common.

Low-elevation streams merge and flow down gentler slopes. The valley broadens and the river begins to meander.

At an even lower elevation a river wanders and meanders slowly across a broad, nearly flat valley. At its mouth it may divide into many separate channels as it flows across a delta built up of river-borne sediments and into the sea.

Figure 1.27: Three longitudinal profile zones. Channel and floodplain characteristics change as rivers travel from headwaters to mouth. Source: Miller (1990). ©1990 Wadsworth Publishing Co.
Stream Order
So, why are headwater systems important?

- Source for nutrients, ions
- Sediment sink
- Decrease flooding
- Recharge
- Aquatic life
- Supply downstream water
Figure 1.20: Hydrologic and topographic floodplains. The hydrologic floodplain is defined by bankfull elevation. The topographic floodplain includes the hydrologic floodplain and other lands up to a defined elevation.
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American Eel - *Anguilla rostrata*
averages 24-40 inches
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Water Uses

• Domestic – Drinking Water, Recreation, Homes
• Industrial – Manufacturing, Office, Cooling Water, Hydropower
• Commerce – Irrigation, Navigation
• Wildlife – Aquatic, Terrestrial
What are the Issues?

• Water Quantity
  – Too Much, Too Little, Wrong Place

• Water Quality
  – Pollution, Invasive Species

• Competing Uses
  – Aquatic Life, Drinking Water, Irrigation, Recreation, Aesthetics
Water Quality Issues?

• Turbidity/Sediment
  – Agriculture, Construction, Unpaved Roads, Instream Erosion
  – Channel Modification, Mining, Recreation

• Minerals (Chlorides, Sulfates, Total Dissolved Solids)
  – Agriculture, Point Sources, Urban Runoff, Mining

• Metals (Copper, Lead, Zinc)
  – Agriculture, Mining, Point Sources, Construction

• Pathogens – *E. coli*
  – Confined Animal Operations, Agriculture, Septic Tanks

• Other (Temperature, pH, Dissolved Oxygen, Mercury)
  – Agriculture, Mining, Point Sources, Construction, Hydropower
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