Characteristics of Streams and Rivers

The ability of a stream or river to erode and transport sediment is affected by many factors. These factors, which are interconnected, include the velocity of the water, the stream's gradient, its discharge, and the shape of its channel.

Velocity

The velocity of water in a stream or river is the distance that water travels in a given amount of time. The velocity of the water in a river is related to the amount of energy that the water has. A fast-moving river can erode materials more quickly and can carry larger particles than a slow-moving river. Many factors affect a river's velocity, including the steepness of the slope, the amount of water traveling downstream, and the shape of the path through which the water travels.

Gradient

The steepness of the slope of a stream or river is called its gradient. A river's gradient varies along its course. A river may plunge down steep hills or mountains near its source. There its gradient is very large. By the time a river approaches sea level, it may be traveling across a plain that slopes very gradually, so its gradient is very small.

Discharge

The discharge of a stream or river is the amount, or volume, of water that passes a certain point in a given amount of time. Discharge is not constant over the length of a river. In many rivers, discharge increases downstream because tributaries continually add more water. In rivers that flow into deserts, discharge may decrease downstream.

Discharge is not constant year-round. During times of increased precipitation or at times when snow is melting, more water runs into rivers. The velocity of the water also increases. Rivers become wider and deeper and may even flood their banks.