- *Measured load*, portion of the total sediment load that is obtained by the sampler in the sampling zone.
- *Unmeasured load*, portion of the total sediment load that passes beneath the sampler, both in suspension and on the bed. With typical suspended sediment samplers this is the lower 0.3 to 0.4 feet of the vertical.

The above terms can be combined in a number of ways to give the total sediment load in a stream (**Table 2.4**). However, it is important not to combine terms that are not compatible. For example, the suspended load and the bed material load are not complimentary terms because the suspended load may include a portion of the bed material load, depending on the energy available for transport. The total sediment load is correctly defined by the combination of the following terms:

Total Sediment Load =

Bed Material Load + Wash Load

or

Bed Load + Suspended Load

or

Measured Load + Unmeasured Load

Sediment transport rates can be computed using various equations or models. These are discussed in the *Stream Channel Restoration* section of Chapter 8.

Table 2.4: Sediment load terms.

		Classification System	
		Based on Mechanism of Transport	Based on Particle Size
Total sediment load	Wash load	Suspended load	Wash load
	Suspended bed-material load		Bed-material load
	Bed load	Bed load	

Stream Power

One of the principal geomorphic tasks of a stream is to transport particles out of the watershed (**Figure 2.15**). In this manner, the stream functions as a transporting "machine;" and, as a machine, its rate of doing work can be calculated as the product of available power multiplied by efficiency.

Stream power can be calculated as:

$$\varphi = \gamma Q S$$

Where:

φ = Stream power (foot-lbs/second-foot)

γ = Specific weight of water (lbs/ft^3)

Q = Discharge (ft^3/second)

S = Slope (feet/feet)

Sediment transport rates are directly related to stream power; i.e., slope and discharge. Baseflow that follows the highly sinuous thalweg (the line that marks the deepest points along the stream channel) in a meandering stream generates little stream power; therefore, the stream's ability to move sediment, *sediment-transport capacity*, is limited. At greater depths, the flow follows a straighter course, which increases slope, causing increased sediment transport rates. The stream builds its cross section to obtain depths of flow and channel slopes that generate the sediment-transport capacity needed to maintain the stream channel.

Runoff can vary from a watershed, either due to natural causes or land use practices. These variations may change the size distribution of sediments delivered to the stream from the watershed by preferentially moving particular particle sizes into the stream. It is not uncommon to find a layer of sand on top of a cobble layer. This often happens when accelerated erosion of sandy soils