All rocks break down under the chemical attack of the hydrosphere, atmosphere, and biosphere. With prolonged exposure to chemical weathering, minerals that are stable at higher temperatures and pressures begin to decompose, while new minerals, stable at the conditions of Earth's surface, are formed. For example, as we discussed earlier in the chapter, feldspar breaks down to form kaolinite, or other **clay** minerals. Clay minerals are one of the most stable kinds of mineral on Earth's surface. They are a major component of mud, both on the land and in the sea. Particles of clay minerals tend to be tiny (typically less than 0.002 mm in diameter) and because tiny particles are hard to identify, scientists who study soils classify all particles less than 0.002 mm in size, regardless of mineral type, as *clay*. The very finest of the clay-sized particles are so small they can remain suspended in water indefinitely; they are called *colloids*.

clay A family of hydrous aluminosilicate minerals. The term is also used for tiny mineral particles of any kind that have physical properties like those of the clay minerals.

Some minerals, such as quartz, are more resistant to weathering than feldspar, and hence do not break down into grains as small as those found in clay. Instead, quartz usually ends up as **sand**, which has grain sizes as coarse as 1 to 2 mm, roughly 100 to 1000 times larger than the grains in clay. Sediment with grain sizes between those of sand and clay is called *silt* (see Figure 4.8). The grain sizes of particles weathered from bedrock decrease with the distance traveled from the source. Some of the finest sand is found at the beach, because it has had an especially long journey from the mountains.

sand A sediment made of relatively coarse mineral grains.