The Basin and Range Province is characterized by broad, gently sloping alluvial basins separated by north to northwest trending fault block mountains. Around 15 to 18 million years ago, the mountain ranges we see today in this province developed and the valleys between them began to fill up with sediment. Stream alluvial deposits and sediment basin fill originating from the bordering mountains are the principal water bearing materials in these basins. They are characterized by small to moderate amounts of mountain-front recharge, streamflow infiltration, and significant underflow in and out of basins. Groundwater flows tend to move inward from the edges of the basin and higher elevations, then down gradient towards the outflow portion of the basin, and then out of the basin in the general direction of river drainage.

The Basin and Range Province contains deep alluvial aquifers and significant volumes of water in storage. However, since aquifer recharge rates are relatively low and pumping volumes have been large, many aquifers in this Province are in an overdraft condition. Overdraft is a condition where groundwater is pumped in excess of recharge. The definition of safe yield is to achieve and thereafter maintain a long-term balance between the annual amount of groundwater withdrawn in an AMA and the annual amount of natural and artificial groundwater recharge. Subsidence is the settling or collapsing of the ground surface that occurs when soil that once had water filling pore spaces becomes dried out and collapses due to the weight of overlying material. It can occur when an aquifer is in overdraft. Fissure cracks can occur along the margins of an area where subsidence has occurred.

**Objectives**

Students will:
- Construct a cross-section of an alluvial aquifer
- Describe the ground water/surface water connection
- Summarize the alluvial aquifer system
- Report on the local aquifer status

**Suggested Activities:**
- Experiment with groundwater flow models
- Develop an inquiry lesson or science fair project that illustrates the groundwater system
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