Around **70**% of the Earth’s surface is covered by water and this surface area combined with the atmosphere itself is known as the **HYDROSPHERE**. Unfortunately, **97**% of this water is saltwater in the oceans which is not usable by people. **DESALINATION**, or removal of salt from seawater is possible, but very expensive. Of the remaining **3**% that is freshwater (not necessarily clean, simply not salty), almost **70**% is frozen in polar ice and about **30**% is found underground leaving less than **ONE** percent of the freshwater on Earth easily accessible in lakes, rivers, and streams. Underground water is called **GROUNDWATER** and is typically found in **AQUIFERS** which are large underground reservoirs made of porous rock. To access groundwater, wells are dug to reach the **SATURATED** (full of water) part of the **PERMEABLE** rock. The impermeable layer of rock below that is too solid for water to enter. The top of the saturated zone is called the **WATER TABLE**.

It is water’s basic chemistry that makes it responsible for so much on Earth. Water, also known as **H2O**, is a **POLAR** molecule made up of one atom of oxygen and **TWO** atoms of hydrogen with a slight **NEGATIVE** charge at the oxygen side and a slight **POSITIVE** charge at the hydrogen side. Because of its polarity, it develops the properties of **COHESION** (a tendency to stick to other water molecules) and **ADHESION** (a tendency to stick to other materials). Since it sticks to other materials easily, water can act as a **UNIVERSAL** solvent dissolving most things into a solution. Similarly, since it sticks so easily to other water molecules, water molecules form a strong surface whose **SURFACE TENSION** is enough to support the weight of small objects and keep it from overflowing out of a container. Cohesion and adhesion can work together as the water molecules climb up the insides of thin tubes like straws and flower stems causing it to rise upwards against gravity. This is known as **CAPILLARY** action. Water also has a very high **SPECIFIC HEAT** index which is a measure of somethings ability to absorb heat energy without changing temperature. This causes water to warm up and cool down more slowly than other materials. Finally, water has a known density of **1 g/mL**. This allows people to predict the buoyancy (floating or sinking behavior) of something easily; denser materials sink (**NEGATIVE** buoyancy) in water and less dense materials will float (**POSITIVE** buoyancy). Objects with a density equal to that of water will sit between the surface and bottom. This is known as **NEUTRAL** buoyancy.

Since the amount of water on Earth is fixed and has remained the same throughout its history, it is important that our water moves throughout the hydrosphere by means of the **WATER CYCLE**. The main steps of the water cycle are **EVAPORATION** (water rising up into a gaseous form in the air), condensation (water cooling into liquid droplets and forming clouds), and **PRECIPITATION** (when water returns to the Earth as rain, snow, etc.). Water can also leave plants by **TRANSPIRATION** to enter the atmosphere. When precipitation occurs over land, it is either carried to nearby lakes and streams by **RUNOFF**. All the area that drains into a certain river after it rains is called its river basin, or watershed. Water that does not end up in a river begins the process of infiltration as it soaks into the ground feeding aquifers and causing the water table to rise. Frequently, this groundwater is **FILTERED** by the rock layers it seeps through becoming cleaner than most surface water.