2. Water's natural processes:

A. Water Movement: The three states of water - ice, water and water vapor, relate to temperature. Water molecules are attached to each other but when they are heated they vibrate and move, temporarily releasing part, then all, of that attraction. Hence, when water is warmed, the molecules separate or evaporate and enter the air as a water vapor. When cooling, the water molecules attract each other and condense to form precipitation. When cold enough, the molecules are rigidly held in place to form ice, hail and snow. These physical states of water allow it to be recycled, and are the basis of the earth's water cycle, which is defined as the movement of water from the earth's surface into the atmosphere and back to the earth's surface again.

As water molecules in the cycle evaporate and return to the atmosphere, they leave behind salts and other material found in water on the surface from which they have evaporated. As this "cleansed water" returns to the earth through the atmosphere in the form of precipitation, various impurities in the air are intercepted. When it reaches the ground, water again contains both man made and natural impurities, such as carbon dioxide, dust and pollen. As the water runs its course on the land, it continues to collect or dissolve and carry oxygen, nutrients, minerals, nitrates, phosphates, carbon dioxide and other materials, most of which are necessary for the life of animals and plants. The types and amounts of materials vary according to the location's geology, topography, vegetation, soil type, weather, water velocity and land use. Eventually, these collected materials are deposited in various parts of the water cycle before the water re-enters the atmosphere and continues to be recycled. Water quality can be measured utilizing the conditions needed to sustain the organisms that live in or use the water in a given area. If alteration and use of the land lowers these conditions to certain levels, the water is considered polluted.

Exactly where water travels and how quickly it moves depends on various factors, such as an area's topography and surface, and its soil and rock types. Precipitation falls into water or on land where it "runs off" of a hard surface such as rock or concrete, or infiltrates a soft surface such as soil or sand. If it moves downward, it can replenish water contained in the underground rock or sediment. This supply of water is referred to as "ground water". Water remaining on the surface enters local streams, rivers and lakes. This land area from which water drains to any given point is referred to as a "watershed". For instance a lake's watershed includes the streams entering it and the hills that drain to these streams and eventually into the lake. A large river, fed by many streams, is made up of many watersheds and is referred to as a "drainage basin". New Jersey encompasses five major drainage basins, which themselves comprise many miles of rivers and streams, acres of lakes and square miles of wetlands and estuaries.