

Ripple Effect #78

What is Hydrology and What Do Hydrologists Do?

You have probably heard or seen the word hydrology used over the past few years. Living in the Red River Basin, it is a word that has been used quite often. Hydrology is the study of water, one of our most valuable resources. Hydrologists study the distribution, circulation, and properties of water to monitor, manage, and protect this fundamental resource.

Hydrology has evolved as a science in response to the need to understand the complex water systems of the Earth and help solve water problems. Hydrologists play a vital role in finding solutions to water problems.

Hydrology is the science that encompasses the occurrence, distribution, movement and properties of the waters of the Earth and their relationship with the environment within each phase of the water cycle. All of the physical, chemical and biological processes involving water as it travels through the water cycle are of interest to those who study water.

There are many pathways the water may take in its continuous cycle of falling as rainfall or snowfall and returning to the atmosphere. The cycle for water may be short, or it may take millions of years. People tap the water cycle for their own uses. Water is diverted temporarily from one part of the cycle by pumping it from the ground or drawing it from a river or lake. It is used for a variety of activities such as households, businesses and industries; for irrigation of farms and parklands; and for production of electric power.

After use, water is returned to another part of the cycle: perhaps discharged downstream or allowed to soak into the ground. Used water normally is lower in quality, even after treatment, which often poses a problem for downstream users.

The hydrologist studies the fundamental transport processes to be able to describe the quantity and quality of water as it moves through the water cycle (evaporation, precipitation, streamflow, infiltration, ground water flow, and other components).

Hydrologists apply scientific knowledge and mathematical principles to solve water-related problems in society: problems of quantity, quality and availability. They may be concerned with finding water supplies for cities or irrigated farms, or controlling river flooding or soil erosion. Or, they may work in environmental protection: preventing or cleaning up pollution or locating sites for safe disposal of hazardous wastes. Persons trained in hydrology may have a wide variety of job titles.

Scientists and engineers in hydrology may be involved in both field investigations and office work. In the field, they may collect basic data, oversee testing of water quality, direct field crews and work with equipment. A hydrologist may spend considerable time doing field work in remote and rugged terrain.

In the office, hydrologists do many things such as interpreting hydrologic data and performing analyses for determining possible water supplies. Much of their work relies on computers for organizing, summarizing and analyzing masses of data, and for modeling studies such as the prediction of flooding and the consequences of reservoir releases or the effect of leaking underground oil storage tanks.

The work of hydrologists is as varied as the uses of water and may range from planning multimillion dollar interstate water projects to advising homeowners about backyard drainage problems.

Employment for hydrologists is expected to grow much faster than the average through the year 2014. Here in the Red River Basin, another good hydrologist is always appreciated!

Source: USGS website - *Hydrology: The Study of Water and Water Problems A Challenge for Today and Tomorrow*, a publication of the Universities Council on Water Resources.

Until the next Ripple Effect,

The Red River Basin Commission (RRBC)

The RRBC is a grassroots organization that is a chartered not-for-profit corporation under the provisions of Manitoba, North Dakota, Minnesota, and South Dakota law. Our offices in Moorhead, MN and Winnipeg, MB can be reached at 218-291-0422 and 204-982-7254, or you can check out our website at www.redriverbasincommission.org.

