

## NORTH CAROLINA GROUND WATER CONDITIONS

**Importance of Ground Water:** More than one-half of the citizens of North Carolina rely on ground water as a source of drinking water. Approximately 98 percent of all public water supply systems in the state use ground water including over two million citizens. Virtually all private water supplies for single family homes depend upon ground water. In many rural counties more than 90 percent of the citizens rely on ground water as their sole source of drinking water.

**Availability and Use:** Naturally occurring potable ground water can be found throughout all three of North Carolina's physiographic areas - Mountains, Piedmont, and Coastal Plain. There are two principal types of aquifers in North Carolina. The Piedmont and Mountain regions are underlain principally by consolidated rocks, such as granite, gneiss, schist and slate. In these regions, ground water occurs in the fractures of the consolidated rocks, and in pore spaces of the residual weathered rock (saprolite) and the alluvium of the stream valleys where water occurs in the pore spaces. In the Coastal Plain, aquifers are composed of stratified formations of consolidated and unconsolidated sand, gravel, shells, clay, limestone and combinations of these. Ground water is contained in the pore spaces of these sedimentary materials. North Carolina's ground water, although generally abundant, is not inexhaustible and is not evenly distributed. The high yielding aquifers of the Coastal Plain area are the source for most municipalities, industries, rural homes, and livestock. In the Piedmont and Mountain areas ground water is the source for most rural homes and for many small and moderate size public and self industrial systems. Statewide, the ground water that discharges to streams is responsible for about 60 percent of all streamflow.

**Quality:** Ground water in North Carolina is generally of good quality. With the exception of a few coastal areas, potable ground water occurs throughout the geographic areas of the state. However, as the population has continued to grow, it has become necessary to protect the ground water resource and establish rules regarding its use. The primary purpose of the North Carolina Ground water Protection Program

is to develop and implement programs designed to protect the ground water resource.

**Contamination Issues:** The ground water resource, regardless of depth, is vulnerable to contamination introduced at or below the land surface. Shallow ground water is the most vulnerable to contamination. Once contaminated, ground water quality is almost impossible to restore completely and the cleanup process is usually very expensive and time consuming.

Over the past few years several issues have emerged as critical to the long-term protection of ground water in North Carolina. These issues include:

- ◆ Regulation of solid and hazardous waste, underground storage tanks, wastewater, solvents, and other chemical contaminants.
- ◆ Responding to incidents of ground water contamination and remediation of contaminated sites.
- ◆ Rapid decline of water levels in some coastal plain aquifers and resulting intrusion of salt water.
- ◆ Assessment of the impact of agricultural chemicals on ground water.
- ◆ The need for Wellhead Protection and Source Water Assessment for public water supply wells.
- ◆ Management of and access to ground water contamination data and other ground water information.

Finding solutions to these problems will shape the development of North Carolina's Ground water Protection Program over the next several years.

**Ground Water Protection Program:**

The ground water protection problems facing the State in the years ahead are formidable. The ground water resources, which millions of North Carolinians depend upon for drinking water supplies, are being polluted or are threatened with pollution by planned and unplanned surface activities conducted by business, agriculture, industry, government, and individuals. The Department of Environment Health and Natural Resources has established a clean water strategy to protect the quality of ground water to achieve the goal that 100% of the State's citizens who rely on ground water have a drinking water supply that meets health based standards by 2008. All programs with ground water elements in the Department of Environment and Natural Resources will be working to achieve this goal.

**Ground Water Contamination Incidents in North Carolina**

