Abstract

An evaluation of the hydrogeologic resources of the Arlington 7.5 minute quadrangle, VT, was carried out for the Vermont Geological Survey under contract with the Vermont Geology Division. We have delineated the extent of carbonate bedrock and glacial overburden aquifers in the valley portion of the quadrangle. Overburden thickness and aquifer recharge potential maps were generated, as were three stratigraphic cross sections of the quadrangle. A technical report prepared for the Vermont Survey will examine the aquifer systems and will determine ground water flow to and through the aquifers.

1793 well driller logs were initially examined from computerized records obtained from the Vermont Survey. Of these, 286 wells could be confidently correlated to an existing house and placed on a map using Arcview. A large carbonate bedrock aquifer underlies the inhabited valley portions of the quadrangle and its extent was revealed by subsurface data from 255 wells. The aquifer ranges from 100 to 300 ft in depth and is confined from above by overburden units of till and/or clay. A piezometric surface map for this aquifer was constructed and indicates that areas surrounding topographic highs where there are gaps or thinning in the confining layer might have an enhanced aquifer recharge potential.

A smaller unconfined sand and gravel aquifer, tapped by 17 wells, lies in the central valley portion of the quadrangle where overburden deposits are thickest. This aquifer ranges from 50-150 ft in depth and rests above the layer of till confining the carbonate aquifer. Recharge is by direct infiltration through the permeable gravel and sand unit and the aquifer consequently has the highest recharge potential.

In addition to the technical report, we plan to present a cohesive summary of the surface geology and hydrogeology of the quadrangle that is accessible to the non-geologist and useful in land management decisions. It is hoped that the report will promote environmentally informed decisions on land use in the quadrangle.