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## 2.0 Geology

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The study area lies within the Allegheny Mountain Section of the Appalachian Plateaus physiographic province and is characterized by wide ridges separated by broad valleys (Sevon, 2000). The geologic structure of the study area resides within the low-amplitude synclinal fold, named the Berlin syncline (Casselberry, 1997). With an axial strike 30 degrees east of north, the Berlin syncline plunges to the southwest (Shaulis, 1997).

The area is underlain by eight geologic formations (Berg et al., 1980; **Figure 2**):

- The Devonian age name Catskill Formation is comprised of sandstone, siltstone, shale, and mudstone.
- The Mississippian and Devonian age Rockwell Formation is comprised of crossbedded, argillaceous sandstone and shale.
- The Mississippian age Burgoon Sandstone is comprised of crossbedded sandstone and includes shale and coal.
- The Mississippian Mauch Chunk Formation is comprised of shale, siltstone, sandstone, and some conglomerate.
- The Pennsylvanian Pottsville Formation is comprised of sandstone and conglomerate as well as thin beds of shale, claystone, limestone, and coal.
- The Pennsylvanian Allegheny Formation is comprised of cyclic sequences of sandstone, shale, limestone, clay, and coal. The upper section of the Allegheny Formation is the producing formation of Well #99.
- The Pennsylvanian Glenshaw Formation is comprised of cyclic sequences of shale, sandstone, red beds, and thin limestone and coal. The middle section of the Glenshaw Formation is the producing formation of Well #2 and Well #18B.
- The Pennsylvanian Casselman Formation is comprised of cyclic sequences of shale, siltstone, sandstone, red beds, thin impure limestone, and thin nonpersistent coal.

The underlying geology of the area, in large part, controls the surface topography and the flow of groundwater through the bedrock aquifers. Therefore, it forms the framework of the hydrogeologic flow model. Because groundwater flow is largely controlled by primary (inter-granular) porosity and secondary (joints and fractures) porosity within the bedrock aquifer, the geologic structure of the aquifers plays a role in shaping the overall groundwater flow regime.