SECTION II

Geology of the Project

The topography in the area of this project has relatively strong relief. The hills are composed of alternate layers of limestones and shales, with the limestones forming prominent benches on the side slopes. Except for local variations, the overall dip of the strata is in a northwesterly direction.

It is evident that the bedrock in this area has been subjected to rather strong stresses in the geologic past. This is indicated by the faulting and sharp folding encountered during the investigation of this project. Several faults were observed, one of which crosses centerline in the vicinity of station 98/10. This particular fault can be observed in the Tuttle Creek spillway, where the displacement is 22 feet. Fault displacement has decreased to 13 feet at a location 200 feet east of the displacement in the main spillway. This diminishing displacement continues to station 98/10 where it is 5 feet.

The reason for the difference in displacement between these two locations is that the bedrock layers were bent, as well as faulted, in the vicinity of centerline, which reduced the amount of displacement of the fault. The bending of the bedrock was facilitated by the strong local dip that existed prior to faulting. The reduction of fault displacement is a local situation, since displacement is regained eastward along the fault zone.

The geologic formations encountered on this project are in the Permian System. For the most part the individual limestone and shale members are relatively constant in thickness and lithologic characteristics; however, there are a few exceptions to this. These exceptions are in the Middleburg, Kiss, and Morrill limestones. These limestones are noted for their variation in thicknesses and lithologic characteristics in this area. Due to the exceptional amount of relief on this section of the project, over 200 feet of geologic section is exposed.

The mantle consists predominantly of a thin layer of colluvium with the exception of a loess-like material and a small amount of alluvium in the small flood-

plains. The loess-like material was encountered between stations 143/00 and 153/00, and has a maximum thickness of 25 feet at station 148/00. This material is located in a small, rounded, buried valley where drainage was to the southwest. It is possible that this material is of glacial origin. There was no conclusive evidence encountered to verify that it is; however, a few small glacial erratics were observed on the ground surface in this area.