

FIGURE 4—Altitude and configuration of the bedrock surface.

**EXPLANATION**

- Bedrock outcrop
- Approximate alignment of principal valleys in bedrock surface—Line pattern indicates paleovalley
- 5200— Bedrock surface contour— Shows approximate altitude of bedrock surface. Contour interval 20 feet. Hachures indicate depression features. Datum is sea level
- A—A' Line of geologic section

**Altitude and Configuration of the Bedrock Surface**

The map of the altitude of the bedrock surface (fig. 4) was computed by the geographic information system as the difference between the maps of the altitude of the land surface and the thickness of the unconsolidated sediments. Land-surface altitude was defined by digital coverages (digital representation of a map), which were smoothed to produce a generalized land-surface coverage that has a resolution commensurate with the thickness coverage. The geographic information system was used to subtract the thickness coverage (fig. 3) from the smoothed land-surface coverage and to plot the resulting map of the altitude of the bedrock surface (fig. 4). Figure 4 is a smoothed surface and does not show small-scale features present in the bedrock surface. Thus, in areas where the unconsolidated sediments are thin, the altitude of a smoothed bedrock contour might be slightly above or below the altitude of a corresponding unsmoothed land-surface contour shown on the base map. These small discrepancies are beyond the intended resolution of figure 4.

In areas of thin unconsolidated sediments, the altitude and configuration of the bedrock surface (fig. 4) are similar to that of the land surface; however, in areas of thick sediments, the bedrock surface has deeper valleys and greater relief than the land surface. The geologic section (fig. 5) shows the altitude and configuration of the land surface and the similar shape of the bedrock surface along an east-west line extending from south of Fort Collins to north of Windsor (fig. 4).

Several shallow stream valleys south of the Cache la Poudre River are classified here as paleovalleys (fig. 4) because the small streams presently flowing in the valleys are unconfined; that is, the streams lack sufficient erosional capacity (competence) to have eroded these broad, deep valleys in the bedrock surface. One or more ancestral streams of greater competence may have cut the paleovalleys, which are now largely filled with sediments and poorly drained by the present streams. South of these paleovalleys, the valleys in the bedrock surface are closely associated with and likely were formed by the ancestral Cache la Poudre River and Big Thompson River.

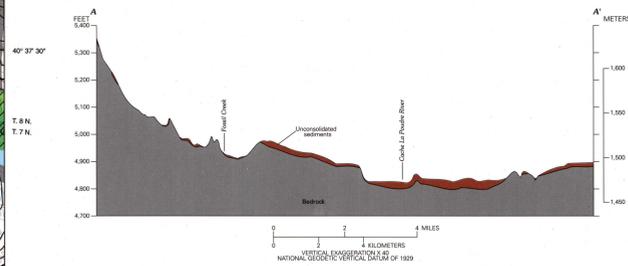


FIGURE 5—Geologic section.