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Whole-rock chemical analyses of Lowland Creek Volcanics samples show a compositional range from the rhyolite and dacite to the andesite and trachyte compositional fields (Dudas and others, 2010). $^{40}\text{Ar}/^{39}\text{Ar}$ dates of between 52.9 to 48.6 Ga (Dudas and others, 2010) indicate that it took almost 5 million years to deposit this volcanic sequence. Rhyolite flows overlying Lowland Creek Volcanics in the northern part of the quadrangle are likely part of the Avon volcanic sequence well exposed 40 km (24 miles) to the north (Trombetta, 1987). Sapphires and gold have been mined from placer on the South Fork of Dry Cottonwood Creek. We speculate that Lockhart Meadows was the site of a glacial lake and that glacial lake sediments underlie the alluvium in this meadow.

Qal	Alluvium of modern channels and flood plains – Gravel, sand, silt, and clay along active streams that consist of locally derived material.
Qac	Alluvium and colluvium, undivided – Mainly covered soil containing poorly sorted clasts from local exposures deposited by sheet wash and, to a lesser extent, other fluvial processes.
Qaf	Alluvial fan – Sub-angular to subrounded, poorly sorted, locally derived cobble to boulders of gravel, sand and silt.
Qls	Landslide – Mass-wasting deposit characterized by a hummocky surface, willows and springs, the inferred landslides at the head of Alaska Gulch formed on ash-flow tuff breccias.

Tavv	Vitrophyre – Flow-banded, glassy groundmass porphyry with rare black quartz megacrysts.
Tavf	Rhyolite – Rhyolite flows, flow breccias, bedded breccia, and tuff (Smedes, 1968). Rhyolite flows are characterized by euhedral black quartz phenocrysts, less abundant embayed quartz megacrysts, and subhedral K-spar phenocrysts in light gray groundmass. Estimated exposed thickness is 200 m (600 ft).

Lower Browns Gulch lava – Porphyritic vitrophyre flow with pinkish-orange phenocrysts in a glassy, dark gray groundmass. Flow banding is well developed locally and not contorted, as in other flows. In hand specimen, is recognizable by large, euhedral feldspars and lesser amounts of quartz phenocrysts and distinctive, glassy groundmass. Reddish-black outcrops are rounded, knobby, and weather to a light gray soil.

	Metaliferous vein
	Dike
	Contact
	Fault: dashed where approximately located; dotted where concealed, bar and ball on downthrown side
	Attitude of inclined flow banding
	Attitude of vertical flow banding
	Attitude of inclined bedding and planar features caused by alignment of compressed lapilli in ashflow tuff
	Volcanic flow breccia
	Hydrothermal alteration

The diagram illustrates the relationship between geological periods and geological time units. It is organized into three main sections, each with a list of geological periods on the left and a corresponding geological time unit on the right, connected by a large curly bracket. The time units are further grouped by a larger curly bracket on the far right.

- Holocene / Quaternary:**
 - Geological periods: Qal, Qac, Qaf, Qls
- Eocene / Tertiary:**
 - Geological periods: Terv, Tenv, Ti
- Cretaceous:**
 - Geological periods: Kba, Kzqm
- Pennsylvanian:**
 - Geological period: Pti

Below the main diagram, there are three additional geological periods listed, each with a corresponding color-coded box:

- Avon volcanics:** Terv (tan), Tenv (red)
- Lowland Creek Volcanics:** Ticoof (orange), Tiof (red), Tioab (red), Tiovc (red), Tiofi (red), Tiodg (purple), Tiovc (purple), Tioag (purple), Tioab (purple), Tioct (purple), Tioag (purple), Tioas (yellow)
- Boulder Batholith:** Kba (red), Kzqm (orange)
- Elkhorn Mountains Volcanics:** Kern (orange)
- Pti (blue)**

