

## Hints Sheet for Units on the Geologic Map of the Mingus Mountain area

Use the following descriptions to locate the samples on the geologic map and to figure out which map unit each sample represents. Then use your description and interpretation of the samples, along with the geologic map and the hints listed below, to fill out the worksheets for Exercise 11D.

Sample Number	Location where sample was collected
11d-1	Collected on top of Hickey Mountain, northwest of Mingus Mountain, in the northwest part of the geologic quadrangle.
11d-2	Collected from unit <b>Vt</b> in the canyon between Hickey Mountain and Mingus Mountain (the canyon is where the map units “V” to the north).
11d-3	Collected from the purple unit, west of the word “Shylock” in the west-central part of the geologic quadrangle.
11d-4	Collected at the small town of Cherry, in the large pink body, approximately half way between Mingus Mountain and the southeast corner of the geologic quadrangle.
11d-5	Collected from unit <i>sb</i> , southeast of Mingus Mountain and just west of the Verde fault.

### Units on the Geologic Map (listed from youngest to oldest)

**Quaternary Units** (unit labels beginning with a *Q*) – these units are Late Cenozoic and consist of sand and gravels that were deposited in low areas. The Verde Formation includes deposits from a lake (the white rocks you drive through near Camp Verde).

**Thb – Hickey Formation basalt** – Late Cenozoic basalt flows.

**Ths – Hickey Formation sediments** – Late Cenozoic conglomerate composed of clasts of all older rocks. Filled small valleys and river channels, so not everywhere present.

**Note:** For Table 9-1, no rocks of Early Cenozoic or Mesozoic age are preserved here, so you cannot say anything about the geologic history of this time period in Table 9-1; just write “no rocks preserved”.

**P!s – Pennsylvanian-Permian Supai Formation** – Late Paleozoic; red-colored sediments deposited on land; equivalent to the red sediments (also called Supai Formation) in the Grand Canyon.

**Mr – Mississippian Redwall Limestone** – Early Paleozoic; contains various marine fossils, including corals and other reef-dwelling critters; equivalent to the Redwall Limestone of the Grand Canyon.

**Dm – Devonian Martin Limestone** – Early Paleozoic; contains some marine fossils.

**Vt – Cambrian Tapeats Sandstone** – Early Paleozoic; contains some clam-like fossils.

**Late Precambrian rocks** – Not present in this area.

**Early Precambrian intrusive rocks** (units *gdp*, *qd*, *gb*, *qp*) – various light- to dark-colored, mostly coarsely crystalline igneous rocks; darker rocks are **gabbro**, whereas medium-colored and light-colored rocks are **granodiorite** and **granite**, respectively.

**Early Precambrian metamorphosed volcanic and sedimentary units** – Includes all other map units (right side of legend), such as the Spud Mountain Volcanics, Grapevine Gulch Formation, etc. These rocks, although given volcanic and sedimentary names, are all metamorphosed to varying degrees. Andesite and basalt were metamorphosed into **greenstone**, whereas rhyolite, sediments, and tuff were turned into **phyllite**. Original volcanics and sediments were metamorphosed (buried, heated, and deformed) at moderate depths (5 miles or so), then uplifted to the surface and eroded before deposition of Paleozoic units.