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# AZGS STATEMAP Program - 2017

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Geologic map of the Dome Rock 7.5' quadrangle

The STATEMAP Program has facilitated a tremendous amount of geologic mapping in the past 25 years, but it imposes a rather relentless schedule on state geological surveys. STATEMAP is part of the National Cooperative Geologic Mapping Program administered by the US Geological Survey (USGS). Federal funding is allocated annually, beginning in September for the AZGS, and is matched dollar-for-dollar by the state; we typically agree to deliver 4 or 5, 1:24,000-scale geologic maps at the end of the funding cycle. These products must be delivered to the USGS in fairly presentable draft form at the end of the contract period, or funding is not released for the following year.

As we initiate our new mapping projects each fall, we begin working on our proposal for funding the following year. We meet with our 12-15 member Arizona Geologic Mapping Advisory Committee (GMAC) in September or early October to get their recommendations for future mapping areas. This group is composed of geologists with a wide range of expertise representing government agencies, private industry, and academia. We present the GMAC with many potential map areas each year; members rank their top 4 mapping areas. GMAC members under-

stand the importance of basic geologic mapping and research, but give much value to the societal applications of mapping such as geologic hazards, resource development, and planning for future infrastructure projects. We then develop a proposal for new geologic mapping based on their rankings and submit it to the USGS by early November to begin the evaluation process. In each annual funding cycle, we evaluate existing geologic mapping, conduct months of fieldwork, integrate field mapping and observations with interpretation of georeferenced aerial photo imagery, and utilize ESRI ArcMap to develop digital GIS databases and complete draft geologic maps to submit to the USGS by early September. Then the mapping cycle begins again.

In the year or so following submittal of draft geologic maps to the USGS, we check and correct our digital geologic map data and layouts, revise and expand map unit descriptions, and typically expand on the map text or compose a separate report. These revised maps are released as AZGS Digital Geologic Maps (DGMs) late in the year following the initial completion of draft maps (e.g., Geologic Map of the Dome Rock Mountains SW  $7\frac{1}{2}'$  Quadrangle, La Paz County, Arizona, DGM-116, 2016).



Interbedded tributary gravel beds and fine-grained late Pleistocene Colorado River floodplain deposits of the Chemehuevi Formation, just north of I-10 in the Dome Rock Mtns SW quadrangle.

Thus, there is about a 3-year cycle between the recommendation of a map area by the GMAC and release of the ‘ready-for-prime-time’ DGM. This schedule results in the release of a handful of new maps each year, and it means we are always keeping our eyes open for new areas to map.

Last September, the AZGS submitted 4 draft geologic maps to the USGS covering areas near Quartzsite in western Arizona, Oatman in northwestern Arizona, and west of Safford in southeastern Arizona. Each of these areas was recommended by the GMAC because of mineral resource potential and potential geologic hazards, but also because they are geologically interesting areas. For example, the Oatman area includes ½ of a large caldera that was the source of the widespread Peach Springs Tuff, which was erupted 18.8 million years ago. Substantial gold and silver mineralization occurred in the Oatman area as a result of volcanic activity. In addition, there are important clues to the origin of the lower Colorado River in the map area. So this is a scientifically interesting and societally useful map. All of these maps will be finalized and released later in 2017.

We also finalized and released 5 new Digital Geologic Maps in 2017 from previous mapping cycles:

- DGM-112; [Cibola area, southwestern Arizona](#)
- DGM-115; [Corona de Tucson, southeast of Tucson](#)
- DGM-116; [Dome Rock Mountains SW, southwestern Arizona](#)
- DGM-117; [Mule Wash, southwestern Arizona](#)
- DGM-118; [Mount Nutt, northwestern Arizona](#)

In the current map cycle we are working in areas along the Colorado River in western Arizona, and the Dragoon quadrangle and more of the Gila Valley near Safford in southeastern Arizona. Field mapping is essentially complete; we will be making draft maps this summer and delivering them to the USGS in September.

We received notification of the STATEMAP award for our next mapping season earlier this year. The federal funding is \$166k, about \$5k less than last year. With this funding and our state match, we will be mapping surficial geologic deposits and assessing potential geologic hazards in the west Flagstaff area (our first geologic mapping project on the Colorado Plateau); continuing geologic mapping in the Oatman – Kingman area; and continuing surficial and basin-deposit mapping in the eastern part of the Gila Valley-Safford area.

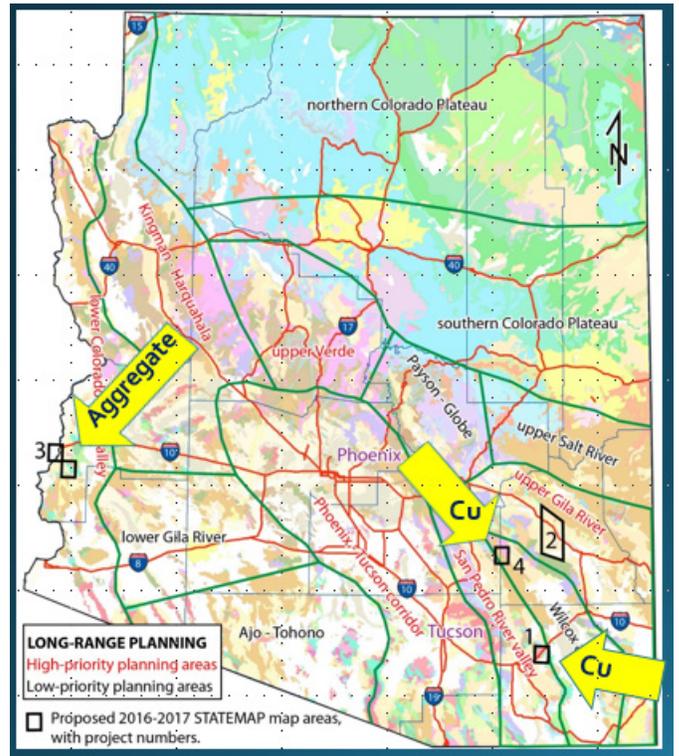
The AZGS has had a superior geologic mapping program since the early 1980s, led initially by Steve Reynolds, then for ~25 years by Jon Spencer. The hard work of geologists too numerous to cite have made this program extremely productive. It has been my pleasure to manage our mapping efforts for the past couple of years, because our mappers are highly experienced and motivated geologists. Our current team consists of Charles Ferguson and Brad Johnson, who handle nearly all of the bedrock mapping, and Joe Cook, Brian Gootee, and Ann Youberg, who handle most of the surficial geologic and basin deposit mapping. Our GIS support team of Laura Bookman and Gary Hudman is critical to our program as well. For the past 20 years, our GMAC has been invaluable in prioritizing geologic

mapping needs in Arizona; we could not have a successful mapping program without them. With all of these assets and lots of interesting geology yet to explore, we look forward to continuing the tradition of excellence in geologic mapping in Arizona for the foreseeable future.

\* Geologic maps and reports of the AZGS and its predecessors, e.g., Arizona Bureau of Mines, are available online as free downloads at the [AZGS Online Document Repository](#). This includes more than 1,000 publications released from 1915 to 2017.

For a graphical index of geologic maps published from 1915 to 2015, see Spencer and Richard (2015), [Map index for geologic maps available from the Arizona Geological Survey](#). Arizona Geological Survey Open File Report, OFR-15-01, V1.2, 32 p.

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Basal travertine (often called tufa) of the early Pliocene Bouse Formation (gray, gnarly looking outcrop) on a gently sloping erosion surface that is cut across older Cenozoic, moderately tilted tan to orange gravel and sand beds.