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ARIZONA GEOLOGICAL SURVEY
INFORMATION TO ARIZONANS SINCE 1889

MISSION

To provide unbiased earth-science information to the public, businesses, and government agencies to facilitate development of relevant policies and courses of action for prudently managing and using Arizona's land, water, mineral, and energy resources.

FUNCTIONS

- *Information about Arizona geology*
- *Geologic maps and reports*
- *Databases and files*
- *Geology library*
- *Rock cuttings and core repository*
- *Geologic framework investigations*
- *Geologic hazards investigations*
- *Mineral and energy resources investigations*
- *Administrative and staff support for Oil and Gas Conservation Commission*

A.R.S. § 27-152

More States Pass Registration Laws

Larry D. Fellows
Arizona Geological Survey

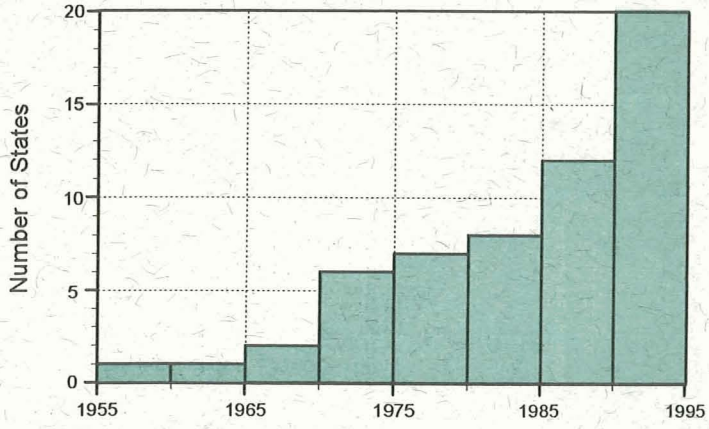
Twenty states, including Arizona, require geologists to be registered to practice legally. Eight states passed registration laws from 1956 to 1985; twelve more have done so in the last ten years. See graph below and list on page 2. Arizona was the first state to require registration of geologists.

The increase in number of states with registration laws can be attributed to population growth and development. Demand and competition for land, water, mineral, and energy resources has increased significantly since 1950. Awareness of natural hazards and limitations, such as earthquakes, landslides, flooding, problem soils, and others, has also increased. Those who set policy, make laws, and plan, design, construct, and maintain structures use geologic information in making informed engineering and land- and resource-management decisions.

In Arizona, the State Board of Technical Registration (SBTR), a nine-member board appointed by the Governor, oversees the registration of architects, assayers, engineers, geologists, landscape architects, and land surveyors. Ronald W. Dalrymple is the Executive Director.

The Auditor General recently reviewed the performance of the SBTR for the past 10 years, as part of the "Sunset Review" process, and recommended that geologists, assayers, and landscape architects *not* be registered. The Legislative Committee of Reference met in November to consider this and other recommendations. The Committee voted to recommend to the full Legislature that assayers, geologists, and landscape architects continue to be regulated and that the SBTR be continued.

Please contact the Board of Technical Registration [1951 West Camelback, Suite 250, Phoenix, AZ 85015; tel: (602) 255-4053] for information about registration requirements in Arizona.



Cumulative number of states that require registration of geologists.

Registration Laws (from page 1)

STATES THAT REQUIRE GEOLOGISTS TO BE REGISTERED

State	Year enacted
Arizona	**1956**
California	1968
Idaho	1971
Delaware	1972
Maine	1973
Georgia	1975
Oregon	1977
North Carolina	1983
South Carolina	1986
Arkansas	1988
Florida	1988
Tennessee	1988
Wyoming	1991
Kentucky	1992
Pennsylvania	1993
Missouri	1994
Wisconsin	1994
Alabama	1995
Illinois	1995
Minnesota	1995

OTHER TYPES OF REGULATION OF GEOLOGICAL PRACTICE

Colorado	Definition	1973
Alaska	Certification	1980
Indiana	Certification	1980
Virginia	Certification	1980
Kansas	Definition	1984
Oklahoma	Definition	1993

REGISTRATION RECENTLY CONSIDERED

Alaska
Indiana
Kansas
Maryland
Nebraska
Ohio
Oklahoma
Texas
Utah

ASBOG

The National Association of State Boards of Geology (ASBOG) was formed in 1990 to enable member boards to interact to better administer the practice of geology in their respective states. Fifteen states that register or certify geologists are members.

Ralph E. Weeks, a resident of Phoenix, was elected President of ASBOG for 1996. Sam Swinehart is the Executive Director of ASBOG. For information, contact the ASBOG at its Columbia, South Carolina, headquarters [(803) 799-1047].

New Publications

The Arizona Geological Survey has released the following reports and maps since August 1995:

Seismic hazard posed by the Sugarloaf fault, central Arizona: P. A. Pearthree, K. R. Vincent, R. Brazier, L. D. Fellows, and O. K. Davis, 1995, Open-File Report 95-7 (Pub. number OFR 95-7), 41 p., 1 sheet, scale 1:6,000. $8.00

The youngest rupture along this fault, which crosses State Route 87 about 20 miles northeast of Mesa, probably occurred between 10,000 and 20,000 years ago. Magnitude of the earthquake generated is estimated to have been 5.8 to 6.7. There is evidence of only one rupture in the last 50,000 to 100,000 years.

Geologic map of the Goldfield Quadrangle and the northern part of the Superstition Mountains SW Quadrangle, Maricopa and Pinal Counties, Arizona: S. J. Skotnicki and C. A. Ferguson, 1995, Open-File Report 95-9 (Pub. number OFR 95-9), 24 p., 2 sheets, scale 1:24,000. $8.00

Welded tuff (middle Tertiary), which forms extensive areas of rugged cliffs, overlies tilted felsic and mafic volcanic rocks, pre-volcanic conglomerate, and Proterozoic granite and schist. The Goldfield mining district is within the study area.

Geologic map of the Florence Junction and the southern portion of the Weaver's Needle 7½' Quadrangles, Pinal County, Arizona: C. A. Ferguson and S. J. Skotnicki, 1995, Open-File Report 95-10 (Pub. number OFR 95-10), 25 p., 1 sheet, scale 1:24,000. $7.00

This area, at the southwestern end of the Superstition Mountains, is dominated by mid-Tertiary

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Arizona **Geology**

is published quarterly by the Arizona Geological Survey (AZGS) to provide information about geologic materials and processes and their impacts on the development and use of Arizona's land, water, mineral and energy resources. We encourage your comments and suggestions.

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New Publications *(from page 2)*

volcanic strata that are unconformable on Precambrian metamorphic and sedimentary rocks. A major north-trending, west-side-down fault extends along the eastern edge of the study area.

Hydroclimatological and paleohydrological context of extreme winter flooding in Arizona, 1993: P. K. House and K. K. Hirschboeck, 1995, Open-File Report 95-12 (Pub. number OFR 95-12), 44 p. $7.50

The authors describe the weather patterns that caused heavy rainfall and flooding throughout much of Arizona in January and February 1993, discuss what caused the floods to be so large, and compare the magnitude of the floods with other historic flooding events.

Controlling and remediating surface and groundwater pollution from inactive and abandoned mines: A survey of management practices: R. Frisch-Gleason, 1995, Open-File Report 95-13 (Pub. number OFR 95-13), 88 p. $12.00

This report includes brief descriptions of existing water-pollution-remediation technologies, with an extensive annotated bibliography, list of contacts, and a list of databases on pollution-abatement projects at inactive and abandoned mines, mainly hardrock metal mines in the western U.S.

Geologic map of the Gerald Hills, Globe-Miami area, Gila County, Arizona: S. J. Skotnicki, 1995, Open-File Report 95-14 (Pub. number OFR 95-14), 7 p., 1 sheet, scale 1:12,000. $5.00

This map was prepared to provide detailed information to facilitate relocation of a section of State Route 88. The Ruin Granite (Proterozoic), the oldest rock unit exposed, is overlain by younger Proterozoic sedimentary strata. All were intruded by diabase at 1040 to 1150 Ma.

Geologic map of the Picketpost Mountain and the southern part of the Iron Mountain 7½' Quadrangles, Pinal County, Arizona: J. E. Spencer and S. M. Richard, 1995, Open-File Report 95-15 (Pub. number OFR 95-15), 12 p., 1 sheet, scale 1:24,000. $5.00

The oldest rocks exposed in the study area include the Pinal schist and Proterozoic granitoids that are overlain by Apache Group and Paleozoic sedimentary units and Tertiary volcanic rocks. Strata have been extended by Tertiary faults and tilted. Mineralization has occurred in several parts of the area.

Geologic map of the Fountain Hills and Mt. McDowell area, Maricopa County, Arizona: S. J. Skotnicki, 1995, Open-File Report 95-16 (Pub. number OFR 95-16), 28 p., 1 sheet, scale 1:24,000. $8.00

This map depicts the bedrock and surficial geology of the rapidly growing Fountain Hills area. The geologic history, geologic hazards, and mineralization of the area are described.

Bedrock geologic map of the eastern half of the Mesa 30' x 60' Quadrangle, east-central Arizona: J. E. Spencer and S. M. Richard, compilers, 1995, Open-File Report 95-18 (Pub. number OFR 95-18), 1 sheet, scale 1:100,000. $3.00

Geologic mapping done at 1:24,000 scale was compiled onto a common base map. The map area, which extends from Florence north to the Superstition Mountains and east to Superior, includes the Whitlow Canyon, Mineral Mountain, Ray, and Donnelly Wash areas.

Tertiary stratigraphic and structural relationships in the Copper Butte area, Teapot Mountain Quadrangle, Pinal County, Arizona: W. R. Dickinson, 1995, Contributed Report 95-H (Pub. number CR 95-H), 15 p., scale 1:24,000. $3.00

Approximately 20 km² were remapped near Copper Butte (6 km southwest of the Ray Mine) because knowledge of relationships there is important for interpreting the Tertiary tectonics of the region. The area has mineral potential. This report includes a detailed discussion of the structural and stratigraphic relationships.

How to Order Them

You may purchase publications at the AZGS office or by mail. Address mail orders to AZGS Publications, 416 W. Congress St., Suite 100, Tucson, AZ 85701. Orders are shipped by UPS, which requires a street address for delivery. All mail orders must be prepaid by a check or money order payable in U.S. dollars to the Arizona Geological Survey or by Master Card or VISA. Do not send cash. Order by publication number and add these shipping and handling charges to your total order:

Shipping & Handling CHARGES
In the United States:

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40.01- 50.00,	add 8.00
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Other countries, request price quotation.

Shipping and handling charges include insurance. For rolled maps, add $1.00 for a mailing tube.

If you purchase Open-File Reports, Contributed Maps, or Contributed Reports at the AZGS office, allow up to two days for photocopying.

DATA • INVESTIGATIONS • INFORMATION • SERVICE

WE SELL TOPO MAPS

Topographic maps may now be purchased at the Arizona Geological Survey (416 West Congress Street, Tucson, AZ 85701). About 80 7½' quadrangles (scale 1:24,000) are available. The area of coverage extends from north of Marana southward to Nogales and from Three Points eastward to Benson. Each map costs $5.19. Please call or write for information about shipping and handling charges for mail orders. Maps are available folded or rolled, but there is an extra charge for mailing rolled maps.

Nearly all 7½' and other series of topographic maps of Arizona are available for purchase at the Earth Science Information Center [340 North Sixth Avenue, Tucson, AZ 8705-8325; tel: (520) 670-5584]. Selected USGS publications and maps may also be purchased there.

MINERALOGY OF ARIZONA

Mineralogy of Arizona, third edition, was recently released by the University of Arizona Press. This 508-page book, written by J. W. Anthony, S. A. Williams, R. A. Bideaux, and R. W. Grant, includes discussions of Arizona minerals, exquisite color photographs of 60 Arizona minerals, maps of metallic mineral districts, a section on the history of mining and mineralogy in Arizona, and a section on Arizona pegmatites. Since 1977 the number of minerals first identified in Arizona has increased from 48 to 76; and 232 minerals new to the State have been discussed, bringing the total of Arizona minerals to 809.

Mineralogy of Arizona may be purchased at the Arizona Geological Survey for $35 (soft cover), plus $6.50 for shipping and handling if you would like to have it mailed.

TUCSON GEM AND MINERAL SHOW

The 42nd annual Gem and Mineral Show, the largest of its type in the world, will be held at the Tucson Convention Center February 8-11, 1996. Calcite is the featured mineral. The Fluorescent Mineral Society will provide a special exhibit of fluorescent minerals. A symposium will feature luminescence. For additional information, please call (520) 322-5773.

Look for the Arizona Geological Survey booth, where you can purchase copies of *Mineralogy of Arizona*, Arizona metallic mineral districts and production, bibliographies for metallic mineral districts, county and state geologic maps, geologic map indexes, and other related information. Our new office is only a couple blocks from the Convention Center. Stop by if you have time.

WE TAKE CREDIT CARDS

Effective immediately we accept Master Card and Visa for telephone, mail, and over-the-counter publication purchases. If you order by telephone and prefer to pay by check or money order, prepayment is still required.

DRILLING PERMITS ISSUED

Four permits have been issued to the Ridgeway Arizona Oil Company to drill to determine the amount of carbon dioxide and helium that are recoverable from rocks in the Supai (Permian) formation southeast of St. Johns. In 1994 Ridgeway drilled a well in which carbon-dioxide-rich gas was encountered. Since then they have drilled two more test wells. Information about those wells and the current status of drilling is not available at this time.

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