



Janet Napolitano
Governor

State of Arizona
Arizona Geological Survey
416 W. Congress, Suite 100
Tucson, Arizona 85701
(520) 770-3500



M. Lee Allison
Director and State Geologist

Arizona Geological Survey News Release (10:00 a.m. 23 April 2008) Release of Earth Fissure Maps: Chandler Heights and Apache Junction

Contact: Michael Conway (520.770.3500; michael.conway@azgs.az.gov)

Tucson -- The first detailed maps of earth fissures have been released for two areas in Arizona. The 1:12,000-scale maps (where one inch on the map is equal to 1000 ft on the ground) of the Chandler Heights and Apache Junction areas showing the location and status of earth fissures are now available online at the Arizona Department of Real Estate's website at <http://azmap.org/fissures>, where the public can easily build customized maps using different layers of information.

Earth fissure maps are also available as free PDF downloads through the Arizona Geological Survey's (AZGS) Earth Fissure Center at www.azgs.az.gov/efmaps.

Earth fissures are a serious geologic hazard in the arid valleys of central and south-central Arizona. As population centers expand into subsiding areas of our basins/valleys, residents and structures are placed in closer proximity to fissures.

The heavy precipitation and surface runoff that accompanies Arizona's monsoon season can turn a barely perceptible fissure into a 20-ft deep, steep-walled gully that cuts roadways, threatens homes, and traps livestock.

According to Lee Allison, State Geologist and Director of AZGS, "Our first line of defense against the hazards of earth fissures is knowing where they are. When we know that, we can avoid them or take steps to reduce the risks they present to people's property and their safety."

Chandler Heights and Apache Junction are the first two of 23 earth fissure study areas targeted for mapping at the 1:12,000-scale. First-round mapping of all 23 study areas is expected to continue through 2011.

For ease of use, the maps include an up-to-date road network and shaded relief that accentuates local topography. Colored lines are used to denote fissure location and status: 1) solid black line for continuous fissures; 2) solid red line for discontinuous fissures; and 3) a dashed green line for unconfirmed but suspected fissures.

AZGS Contact Information

Michael Conway 520.770.3500 ph; 520.971.3688 cell michael.conway@azgs.az.gov
Todd Shipman 520.770.3500 ph todd.shipman@azgs.az.gov

Phoenix Office

Mimi Diaz 602.708.8253 cell mimi.diaz@azgs.az.gov

Arizona Dept of Real Estate Contact Information

Cindy Ferrin (602) 771-7757 cferrin@azre.gov

ADDITIONAL INFORMATION

AZGS'S Earth Fissure Mapping Process. Mapping earth fissures requires a painstaking approach compiling earlier studies, examining new and historical aerial photographs, and field mapping of each fissure using high-resolution global positioning system (GPS) receivers. To assure a consistently high-quality map product, AZGS geoscientists collect data every 5- to 15-ft, yielding 350 to 1000 data points per mile of fissure.

In the lab, the field data are processed, reviewed for adherence to set standards, and placed in a geographic information system (GIS) data base. The data base is handed off to GIS Services within the Institute for Social Science Research at Arizona State University, who then loads it for display on the AZMap Earth Fissures Viewer. This customized internet mapping service, which provides on-line interactive mapping capabilities for locating earth fissures, is created by GIS Services and publicly accessible via the Arizona Department of Real Estate's website.

We do everything possible to accurately map each fissure within the study area. Each study area has been examined over its entire extent by aerial photograph and any suspicious line is field checked to determine if it might be a fissure. However, not all fissures have a surface exposure, and some may be hidden under plowed fields or other areas disturbed by development. The State of Arizona does not guarantee absolute accuracy. The earth fissure maps will not substitute for professional inspection by qualified, registered geologists or engineers.

Background. Earth fissures are associated with land subsidence that accompanies extensive groundwater pumping. The earliest appearance of fissures in Arizona was near Eloy in 1928. Individual fissures range in length from hundreds of feet to miles, and in width from inches to ten's of feet. Currently, geoscientists believe that fissures initially form at the groundwater table and then propagate upwards hundreds of feet to the surface. Because fissures are commonly oriented perpendicular to local drainages,

they are capable of capturing surface runoff. Inrushing waters may cause dramatic changes in fissure geometry – length and width -- erosion of sidewalls and gully development. Property owners are encouraged to set structures as far away from fissures as possible and to prevent water from entering them.

So far, reports of earth fissures are confined to Cochise, Maricopa, Pima, and Pinal counties in central and south-central Arizona. In 2007, AZGS released 1:250,000-scale planning maps of the four counties showing the approximate locations of earlier reported earth fissures. These earth fissure planning maps are available free, online at the Earth Fissure Center at www.azgs.az.gov/efc.

AZGS is charged by state statute with mapping earth fissures in Arizona. The earth fissure map information is then provided for public release via the State of Arizona's Internet map service accessible from the Arizona Department of Real Estate's website.