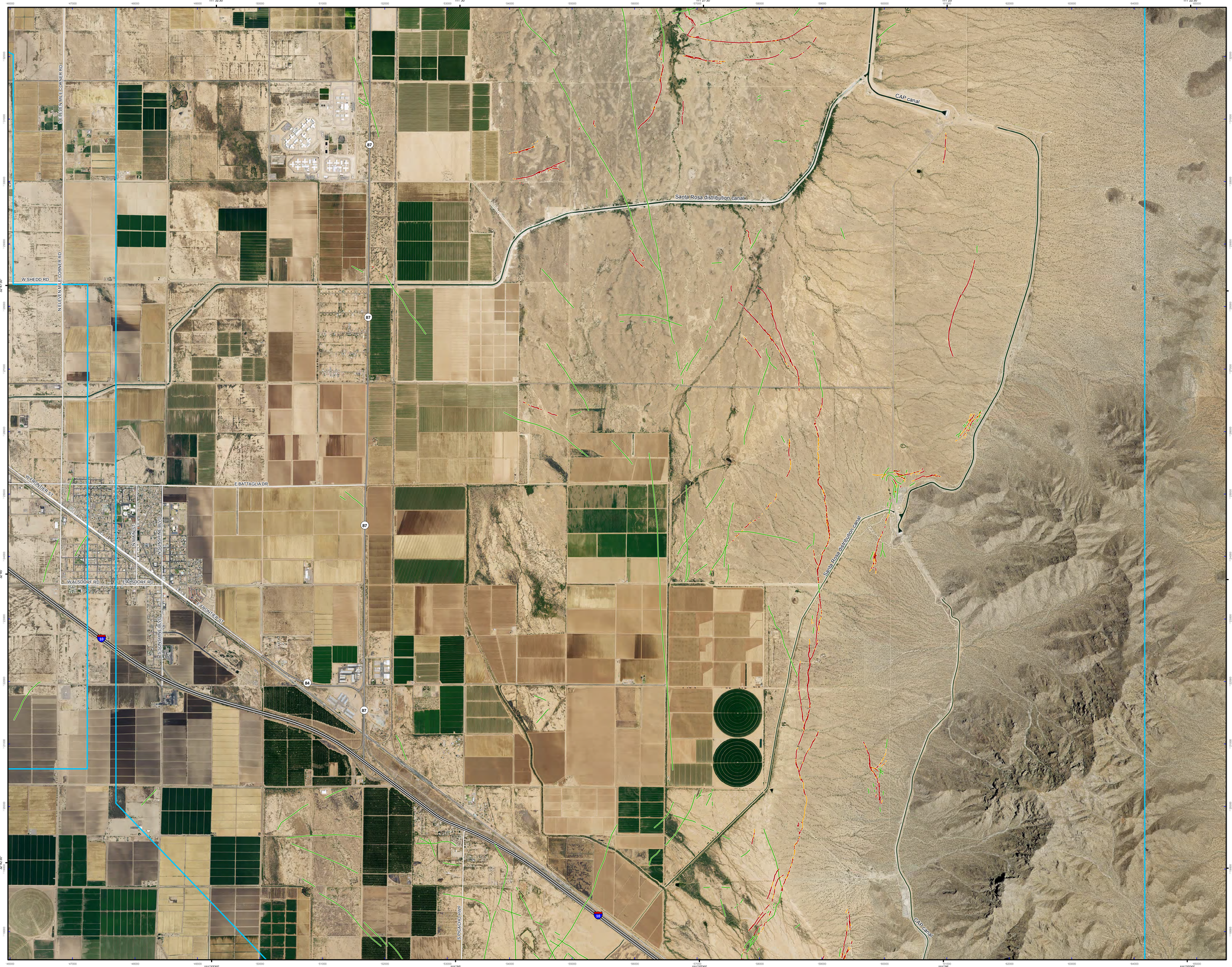
Earth Fissure Map of the Picacho and Friendly Corners Study Areas: Pinal County, Arizona

January 2016
Arizona Geological Survey

Digital Map Series - Earth Fissure Map 3 (DM-EF-3)

version 3.0

Sheet 2 of 3



Notice

The State of Arizona has made a reasonable effort to ensure the accuracy of this map when it was produced, but errors may be present and the state of Arizona does not guarantee its accuracy. The map supplements, and is not a substitute for, a professional inspection of property for defects and conditions.

This map combines two previously-released earth fissure study area maps. The Friendly Corners study area map (DM-EF-12) is now included in this release, DM-EF-3 version 2.0.

Introduction

This is one of a series of earth fissure maps prepared by the Arizona Geological Survey (AZGS) in accordance with Ariz. Rev. Stat. § 27-152.01(3). AZGS collected location information from previously conducted earth fissure studies, reviewed available remote-sensing aerial and satellite imagery, and conducted surface site investigations throughout the study area. A reasonable effort was made to identify all earth fissures in the study area. Nonetheless, some fissures may remain unmapped as a result of one or more of the following:

1) Existing fissures may have been masked by construction or agricultural activities.

2) Incipient fissures may lack clear surface expression.

3) The surface expression of fissures changes constantly as new earth fissures develop and old earth fissures fill in. A blank area on the map does not guarantee earth fissures are not present. However, blank areas within the study area boundary have been investigated, and no surface evidence of fissures was found as of the date of map publication. Determining the presence or absence of a fissure at any specific site may require additional mapping and/or geotechnical analysis.

References

Arizona Department of Water Resources (ADWR), 2015, Interferometric Synthetic Aperture Radar, Hydrology, Geophysics/Surveying Unit

Carpenter, M.C., 1991, Earth-fissure movements associated with fluctuations in ground-water levels near Picacho Mountains, south-central Arizona, 1980-84: U.S. Geological Survey Open-File Report 90-0561, 64 p.

Harris, R.C., 1994, A reconnaissance of earth fissures near Apache Junction, Chandler Heights, and southwestern Picacho Basin: Arizona Geological Survey Open-File Report OFR-94-11, 5 p., 2 sheets, scales 1:24,000 and 1:26,700.

Jackson, Garrett, 1990, Surficial geologic maps of the Picacho Basin [Picacho Reservoir, Newman Peak, Casa Grande Mtns., Eloy North, and Eloy South 7.5 min]: Arizona Geological Survey Open-File Report OFR-90-02, 9 p., 5 sheets, scale 1:24,000.

Laney, R.L., Raymond, R.H., and Winikka, C.C., 1978, Maps showing water-level declines, land subsidence, and earth fissures in south-central Arizona: U.S. Geological Survey Water-Resources Investigations Open-File Report WRI 78-0083, 2 sheets, scale 1:125,000.

NAIP Orthoimagery (1-Meter GSD), 2015, USDA-FSA-APFO Aerial Photography Field Office, Salt Lake City, Utah.

Slaff, Steven, Jackson, G.W., and Pearthree, P.A., 1989, Development of earth fissures in Picacho basin, Pinal County, Arizona from 1959 to 1989 [Newman Peak, Picacho Reservoir, Casa Grande Mtns., Eloy South, Eloy North, and Valley Farms 7.5 min]: Arizona Geological Survey Open-File Report OFR-89-10, 38 p., 6 sheets, scale 1:24,000.

Slaff, Steven, 1991, Earth-fissure activity near Brady and Picacho pumping plants, Tucson Aqueduct, Central Arizona Project, Pinal County, Arizona – A report to the U.S. Bureau of Reclamation: Arizona Geological Survey Open-File Report 91-01, 48 p., 2 sheets, scale 1:24,000.

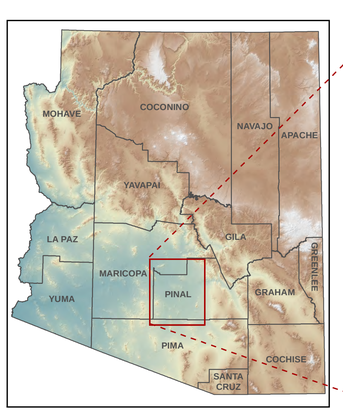
MAP EXPLANATION

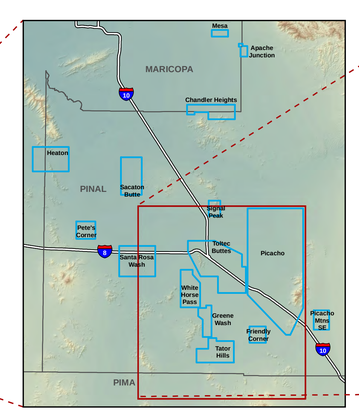
Red lines represent the location of continuous earth fissures manifested as open cracks or gullies.

Orange lines represent the location of discontinuous earth fissures manifested as elongated to circular depressions or as abbreviated or irregular linear depressions. These discontinuous surface features frequently represent an incipient surface expression of an earth fissure.

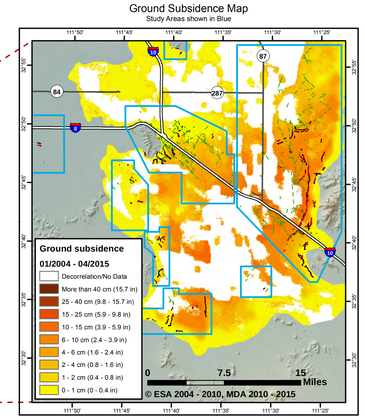
Green lines represent the approximate locations of unconfirmed earth fissures, defined as fissures which could not be confirmed by surface investigations by AZGS geologists, but which have been previously reported by Professional Geologists in published documents or maps.

The outline of the Study Area is shown in blue. The limits of the study area are based on interpretation of modern and recent ground subsidence data provided by the Arizona Department of Water Resources. Historical and modern aerial photos taken within this area were searched for anomalous lineaments. These lineaments were then investigated in the field to determine if there was any evidence of earth fissures.





Ground Subsidence Map
Study Areas shown in Blue



Air photo base compiled from 2015, 1 meter NAIP (National Agriculture Imagery Program) digital ortho imagery.

Transportation network dataset compiled by Arizona State Lands Dept. by combining the 2007 County Road Data of Maricopa, Pima, Pinal and Cochise Counties with the Census 2000 Tiger/Line Data of the remaining Counties.

Map projection and blue, 1000-meter grid ticks: Universal Transverse Mercator, zone 12. North American Datum of 1983 HARN

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Subsidence data provided by the Arizona Department of Water Resources (ADWR) Interferometric Synthetic Aperture Radar (InSAR), Hydrology, and Geophysics / Surveying Unit. Subsidence data for other locations and time periods is accessible at http://www.azwater.gov/AzDWR/Hydrology/GroundwaterandLandSubsidence.htm

Shaded relief basemap produced from 10m NED Digital Elevation Model

1:24,000 Scale

1 0.5 0 1 Miles

1 0.5 0 1 Kilometers

0 1000 2000 3000 4000 5000 Feet

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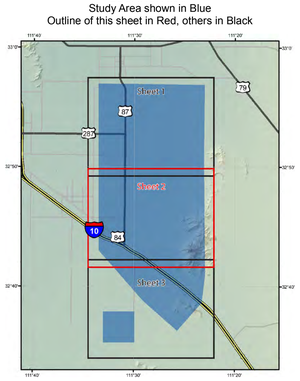
LOCATION MAP
Study Area shown in Blue
Outline of this sheet in Red, others in Black