

Observations of Ground Cracks, Near Benson AZ.

Conclusions: Based on personal observations and information contained in “Giant Desiccation Cracks in Arizona”, Jan 2004, Raymond C. Harris, Arizona Geological Survey (AZGS) Open File Report 04-01, the features are desiccation cracks. Cracks of this type have been reported in this area at least since 1968.

Discussion: On 6 Dec 2005 I accompanied a group from the Benson Community Watershed Alliance to view ground cracks reported by local resident Mr. Charlie Ohrel, 520-720-4969, of The Nature Conservancy, south of the intersection of Apache Powder Road and State Highway 80 on the property of Mr. John Trotter, 720-4533. Subsequent checking indicates the cracks observed are probably in the NW1/4, NE1/4, Sec.1, T18S, R20E or otherwise near 3529951mN, 12R570643mE at an elevation of about 3600 feet.

The cracks are in Holocene (< 10,000 years old) age piedmont (material moved toward the center of the valley rather than downstream along the valley) alluvial deposits derived from the Saint David formation to the west. “Geologic Map of the Benson 7.5’ Quadrangle, Cochise County, Arizona”, 2003, by Ann Youberg, Skotnicki, S.J., Shipman, T.C. and Ferguson, C.A., Arizona Geological Survey Digital Geologic Map DGM-34.

The cracks observed in this area ranged from narrow lines with side separations of less than 1/4-inch to open gullies reaching several feet in width and over 3 feet in depth. Major open cracks were seen both along a dirt farm road (running approximately east-west) and approximately perpendicular to it. There were also places where tunnels extending horizontally beneath an undisturbed surface could be seen. The surface soil had appreciable plasticity when I hand-tested the soil in one location. Such plasticity indicates the probable presence of clay in the soil. I did not test for dispersivity (ability of material to erode or be eroded in standing water) of the clay fraction but the surface features are similar to those I have encountered in areas where dispersive clays are known.

The basic cause of these features given in the AZGS Report is extended drought. Contributing factors are soil types containing expansive and/or dispersive clay with subsequent heavy rain and sheet-flow runoff that

collapses and erodes the cracks at the surface. Mr. Trotter reported that such heavy runoff had occurred during this summer's "monsoon" season.

Recommendation: If development is anticipated in or above this area, a thorough, site-specific, geologic, engineering geologic and geotechnical engineering investigation of these and other similar cracks and the associated soils, should be completed to ensure public safety under the anticipated new conditions.

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