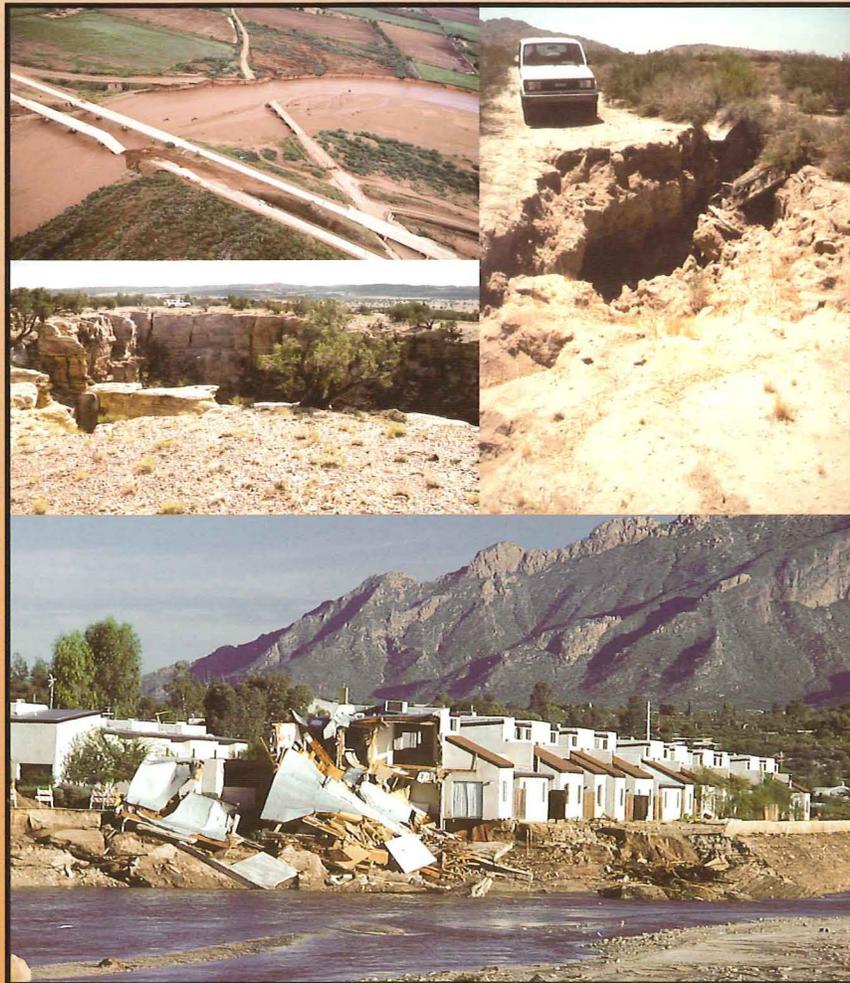
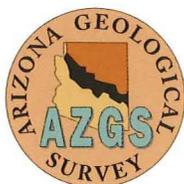

A Home Buyer's Guide to Geologic Hazards in Arizona



Raymond C. Harris
Philip A. Pearthree

Arizona Geological Survey
Down-To-Earth 13
2002



ARIZONA GEOLOGICAL SURVEY

MISSION

To inform and advise the public about the geologic character of Arizona in order to foster understanding and prudent development of the State's land, water, mineral, and energy resources.

ACTIVITIES

PUBLIC INFORMATION. Inform the public by answering inquiries, preparing and selling maps and reports, maintaining a library, databases, and a website, giving talks, and leading fieldtrips.

GEOLOGIC MAPPING. Map and describe the origin and character of rock units and their weathering products.

HAZARDS AND LIMITATIONS. Investigate geologic hazards and limitations such as earthquakes, land subsidence, flooding, and rock solution that may affect the health and welfare of the public or impact land and resource management.

ENERGY AND MINERAL RESOURCES. Describe the origin, distribution, and character of metallic, non-metallic, and energy resources and identify areas that have potential for future discoveries.

OIL AND GAS CONSERVATION COMMISSION. Assist in carrying out the rules, orders, and policies established by the Commission, which regulates the drilling for and production of oil, gas, helium, carbon dioxide, and geothermal resources.

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Cover photos:

Upper left: Interstate 19 and San Xavier Road, south of Tucson, after flood of October 1983. *Photo © Peter L. Kresan.*

Upper right: Earth fissure crossing road near Queen Creek. *Photo by Raymond C. Harris.*

Bottom: Rillito Creek in Tucson after flood of October 1983. *Photo © Peter L. Kresan.*

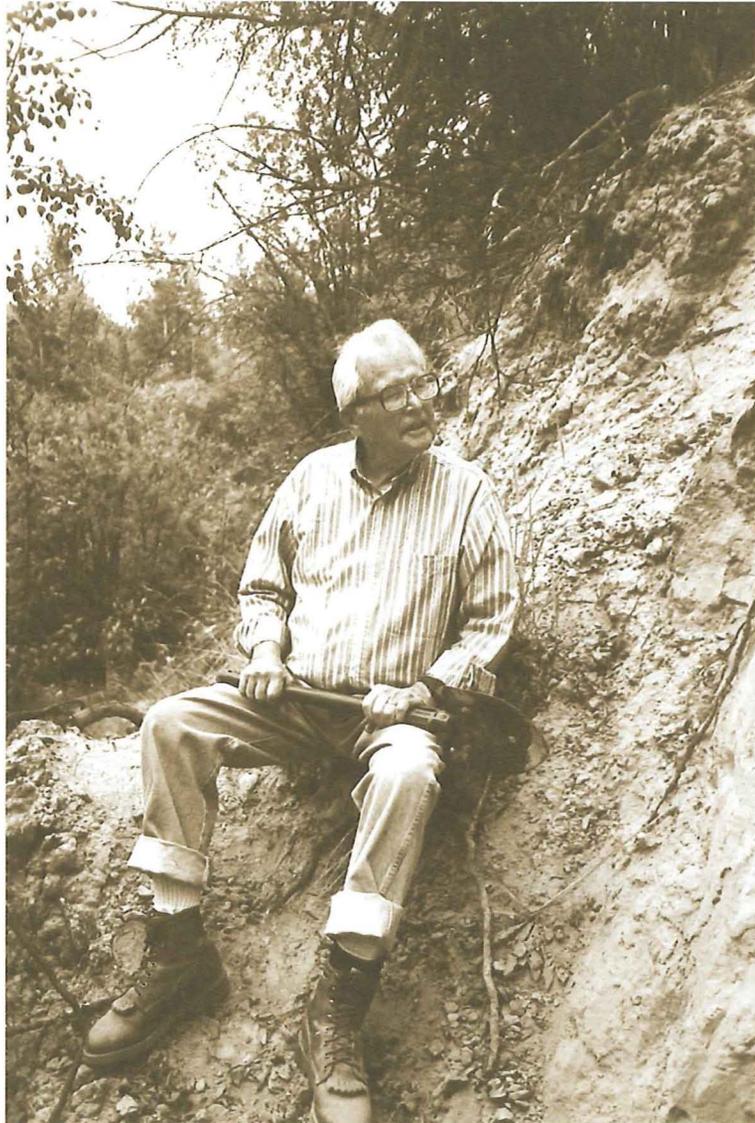
Left center: Sinkhole on Colorado Plateau west of Snowflake. *Photo by Raymond C. Harris.*

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Dr. Troy L. Péwé
1918—1999

Foreword

Dr. Troy L. Péwé spent the last 34 years of his professional career as a faculty member in the Department of Geology at Arizona State University. In addition to teaching and advising graduate students, he served as Department Chairman for a dozen years. Dr. Péwé earned international recognition for work on permanently frozen ground (permafrost) and Ice Age (Pleistocene) geology, which he started before coming to Arizona.

In the mid-1970s Dr. Péwé began to investigate and photograph geologic features, materials, and processes that were impacting urban development in Arizona. Land subsidence and earth fissures, caused by over-pumping of groundwater, were among the first problems that attracted his interest. Dr. Péwé advised graduate students on geologic mapping and hazards theses in the Carefree, Cave Creek, Chandler, Phoenix, Scottsdale, and Tempe areas. He worked closely with city officials and with staff at the Salt River Project, Rio Salado

Development District, and many other groups, a number of which provided funding for the mapping and investigations.

The Arizona Geological Survey published several of the reports Dr. Péwé and his students produced: *Environmental Geology of the McDowell Mountain Area, Maricopa County, Arizona* (Geologic Investigations Folio 1), *Environmental Geology of the Tempe Quadrangle, Maricopa County, Arizona* (Geologic Investigations Folio 2), and *Geologic and Gravimetric Investigations of the Carefree Basin, Maricopa County, Arizona* (Special Paper 8). The Arizona Legislature provided funds to print the Geologic Folio publications. Dr. Péwé also provided a number of maps for release in the Arizona Geological Survey's Contributed Map series.

Because of Troy Péwé's commitment to investigate relationships between geologic hazards and urban development in Arizona, and to inform the public about them, we dedicate this book in honor of his memory.

Larry D. Fellows
Director and State Geologist
Arizona Geological Survey
June 2002

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Book design and layout by John A. Birmingham

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Contents

	<i>Page</i>
Introduction	1
Floods	2
Earthquakes	7
Problem Soils	11
Mass Movement	16
Subsidence and Fissures	20
Radon	24
Karst	28
Abandoned Mines.	31
Volcanic Hazards	34

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Horten, whose skill is greatly appreciated. We appreciate the masterful design and layout skill of John A. Birmingham. This book is dedicated to the memory of Troy L. Péwé in recognition of his tireless efforts to educate Arizona's citizens about geologic hazards and for inspiring this book.

*Raymond C. Harris
Philip A. Pearthree*