

## In memory of William R. Muehlberger

Paul W. Bauer

New Mexico Geology, v. 33, n. 4 pp. 126-127, Print ISSN: 0196-948X, Online ISSN: 2837-6420.

<https://doi.org/10.58799/NMG-v33n4.126>

Download from: <https://geoinfo.nmt.edu/publications/periodicals/nmg/backissues/home.cfm?volume=33&number=4>

---

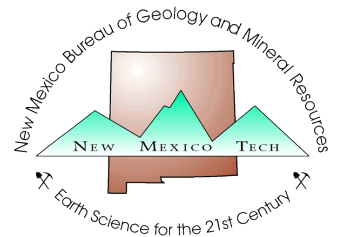
*New Mexico Geology* (NMG) publishes peer-reviewed geoscience papers focusing on New Mexico and the surrounding region. We also welcome submissions to the Gallery of Geology, which presents images of geologic interest (landscape images, maps, specimen photos, etc.) accompanied by a short description.

Published quarterly since 1979, NMG transitioned to an online format in 2015, and is currently being issued twice a year. NMG papers are available for download at no charge from our website. You can also [subscribe](#) to receive email notifications when new issues are published.

---

*New Mexico Bureau of Geology & Mineral Resources*  
*New Mexico Institute of Mining & Technology*  
801 Leroy Place  
Socorro, NM 87801-4796

<https://geoinfo.nmt.edu>



*This page is intentionally left blank to maintain order of facing pages.*



Bill Muehlberger, longtime University of Texas (Austin) geology professor and former research associate with the New Mexico Bureau of Geology and Mineral Resources, died September 14, 2011, at the age of 87. Photo courtesy of David Stephens, taken in August 2010.

## In Memory of William R. Muehlberger 1923–2011

Typing “Muehlberger” into the New Mexico Geologic Bibliography Database returns 47 hits. If not a spectacular number, then close to it, especially when we bear in mind that most of his professional life was spent working elsewhere. Moreover, the list contains: very few abstracts; two of the state’s most popular geologic tour books; a handful of highly significant and often-referenced papers; and a series of trailblazing geologic maps that cover ~1,000 mi<sup>2</sup> of geologically complex territory. What is truly remarkable is that Bill’s publications span 50 yrs, from 1955 to 2005, and represent an amazing cross section of topics, from Precambrian petrology to the Quaternary evolution of the Rio Grande gorge.

His 1955 Geological Society of America Bulletin article is titled *Relative age of Folsom Man and the Capulin Mountain eruption, Colfax and Union Counties, New Mexico*. The Folsom site is famous and enormously significant because projectile points were found with extinct bison bones, indicating that humans occupied the area much earlier than had been thought. Bill applied principles of stratigraphic correlation in an attempt to bracket the times of the bison hunt and the lava flows. The impact of this paper was felt well beyond the field of geology and continues to be cited in even the most recent archaeological papers on the Folsom site.

His 2005 New Mexico Bureau of Geology publication, *High Plains of northeastern New Mexico: Guide to geology and culture*, was a collaborative effort with his wife Sally and a substantial reworking of his classic 1961 scenic trip to the High Plains. How many authors publish major book revisions 44 yrs later? We are grateful that Bill did, as this is one of our best-selling books, and a winner of a New Mexico Book Award.

Bill’s career in New Mexico can be rather nicely divided into four phases of research. The preamble to these phases began when, as an undergrad at Cal Tech, he signed on as field assistant to professor Dick Jahns to work in the Ojo Caliente pegmatite district of north-central New Mexico in August of 1947, work that ultimately led to Jahns’ 1953 opus on the origin of pegmatites. Upon finishing his Ph.D. in 1954 and landing a faculty job at the University of Texas in Austin, Bill straightaway plunged back into northern New Mexico, enticed by summer support from the

New Mexico Bureau of Geology, a mutually rewarding relationship that has lasted for 55 yrs.

Phase 1: Northeastern New Mexico (1954–1957). Bill mapped the Des Moines 15-min quadrangle in cooperation with Brewster Baldwin, who was preparing a bulletin on the geology of Union County. Bill’s field area covered a complicated inverted volcanic stratigraphy, the captivating Folsom Man site, and Capulin Mountain National Monument, the easternmost Cenozoic volcano in the U.S. The geologic map they constructed is still the definitive work. The bureau’s aquifer mapping program has just begun a hydrogeologic study of Union County in which their geologic map is the cornerstone. Bill assigned two graduate students to work in northeastern New Mexico, one of whom was Charlie Mankin (Ph.D., 1958) who went on to become the state geologist of Oklahoma and was pivotal in masterminding the STATEMAP geologic mapping program in the early 1990s.

Phase 2: Chama country (1957–1970). It took Bill 10 yrs to orchestrate his return to Dick Jahns’ high country. Bill was clearly in his element, as he and his nine graduate students dissected the geology of the region in a spectacularly productive manner. The students were devoted to pure field studies with titles such as *Geology of the Chama Area*. Bill and students put out a number of influential papers on the structure and tectonics of the Brazos uplift and Precambrian of the Tusas Mountains. Bill completed the Ojo Caliente 7.5-min quadrangle in 1960. Remarkably, when STATEMAP remapped the quadrangle a few years ago, Bill was a coauthor 45 yrs after he thought the quadrangle was done. Two of Bill’s 15-min quadrangles (Chama, 1967; Brazos, 1968) are still in print. In 1982 Bill and Sally wrote a lovely popular guidebook to the region—the famous “red chile” scenic trip—which became yet another best seller for the bureau’s publications program.

Phase 3: Taos to the Moon (1970–2005). After Bill was appointed principal investigator for field geology for the Apollo 16 and 17 missions in 1970, he and Lee Silver chose the Rio Grande gorge as a geologic training analog for the Apollo 15 and 16 lunar landings. Beginning in 1980, Bill began teaching a four-day geo-tour of northern New Mexico, which virtually all of the shuttle and space station astronauts have now attended. Bill and Sally’s “red chile” guidebook became the

textbook for the training. Although Bill retired in 2006 from astronaut training in New Mexico, his vigorous program lives on.

Phase 4: The Rio Grande rift near Taos (1978–1985). At the age of 55, Bill staked claim to one of the most spectacular field areas in the country. In a rather short time, he and his five graduate students had explored its Proterozoic sedimentology, Pennsylvanian stratigraphy, Laramide orogeny, rift evolution, Cenozoic volcanism, Neogene deformation, tectonic geomorphology, and Quaternary geology. Bill recognized the significance and complex character of rift accommodation zones, and he deciphered the elaborate interplay among rift tectonics, sedimentation, volcanism, and geomorphology, all of which were presented in a suite of papers. During this time, Bill was also working on his magnum opus, the award-winning *Tectonic Map of North America*, which was published in 1998.

In the late 1980s, as a new geologist with the New Mexico Bureau of Geology, I was assigned to map quadrangles in the Taos region. Lucky for me that I discovered the readable and insightful body of literature with the name Muehlberger attached. Shortly thereafter I met Bill in the field, and we remained friends ever

since. Even though I continue to refer to his books, papers, and maps on a regular basis, I valued his camaraderie and spirit even more than his scientific legacy. Clearly, Bill's dedication to the land of enchantment was not inspired by a desire to study any single geologic topic, but rather by his yearning to be working in the glorious landscapes of northern New Mexico, on whatever topic happened to be on hand. It is not unreasonable to speculate that had a teaching job opened up at University of New Mexico in 1954, this symposium would be taking place in Albuquerque rather than in Austin. Those of us who have tracked Bill Muehlberger's sizable boot prints across northern New Mexico are profoundly appreciative of his many contributions, and are honored to offer him the rank of honorary New Mexican field geologist.

—Paul W. Bauer

*Paul's memorial to Bill Muehlberger was presented in Austin, Texas, at the Muehlberger Symposium that was sponsored by the Jackson School of Geosciences, University of Texas at Austin, in August 2010.*

## Selected bibliography with emphasis on New Mexico

- Muehlberger, W. R., 1955, Relative age of Folsom Man and the Capulin Mountain eruption, Colfax and Union Counties, New Mexico (abs.): *Geological Society of America, Bulletin*, v. 66, no. 12, pt. 2, pp. 1600–1601.
- Muehlberger, W. R., 1957, Pennsylvanian outcrops along Brazos uplift, Rio Arriba County, New Mexico: *American Association of Petroleum Geologists, Bulletin*, v. 41, no. 1, pp. 140–145.
- Muehlberger, W. R., and Baldwin, B., 1958, Field methods for determining direction of magnetization as applied to late Cenozoic basalts, northeastern New Mexico: *Journal of Geophysical Research*, v. 63, n. 2, pp. 353–360.
- Muehlberger, W. R., 1960, Precambrian rocks of the Tusas Mountains, Rio Arriba County, New Mexico; in Beaumont, E. C., and Read, C. B. (eds.), *Rio Chama country: New Mexico Geological Society, Guidebook 11*, pp. 45–47.
- Muehlberger, W. R., Adams, G. E., Longgood, T. E., Jr., and St. John, B. E., 1960, Stratigraphy of the Chama quadrangle, northern Rio Arriba County, New Mexico; in Beaumont, E. C., and Read, C. B. (eds.), *Rio Chama country: New Mexico Geological Society, Guidebook 11*, pp. 93–102.
- Muehlberger, W. R., 1960, Structure of the central Chama Platform, northern Rio Arriba County, New Mexico; in Beaumont, E. C., and Read, C. B. (eds.), *Rio Chama country: New Mexico Geological Society, Guidebook 11*, pp. 103–109.
- Baldwin, B., and Muehlberger, W. R., 1960, Geologic studies of Union County, New Mexico: *New Mexico Bureau of Mines and Mineral Resources, Bulletin 63*, 171 pp.
- Muehlberger, W. R., Baldwin, B., and Foster, R. W., 1961, High Plains, northeastern New Mexico, Raton–Capulin Mountain–Clayton: *New Mexico Bureau of Mines and Mineral Resources, Scenic Trip to the Geologic Past*, no. 7, 106 pp.
- Muehlberger, W. R., and Denison, R. E., 1964, Precambrian geology of south-central New Mexico; in Ash, S. R., and Davis, L. V. (eds.), *Ruidoso country: New Mexico Geological Society, Guidebook 15*, pp. 62–69.
- Muehlberger, W. R., 1967, Geology of Chama quadrangle, New Mexico: *New Mexico Bureau of Mines and Mineral Resources, Bulletin 89*, 114 pp., 2 sheets, scale 1:48,000.
- Muehlberger, W. R., 1968, Geology of Brazos Peak quadrangle, New Mexico: *New Mexico Bureau of Mines and Mineral Resources, Geologic Map 22*, 3 sheets, scale 1:48,000.
- Muehlberger, W. R., 1979, The Embudo fault between Pilar and Arroyo Hondo, New Mexico—an active intracontinental transform fault; in Ingersoll, R. V., Woodward, L. A., and James, H. L. (eds.), *Santa Fe country: New Mexico Geological Society, Guidebook 30*, pp. 77–82.
- Muehlberger, W. R., and Muehlberger, S., 1982, Española–Chama–Taos—a climb through time: *New Mexico Bureau of Mines and Mineral Resources, Scenic Trips to the Geologic Past*, no. 13, 99 pp.
- Dungan, M. A., Muehlberger, W. R., Leininger, L., Peterson, C., McMillan, N. J., Gunn, G., Lindstrom, M., and Haskin, L., 1984, Volcanic and sedimentary stratigraphy of the Rio Grande gorge and the late Cenozoic geologic evolution of the southern San Luis Valley; in Baldrige, W. S., Dickerson, P. W., Riecker, R. E., and Zidek, J. (eds.), *Rio Grande rift, northern New Mexico: New Mexico Geological Society, Guidebook 35*, pp. 157–170.
- Muehlberger, W. R. (compiler), 1992, *Tectonic map of North America, Southeast and Southwest Sheets: American Association of Petroleum Geologists, scale 1:5,000,000.*
- Muehlberger, W. R., 2004, Geological training of astronauts in the Taos region; in Brister, B. S., Bauer, P. W., Read, A. S., and Lueth, V. W. (eds.), *Geology of the Taos region: New Mexico Geological Society, Guidebook 55*, pp. 272–277.
- Muehlberger, W. R., Muehlberger, S. J., and Price, L. G., 2005, High Plains of northeastern New Mexico—a guide to geology and culture: *New Mexico Bureau of Geology and Mineral Resources, Scenic Trip Series*, no. 19, 102 pp.
- Koning, D. J., Karlstrom, K. E., May, J., Skotnicki, S. J., Horning, R., Newell, D., and Muehlberger, W. R., 2005, Preliminary geologic map of the Ojo Caliente 7.5-minute quadrangle, Rio Arriba and Taos Counties, New Mexico: *New Mexico Bureau of Geology and Mineral Resources, Open-file Geologic Map 101*, scale 1:24,000.
- Muehlberger, W. R., Muehlberger, S. J., and Price, L. G., 2010, Capulin Volcano National Monument; in Price, L. G. (ed.), *The Geology of Northern New Mexico's Parks, Monuments, and Public Lands: New Mexico Bureau of Geology and Mineral Resources*, pp. 313–318.