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Roadlog References

(Includes references for all roadlogs in this volume.)

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ROAD LOG REFERENCES

- Aby, S.B., Bauer, P.W., and Kelson, K.I., 2004, The Picuris Formation: A late Eocene to Miocene sedimentary sequence in northern New Mexico: New Mexico Geological Society, 55th Field Conference, Guidebook, p. 335-350.
- Aldrich, M.J., Jr., 1986, Tectonics of the Jemez lineament in the Jemez Mountains and Rio Grande rift: *Journal of Geophysical Research*, v. 91, no. B2, p. 1753-1762.
- Aldrich, M.J. and Dethier, D.P., 1990, Stratigraphic and tectonic evolution of the northern Española basin, Rio Grande rift, New Mexico: *Geological Society of America Bulletin*, v. 102, p. 1695-1705.
- Appelt, R.M., 1998, ⁴⁰Ar/³⁹Ar geochronology and volcanic evolution of the Taos Plateau volcanic field, northern New Mexico and southern Colorado [M.S. thesis]: Socorro, New Mexico Tech, 58 p.
- Aubele, J.C. ; Crumpler, L.S. 2001, Raton-Clayton and Ocate volcanic fields: New Mexico Geological Society, 52nd Field Conference, Guidebook, p. 69-76.
- Baltz, E.H., 1978, Resume of Rio Grande depression in north-central New Mexico, *in* Hawley, J.W., compiler, Guidebook to Rio Grande Rift in New Mexico and Colorado: New Mexico Bureau of Mines and Mineral Resources, Circular 163, p. 210-227.
- Bauer, P.W., 1988, Precambrian geology of the Picuris Range, north-central New Mexico [Ph.D. dissertation]: New Mexico Bureau of Mines and Mineral Resources, Open-file Report OF-325, 260 p.
- Bauer, P.W., 1993, Proterozoic tectonic evolution of the Picuris Mountains, northern New Mexico: *Journal of Geology*, v. 101, p. 483-500.
- Bauer, P.W. and Helper, M.A., 1994, Geology of Trampas quadrangle, Picuris Mountains, Taos and Rio Arriba Counties, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Geologic Map GM-71, scale 1:24,000.
- Bauer, P.W. and Kelson, K.I., 1997, Geology of the Taos SW 7.5-minute quadrangle, Taos County, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Open-file Geologic Map OF-GM-12, scale 1:24,000.
- Bauer, P.W. and Kelson, K.I., 2001, Geology of the Taos 7.5-minute quadrangle, Taos County, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-file Geologic Map OF-GM-43, scale 1:24,000.
- Bauer, P.W. and Kelson, K.I., 2004a, Cenozoic structural development of the Taos area, New Mexico: New Mexico Geological Society, 55th Field Conference, Guidebook, p. 129-146.
- Bauer, P.W. and Kelson, K.I., 2004b, Rift extension and fault slip rates in the southern San Luis Basin, New Mexico: New Mexico Geological Society, 55th Field Conference, Guidebook, p. 172-180.
- Bauer, P.W., Johnson, P.S., and Kelson, K.I., 1999a, Geology and hydrogeology of the southern Taos Valley, Taos County, New Mexico: Final Technical Report for the New Mexico Office of the State Engineer, January 1999, 56 p., 4 oversized plates.
- Bauer, P.W., Kelson, K.I., Lyman, J., Heynekamp, M.R., and McCraw, D.J., 1999b, Geology of the Ranchos de Taos 7.5-minute quadrangle, Taos County, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-file Geologic Map OF-GM-33, scale 1:24,000.
- Bauer, P.W., Kelson, K.I., and Aby, S., 2003, Geology of the Penasco 7.5-minute quadrangle, Taos County, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-file Geologic Map OF-GM-62, scale 1:24,000.
- Bauer, P.W. and Ralser, S., 1995, The Picuris-Pecos fault—repeatedly reactivated, from Proterozoic(?) to Neogene: New Mexico Geological Society, 46th Field Conference, Guidebook, p. 111-115.
- Biehler, S., Ferguson, J., Baldrige, W.S., Jiracek, G.R., Aldern, J.L., Martinez-Garcia, M., Fernandez, R., Romo, J.M., Gilpin, B., Braile, L.W., Hersey, D.R., Luyendyk, B.P., and Aiken, C.L.V., 1991, A geophysical model of the Española Basin, Rio Grande rift, New Mexico: *Geophysics*, v. 56, no. 3, p. 340-353.
- Bradford, S.C., 1992, Kinematics of an accommodation zone in the Rio Grande Rift: the Embudo fault zone, northern New Mexico [M.S. thesis]: Columbus, Ohio State University, 177 p.
- Brown, L.L. and Golombek, M.P., 1986, Block rotations in the Rio Grande Rift, New Mexico: *Tectonics* v. 5, no. 3 p. 423-438.
- Bullock, A., 1973, *Mountain Villages*: Sunstone Press, Santa Fe, 120 p.
- Bureau of Land Management, 2003, Notice of Public Land Closure, Ute Mountain, Taos County, New Mexico: Federal Register, v. 68, n. 250, p. 75625-75626, from the Federal Register Online via GPO Access <<http://www.gpoaccess.gov/fr/>> [DOCID:fr31de03-127].
- Butler, A.P., 1946, Tertiary and Quaternary geology of the Tusas-Tres Piedras area, New Mexico [Ph.D dissertation]: Cambridge, Harvard University, 188 p.
- Cabot, E.C., 1938, Fault border of the Sangre de Cristo Mountains north of Santa Fe, New Mexico: *Journal of Geology*, v. 46, p. 88-105.
- Caffall, N.M. and Brown, L.L., 1985, Paleomagnetism of the Servilleta Basalts, Rio Grande Gorge, New Mexico: *Eos, Transactions of the American Geophysical Union*, v. 66, no. 46, p. 872.
- Casey, J.M., 1980a, Depositional systems and basin evolution of the late Paleozoic Taos trough, northern New Mexico: Texas Petroleum Research Committee Report, UT-80-1, 236 p.
- Casey, J.M., 1980b, Depositional systems and paleogeographic evolution of the late Paleozoic Taos trough, northern New Mexico, *in* Fouch, T.D. and Magathan, E.R., eds., Paleozoic paleogeography of the west-central United States: Society of Economic Paleontologists and Mineralogists, Rocky Mountain Section, Rocky Mountain Paleogeography Symposium, v. 1, p. 181-196.
- Casey, J.M. and Scott, A.J., 1979, Pennsylvanian coarse-grained fan deltas associated with the Uncompahgre uplift, Talpa, New Mexico: New Mexico Geological Society, 30th Fall Field Conference, Guidebook, p. 211-218.
- Cash, M.R., 1993, *Built of Earth and Song: Churches of Northern New Mexico*: Red Crane Books, Santa Fe, 170 p.
- Cavazza, W., 1986, Miocene sediment dispersal in the central Española Basin, Rio Grande rift, New Mexico, USA: *Sedimentary Geology*, v. 51, p. 119-135.
- Chapin, T.S., 1981, Geology of Fort Burgwin Ridge, Taos County, New Mexico [M.A. thesis]: Austin, University of Texas, 151 p.
- Chapin, C.E. and Cather, S.M., 1994, Tectonic setting of the axial basins of the northern and central Rio Grande rift, *in* Keller, G.R. and Cather, S.M., eds., Basins of the Rio Grande Rift: Structure, Stratigraphy, and Tectonic Setting: Geological Society of America Special Paper 291, p. 5-25.
- Cordell, L., 1978, Regional geophysical setting of the Rio Grande rift: *Geological Society of America Bulletin* 89, p. 1073-1090.
- Cordell, L., 1979, Gravimetric expression of graben faulting in Santa Fe country and the Española Basin, New Mexico: New Mexico Geological Society, 30th Field Conference, Guidebook, p. 59-64.
- Cordell, L., and Keller, G.R., 1984, Regional structural trends inferred from gravity and aeromagnetic data in the New Mexico-Colorado border region: New Mexico Geological Society, 35th Field Conference, Guidebook, p. 21-23.
- Dethier, D.P. and McCoy, W.D., 1993, Aminostratigraphic relations and age of Quaternary deposits, northern Española Basin, New Mexico: *Quaternary Research*, v. 39, p. 222-230.
- Dethier, D.P. and Reneau, S.L., 1995, Quaternary history of the western Española Basin, New Mexico: New Mexico Geological Society, 46th Field Conference, Guidebook, p. 289-298.
- Dickerson, P.W., 2004, Field geophysical training of astronauts in Taos valley—a brief synopsis: New Mexico Geological Society Guidebook, 55th Field Conference, Guidebook, p. 278-281
- 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: New Mexico Geological Society, 35th Field Conference, Guidebook, p. 157-170.
- Dungan, M.A., Lindstrom, M.M., McMillan, N.J., Moorbath, S., Hoefs, J., and Haskin, L.A., 1986, Open system magmatic evolution of the Taos Plateau volcanic field, northern New Mexico: *Journal of Geophysical Research*, B, Solid Earth and Planets, v. 91, no. 6, p. 5999-6028.
- Dungan, M.A., 1987, Open system magmatic evolution of the Taos Plateau volcanic field, northern New Mexico: *Journal of Petrology*, v. 28, no. 5, p. 955-977.
- Dungan, M.A., Thompson, R.A., and Stormer, J.S., 1989, Excursion 18B—Rio Grande rift volcanism—Northern Jemez zone, New Mexico, *in* Chapin, C.E. and Zidek, J., eds., Field excursions to volcanic terrains in the western United States, Volume I—Southern Rocky Mountain region: New Mexico Bureau of Mines and Mineral Resources Memoir 46, p. 435-486.
- Faulds, J.E. and Varga, R.J., 1998, The role of accommodation zones and transfer zones in the regional segmentation of extended terranes, *in* Faulds, J.E.,

- and Stewart, J.H., eds., Accommodation Zones and Transfer Zones: The Regional Segmentation of the Basin and Range Province: Geological Society of America Special Paper 323, p. 1-45.
- Galusha, T. and Blick, J.C., 1971, Stratigraphy of the Santa Fe Group, New Mexico: Bulletin of the American Museum of Natural History, v. 144, 127 p.
- Gaud, M.N., 2002, Outcrop investigations of the permeability and spatial distributions of alluvial-slope lithofacies near Española, New Mexico: Albuquerque, University of New Mexico, 127 p.
- Grauch, V.J.S., Bauer, P.W., and Kelson, K.I., 2004, Preliminary interpretation of high-resolution aeromagnetic data collected near Taos, New Mexico: New Mexico Geological Society, 55th Field Conference, Guidebook, p. 244-256.
- Grambling, J.A., 1984, The Precambrian rocks near Pilar: New Mexico Geological Society, 35th Field Conference, Guidebook, p. 305-306.
- Hall, M.S., 1988, Oblique slip faults in the northwestern Picuris Mountains of New Mexico: An expansion of the Embudo transform zone, [M.S. Thesis]: Austin, University of Texas, 69 p.
- Heffern, E.L., 1990, A geologic overview of the Wild Rivers Recreation Area, New Mexico: New Mexico Geological Society, 41st Field Conference, Guidebook, p. 229-236.
- Hillman, D.M.J., 1986, A study of small-scale deformation features associated with Embudo fault zone, north-central New Mexico, [M.S. thesis]: Norman, University of Oklahoma, 79 p.
- Ingersoll, R.V., Cavazza, W., Baldrige, W.S., and Shafiqullah, M., 1990, Cenozoic sedimentation and paleotectonics of north-central New Mexico: Implications for initiation and evolution of the Rio Grande rift: Geological Society of America Bulletin, v. 102, p. 1280-1296.
- Izzett, G.A. and Obradovich, J.D., 2001, ⁴⁰Ar/³⁹Ar ages of Miocene tuffs in basin-fill deposits (Santa Fe Group, New Mexico, and Troublesome Formation, Colorado) of the Rio Grande rift system: The Mountain Geologist, v. 38, no. 2, p. 77-86.
- Jackson-Paul, P.B., Connell, S.D., and Bauer, P.W., 2002, Preliminary lithologic descriptions of Bureau of Indian Affairs (BIA) wells on Taos Pueblo lands, Taos County, New Mexico: Technical report for the Department of Justice, Expert Witness Program, 49 p.
- Julyan, R., 1986, The place names of New Mexico: Albuquerque, University of New Mexico Press, 385 p.
- Johnson, C.M. and Lipman, P.W., 1988, Origin of metaluminous and alkaline volcanic rocks of the Latir volcanic field, northern Rio Grande rift, New Mexico: Contributions to Mineralogy and Petrology, v. 100, no. 1, p. 107-128.
- Johnson, C.M., Czamanske, G.K., and Lipman, P.W., 1989, Geochemistry of intrusive rocks associated with the Latir volcanic field, New Mexico, and contrasts between evolution of plutonic and volcanic rocks: Contributions to Mineralogy and Petrology, v. 103, no. 1, p. 90-109.
- Karlstrom K.E. and Daniel, C.G., 1993, Restoration of Laramide right-lateral strike slip in northern New Mexico by using Proterozoic piercing points: Tectonic implications from the Proterozoic to the Cenozoic: Geology, v. 21, no. 12, p. 1139-1142.
- Keller, G.R., Cordell, L., Davis, G.H., Pepples, W.J., and White, G., 1984, A geophysical study of the San Luis Basin: New Mexico Geological Society, 35th Field Conference, Guidebook, p. 51-58.
- Kelley, S.A., 1995, Evidence for post-Laramide displacement on the Picuris-Pecos fault: New Mexico Geological Society, 46th Field Conference, Guidebook, p. 32-33.
- Kelley, S.A. and Chapin, C.E., 1995, Apatite fission-track thermochronology of southern Rocky Mountain—Rio Grande Rift—western High Plains provinces: New Mexico Geological Society, 46th Field Conference, Guidebook, p. 87-96.
- Kelley, V.C., 1978, Geology of the Española Basin: New Mexico Bureau of Mines and Mineral Resources, Geologic Map GM-48, scale 1:125,000.
- Kelson, K.I., 1986, Long-term tributary adjustments to base level lowering in northern Rio Grande rift, New Mexico [M.S. thesis]: Albuquerque, University of New Mexico, 210 p.
- Kelson, K.I. and Bauer, P.W., 1998, Geology of the Carson 7.5-minute quadrangle, Taos County, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Open-file Geologic Map OF-GM-22, scale 1:24,000.
- Kelson, K.I. and Bauer, P.W., 2003, Geology of the Los Cordovas 7.5-minute quadrangle, Taos County, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-file Geologic Map OF-GM-63, scale 1:24,000.
- Kelson, K.I., Bauer, P.W., Love, D., Connell, S.D., Mansell, M., and Rawling, G., 2003, Initial paleoseismic and hydrogeologic assessment of the southern Sangre de Cristo fault at the Taos Pueblo site, Taos County, New Mexico: Technical Report by William Lettis & Associates, Inc., 15 p.
- Kelson, K.I., Bauer, P.W., Unruh, J.R., and Bott, J.D.J., 2004a, Late Quaternary characteristics of the northern Embudo fault, Taos County, New Mexico: New Mexico Geological Society, 55th Field Conference, Guidebook, p. 147-157.
- Kelson, K.I., Bauer, P.W., Love, D., Connell, S.D., Mansell, M., and Rawling, G., 2004b, Initial paleoseismic and hydrogeologic assessment of the southern Sangre de Cristo fault at the Taos Pueblo site, Taos County, New Mexico: New Mexico Geological Society, 55th Field Conference, Guidebook, p. 289-299.
- Kelson, K.I. and Olig, S.S., 1995, Estimated rates of Quaternary crustal extension in the Rio Grande rift, northern New Mexico: New Mexico Geological Society, 46th Field Conference, Guidebook, p. 9-12.
- Kelson, K.I. and Wells, S.G., 1987, Present-day fluvial hydrology and long-term tributary adjustments, northern New Mexico, in Menges, C., Enzel, Y., and Harrison, B., eds., Quaternary Tectonics, Landform Evolution, Soil Chronologies and Glacial Deposits—Northern Rio Grande Rift of New Mexico: Friends of the Pleistocene, Rocky Mountain Cell, Guidebook, p. 95-109.
- Kelson, K.I. and Wells, S.G., 1989, Geologic influences on fluvial hydrology and bedload transport in small mountainous watersheds, northern New Mexico, USA: Earth Surface Processes and Landforms, v. 14, no. 8, p. 671-690.
- Kelson, K.I., Unruh, J.R., and Bott, J.D.J., 1997, Field characterization, kinematic analysis, and initial paleoseismic assessment of the Embudo fault, northern New Mexico: Final Technical Report to the U.S. Geological Survey from William Lettis and Assoc., Inc., 48 p.
- Kluth, C.F. and Schaftenaar, C.H., 1994, Depth and geometry of the northern Rio Grande rift in the San Luis Basin, south-central Colorado, in Keller, G.R. and Cather, S.M., eds., Basins of the Rio Grande Rift: Structure, Stratigraphy, and Tectonic Setting: Geological Society of America, Special Paper 291, p. 27-37.
- Koning, D.J., 2002a, Geology of the Española 7.5-minute quadrangle and implications regarding middle Miocene deposition and tectonism in the Rio Grande rift, north-central New Mexico (abs.): New Mexico Geology, v. 42, no. 2, p. 63.
- Koning, D.J., 2002b, Geologic map of the Española 7.5-minute quadrangle, Rio Arriba and Santa Fe counties, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-file Geologic Map OF-GM-54, scale 1:24,000.
- Koning, D.J., 2002c, Depositional trends of the upper Tesuque Formation, Española Basin, N.M., and inferred tectonic and climatic influences on aggradation (abs.): Geological Society of America, Abstracts with Programs, v. 34, no. 6, p. 281.
- Koning, D.J., 2003a, Problems with the existing stratigraphic nomenclature of the Santa Fe group in the Española Basin and suggested revisions (abs.): New Mexico Geology, v. 25, no. 2, p. 49.
- Koning, D.J., 2003b, Geologic map of the Chimayo 7.5-minute quadrangle, Rio Arriba and Santa Fe counties, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-file Geologic Map OF-GM-71, scale 1:24,000.
- Koning, D.J. and Aby, S., 2003, Geologic map of the Velarde 7.5-minute quadrangle, Rio Arriba and Santa Fe counties, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-file Geologic Map OF-GM-79, scale 1:24,000.
- Koning, D.J. and Maldonado, F., 2001, Geologic map of the Horcado Ranch 7.5-minute quadrangle, Santa Fe county: New Mexico Bureau of Geology and Mineral Resources, Open-file Geologic Map OF-GM-44, scale 1:24,000.
- Koning, D.J. and Manley, K., 2003, Geologic map of the San Juan Pueblo 7.5-minute quadrangle, Rio Arriba and Santa Fe counties, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-file Geologic Map OF-GM-70, scale 1:24,000.
- Koning, D.J., Nyman, M., Horning, R., Eppes, M., and Rogers, S., 2002, Geology of the Cundiyo 7.5-minute quadrangle, Santa Fe County, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-file Geologic Map OF-GM-56, scale 1:24,000.
- Koning, D.J., Aby, S., and Dunbar, N., 2004a, Middle-upper Miocene stratigraphy of the Velarde graben, north-central New Mexico: Tectonic and paleogeographic implications: New Mexico Geological Society, 55th Field Confer-

- ence, Guidebook, p. 359-373.
- Koning, D.J., Ferguson, J., Jackson-Paul, P., and Baldrige, W.S., 2004b, The geologic structure of the northern Espanola Basin and the southern Embudo fault system: New Mexico Geological Society, 55th Field Conference, Guidebook, p. 158-171.
- Kuhle, A.J., 1997, Sedimentology of Miocene alluvial-slope deposits, Española Basin, Rio Grande rift: An outcrop analogue for subsurface heterogeneity [M.S. thesis]: Albuquerque, University of New Mexico, 205 p.
- Kuhle, A.J. and Smith, G.A., 2001, Alluvial-slope deposition of the Skull Ridge Member of the Tesuque Formation, Española Basin, New Mexico: *New Mexico Geology*, v. 23, p. 30-37.
- Lambert, P.W., 1966, Notes on the late Cenozoic geology of the Taos-Questa area, New Mexico: New Mexico Geological Society, 17th Field Conference, Guidebook, p. 43-50.
- Leininger, R.L., 1982, Cenozoic evolution of the southernmost Taos plateau, New Mexico [M.S. thesis]: Austin, University of Texas, 110 p.
- Leonardson, R.W., Dunlop, G., Starquist, V.L., Bratton, G.P., Meyer, J.W., and Osborne, L.W., Jr., 1983, Preliminary geology and molybdenum deposits at Questa, New Mexico: Proceedings of the Denver Region Exploration Geologists Society Symposium, p. 151-155.
- Lipman P.W., Steven, T.A., and Mehnert, H.H., 1970, Volcanic history of the San Juan Mountains, Colorado, as indicated by potassium-argon dating, Geological Society of America Bulletin, v. 81, no. 8, p. 2329-2351.
- Lipman, P.W. and Mehnert, H.H., 1975, Late Cenozoic basaltic volcanism and development of the Rio Grande depression in the southern Rocky Mountains: Geological Society of America, Memoir 144, p. 119-154.
- Lipman, P.W. and Mehnert, H.H., 1979, The Taos Plateau volcanic field, northern Rio Grande rift, New Mexico, *in* Riecker, R.C., ed., Rio Grande Rift: Tectonics and Magmatism: American Geophysical Union, Washington D.C., p. 289-311.
- Lipman, P.W., Mehnert, H.H., and Naeser, C.W., 1986, Evolution of the Latir volcanic field, northern New Mexico, and its relation to the Rio Grande rift, as indicated by potassium-argon and fission track dating: *Journal of Geophysical Research*, B, Solid Earth and Planets, v. 91, no. 6, p. 6329-6345.
- Lipman, P.W., 1988, Evolution of silicic magma in the upper crust; the mid-Tertiary Latir volcanic field and its cogenetic granitic batholith, northern New Mexico, U.S.A.: *Transactions of the Royal Society of Edinburgh, Earth Sciences*, v. 79, no. 2-3, p. 265-288.
- Lipman P.W. and Reed, J.C., 1989, Geologic map of the Latir volcanic field and adjacent areas, northern New Mexico: U.S. Geological Survey, Miscellaneous Geologic Investigations Map I-1907, scale 1:48,000.
- Lipman, P.W., Dungan, M.A., Brown, L.L., and Deino, A.L., 1996, Geological Society of America Bulletin, v. 108, no. 8, p. 1039-1055.
- Machette, M.N. and Personius, S.F., 1984, Quaternary and Pliocene faults in the eastern part of the Aztec quadrangle and the western part of the Raton quadrangle, northern New Mexico: U.S. Geological Survey, Miscellaneous Field Studies Map MF-1465-B, scale 1:250,000.
- Machette, M.N., Personius, S.F., Kelson, K.I., Haller, K.M., and Dart, R.L., 1998, Map and data for Quaternary faults in New Mexico: U.S. Geological Survey, Open-file Report 98-521, 443 p.
- Manley, K., 1976a, The late Cenozoic history of the Española basin, New Mexico [Ph.D. dissertation]: Boulder, University of Colorado, 171 p.
- Manley, K., 1976b, K-Ar age determinations on Pliocene basalts from the Española Basin, New Mexico: *Isochron/West*, no. 16, 29-30.
- Manley, K., 1977, Geologic map of the Cejita Member (new name) of the Tesuque Formation, Española Basin, New Mexico: U.S. Geological Survey, Miscellaneous Field Studies Map MF-877, scale 1:24,000.
- Manley, K., 1978, Cenozoic geology of the Española basin: New Mexico Bureau of Mines and Mineral Resources Circular 163, p. 201-210.
- Manley, K., 1979a, Stratigraphy and structure of the Española Basin, Rio Grande rift, New Mexico, *in* Riecker, R.E., ed., Rio Grande Rift: Tectonics and Magmatism: Washington D.C., American Geophysical Union, p. 71-86.
- Manley, K., 1979b, Tertiary and Quaternary stratigraphy of the northeast plateau, Española Basin, New Mexico: New Mexico Geological Society, 30th Field Conference, Guidebook, p. 231-236.
- McDonald, D. and Nielsen, K., 2004, Development of the Miranda graben constrains the uplift of the Picuris Mountains and has implications to the Rio Grande rift: New Mexico Geological Society, 55th Field Conference, Guidebook, p. 219-229.
- McIntosh, W.C., and Quade, J., 1995, ⁴⁰Ar/³⁹Ar geochronology of tephra layers in the Santa Fe Group, Española Basin, New Mexico: New Mexico Geological Society, 46th Field Conference, Guidebook, p. 279-284.
- McIntosh, W.C., Peters, L., Esser, R., and Bauer, P.W., 2004 Geochronology data from the Taos region: New Mexico Bureau of Geology and Mineral Resources, Open-file Report, OF-AR-24.
- McMillan, N.J. and Dungan, M.A., 1986, Magma mixing as a petrogenetic process in the development of the Taos Plateau volcanic field, New Mexico: *Journal of Geophysical Research*, B, Solid Earth and Planets, v. 91, no. 6, p. 6029-6045.
- McMillan, N.J. and Dungan, M.A., 1988, Open system magmatic evolution of the Taos Plateau volcanic field, northern New Mexico: *Journal of Petrology*, v. 29, no. 3, p. 527-557.
- Menges, C.M., 1988, The tectonic geomorphology of mountain front landforms in the northern Rio Grande rift, New Mexico [Ph.D. dissertation]: Albuquerque, University of New Mexico, 140 p.
- Menges, C.M., 1990, Late Cenozoic rift tectonics and mountain-front landforms of the Sangre de Cristo Mountains near Taos, northern New Mexico: New Mexico Geological Society, 41st Field Conference, Guidebook, p. 113-122.
- Miggins, D.P., Thompson, R.A., Pillmore, C.L., Snee, L.W., and Stern, C.R., 2002, Extension and uplift of the northern Rio Grande rift: Evidence from ⁴⁰Ar/³⁹Ar geochronology from the Sangre de Cristo Mountains, south-central Colorado and northern New Mexico, *in* Menzies, M.A., Klemperer, S.L., Ebinger, C.J., and Baker, J., eds., Volcanic Rifted Margins: Geological Society of America Special Paper 362, p. 49-66.
- Miller, J.P., Montgomery, A., and Sutherland, P.K., 1963, Geology of part of the southern Sangre de Cristo Mountains, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 11, 106 p.
- Modreski, P.J. and Kline, J.M., 1999, Schorl-dravite tourmaline in metamorphic rocks from the Pilar Cliffs, Taos County, New Mexico (abs.): *New Mexico Geology*, v. 21, no. 1, p. 14.
- Montgomery, A., 1953, Precambrian geology of the Picuris Range, north-central New Mexico: New Mexico Bureau of Mines and Mineral Resources Bulletin 30, 89 p.
- Morley, C.K., Nelson, R.A., Patton, T.L., and Mann, S.G., 1990, Transfer zones in the East African rift system and their relevance to hydrocarbon exploration in rifts: *American Association of Petroleum Geologists Bulletin*, v. 74, p. 1234-1253.
- Muehlberger, W.R., 1978, Frontal fault zone of northern Picuris Range, *in* Hawley, J.W., compiler, Guidebook to Rio Grande Rift in New Mexico and Colorado: New Mexico Bureau of Mines and Mineral Resources Circular 163, p. 44-46.
- Muehlberger, W.R., 1979, The Embudo fault between Pilar and Arroyo Hondo, New Mexico: An active intracontinental transform fault: *New Mexico Geological Society*, 30th Field Conference, Guidebook, p. 77-82.
- Muehlberger, W.R., 2004, Geological training of astronauts in the Taos region: New Mexico Geological Society, 55th Field Conference, Guidebook, p. 272-277.
- Olig, S.S., Kelson, K.I., Gardner, J.N., Reneau, S.L., and Hemphill-Haley, M.A., 1996, The seismic potential of the Pajarito fault system, New Mexico: *New Mexico Geological Society*, 47th Field Conference, Guidebook, p. 143-151.
- Ozima, M., Kono, M., Kaneoka, I., Kinoshita, H., Kobayashi, K., Nagata, T., Larson, E.E., and Strangway, D.W., 1967, Paleomagnetism and potassium-argon ages of some volcanic rocks from the Rio Grande gorge, New Mexico: *Journal of Geophysical Research*, v. 72, no. 10, p. 2615-2621.
- Personius, S.F. and Machette, M.N., 1984, Quaternary faulting in the Taos Plateau region, northern New Mexico: *New Mexico Geological Society*, 30th Field Conference, Guidebook, p. 83-90.
- Peterson, C.M., 1981, Late Cenozoic stratigraphy and structure of the Taos Plateau, northern New Mexico [M.S. thesis]: Austin, University of Texas, 57 p.
- Read, A.S., Koning, D.J., Smith, G.A., Ralser, S., Rogers, J., and Bauer, P.W., 2000, Geology of the Santa Fe 7.5-minute quadrangle, Santa Fe County, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-file Geologic Map OF-GM-32, scale 1:12,000.
- Read, A.S. and Koning, D.J., 2004, Geologic map of the southern Española Basin, New Mexico Bureau of Geology and Mineral Resources Open-file Geologic Map, OF-GM-103, scale 1:50,000.
- Rehder, T.R., 1986, Stratigraphy, sedimentology, and petrography of the Picuris Formation in Ranchos de Taos and Tres Ritos quadrangles, north-central New Mexico [M.S. thesis]: Dallas, Southern Methodist University, 110 p.

- Reiter, M. and Sandoval, J., 2004, Subsurface temperature logs in the vicinity of Taos, New Mexico: New Mexico Geological Society, 55th Field Conference, Guidebook, p. 415-419.
- Reynolds, C.B., 1986, Shallow seismic reflection survey, Taos Pueblo, Taos County, New Mexico: Charles B. Reynolds and Associates Report to the BIA, May 27, 10 p.
- Reynolds, C.B., 1992, Shallow seismic reflection survey, northern Taos Pueblo area, Taos County, New Mexico: Charles B. Reynolds and Associates Report to the BIA, May 18, 9 p.
- Rogers, K.L., 1985, Middle Pleistocene (Late Irvingtonian:Nebraskan) climatic changes in south-central Colorado: National Geographic Review, v. 1, p. 535-563.
- Rosendahl, B.R., 1987, Architecture of continental rifts with special reference to East Africa: Annual Review of Earth and Planetary Sciences, v. 15, p. 445-503.
- Salyards, S.L. and Ni, J.F., 1990, Kinematics of the Española Basin, Rio Grande rift, New Mexico from net, non-vertical paleomagnetic rotations: Eos, Transactions of the American Geophysical Union, v. 71, no. 43, p. 1584.
- Salyards, S.L., Ni, J.F., and Aldrich, M.J., Jr., 1994, Variation in paleomagnetic rotations and kinematics of the north-central Rio Grande rift, New Mexico, in Keller, G.R. and Cather, S.M., eds., Basins of the Rio Grande Rift: Structure, Stratigraphy, and Tectonic Setting: Geological Society of America Special Paper 291, p. 59-71.
- Sawyer, D.A., Mullins, K.F., Dohrenwend, J., and Isbrecht, J., 2004, Processed Landsat 7 satellite imagery of the Española Basin region, New Mexico: U.S. Geological Survey Open-file Report 2004-1040-A.
- Schilling, J.H., 1960, Mineral resources of Taos County, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Bulletin 71, 124 p.
- Sherman, J.E. and Sherman, B.H., 1975, Ghost towns and mining camps of New Mexico: Norman, University of Oklahoma Press, 146 p.
- Smith, G.A., 2000, Recognition and significance of streamflow-dominated piedmont facies in extensional basins: Basin Research: v. 12, p. 399-411.
- Smith, G.A., 2004, Middle to late Cenozoic development of the Rio Grande rift and adjacent regions in northern New Mexico, in Mack, G.H. and Giles, K.A., eds., The geology of New Mexico, A geologic history: New Mexico Geological Society Special Publication 11, p. 331-358.
- Smith, G.A., Gaud, M.N., and Timmons, J.M., 2004, Geologic map of the Truchas 7.5-minute quadrangle, Rio Arriba, Santa Fe, and Taos Counties, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-file Geologic Map OF-GM-84, scale: 1:24,000.
- Smith, G.A., Moore, J.D., and McIntosh, W.C., 2002 Assessing roles of volcanism and basin subsidence in causing Oligocene-lower Miocene sedimentation in the northern Rio Grande Rift, New Mexico, U.S.A.: Journal of Sedimentary Research, v. 72, no. 6, p. 836-848.
- Smith, G.A. and Pazzaglia, F.J., 1995, The Pliocene(?) Borrego pediment surface and development of the western Sangre de Cristo Mountains front: New Mexico Geological Society, 46th Field Conference, Guidebook, p. 6-8.
- Smith, G.A. and Roy, M., 2001, Assessing ruptured hanging-wall hinge-zone uplifts in the northern Rio Grande rift, New Mexico (abs.): Geological Society of America, Abstracts with Programs, v. 33, no. 5, p. A61.
- Steinpress, M.G., 1980, Neogene stratigraphy and structure of the Dixon area, Española basin, north-central New Mexico [M.S. thesis]: Albuquerque, University of New Mexico, 127 p.
- Steven, T.A., 1975, Middle Tertiary volcanic field in the southern Rocky Mountains, in Curtis, B.F., ed., Cenozoic History of the Southern Rocky Mountains: Geological Society of America Memoir 144, p. 75-94.
- Sutherland, P.K., 1963, Paleozoic rocks, in Miller, J.P., Montgomery, A., and Sutherland, P.K., Geology of Part of the Southern Sangre de Cristo Mountains, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Memoir 11, p. 22-46.
- Sutherland, P.K. and Harlow, F.H., 1973, Pennsylvanian brachiopods and biostratigraphy in the southern Sangre de Cristo Mountains, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Memoir 27, 173 p.
- Tandon, K., 1992, Deep structure beneath the San Luis Basin in Colorado from reprocessing of an industry reflection survey [Ph.D. dissertation]: Ithaca, Cornell University, 285 p.
- Tedford, R.H. and Barghoorn, S.F., 1993, Neogene stratigraphy and mammalian biochronology of the Española Basin, northern New Mexico: New Mexico Museum of Natural History and Science Bulletin 2, p. 159-168.
- Tedford, R.H., Skinner, M.F., Fields, R.W., Rensberger, J.M., Whistler, D.P., Galusha, T., Taylor, B.E., Macdonald, J.R., and Webb, S.D., 1987, Faunal succession and biochronology of the Arikarean through Hemphillian interval (late Oligocene through earliest Pliocene epochs) in North America, in Woodburne, M.O., ed., Cenozoic Mammals of North America, Geochronology and Biostratigraphy: Berkeley, University of California Press, p. 153-210.
- The North American Commission on Stratigraphic Nomenclature, 1983, The North American Stratigraphic Code: The American Association of Petroleum Geologists Bulletin, v. 67, no. 5, p. 841-875.
- Thompson, R.A., Dungan, M.A., and Lipman, P.W., 1986, Multiple differentiation processes in early-rift calc-alkaline volcanics, northern Rio Grande Rift, New Mexico: Journal of Geophysical Research, B. Solid Earth and Planets v. 91, no. 6, p. 6046-6058.
- Thompson, R.A. and Schilling, S.P., 1988, Generalized geologic maps of Brushy Mountain and Timber Mountain areas, Taos County, New Mexico: U. S. Geological Survey, Open-file Report 88-0561.
- Thompson, R.A. and Machette, M.N., 1989, Geologic map of the San Luis Hills area, Conejos and Costilla Counties, Colorado: U.S. Geological Survey, Miscellaneous Investigations Series Map I-1906, scale 1:50,000.
- Thompson, R.A., Johnson, C.M., and Mehnert, H.H., 1991, Oligocene basaltic volcanism of the northern Rio Grande Rift; San Luis Hills, Colorado: Journal of Geophysical Research, B, Solid Earth and Planets, v. 96, no. 8, p. 13,577-13,592.
- Thompson, R.A. and Lipman, P.W. 1994a, Geologic map of the Los Pinos Quadrangle, Rio Arriba and Taos Counties, New Mexico and Conejos County, Colorado: U.S. Geological Survey, Geologic Map GQ-1749, scale 1:24,000.
- Thompson, R.A. and Lipman, P.W. 1994b, Geologic map of the San Antonio Mountain Quadrangle, Rio Arriba County, New Mexico: U.S. Geological Survey, Geologic Map GQ-1750, scale 1:24,000.
- Tweto, O., 1979, The Rio Grande Rift System in Colorado, in Riecker, R.E., ed., Rio Grande Rift: Tectonics and Magmatism: Washington, D.C., American Geophysical Union, p. 33-56.
- Ulmer, D.S. and Laury, R.L., 1984, Diagenesis of the Mississippian Arroyo Penasco Group, north-central New Mexico: New Mexico Geological Society, 35th Field Conference, Guidebook, p. 91-100.
- Usner, D.J., 1995, Sabino's Map: Santa Fe, Museum of New Mexico Press, 264 p.
- Wells, S.G., Kelson, K.I., and Menges, C.M., 1987, Quaternary evolution of fluvial systems in the northern Rio Grande rift, New Mexico and Colorado: Implications for entrenchment and integration of drainage systems, in Menges, C., Enzel, Y., Harrison, B., eds., Quaternary Tectonics, Landform Evolution, Soil Chronologies and Glacial Deposits—Northern Rio Grande Rift of New Mexico: Friends of the Pleistocene, Rocky Mountain Cell, Guidebook, p. 95-109.
- Wong, I., Kelson, K., Olig, S., Bott, J., Green, R., Kolbe, T., Hemphill-Haley, M., Gardner, J., Reneau, S., and Silva, W., 1996, Earthquake potential and ground shaking hazard at the Los Alamos National Laboratory, New Mexico: New Mexico Geological Society, 47th Field Conference, Guidebook, p. 135-142.