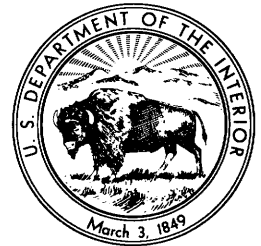


# **Publications of the U.S. Geological Survey, 1989**

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**DEPARTMENT OF THE INTERIOR**



DEPARTMENT OF THE INTERIOR  
MANUEL LUJAN, Jr., *Secretary*

U.S. GEOLOGICAL SURVEY  
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Estimates of undiscovered conventional oil and gas resources in the United States; a part of the Nation's energy endowment, by R. F. Mast, G. L. Dolton, R. A. Crovelli, D. H. Root, E. D. Atanasi, U.S. Geological Survey; P. E. Martin, L. W. Cooke, G. B. Carpenter, W. C. Pecora, and M. B. Rose, Minerals Management Service. 1989. 44 p.

### CATALOGS

Price and availability list of U.S. Geological Survey publications. 1988. 1989. 47 p.

Publications of the U.S. Geological Survey, 1988. 1989. 386 p.

### REPORTS AVAILABLE ONLY THROUGH NTIS

The following reports may be obtained from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. When ordering, please use the NTIS number preceding each item.

PB-89 167 399. NEVADA. Data on evapotranspiration in phreatophyte areas, Smith Creek valley and Carson Desert, west-central Nevada, 1983, by R. L. Carmen. 1989. 14 p., magnetic tape. (Inspection copies of the text and magnetic tape are available at USGS, WRD, Room 224, Federal Bldg., 705 North Plaza St., Carson City, NV 89701.)

PB-89 178 453. Digital data tapes for infrared mineral spectra from USGS Open-file report 87-263, by J. W. Salisbury, L. S. Walter and Norma Vergo. 1988. 2 tapes with 3 enclosures.

### WATER-RESOURCES INVESTIGATIONS REPORTS

"Water-Resources Investigations Reports" (WRI) in this listing is applied to reports that are of an interpretative nature made available to the public outside the formal USGS publications series. WRI's are not reproduced and distributed in quantity as are formal USGS publications, but are available for public inspection at the indicated depositories.

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In the water-resources investigations report and the open-file report listings that follow, offices where reports may be inspected are identified by the symbols listed below:

- A Public Inquiries Office, Rm. 101, 4230 University Dr., Anchorage, AK 99508-4664.
- Da Library, 1526 Cole Blvd. at West Colfax Ave., Golden, CO (Stop 914, Box 25046, Federal Center, Denver, CO 80225).
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- NC Library, Rm. 4A100, National Center, 12201 Sunrise Valley Dr., Reston, VA 22092.
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- SF Public Inquiries Office, Rm. 504, Customhouse, 555 Battery St., San Francisco, CA 94111.
- T Public Inquiries Office, Rm. 1C45, Federal Bldg., 1100 Commerce St. Dallas, TX 75242. (Closed.)
- U Public Inquiries Office, Rm. 8105, Federal Bldg., 125 South State St., Salt Lake City, UT 84138.
- Wa U.S. Department of the Interior, Rm. 2650, 18th and C Sts., NW, Washington, DC 20240.
- Wb U.S. Department of the Interior, Natural Resources Library, Gifts and Exchange Section, 18th and C Sts., NW, Washington, DC 20240.

WRI 84-4252. NEW HAMPSHIRE. Ground-water resources of the Lamprey River basin, southeastern New Hampshire, by J. E. Cotton. 1988. 46 p., 1 over-size sheet, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, Wb.)

WRI 84-4363. ARKANSAS. Average annual precipitation and runoff for Arkansas, 1951-80, by D. A. Freiwald. 1984. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 700 West Capitol Ave., Room 2301, Federal Office Bldg., Little Rock, AR 72201.)

WRI 85-4185. PENNSYLVANIA. Simulation of ground-water flow in aquifers along the Susquehanna River in Columbia County, Pennsylvania, by J. H. Williams and G. E. Senko. Prepared in cooperation with Susquehanna River Basin Commission. 1988.

44 p., 6 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Wb; USGS, WRD, P.O. Box 1107, 228 Walnut St., 4th Floor, Federal Bldg., Harrisburg, PA 17108.)

WRI 85-4213. PENNSYLVANIA. Sediment loads, discharges, and yields in the East Branch Mahoning Creek basin, Clearfield and Jefferson counties, Pennsylvania, June 1979 through September 1981, by C. A. Loper and K. L. Wetzel. Prepared in cooperation with Pennsylvania Department of Environmental Resources. 1988. 26 p. (NC, Da, M, Wb; USGS, WRD, Federal Bldg., Fourth Floor, 3rd and Walnut St., Harrisburg, PA 17108.)

WRI 85-4233. SOUTH DAKOTA. Geologic structure and altitude of the top of the Minnelusa Formation, northeastern Black Hills, South Dakota, by K. D. Peter, D. P. Lyllonen and K. R. Mills. 1985. 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, Wb, Db.)

WRI 85-4327. CONNECTICUT. Rainfall-runoff relationships of the Hop Brook basin, Manchester, Connecticut, by L. A. Weiss. Prepared in cooperation with the Town of Manchester, Connecticut. 1988. 22 p., 1 over-size sheet. (NC, Da, M, Wb, A, T, Db, LA, U; USGS, WRD, 10 Causeway St., Room 926, Boston, MA 02222-1040; USGS, Earth Sci. Information and Sales, E-146 Federal Bldg., Box 53, 701 "C" St., Anchorage, AK 99508-4664.)

WRI 85-4331. PENNSYLVANIA. Low-flow routing in the Lehigh and Delaware rivers, Pennsylvania, by H. N. Flippo, Jr. Prepared in cooperation with U.S. Army Corps of Engineers. 1988. 30 p. (NC, Da, M, Wb; USGS, WRD, 228 Walnut St., Federal Bldg., Room 450, Harrisburg, PA 17108.)

WRI 85-4333. CONNECTICUT. Cost-effectiveness of the U.S. Geological Survey's stream-gaging program in Connecticut, by T. B. Shepard and L. A. Weiss. 1988. 63 p. (NC, Da, M, Wb, A, T, Db, LA, USGS, WRD, 10 Causeway St., Room 926, Boston, MA 02222-1040; USGS, Earth Sci. Information and Sales, E-146 Federal Bldg., Box 53, 701 "C" St., Anchorage, AK 99508-4664.)

WRI 85-4334. MINNESOTA. Hydrogeology of sand-plain aquifers in Carlton, Kanabec, and Pine counties, east-central Minnesota, by C. F. Myette. Prepared in cooperation with Onanegozie Resource Conservation and Development Project and Minnesota Department of Natural Resources. 1986. 66 p., 4 over-size sheets. (NC, Da, M, Wb; USGS, WRD, 702 Post Office Bldg., St. Paul, MN 55101.)

WRI 86-4053. MASSACHUSETTS. Yield and quality of ground water from stratified-drift aquifers, Taunton River basin, Massachusetts, by W. W. Lapham. Prepared in cooperation with Massachusetts Department of Environmental Management, Division of Water Resources. 1988. 69 p., 2 over-size sheets, scale 1:50,000 (1 inch = about 4,200 feet). (NC, Da, M, Wb.)

WRI 86-4054. PENNSYLVANIA. Effects of flood controls proposed for West Branch Brandywine Creek, Chester County, Pennsylvania, by R. A. Sloto. Prepared in cooperation with Chester County Water Resources Authority. 1988. 28 p. (NC, Da, M, Wb; USGS, WRD, 111 Great Valley Pkwy., Malvern, PA 19355; and P.O. Box 1107, Harrisburg, PA 17108.)

WRI 86-4055. PENNSYLVANIA. Simulation of ground-water flow in the lower sand unit of the Potomac-Raritan-Magothy aquifer system, Philadelphia, Pennsylvania, by R. A. Sloto. 1988. 51 p. (NC, Da, M, Wb; USGS, WRD, Great Valley Corp. Ctr., 111 Great Valley Pkwy., Malvern, PA 19355; and Federal Bldg., 4th Floor, 228 Walnut St., P.O. Box 1107, Harrisburg, PA 17108-1107.)

- WRI 86-4094. NEW MEXICO. Ground-water geochemistry of the Albuquerque-Belen Basin, central New Mexico, by S. K. Anderholm. 1988. 110 p., 2 over-size sheets. (NC, Da, M, Wb, Db, U; USGS, WRD, Pinetree Office Park, Suite 200, 4501 Indian School Rd. NE, Albuquerque, NM 87110.)
- WRI 86-4100. PUERTO RICO. Reconnaissance of the ground-water resources of Vieques Island, Puerto Rico, by Sigfredo Torres-González. Prepared in cooperation with the Puerto Rico Land Administration, Puerto Rico Department of Natural Resources, and Puerto Rico Aqueduct and Sewer Authority. 1989. 37 p. (NC, Da, M, Wb; USGS, WRD, GPO Box 4424, San Juan, PR 00936.)
- WRI 86-4116. Water-quality maps for the Upper Cretaceous and lower Tertiary aquifer in the southeastern coastal plain of Mississippi, Alabama, Georgia, South Carolina, and southeastern North Carolina, by R. W. Lee. 1988. 2 over-size sheets, scale 1:2,000,000 (1 inch = about 32 miles). (NC, Da, M, Wb; USGS, WRD, 75 Spring St. SW, Suite 772, Atlanta, GA 30303.)
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- WRI 86-4142. NEW YORK. Relation between land use and ground-water quality in the upper glacial aquifer in Nassau and Suffolk counties, Long Island, New York, by D. A. Eckhardt, W. J. Flipse, Jr. and E. T. Oaksford. 1989. 35 p., 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, P.O. Box 1669, Albany, NY 12201.)
- WRI 86-4174. NEW MEXICO. Reconnaissance of hydrology, land use, ground-water chemistry, and effects of land use on ground-water chemistry in the Albuquerque-Belen Basin, New Mexico, by S. K. Anderholm. 1987. 37 p., 3 over-size sheets. (NC, Da, M, Wb, Db, U; USGS, WRD, Pinetree Office Park, Suite 200, 4501 Indian School Rd. NE, Albuquerque, NM 87110.)
- WRI 86-4314. LOUISIANA. Louisiana hydrologic atlas map No. 3; altitude of the base of freshwater in Louisiana, by C. W. Smoot. Prepared in cooperation with Louisiana Department of Transportation and Development. 1988. 1 over-size sheet, scale 1:1,000,000 (1 inch = about 16 miles). (NC, Da, M, Wb.)
- WRI 86-4318. NEW YORK. Hydrogeologic correlations for selected wells on Long Island, New York; a data base with retrieval program, by H. T. Buxton, D. A. Smolensky and P. K. Shernoff. Prepared in cooperation with the Nassau County Department of Public Works, Suffolk County Department of Health Services, Suffolk County Water Authority, and New York City Department of Environmental Protection. 1989. 105 p., 3 over-size sheets. (NC, Da, M, Wb; Library, USGS, WRD, P.O. Box 1669, Albany, NY 12201.)
- WRI 86-4319. A finite-element model for simulating hydraulic interchange of surface and ground water, by K. C. Glover. Prepared in cooperation with the Wyoming State Engineer. 1988. 90 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Room 4007, 2120 Capitol Ave., Cheyenne, WY 82003.)
- WRI 86-4331. MINNESOTA. Effect of urban runoff on the quality of lakes in Eagan, Minnesota, by L. H. Tornes. Prepared in cooperation with City of Eagan, Minnesota. 1989. 64 p. (NC, Da, M, Wb; USGS, WRD, 702 Post Office Bldg., St. Paul, MN 55101.)
- WRI 86-4333. NEW YORK. Chlorinated organic compounds in ground water at Roosevelt Field, Nassau County, Long Island, New York, by D. A. Eckhardt and K. A. Pearsall. Prepared in cooperation with the Nassau County Department of Public Works. 1989. 62 p., 2 over-size sheets. (NC, Da, M, Wb; Library, USGS, WRD, P.O. Box 1669, Albany, NY 12201.)
- WRI 86-4334. PUERTO RICO. Water required, water used, and potential water sources for rice irrigation, north coast of Puerto Rico, by A. J. Román-Más. 1988. 35 p. (NC, Da, M, Wb; USGS, WRD, GPO Box 4424, San Juan, PR, 00936.)
- WRI 86-4350. COLORADO. Soil-water hydrology and geochemistry of a coal spoil at a reclaimed surface mine in Routt County, Colorado, by R. S. Williams, Jr. and S. E. Hammond. Prepared in cooperation with U.S. Bureau of Land Management. 1988. 100 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Box 25046, Mail Stop 415, Denver Federal Ctr., Denver, CO 80225-0046.)
- WRI 86-4361. LOUISIANA. Simulation of flow and transport in the lower Mississippi River, Louisiana, by P. B. Curwick. Prepared in cooperation with Louisiana Department of Transportation and Development. 1988. 38 p., 1 over-size sheet, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, Wb; USGS, WRD, 6554 Florida Blvd., Baton Rouge, LA 70806.)
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- WRI 87-4034. FLORIDA. Hydrogeology, aquifer characteristics, and ground-water flow of the surficial aquifer system, Broward County, Florida, by J. E. Fish. Prepared in cooperation with South Florida Water Management District. 1988. 92 p., 8 over-size sheets. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301; and Suite 106, 9100 NW 36th St., Miami, FL 33178.)
- WRI 87-4038. NEW JERSEY. Ground-water-withdrawal and level data used to simulate regional flow in the major coastal plain aquifers of New Jersey, by O. S. Zapezca, L. M. Voronin and Mary Martin. 1987. 120 p., 10 over-size sheets. (NC, Da, M, Wb; USGS, WRD, Mountain View Office Park, Suite 206, 810 Bear Tavern Rd., West Trenton, NJ 08628.)
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- WRI 87-4045. WASHINGTON. Evaluation of available data on the geohydrology, soil chemistry, and ground-water chemistry of Gas Works Park and surrounding region, Seattle, Washington, by M. A. Sabol, G. L. Turney and G. N. Ryals. 1988. 49 p., 1 over-size sheet. (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402.)
- WRI 87-4057. SOUTH DAKOTA. Appraisal of the water resources of the Big Sioux Aquifer, Moody County, South Dakota, by D. S. Hansen. 1988. 38 p. (NC, Da, M, Wb; USGS, WRD, Federal Bldg., Room 317, 200 4th St. SW, Huron, SD 57350-2469.)
- WRI 87-4058. OREGON. CALIFORNIA. Geohydrology and numerical model analysis of ground-water flow in the Goose Lake basin, Oregon and California, by D. S. Morgan. Prepared in



- cooperation with Oregon Water Resources Department. 1988. 92 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, Wb, LA, S, SF; USGS, Library, 5400 McArthur, Vancouver, WA 98661.)
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- WRI 87-4105. PUERTO RICO. Hydrology and effects of development on the water-table aquifer in the Vega Alta Quadrangle, Puerto Rico, by Fernando Gómez-Gómez and Heriberto Torres-Sierra. Prepared in cooperation with Puerto Rico Industrial Development Co., Puerto Rico Department of Natural Resources, and Puerto Rico Aqueduct and Sewer Authority. 1988. 54 p. (NC, Da, M, Wb; USGS, WRD, GPO Box 4424, San Juan, PR 00936.)
- WRI 87-4117. COLORADO. Evaluation of the flood hydrology in the Colorado Front Range using precipitation, streamflow, and paleoflood data for the Big Thompson River basin, by R. D. Jarrett and J. E. Costa. 1988. 37 p. (NC, Da, M, Wb, Db; USGS, WRD, Box 25046, Mail Stop 415, Denver Federal Ctr., Denver, CO 80225.)
- WRI 87-4134. NORTH DAKOTA. Hydrogeologic system and probable hydrologic consequences of mining in the Mand M lignite area, southeastern Williams County, North Dakota, by C. A. Armstrong, O. A. Crosby, W. F. Horak and R. L. Houghton. 1987. 48 p. (NC, Da, M, Wb; USGS, WRD, 821 East Interstate Ave., Bismarck, ND 58501.)
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- WRI 87-4159. NEW YORK. Hydrogeology of the Croton-Ossining area, Westchester County, New York, by R. J. Reynolds. 1988. 5 over-size sheets. (NC, Da, M, Wb; USGS, WRD, P.O. Box 1669, Albany, NY 12201.)
- WRI 87-4166. FLORIDA. Hydrology of the Citrus Park Quadrangle, Hillsborough County, Florida, by M. A. Corral, Jr. and T. H. Thompson. 1988. 13 p., 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301; and Suite B-5, 4710 Eisenhower Blvd., Tampa, FL 33614.)
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- WRI 87-4168. WISCONSIN. Hydrology and water quality of Delavan Lake in southeastern Wisconsin, by S. J. Field and M. D. Duerk. 1988. 107 p. (NC, Da, M, Wb; USGS, WRD, 6417 Normandy Lane, Madison, WI 53719-1133.)
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- WRI 87-4171. WEST VIRGINIA. Suspended-sediment yields in the Coal River and Trace Forks basins, West Virginia, 1975-84, by S. M. Ward and D. H. Appel. Prepared in cooperation with the West Virginia Department of Highways and the West Virginia Department of Natural Resources. 1988. 38 p. (NC, Da, M, Wb, Wa.)
- WRI 87-4173. LOUISIANA. Hydrologic investigations of the lower Calcasieu River, Louisiana, by M. J. Forbes. 1988. 61 p. (NC, Da, M, Wb; USGS, WRD, 6554 Florida Blvd., Baton Rouge, LA 70896; and 75 Spring St. SW, Room 772, Atlanta, GA 30303.)
- WRI 87-4182. WASHINGTON. Ground-water resources and simulation of flow in aquifers containing freshwater and seawater, Island County, Washington, by D. B. Sapik, G. C. Bortleson, B. W. Drost, M. A. Jones and E. A. Prych. Prepared in cooperation with Island County Board of Commissioners and State of Washington Department of Ecology. 1988. 67 p., 4 over-size sheets. (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402.)
- WRI 87-4188. FLORIDA. Water resources and effects of ground-water development in Pasco County, Florida, by J. D. Fretwell. Prepared in cooperation with Pasco County, Florida. 1988. 209 p. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301; and Suite B-5, 4710 Eisenhower Blvd., Tampa, FL 33614.)



- WRI 87-4189. COLORADO. Predicted effects of underground mine flooding at Tract C-b in Piceance Basin, northwestern Colorado, by O. J. Taylor. 1988. 16 p. (NC, Da, M, Wb, Db; USGS, WRD, Box 25046, Mail Stop 415, Federal Ctr., Denver, CO 80225.)
- WRI 87-4193. COLORADO. Regionalization of mean annual suspended-sediment loads in streams; central, northwestern, and southwestern Colorado, by J. G. Elliott. Prepared in cooperation with Colorado River Water Conservation District and U.S. Bureau of Reclamation. 1988. 24 p. (NC, Da, M, Wb; USGS, WRD, Box 25046, Mail Stop 415, Federal Ctr., Denver, CO 80225.)
- WRI 87-4194. PENNSYLVANIA. Estimation of flood-frequency characteristics and the effects of urbanization for streams in the Philadelphia, Pennsylvania area, by J. F. Bailey, W. O. Thomas, Jr., K. L. Wetzler and T. J. Ross. Prepared in cooperation with the Philadelphia Water Department. 1989. 71 p. (NC, Da, M, Wb; USGS, WRD, P.O. Box 1107, 228 Walnut St., 4th Floor, Federal Bldg., Harrisburg, PA 17108.)
- WRI 87-4195. COLORADO. Hydrogeology of the Leadville Limestone and other Paleozoic Rocks in northwestern Colorado, with results of aquifer tests at Glenwood Springs, by A. L. Gellon. 1989. 96 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Box 25046, Mail Stop 415, Denver Federal Ctr., Denver, CO 80225.)
- WRI 87-4196. PENNSYLVANIA. Effects of urbanization on storm-runoff volume and peak discharge of Valley Creek, eastern Chester County, Pennsylvania, by R. A. Sloto. Prepared in cooperation with Chester County Water Resources Authority. 1988. 32 p. (NC, Da, M, Wb, USGS, WRD, 111 Great Valley Pkwy., Malvern, PA 19355.)
- WRI 87-4205. OKLAHOMA. Statistical summaries of streamflow records in Oklahoma and parts of Arkansas, Kansas, Missouri, and Texas through 1984, by D. C. Heimann and R. L. Tortorelli. 1988. 387 p., 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 215 Dean A. McGee Ave., Room 621, Oklahoma City, OK 73102.)
- WRI 87-4210. ARIZONA. Flood hydrology near Flagstaff, Arizona, by G. W. Hill, T. A. Hales and B. N. Aldridge. 1988. 31 p. (NC, Da, M, Wb; USGS, WRD, Room 5A Federal Bldg., 300 West Congress St., Tucson, AZ 85701-1393; 3738 North 16th St., Suite E, Phoenix, AZ 85016; 1940 South 3rd Ave., Yuma, AZ 85364; and 2255 North Gemini Drive, Bldg. 3, Flagstaff, AZ.)
- WRI 87-4211. NEW YORK. Estimation of hydraulic characteristics of the upper glacial and Magothy aquifers at East Meadow, New York, by use of aquifer tests, by K. R. Prince and B. J. Schreider. Prepared in cooperation with Nassau County Department of Public Works. 1989. 43 p. (NC, Da, M, Wb; Library, USGS, P.O. Box 1669, Albany, NY 12201.)
- WRI 87-4218. PENNSYLVANIA. Geohydrology of the Furnace Creek basin and vicinity, Berks, Lancaster, and Lebanon counties, Pennsylvania, by L. D. Cecil. Prepared in cooperation with Millcreek Township. 1988. 38 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Wb; USGS, WRD, 111 Great Valley Parkway, Malvern, PA.)
- WRI 87-4220. WISCONSIN. Water resources of the Apostle Islands National Lakeshore, northern Wisconsin, by W. J. Rose. 1988. 44 p. (NC, Da, M, Wb; USGS, WRD, 6417 Normandy Lane, Madison, WI 53719-1133.)
- WRI 87-4221. MAINE. Application of a precipitation-runoff modeling system in the Bald Mountain area, Aroostook County, Maine, by R. A. Fontaine. Prepared in cooperation with the Maine Department of Environmental Protection. 1989. 49 p. (NC, Da, M, Wb; USGS, 26 Ganneston Dr., Augusta, ME 04330.)
- WRI 87-4222. WYOMING. Estimating average dissolved-solids yield from basins drained by ephemeral and intermittent streams; Green River basin, Wyoming, by L. L. DeLong and D. K. Wells. 1988. 14 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Room 4007, 2120 Capitol Ave., Cheyenne, WY 82003.)
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OF 84-0692. Gazetteer of planetary nomenclature, by Harold Masursky, Kaare Aksnes, G. E. Hunt, M. Y. Marov, P. M. Millman, David Morrison, T. C. Owen, V. V. Shevchenko, B. A. Smith and V. G. Tejfel. Prepared for the National Aeronautics and Space Administration. 1989. 463 p. (NC, Da, M.)

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- OF 85-0277. ARIZONA. Geologic map of the Artillery Peak Northwest Quadrangle, Mohave County, Arizona, by Ivo Lucchitta and Neil Suneson. 1985. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)
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- OF 86-0520-A. Catalog of first motion focal mechanisms, 1984-1985; Volume 1, by R. E. Needham. 1988. 171 p. (NC, Da, M.)
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- OF 87-0258. NEW MEXICO. Aspects of the petrology, mineralogy, and geochemistry of the granitic rocks associated with Questa Caldera, northern New Mexico, by Brigitte Dillet and G. K. Czamanske. 1987. 238 p. (NC, Da, M, Db, U; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)
- OF 87-0261-A. SOUTH DAKOTA. Map of mines, prospects, and patented mining claims, and classification of mineral deposits in the Maurice 7 1/2 minute Quadrangle, Black Hills, South Dakota, by Ed DeWitt, D. P. Buscher, A. B. Wilson and T. M. Johnson. 1988. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db; Library, South Dakota School of Mines and Technol., Rapid City, SD 57701.)
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- OF 87-0261-I. SOUTH DAKOTA. Map of mines, prospects, and patented mining claims, and classification of mineral deposits in the Edgemont Northeast 7 1/2 minute Quadrangle, Black Hills, South Dakota, by Ed DeWitt, D. P. Buscher, A. B. Wilson and T. M. Johnson. 1988. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db; Library, South Dakota School of Mines and Technol., Rapid City, SD 57701.)
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- OF 87-0341. CALIFORNIA. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from Owlshhead Mountains Wilderness Study Area (CDCA-156), San Bernardino County, California, by B. M. Adrian, J. G. Friskin, D. E. Detra, R. T. Hopkins, T. A. Roemer and J. L. Jones. 1987. 57 p., 1 over-size sheet, scale 1:62,500 (1 inch = about 1 mile). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., Room 1341, Resources Bldg., 1416 9th St., Sacramento, CA 95814; 367 Civic Dr., Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Room 1065, Los Angeles, CA 90012.)
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- OF 88-0498. CALIFORNIA. Determination of bench-mark elevations at Bethel Island and vicinity, Contra Costa and San Joaquin counties, California, 1987, by J. C. Blodgett, M. E. Ikehara and W. F. McCaffrey. Prepared in cooperation with the Federal Emergency Management Agency. 1988. 11 p. (NC, Da, M, Wb.)
- OF 88-0499. TEXAS. Hydrologic data for the Salt Bayou estuary near Sabine Pass, Texas, October 1984 to March 1986, by J. C.

- Fisher. Prepared in cooperation with Texas Parks and Wildlife Department. 1988. 128 p. (NC, Da, M, Wb.)
- OF 88-0502. NEW MEXICO. Analytical results and sample locality maps of heavy-mineral-concentrate and rock samples from the Big Hatchet Mountains Wilderness Study Area (NM-030-035), Hidalgo County, New Mexico, by R. T. Hopkins, H. N. Barton, L. A. Bradley and G. W. Day. 1988. 17 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)
- OF 88-0504. CALIFORNIA. A video report on the Parkfield earthquake prediction experiment; the emergency response, by S. R. Walter. 1988. 7 p., 1 video cassette. (NC, Da, M.) (The purpose of the 4-minute VHS video is to explain how Federal, State, County, and local agencies are prepared to cooperate if a short-term earthquake prediction is issued by the U.S. Geological Survey for the Parkfield area. Copies can be made for all standard formats including 2 inch, 1 inch Type-C, 3/4 inch U-matic, 1/2 inch VHS, 1/2 inch Betamax, and 8 mm. NTSC, SECAM, and PAL standards are also available.) (Inquiries and orders should be sent to Video Transform, 2450 Embarcadero Way, Palo Alto, CA 94303; telephone 415-494-1529, attention Mary MacKinnon.)
- OF 88-0505. ALASKA. Aeromagnetic map of part of the Middleton Island Quadrangle and vicinity, Alaska. 1988. 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, A, S, SF, LA; Alaska Div. Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)
- OF 88-0506. CALIFORNIA. Aeromagnetic map of the Vulcan area, San Bernardino County, California. 1988. 1 over-size sheet, scale 1:62,500 (1 inch = about 1 mile). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., Room 1341, Resources Bldg., 1416 9th St., Sacramento, CA 95814; 367 Civic Dr., Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Room 1065, Los Angeles, CA 90012.)
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- OF 88-0512. ALASKA. Analytical data and sample locality map for aqua-regia leachates of stream sediments analyzed by ICP from the Chignik and Sutwik Island quadrangles, Alaska, by George VanTrump, Jr., J. M. Motooka, Olga Erlich and M. L. Tompkins. 1988. 40 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, A, S, SF, LA; Alaska Div. Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)
- OF 88-0513. MINNESOTA. Gravity survey data for the International Falls and Roseau CUSMAP projects, Minnesota, USA, and Ontario, Canada, by R. J. Horton and R. P. Kucks. 1988. 27 p. (NC, Da, M.)
- OF 88-0514. VIRGIN ISLANDS. Analytical results for 38 water samples from a hydrogeochemical survey of the U.S. Virgin Islands, by J. B. McHugh and R. E. Tucker. 1988. 9 p. (NC, Da, M.)
- OF 88-0517. Bouguer gravity map and related filtered anomaly maps of Morocco, by T. G. Hildenbrand, R. P. Kucks, M. F. Hamouda and A. B. Bellot. 1988. 15 p. (NC, Da, M.)
- OF 88-0518. COLORADO. Chemical data concerning Proterozoic ores and rocks from the Sedalia Mine area, Chaffee County, Colorado, by D. M. Sheridan, W. H. Raymond and M. L. Stone. 1988. 17 p., 1 over-size sheet, scale 1:6,000 (1 inch = 500 feet). (NC, Da, M, U, Db.)
- OF 88-0519. IDAHO. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the King Hill Creek Wilderness Study Area, Elmore County, Idaho, by M. S. Erickson, H. D. King, L. Bradley and C. A. Gent. 1988. 19 p., 1 over-size sheet, scale 1:50,000 (1 inch = about 4,200 feet). (NC, Da, M, U, SF, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hill, Room 332, Moscow, ID 83843.)
- OF 88-0520. UTAH. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the North Stansbury Mountains Wilderness Study Area, Tooele County, Utah, by B. M. Adrian, K. A. Duttweiler, J. D. Gaccetta and D. L. Fey. 1988. 20 p., 1 over-size sheet, scale 1:62,500 (1 inch = about 1 mile). (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108.)
- OF 88-0527-A. COLORADO. Core porosity, permeability, and vitrinite reflectance data from the Lower Cretaceous J Sandstone in 141 Denver Basin core holes, by D. K. Higley. 1988. 6 p. (NC, Da, M, U, Db.)
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- OF 88-0528. CALIFORNIA. Preliminary geologic map of the Monocline Ridge Quadrangle, California, by J. A. Bartow. 1988. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., Room 1341, Resources Bldg., 1416 9th St., Sacramento, CA 95814; 367 Civic Dr., Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Room 1065, Los Angeles, CA 90012.)
- OF 88-0529. MISSOURI, ARKANSAS. Spectrographic analyses of insoluble-residue samples, Harrison 1° × 2° Quadrangle, Missouri and Arkansas; drill hole Nos. 64, 65, 66, and 67, by Barbara Chazin and M. S. Erickson. Prepared in cooperation with Arkansas Geological Commission and Missouri Division of Geology and Land Survey. 1988. 37 p. (NC, Da, M; Missouri Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Road (P.O. Box 250), Rolla, MO 65401.)
- OF 88-0530. ALASKA. Analytical data and sample locality map for aqua-regia leachates of stream sediments analyzed by ICP, and emission spectrographic results for both stream sediments and panned concentrates collected in 1985 from the Chandler Lake Quadrangle, Alaska, by Olga Erlich, J. M. Motooka, S. E. Church, E. A. Bailey, B. F. Arbogast and W. R. Willson. 1988. 38 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, A, S, SF, LA; Alaska Div. Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S.

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- OF 88-0532. WYOMING. Monitoring of thermal activity in Southwest Yellowstone National Park, by Irving Friedman, D. R. Norton and R. A. Hutchinson. 1988. 23 p. (NC, Da, M.)
- OF 88-0533. ALASKA. Mineral resource assessment of the Wiseman 1° by 3° Quadrangle, Alaska, by J. D. Bliss, W. P. Brosgé, J. T. Dillon, J. T. Dutro, Jr., J. B. Cathrall and J. W. Cady. 1988. 84 p., 3 over-size sheets, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, A, S, SF, LA; Alaska Div. Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)
- OF 88-0534. CALIFORNIA. Geologic map of the southern part of the Dale Lake 15-minute Quadrangle, San Bernardino and Riverside counties, California, by K. A. Howard and C. M. Allen. 1988. 17 p., 1 over-size sheet, scale 1:62,500 (1 inch = about 1 mile). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., Room 1341, Resources Bldg., 1416 9th St., Sacramento, CA 95814; 367 Civic Dr., Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Room 1065, Los Angeles, CA 90012.)
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- OF 88-0536. WISCONSIN. Exploration drill cores in the Wisconsin magmatic terrane, by G. L. Laberge. 1988. 72 p. (NC, Da, M.)
- OF 88-0537-A. Utility programs for GSDRAW and GSMAP version 5.0 using an IBM PC (or compatible) microcomputer, digitizer, and plotter, by G. I. Selner and R. B. Taylor. 1988. 32 p. (NC, Da, M.)
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- OF 88-0540. PETAL3; PENetration Testing And Liquefaction; an interactive computer program, by A. T. Chen. 1988. 34 p. (NC, Da, M.)
- OF 88-0541. WASHINGTON, OREGON. Proceedings of Conference XLII; a workshop on Evaluation of earthquake hazards and risk in the Puget Sound and Portland areas, edited by W. W. Hays and compiled by Carla Kitzmiller. 1988. 353 p. (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503.)
- Workshop on Evaluation of earthquake hazards and risk in the Puget Sound and Portland areas, by W. J. Kockelman, P. L. Gori and W. W. Hays. p. 1-33.
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- OF 88-0542. PBDAT for MS-DOS; a computer program for IBM-PC compatibles for processing raw Pb-U-Th isotope data, version 1.00a, by K. R. Ludwig. 1988. 37 p. (NC, Da, M.)
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- OF 88-0547. ARIZONA. Geologic map of the Planet 2 SW Quadrangle, Mohave County, Arizona, by Ivo Lucchitta and Neil Suneson. 1988. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)
- OF 88-0548. NEVADA. Tephrochronologic studies of sediment cores from Walker Lake, Nevada, by A. M. Sarna-Wojcicki, K. R. Lajoie, C. E. Meyer, D. P. Adam, S. W. Robinson and R. S. Anderson. 1988. 36 p., 8 over-size sheets. (NC, Da, M, Db, U, SF, LA., Nevada Bur. of Mines and Geol., Univ. Nevada, Reno, NV 89557.)
- OF 88-0549. LOUISIANA. Louisiana barrier island erosion study; surveys of the Isles Dernieres area, Louisiana taken from 1853 to 1936; maps and description of data available on 9-track computer tape, by B. E. Jaffe, Greg Gabel, Thang Phi, Graig McHendrie, Rob Wertz and A. H. Sallenger, Jr. 1988. 25 p. (NC, Da, M.)
- OF 88-0550. Measured sections of the Laki Formation, Ganjo Takkar and Saidpur Outlier, Hyderabad District, Pakistan, by R. E. Thomas, M. R. Khan and S. A. Khan. 1988. 69 p. (NC.) (Report prepared jointly by the Geological Survey of Pakistan and the U.S. Geological Survey under the auspices of the U.S. Agency for International Development.)
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- OF 88-0552. SOUTH DAKOTA. Gravity survey data (and a Bouguer gravity anomaly map) of south-central and southwest South Dakota, by John Klasner and R. P. Kucks. 1988. 66 p. (NC, Da, M, Db; Library, South Dakota School of Mines and Technol., Rapid City, SD 57701.)



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- OF 88-0560. NEVADA, CALIFORNIA. Location refinement of earthquakes in the southwestern Great Basin, 1931-1974, and seismotectonic characteristics of some of the important events, by W. H. Gawthrop and W. J. Carr. Prepared in cooperation with U.S. Department of Energy. 1988. 64 p., 1 over-size sheet. (NC, Da, M.)
- OF 88-0561. NEW MEXICO. Generalized geologic maps of Brushy Mountain and Timber Mountain areas, Taos County, New Mexico, by R. A. Thompson and S. P. Schilling. 1988. 1 over-size sheet. (NC, Da, M, Db, U; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)
- OF 88-0562. Integrated GPS, range-range and hyperbolic LORAN C marine navigation system for use on IBM AT or compatible microcomputer, by J. T. Gann. 1988. Two 5 1/4 inch diskettes. (NC, Da, M.)
- OF 88-0563. GEORGIA. Analyses and descriptions of geochemical samples, Tray Mountain Wilderness, Chattahoochee Roadless Area, and Blood Mountain Wilderness, northeastern Georgia, by D. F. Siems, C. L. Fom, R. P. Koeppen and A. E. Nelson. 1988. 48 p. (NC, Da, M; Georgia Geol. Surv., Room 400, 19 Martin Luther King Jr. Dr. SW, Atlanta, GA 30334.)
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- OF 88-0566. NEW MEXICO. Trace element and rare earth element variation in fluorites collected from skarn and epithermal mineral deposits in the Sierra Cuchillo area, south-central New Mexico, by R. G. Eppinger. 1988. 108 p., 2 over-size sheets. (NC, Da, M, Db, U; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)
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- OF 88-0572. OREGON. Mineral resources of the Jordan Craters Wilderness Study Area, Malheur County, Oregon, by J. P. Calzia, Susan Hubbard-Sharpless, R. L. Turner, Andrew Griscom, D. L. Sawatzky and J. M. Linne. 1988. 11 p. (NC, Da, M, S, LA, SF, Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)
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- Da, M, LA, and California Div. Mines and Geol., 107 South Broadway, Los Angeles, CA 90012.)
- OF 89-0350. ALASKA. Reconnaissance geology and exploration geochemistry of King Cove, Alaska Peninsula, by G. D. DuBois, F. H. Wilson, R. L. Detterman and R. T. Hopkins. 1989. 23 p. (NC, Da, M, A, S, SF, LA; Alaska Div. Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)
- OF 89-0352. OREGON. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the Abert Rim (OR-1-101) Wilderness Study Area, Lake County, Oregon, by M. S. Erickson, D. L. Fey, F. W. Tippitt and H. D. King. 1989. 18 p. (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)
- OF 89-0353. ALASKA. Thermal maturity and organic geochemistry of the Kandik Basin region, east-central Alaska, by M. B. Underwood, M. M. Laughland, T. J. Wiley and D. G. Howell. 1989. 41 p. (NC, Da, M, A, S, SF, LA; Alaska Div. Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)
- OF 89-0355. VIRGIN ISLANDS. Gold, silver, tellurium, and spectrographic analyses for rock and soil samples from the U.S. Virgin Islands, by J. B. McHugh, R. E. Tucker, R. T. Hopkins, T. A. Roemer and H. V. Alminas. 1989. 64 p. (NC, Da, M.)
- OF 89-0356. Ampere-hour monitor for the electrochemical exploration technique, by T. P. Grover. 1989. 15 p. (NC, Da, M.)
- OF 89-0357. OKLAHOMA. Reprocessing of the COCORP data recorded across the Wichita Mountain Uplift and the Anadarko Basin in southern Oklahoma, by W. F. Agena, M. W. Lee and J. A. Grow. 1989. 20 p. (NC, Da, M.)
- OF 89-0361. ALASKA. Preliminary geologic and rock-chip geochemical data from drill core and trenches at the Shumagin gold deposit, Unga Island, Alaska, by W. H. White and L. D. Queen. 1989. 38 p. (NC, Da, M, A, S, SF, LA; Alaska Div. Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)
- OF 89-0363. ALASKA. Pre-field study and mineral resource assessment of the Sleetmute Quadrangle, southwestern Alaska, by M. L. Miller, H. E. Belkin, R. B. Blodgett, T. K. Bundtzen, J. W. Cady, R. J. Goldfarb, J. E. Gray, R. G. McGimsey and S. L. Simpson. 1989. 115 p., 3 over-size sheets, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, A, S, SF, LA; Alaska Div. Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)
- OF 89-0365. CALIFORNIA. Air photo lineaments, southern Sierra Nevada, California, by D. C. Ross. 1989. 23 p., 2 over-size sheets. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., Room 1341, Resources Bldg., 1416 9th St., Sacramento, CA 95814; 367 Civic Dr., Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Room 1065, Los Angeles, CA 90012.)
- OF 89-0366. UTAH. Analytical results for uranium and thorium in 1462 stream-sediment samples, Richfield 1° × 2° Quadrangle, Utah, by J. B. McHugh, W. R. Miller, R. B. Vaughn, D. M. McKown, R. E. Tucker and C. S. Bromfield. 1989. 18 p. (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108.)
- OF 89-0367. BING; a BASIC computer program for modeling unsteady flow of Bingham viscoplastic material, by W. Z. Savage, P. S. Powers and Bernard Amadei. 1989. 22 p. (NC, Da, M.)
- OF 89-0370. WYOMING. Physical properties and laboratory data for soils formed in Pleistocene tills at Bull Lake, Dinwoody Lakes, and Fremont Lake, Fremont and Sublette counties, Wyoming, by R. R. Shroba. 1989. 14 p. (NC, Da, M, U, Db; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)
- OF 89-0371. Data on the geochemistry of pelagic clay of the subarctic North Pacific Ocean, by W. E. Dean, J. V. Gardner, P. H. Briggs and G. O. Riddle. 1989. 28 p. (NC, Da, M.)
- OF 89-0372. LOUISIANA. U.S. Geological Survey studies of Louisiana barrier island erosion and wetland loss; an interim report of status and results, by A. H. Sallenger, Jr. and S. J. Williams. 1989. 16 p. (NC, Da, M.)
- OF 89-0374. WASHINGTON. Report on list of structures recommended for seismic instrumentation in the Puget Sound area, Washington, compiled by B. M. Olsen, Paul Grant and Mehmet Celebi. 1989. 55 p. (NC, Da, M, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503.)
- OF 89-0381. Documentation of computer programs to compute and display pathlines using results from the U.S. Geological Survey modular three-dimensional finite-difference ground-water flow model, by D. W. Pollock. 1989. 188 p. (NC, Da, M, Wb.)
- OF 89-0400-A. New information resources of the U.S. Geological Survey Library System, January 1989. 1989. 48 p. (NC, Da, M, A, Db, LA, S, U, SF, Wa.)
- OF 89-0400-B. New information resources of the U.S. Geological Survey Library System, February 1989. 1989. 54 p. (NC, Da, M, A, Db, LA, S, U, SF, Wa.)
- OF 89-0400-C. New information resources of the U.S. Geological Survey Library system, March 1989. 1989. 79 p. (NC, Da, M, A, Db, LA, S, U, SF, Wa.)
- OF 89-0400-D. New information resources of the U.S. Geological Survey Library System, April 1989. 1989. 74 p. (NC, Da, M, A, Db, LA, S, U, SF, Wa.)
- OF 89-0400-E. New information resources of the U.S. Geological Survey Library System, May 1989. 1989. 80 p. (NC, Da, M.)
- OF 89-0400-F. New information resources of the U.S. Geological Survey Library System, June 1989. 1989. 62 p. (NC, Da, M, A, Db, NC, LA, S, U, SF, Wa.)
- OF 89-0400-G. New information resources of the U.S. Geological Survey Library System, July 1989. 1989. 54 p. (NC, Da, M, A, Db, NC, LA, S, U, SF, Wa.)
- OF 89-0427. The Lakhra Anticline, an active feature of Pleistocene to Recent age in southern Pakistan, by W. F. Outerbridge and R. A. Khan. 1989. 32 p., 1 over-size sheet. (NC, Da, M.)
- OF 89-0428. A bibliography on the economic theory of mineral resources, by K. R. Long. 1989. 37 p. (NC, Da, M.)

- OF 89-0429. OREGON, IDAHO. Seismicity and late Cenozoic faulting in the Brownlee Dam area, Oregon-Idaho; a preliminary report, by G. M. Mann. 1989. 46 p., 3 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, S, SF, LA, U; Dep. of Geol. and Mineral Industry, 910 State Office Bldg., 1400 SW 5th Ave., Portland, OR 97201-5528; Idaho Geol. Surv., Univ. of Idaho, Morrill Hall, Room 332, Moscow, ID 83843.)
- OF 89-0430. NEW HAMPSHIRE, MASSACHUSETTS. Surficial geologic map of the Hampton 7.5-minute Quadrangle (east half of the Exeter 7.5 x 15-minute Quadrangle), New Hampshire-Massachusetts, by Carl Koteff, G. D. Gephart and J. P. Schafer. 1989. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M.)
- OF 89-0433. COLORADO. Taxonomic revision of the Spermatopsida of the Oligocene Creede flora, southern Colorado, by H. E. Schorn and J. A. Wolfe. 1989. 95 p. (NC, Da, M, U, Db.)
- OF 89-0434. COLORADO. Principal facts for gravity profile stations in the vicinity of Creede, Mineral County, Colorado, by G. A. Abrams and Ileane Judy. 1989. 10 p. (NC, Da, M, U, Db.)
- OF 89-0435. WYOMING. Preliminary Quaternary geologic map of the Dinwoody Lake area, Fremont County, Wyoming, by G. M. Richmond and J. F. Murphy. 1989. 2 p. (NC, Da, M, U, Db; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)
- OF 89-0436. IDAHO. Pleistocene sediments and basalts along the Snake River in the area between Blackfoot and Eagle Rock, southeastern Snake River plain, southeastern Idaho, by G. A. Desborough, W. H. Raymond, R. F. Marvin and K. S. Kellogg. 1989. 18 p. (NC, Da, M, U, SF, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)
- OF 89-0445. IDAHO. Chlorine-rich biotites from the Blackbird mining district, Lemhi County, Idaho; evidence for a saline hydrothermal brine, by J. T. Nash. 1989. 25 p. (NC, Da, M, U, SF, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)
- OF 89-0451. ALASKA. Geochemical signatures, analytical results, mineralogical data, and sample locality map of placer and lode gold, and heavy-mineral concentrates from the Fortymile mining district, Eagle Quadrangle, Alaska, by J. B. Cathrall, Mary Albanese, George VanTrump, Jr., E. L. Mosier and Larry Lueck. 1989. 32 p. (NC, Da, M, A, S, SF, LA; Alaska Div. Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)
- OF 89-0454. The computer analysis of high resolution gamma-ray spectra from instrumental activation analysis experiments, by P. A. Baedeker and J. N. Grossman. 1989. 98 p. (NC, Da, M.)
- OF 89-0455. NEVADA. Chemical and physical characteristics of alluvium from drill core near the Rabbit Creek gold deposit, Getchell mining district, Humboldt County, Nevada, by D. E. Detra, D. J. Madden-McGuire, S. M. Smith, M. L. Silberman, Theodore Botinelly, D. J. Grimes, W. H. Ficklin, J. B. McHugh, R. M. O'Leary and M. E. Hinkle. 1989. 85 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. Nevada, Reno, NV 89557.)
- OF 89-0456. UTAH. Selected analytical results, sample locality map, and discussion of trace-element anomalies for rock samples from near Kings Canyon, Confusion Range, Millard County, west-central Utah, by D. R. Zimelman, R. H. Hill, D. L. Fey, B. F. Arbogast and J. H. Bullock, Jr. 1989. 14 p. (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108.)
- OF 89-0457. Geophysical data collected in 1984 by the R/V S.P. Lee in the Manus and New Ireland regions of Papua New Guinea, by M. S. Marlow, H. F. Ryan, J. R. Childs, S. V. Dadisman and N. F. Exon. 1989. 4 p. (NC, Da, M.)
- OF 89-0458. CALIFORNIA. Basic data and preliminary density profile from a borehole gravity survey made in the Cajon Pass scientific drillhole, California, by L. A. Beyer, F. G. Clutson and F. V. Grubb. 1989. 18 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., Room 1341, Resources Bldg., 1416 9th St., Sacramento, CA 95814; 367 Civic Dr., Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Room 1065, Los Angeles, CA 90012.)
- OF 89-0464. Measured stratigraphic sections of the Lower Permian Nilawahan Group, Salt Range, Punjab Province, Pakistan, by B. E. Law and T. Hussnain. Prepared jointly by the Geological Survey of Pakistan and the U.S. Geological Survey. 1989. 11 p. (NC, Da, M.)
- OF 89-0468. HAWAII. An assessment of the ground-water resources of Kaho'olawe, Hawaii using transient electromagnetic and Schlumberger soundings, by J. P. Kauahikaua. 1989. 51 p., (NC, Da, M, SF, LA.)
- OF 89-0469. CALIFORNIA. Geologic map of Miranda Pine Mtn. Quadrangle and part of Taylor Canyon Quadrangle, California, by J. G. Vedder, D. G. Howell and Hugh McLean. 1989. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., Room 1341, Resources Bldg., 1416 9th St., Sacramento, CA 95814; 367 Civic Dr., Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Room 1065; Los Angeles, CA 90012.)
- OF 89-0493. Black and white photograph catalog of geologic/geomorphologic phenomena, by J. K. McGregor, Jr. 1989. 337 p. (NC, Da, M.) (Copies of photographs available from USGS, Photographic Library, Mail Stop 914, Denver, CO.)

#### Reports Available Only Through the National Cartographic Information Centers

For information on availability and price of these reports, write to the address indicated by a dagger (†) in the listing for the report, or call 800 USA-MAPS.

OF 87-0315. Research, investigations and technical developments, National Mapping Program 1985-1986. 1988. 139 p. (F, M, Da, NC, Wb.) (†USGS, Office of Geographic and Cartographic Research, 521 National Ctr., Reston, VA 22092.)

OF 89-0127. Termination of EC Memo series, by A. P. Colvocoresses. 1989. 2 p., with attachments. (F, M, Da, NC, Wb.) †USGS, EROS Cartography, 520 National Ctr., Reston, VA 22092.

#### Reports Available Only Through Certain Geological Survey Field Offices

For information on availability and price of these reports, write to the address indicated by a dagger (†) in the listing for the report.

OF 88-0457. CONNECTICUT. Offstream freshwater use in Connecticut, 1985, by D. K. Bigham and J. R. Bohr. 1988. 1 over-size sheet. (NC, Da, M, Wb.) †USGS, WRD, 450 Main St., Room 525, Hartford, CT 06103.

OF 89-0085. Circum-Pacific seismic potential, 1989-1999, by S. P. Nishenko. 1989. 1 over-size sheet, scale 1:33,500,000 (1 inch = about 550 miles). (NC, Da, M.) †USGS, Branch of Global Seismology and Geomagnetism, 1711 Illinois Ave., Room 515, Mail Stop 967, Golden, CO 80401.

OF 89-0098. ALASKA. Seismicity of Alaska, 1786-1987, by S. K. Guter. 1989. 1 over-size sheet, scale 1:2,500,000 (1 inch = about 40 miles). (NC, Da, M, A, S, SF, LA; Alaska Div. Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.) †USGS, Branch of Global Seismology and Geomagnetism, 1711 Illinois Ave., Room 515, Mail Stop 967, Golden, CO 80401.

## MAPS

### ANTARCTIC GEOLOGIC MAPS

A-0014. Reconnaissance geologic map of the Welcome Mountain Quadrangle, Transantarctic Mountains, Antarctica, compiled by Edmund Stump, Arizona State University; from contributions by S. G. Borg, Arizona State University; J. W. Collinson, Ohio State University; E. S. Grew, University of Maine; J. R. Holloway, Arizona State University; Michael Sandiford, University of Melbourne, Australia; N. W. Roland, Bundesanstalt für Geowissenschaften und Rohstoffe, West Germany; and Edmund Stump. Prepared by the U.S. Geological Survey under the auspices of the National Science Foundation from contributions by the Bundesanstalt für Geowissenschaften und Rohstoffe and the U.S. Antarctic Research Program. 1989. Lat 73°S to 72°S, long 162°E to 157°30'E. Scale 1:250,000 (1 inch = about 4 miles). Sheet 28 by 33 inches (in color). (Lambert Conformal Conic projection.)

### GEOLOGIC QUADRANGLE MAPS

Multicolor geologic maps on topographic bases in 7 1/2- or 15-minute quadrangle units; scales mainly 1:24,000 or 1:62,500; show bedrock, surficial, or engineering geology. Maps are accompanied by brief texts and some maps by structure and columnar sections also.

GQ-0380. UTAH. Geology of the Sugar House Quadrangle, Salt Lake County, Utah, by M. D. Crittenden, Jr. 1988. Lat 40°37'30" to 40°45', long 111°45' to 111°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 31 by 33 inches. (This map was reproduced by electronic color scanning of an earlier (1965) printing.) (Reprint.)

GQ-1611. NEW MEXICO. Geologic map of the Wilson Mountain Quadrangle, Catron and Grant counties, New Mexico, by J. C. Ratté and W. E. Brooks. 1989. Lat 33°07'30" to 33°15', long 108°52'30" to 109°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 34 by 50 inches (in color).

GQ-1614. COLORADO, WYOMING. Geologic map of the Diamond Peak Quadrangle, Larimer County, Colorado, and Albany County, Wyoming, by W. A. Braddock, J. C. Cole and D. H. Eggler. 1989. Lat 40°52'30" to 41°, long 105°30' to

105°37'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 30 by 36 inches (in color).

GQ-1615. COLORADO, WYOMING. Geologic map of the Cherokee Park Quadrangle, Larimer County, Colorado, and Albany County, Wyoming, by D. H. Eggler and W. A. Braddock. 1988. Lat 40°52'30" to 41°, long 105°22'30" to 105°30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 30 by 36 inches (in color).

GQ-1616. COLORADO, WYOMING. Geologic map of the Virginia Dale Quadrangle, Larimer County, Colorado, and Albany and Laramie counties, Wyoming, by W. A. Braddock, D. H. Eggler and T. R. Courtright. 1989. Lat 40°52'30" to 41°, long 105°15' to 105°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 30 by 36 inches (in color).

GQ-1617. COLORADO. Geologic map of the Livemore Mountain Quadrangle, Larimer County, Colorado, by W. A. Braddock and T. T. Connor. 1988. Lat 40°45' to 40°52'30", long 105°15' to 105°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 28 by 31 inches (in color).

GQ-1619. COLORADO. Geologic map of the Rustic Quadrangle, Larimer County, Colorado, by K. C. Shaver, W. D. Nesse and W. A. Braddock. 1988. Lat 40°37'30" to 40°45', long 105°30' to 105°37'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 37 inches (in color).

GQ-1622. COLORADO. Geologic map of the Pingree Park Quadrangle, Larimer County, Colorado, by W. D. Nesse and W. A. Braddock. 1989. Lat 40°30' to 40°37'30", long 105°30' to 105°37'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 28 by 40 inches (in color).

GQ-1624. COLORADO. Geologic map of the Buckhorn Mountain Quadrangle, Larimer County, Colorado, by W. A. Braddock, J. T. O'Connor and G. C. Curtin. 1989. Lat 40°30' to 40°37'30", long 105°15' to 105°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 32 inches (in color).

GQ-1625. COLORADO. Geologic map of the Horsetooth Reservoir Quadrangle, Larimer County, Colorado, by W. A. Braddock, R. H. Calvert, J. T. O'Connor and G. A. Swann. 1989. Lat 40°30' to 40°37'30", long 105°07'30" to 105°15'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 36 inches (in color). (Supersedes Open-file report 73-29.)

GQ-1626. COLORADO. Geologic map of the Glen Haven Quadrangle, Larimer County, Colorado, by R. C. Bucknam and W. A. Braddock. 1989. Lat 40°22'30" to 40°30', long 105°22'30" to 105°30'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 30 by 36 inches (in color).

GQ-1627. COLORADO. Geologic map of the Pinewood Lake Quadrangle, Boulder and Larimer counties, Colorado, by Raymond Punongbayan, J. C. Cole, W. A. Braddock and R. B. Colton. 1989. Lat 40°15' to 40°22'30", long 105°15' to 105°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 36 inches (in color).

GQ-1628. COLORADO. Geologic map of the Crater Lake Reservoir Quadrangle, Boulder and Larimer counties, Colorado, by W. A. Braddock, Prinya Nutalaya and R. B. Colton. 1988. Lat 40°15' to 40°22'30", long 105°07'30" to 105°15'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 33 by 38 inches (in color).

GQ-1629. COLORADO. Geologic map of the Lyons Quadrangle, Boulder County, Colorado, by W. A. Braddock, R. G. Houston, R. B. Colton and J. C. Cole. 1988. Lat 40°07'30" to 40°15',

long 105°15' to 105°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 36 inches (color generated by computer).

GQ-1632. IDAHO. Geologic map of the Inferno Cone Quadrangle, Butte County, Idaho, by M. A. Kuntz, R. H. Lefebvre, D. E. Champion and Betty Skipp. 1989. Lat 43°22'30" to 43°30', long 113°30' to 113°37'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 28 by 50 inches (in color).

GQ-1633. IDAHO. Geologic map of the Watchman Quadrangle, Butte County, Idaho, by M. A. Kuntz, R. H. Lefebvre and D. E. Champion. 1989. Lat 43°22'30" to 43°30', long 113°22'30" to 113°30'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 27 by 44 inches (in color).

GQ-1634. IDAHO. Geologic map of the North Laidlaw Butte Quadrangle, Blaine and Butte counties, Idaho, by D. E. Champion, M. A. Kuntz and R. H. Lefebvre. 1989. Lat 43°15' to 43°22'30", long 113°30' to 113°37'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 28 by 40 inches (in color).

GQ-1648. ARIZONA, NEW MEXICO. Geologic map of the Fort Defiance Quadrangle, Apache County, Arizona, and McKinley County, New Mexico, by R. E. Thaden. 1989. Lat 35°45' to 35°52'30", long 109° to 109°07'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 38 inches (in color).

GQ-1650. CONNECTICUT. Bedrock geologic map of the Spring Hill Quadrangle, Connecticut, by M. H. Pease, Jr. 1988. Lat 40°45' to 41°52'30", long 72°07'30" to 72°15'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 34 by 44 inches (in color).

GQ-1651. NEW MEXICO. Geologic map of the Bull Basin Quadrangle, Catron County, New Mexico, by J. C. Ratté. 1989. Lat 33°37'30" to 33°45', long 108°52'30" to 109°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 43 inches (in color). (Supersedes Open-file report 86-194.)

GQ-1653. OREGON. Geologic map of the Pelican Butte Quadrangle, Klamath County, Oregon, by J. G. Smith. 1988. Lat 42°30' to 42°45', long 122° to 122°15'. Scale 1:62,500 (1 inch = about 1 mile). Sheet 32 by 39 inches (in color).

GQ-1654. OREGON. Geologic map of the Desolation Butte Quadrangle, Grant and Umatilla counties, Oregon, by J. G. Evans. 1989. Lat 44°45' to 45°, long 118°30' to 118°45'. Scale 1:62,500 (1 inch = about 1 mile). Sheet 30 by 40 inches (in color). (Polyconic projection.)

GQ-1655. ALASKA. Geologic map of the Gulkana B-1 Quadrangle, south-central Alaska, by D. H. Richter, J. C. Ratté, H. R. Schmoll, W. P. Leeman, J. G. Smith and L. A. Yehle. 1989. Lat 62°15' to 62°30', long 144° to 144°30'. Scale 1:63,360 (1 inch = 1 mile). Sheet 26 by 40 inches (in color).

GQ-1656. CALIFORNIA. Geologic map of the Bass Lake Quadrangle, west-central Sierra Nevada, California, by P. C. Bateman. 1989. Lat 37°15' to 37°30', long 119°30' to 119°45'. Scale 1:62,500 (1 inch = about 1 mile). Sheet 26 by 32 inches (in color).

GQ-1658. CALIFORNIA. Geologic map of the Burnett Peak Quadrangle, Monterey and San Luis Obispo counties, California, by V. M. Seiders. 1989. Lat 35°45' to 35°52'30", long 121°07'30" to 121°15'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 34 by 50 inches (in color).

GQ-1659. NEW MEXICO. Geologic map of the Twin Lakes Quadrangle, McKinley County, New Mexico, by R. S. Zech. 1989. Lat 35°37'30" to 35°45', long 108°45' to 108°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 33 by 38 inches (in color).

GQ-1660. WEST VIRGINIA. Geologic map of the Sissonville Quadrangle, Kanawha, Jackson, and Putnam counties, West Virginia, by P. C. Lyons. 1989. Lat 38°30' to 38°37'30", long 81°37'30" to 81°45'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 34 by 42 inches (in color).

GQ-1661. NEW MEXICO. Geologic map of the Tse Bonita School Quadrangle, McKinley County, New Mexico, by R. S. Zech. 1989. Lat 35°37'30" to 35°45', long 108°52'30" to 109°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 39 inches (in color).

GQ-1663. KENTUCKY. Geologic map of the Middlesboro North Quadrangle, Bell County, Kentucky, by C. L. Rice and R. G. Ping. Prepared in cooperation with the Commonwealth of Kentucky, University of Kentucky, and Kentucky Geological Survey. 1989. Lat 36°37'30" to 36°45', long 83°37'30" to 83°45'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 52 inches (in color).

GQ-1667. WYOMING. Geologic map of the Two Ocean Pass Quadrangle, Yellowstone National Park and vicinity, Wyoming, by H. W. Smedes, J. W. McGonigle and H. J. Prostka. 1989. Lat 44° to 44°15', long 110° to 110°15'. Scale 1:62,500 (1 inch = about 1 mile). Sheet 23 by 36 inches (in color).

GQ-1670. VIRGINIA, MARYLAND. Geologic map of the Vienna Quadrangle, Fairfax County, Virginia, and Montgomery County, Maryland, by A. A. Drake, Jr. and K. Y. Lee. 1989. Lat 38°52'30" to 39°, long 77°15' to 77°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 41 by 56 inches (in color).

## GEOPHYSICAL INVESTIGATIONS MAPS

Maps on topographic or planimetric bases; various scales; show results of surveys using geophysical techniques, such as gravity, magnetic, seismic, or radioactivity, which reflect subsurface structures that are of economic or geologic significance. Many maps are correlated with the geology.

GP-0963. OHIO. Gravity anomaly maps of Ohio, by T. G. Hildenbrand, U.S. Geological Survey; prepared in cooperation with the Ohio Geological Survey, H. R. Collins, State Geologist. 1986. Lat about 39° to about 42°, long about 81° to about 85°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 41 by 57 inches (in color). (Data were gridded at a spacing of 1 km on Lambert conformal projection 83°W as central meridian. Color interval computer drawn.) (Reprint.)

GP-0978. IDAHO. Bouguer gravity anomaly map and four derivative maps of Idaho, by Viki Bankey and M. D. Kleinkopf. 1988. Three sheets. Lat 42° to 49°, long 111° to 117°. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Each sheet 34 by 44 inches (in color).

GP-0980. NEW MEXICO. Aerial gamma-ray color contour maps of regional surface concentrations of potassium, uranium, thorium, and composite-color maps of uranium, potassium, thorium, and their ratios in New Mexico, by J. S. Duval. 1989. Four sheets. Lat 31° to 37°, long 103° to 109°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 31 by 32 inches; sheets 2-4, 32 by 50 inches.

## MISCELLANEOUS INVESTIGATIONS SERIES MAPS

Maps on planimetric or topographic bases; regular and irregular areas; various scales; a wide variety of format and subject matter. The series also includes 7 1/2-minute quadrangle photogeologic maps on planimetric bases which show geology as interpreted from aerial photographs. Series also includes maps of Mars and the Moon.

- I-0994. WASHINGTON. Geologic map of the Olympic Peninsula, Washington, by R. W. Tabor and W. M. Cady, *with major unpublished contributions from* N. S. MacLeod, W. W. Rau, P. D. Snively, Jr., and R. J. Stewart. 1978 (1988). Two sheets. Sheet 1 (east half), lat about 47°10' to about 48°10', long about 122°50' to about 123°50'; sheet 2 (west half), lat about 47°15' to about 48°20', long about 123°50' to about 124°50'. Each sheet, scale 1:125,000 (1 inch = about 2 miles). Each sheet 41 by 54 inches (all in color). (Geology mapped in 1961-74.) (Reprint.)
- I-1198-F. WASHINGTON. Surficial geologic map of the Port Townsend 30- by 60-minute Quadrangle, Puget Sound region, Washington, by Fred Pessl, Jr., D. P. Dethier, D. B. Booth and J. P. Minard. 1989. Lat 48° to 48°30', long 122° to 123°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 36 by 48 inches (in color). (Accompanied by 13-page text.)
- I-1257-J. CALIFORNIA. Slope map of San Mateo County, California, by R. K. Mark, E. B. Newman and E. E. Brabb. 1988. Lat about 37°06' to about 37°43', long about 122°04'30" to about 122°33'15". Scale 1:62,500 (1 inch = about 1 mile). Sheet 35 by 50 inches (in color).
- I-1313-J. VIRGINIA, MARYLAND. Maps showing geologic and hydrologic factors affecting land-use planning in the Culpeper Basin, Virginia and Maryland, by A. J. Froelich. 1989. Two sheets. Lat about 38°15' to about 39°15', long 77°15' to 78°15'. Scale 1:125,000 (1 inch = about 2 miles). Sheet 1, 32 by 48 inches, sheet 2, 32 by 48 inches (in color).
- I-1360-E. MICHIGAN, WISCONSIN. Bouguer gravity anomaly map and geologic interpretation of the Iron River 1° x 2° Quadrangle, Michigan and Wisconsin, by J. S. Klasner and W. J. Jones. 1989. Lat 46° to 47°, long 88° to 90°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 41 by 57 inches (in color).
- I-1430-H. UTAH. Gamma-ray composite-color maps of the Tushar Mountains and adjoining areas, Marysvale volcanic field, Utah, by T. A. Schutter, J. S. Duval, D. L. Campbell, J. A. Pitkin, T. A. Steven and C. G. Cunningham. 1989. Lat 38°15' to 38°40', long 112° to 112°37'30". Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 43 by 52 inches (in color).
- I-1508-B. MONTANA. Geologic maps, cross section, and photographs of the central part of Glacier National Park, Montana, by R. L. Earhart, O. B. Raup, J. W. Whipple, A. L. Isom and G. A. Davis. 1989. Two sheets. Lat 48°37'30" to 48°45', long 113°22'30" to 113°52'30". Sheet 1, 27 by 39 inches; sheet 2, 33 by 29 inches (all in color).
- I-1663. ARIZONA. Geologic map of San Francisco Mountain, Elden Mountain, and Dry Lake Hills, Coconino County, Arizona, by R. F. Holm. 1988. Lat about 35° to about 35°25', long about 111°32'30" to 111°45'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 41 by 58 inches (in color). (Accompanied by 12-page text.)
- I-1764. UTAH. Geologic map of the Huntington 30' by 60' Quadrangle, Carbon, Emery, Grand, and Uintah counties, Utah, by I. J. Witkind. 1988. Lat 39° to 39°30', long 110° to 111°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 40 by 54 inches (in color).
- I-1773. Metallogenic map of zinc, lead, and barium deposits and occurrences in Paleozoic sedimentary rocks, east-central United States, by S. H. B. Clark. 1987. Lat about 31° to about 44°, long about 78°30' to about 93°. Scale 1:2,500,000 (1 inch = about 40 miles). Sheet 40 by 50 inches (in color). (Accompanied by 77-page text.)
- I-1797-C. COLORADO. Geologic map of the Roan Plateau area, northwestern Colorado, by W. J. Hail, Jr., R. B. O'Sullivan and M. C. Smith. 1989. Lat 39°30' to 39°45', long 108° to 108°30'. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 32 by 42 inches (in color).
- I-1803-A. IDAHO, MONTANA. Map showing exposures of limonitic rocks and hydrothermally altered rocks in the Dillon 1° x 2° Quadrangle, Idaho and Montana, by D. B. Segal and L. C. Rowan. 1989. Lat 45° to 46°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 23 by 40 inches (in color).
- I-1803-C. IDAHO, MONTANA. Map showing locations of mines and prospects in the Dillon 1° x 2° Quadrangle, Idaho and Montana, by J. S. Loen and R. C. Pearson. 1989. Lat 45° to 46°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 34 1/2 by 43 inches (in color). (Accompanied by 85-page text.) (Supersedes Open-file report 84-377.)
- I-1805. COLORADO, WYOMING. Geologic map of the Table Mountain Quadrangle and adjacent parts of the Round Butte and Buckeye quadrangles, Larimer County, Colorado and Laramie County, Wyoming, by T. R. Courtright and W. A. Braddock. 1989. Lat 40°50'30" to 41°, long 105°05' to 105°15'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 34 by 36 inches (in color).
- I-1828. CALIFORNIA. Geologic maps of the Pacific Palisades area, Los Angeles, California, by J. T. McGill. 1989. Two sheets. Lat 34°08', long 118°20'. Each sheet, scale 1:4,800 (1 inch = 400 feet). Sheet 1, 40 by 58 inches; sheet 2, 32 by 58 inches (all in color).
- I-1830. UTAH. Geologic map of the Lynndyl 30- by 60-minute Quadrangle, west-central Utah, by E. H. Pampeyan. 1989. Lat 39°30' to 40°, long 112° to 113°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 41 by 54 inches (in color). (Accompanied by 9-page text.) (Geology compiled and mapped 1981-83.)
- I-1832. WASHINGTON. Geologic map of the Cape Disappointment-Naselle River area, Pacific and Wahiakum counties, Washington, by R. E. Wells. 1989. Lat 46°12'30" to 46°30', long 123°45' to 124°07'30". Scale 1:62,500 (1 inch = about 1 mile). Sheet 32 by 38 inches (in color).
- I-1852. WASHINGTON. Surficial geologic map of the Granite Falls 15-minute Quadrangle, Snohomish County, Washington, by D. B. Booth. 1989. Lat 48° to 48°15', long 121°45' to 122°. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 29 by 39 inches (in color).
- I-1854. SOUTH CAROLINA. Geology of the Bethera, Cordsville, Huger, and Kittredge quadrangles, Berkeley County, South Carolina, by R. E. Weems and E. M. Lemon, Jr. Prepared in cooperation with U.S. Nuclear Regulatory Commission. 1989. Two sheets. Lat 33° to 33°15', long 79°45' to 80°. Sheet 1, scale 1:24,000 (1 inch = 2,000 feet); sheet 2, scale 1:62,500 (1 inch = about 1 mile). Sheet 1, 55 by 58 inches; sheet 2, 41 by 58 inches (all in color).
- I-1866. NEVADA. Geologic map of the Fortification Range, Lincoln and White Pine counties, Nevada, by M. D. Loucks, D. G. Tingey, M. G. Best, E. H. Christiansen and L. F. Hintze. 1989. Lat 38°30' to 38°45', long 114°22'30" to 114°37'30". Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 30 by 33 inches (in color).
- I-1871 (Jg-14). Atlas of Jovian satellites, Namtar Quadrangle; Ganymede (the largest of the four major moons of Jupiter). 1988.



- Two sheets. Sheet 1 (shaded relief and surface markings), lat -66° to -21°, long 270° to 360°; sheet 2 (airbrush base), lat -66° to -21°, long 270° to 360°. Each sheet, scale 1:5,000,000 (1 inch = about 80 miles). Sheet 1, 30 by 33 inches (in color); sheet 2, 26 by 33 inches. (Image sources—Voyager 1 and 2. Lambert Conformal projection.)
- I-1873. ALASKA. Map showing sedimentary basins of onshore and continental shelf areas, Alaska, by C. E. Kirschner. 1988. Lat about 50° to about 70°30', long about 130° to about 180°. Scale 1:2,500,000 (1 inch = about 40 miles). Sheet 40 by 58 inches (in color.)
- I-1876 (MC-1). Atlas of Mars, Mare Boreum region. 1988. Two sheets. Sheet 1 (shaded relief map that supersedes I-969, the first edition of this sheet); sheet 2 (controlled photomosaics). Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 1, 32 by 36 inches (in color); sheet 2, 29 by 33 inches. (A series of maps covering the entire surface of Mars was originally compiled from Mariner 9 data. This original series is now being revised and augmented with image data from Viking Orbiter. Polar Stereographic projection.)
- I-1881. UTAH, NEVADA. Geologic map of the northern White Rock Mountains-Hamlin Valley area, Beaver County, Utah, and Lincoln County, Nevada, by M. G. Best, M. I. Toth, J. B. Kowallis, J. B. Willis and V. C. Best. 1989. Lat 38°07'30" to 38°30', long 114° to 114°15'. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 31 by 44 inches (in color). (Supersedes Open-file report 86-114.)
- I-1883. COLORADO. Geologic map of the Fossil Ridge area, Gunnison County, Colorado, by R. S. Zech. 1988. Lat 38°37'30" to 38°45', long 106°33'30" to 106°40'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 28 by 38 inches (in color).
- I-1884. NEVADA. Surficial geologic map of the Specter Range NW Quadrangle, Nye County, Nevada, by W C Swadley, U.S. Geological Survey; and H. E. Huckins, Fenix & Scisson, Inc. Prepared in cooperation with U.S. Department of Energy. 1989. Lat 36°37'30" to 36°45', long 116°07'30" to 116°15'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 32 inches (in color).
- I-1890 (Jg-2). Atlas of Jovian satellites, Perrine Quadrangle; Ganymede (the largest of the four major moons of Jupiter). 1988. Two sheets. Sheet 1 (shaded relief and surface markings), lat 21° to 66°, long 0° to 90°; sheet 2 (airbrush base), lat 21° to 66°, long 0° to 90°. Each sheet, scale 1:5,000,000 (1 inch = about 80 miles). Sheet 1, 30 by 33 inches (in color); sheet 2, 26 by 33 inches. (Image sources—Voyager 1 and 2. Lambert Conformal projection.)
- I-1893. OREGON. Geologic map of the Salem 1° by 2° Quadrangle, western Oregon, by G. W. Walker and R. A. Duncan. 1989. Lat 44° to 45°, long 122° to 124°11'. Scale 1:250,000 (1 inch = about 4 miles). Sheet 40 by 46 inches (in color). (Transverse Mercator projection.)
- I-1894. COLORADO. Historic trail maps of the Sterling 1° by 2° Quadrangle, northeastern Colorado, by G. R. Scott. 1989. Two sheets. Lat 40° to 41°, long 102° to 104°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Each sheet 24 by 29 inches (in color). (Accompanied by 23-page text.)
- I-1896. ARIZONA. Geologic map of the Sedona 30' by 60' Quadrangle, Yavapai and Coconino counties, Arizona, by G. W. Weir, G. E. Ulrich and L. D. Nealey. 1989. Lat 34°30' to 35°, long 111° to 112°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 35 by 54 inches (in color). (Supersedes Open-file report 86-164.)
- I-1897-B. ARIZONA. Hydraulic map of 24.5 Mile Rapids, Grand Canyon, Arizona, by S. W. Kieffer. Prepared in cooperation with the U.S. Bureau of Reclamation and National Park Service. 1988. Lat 36° to about 36°45', long about 111°45' to about 113°15'. Scale 1:1,000 (1 inch = about 100 feet). Sheet 32 by 34 inches (in color).
- I-1897-C. ARIZONA. Hydraulic map of Hance Rapids, Grand Canyon, Arizona, by S. W. Kieffer. Prepared in cooperation with the U.S. Bureau of Reclamation and the National Park Service. 1988. Lat 35°45' to about 36°45', long about 111°45' to 113°30'. Scale about 1:720,000 (1 inch = about 12 miles). Sheet 41 by 57 inches (in color).
- I-1897-D. ARIZONA. Hydraulic map of Bright Angel Rapids, Grand Canyon, Arizona, by S. W. Kieffer. Prepared in cooperation with the U.S. Bureau of Reclamation and National Park Service. 1988. Lat 36° to about 36°45', long about 111°45' to about 113°15'. Scale 1:2,000 (1 inch = about 200 feet). Sheet 41 by 53 inches (in color).
- I-1897-E. ARIZONA. Hydraulic map of Horn Creek Rapids, Grand Canyon, Arizona, by S. W. Kieffer. Prepared in cooperation with the U.S. Bureau of Reclamation and the National Park Service. 1988. Lat 35°45' to about 36°45', long about 111°45' to 113°30'. Scale 1:1,000 (1 inch = about 80 feet). Sheet 33 by 44 inches (in color).
- I-1897-G. ARIZONA. Hydraulic map of Hermit Rapids, Grand Canyon, Arizona, by S. W. Kieffer. Prepared in cooperation with the U.S. Bureau of Reclamation and the National Park Service. 1988. Lat about 35°45' to about 36°45', long about 111°45' to 113°30'. Scale 1:1,000 (1 inch = about 100 feet). Sheet 41 by 46 inches (in color).
- I-1897-H. ARIZONA. Hydraulic map of Crystal Rapids, Grand Canyon, Arizona, by S. W. Kieffer. Prepared in cooperation with the U.S. Bureau of Reclamation and the National Park Service. 1988. Lat about 35°45' to about 36°45', long about 111°45' to 113°30'. Scale 1:1,000 (1 inch = about 100 feet). Sheet 41 by 57 inches (in color).
- I-1897-I. ARIZONA. Hydraulic map of Deubendorff Rapids, Grand Canyon, Arizona, by S. W. Kieffer. Prepared in cooperation with the U.S. Bureau of Reclamation and the National Park Service. 1988. Lat about 35°45' to about 36°45', long about 111°45' to 113°30'. Scale 1:1,000 (1 inch = about 100 feet). Sheet 41 by 49 inches (in color).
- I-1897-J. ARIZONA. Hydraulic map of Lava Falls Rapids, Grand Canyon, Arizona, by S. W. Kieffer. Prepared in cooperation with the U.S. Bureau of Reclamation and the National Park Service. 1988. Lat 35°45' to about 36°45', long about 111°45' to 113°30'. Scale about 1:720,000 (1 inch = about 12 miles). Sheet 41 by 57 inches (in color).
- I-1902. NEVADA. Geologic map of the Peko Hills, Elko County, Nevada, by K. B. Ketner and J. G. Evans. 1988. Lat 41° to 41°10', long 115°22'30" to 115°30'45". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 28 by 40 inches (in color). (Supersedes Open-file report 83-289.)
- I-1903. WISCONSIN. Geologic map of Proterozoic rocks near Mountain, Oconto County, Wisconsin, by P. K. Sims. 1989. Lat about 45°09' to about 45°15', long about 88°21' to 88°29'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 24 by 29 inches (in color).
- I-1904. UTAH. Geologic map of the Milford Quadrangle and east half of the Frisco Quadrangle, Beaver County, Utah, by M. G.



- Best, D. M. Lemmon and H. T. Morris. 1989. Lat 38°15' to 38°30', long 113° to 113°22'55". Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 31 by 54 inches (in color).
- I-1905. CALIFORNIA. Geologic map of Santa Cruz County, California, by E. E. Brabb. 1989. Lat about 36°50'40" to about 37°17'40", long about 121°34'30" to about 122°19'40". Scale 1:62,500 (1 inch = about 1 mile). Sheet 38 by 57 inches (in color).
- I-1906. COLORADO. Geologic map of the San Luis Hills area, Conejos and Costilla counties, Colorado, by R. A. Thompson and M. N. Machette. 1989. Lat 37° to 37°19'27", long 105°30' to 106°. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 34 by 54 inches (in color).
- I-1907. NEW MEXICO. Geologic map of the Latir volcanic field and adjacent areas, northern New Mexico, by P. W. Lipman and J. C. Reed, Jr. 1989. Two sheets. Sheet 1, lat 36°30' to 37°, long 105°15' to 105°37'30". Each sheet, scale 1:48,000 (1 inch = 4,000 feet). Sheet 1, 41 by 56 inches; sheet 2, 21 by 52 inches (all in color).
- I-1908. HAWAII. Generalized ages of surface lava flows of Mauna Loa Volcano, Hawaii, by J. P. Lockwood, P. W. Lipman, L. D. Petersen and F. R. Warshauer. 1988. Lat about 18°54' to about 20°17', long about 154°48' to about 156°04'. Scale 1:250,000 (1 inch = about 4 miles). Sheet 28 by 29 inches (in color; Universal Transverse Mercator projection).
- I-1909. COLORADO. Geologic map of the Mount Jackson Quadrangle and the eastern part of the Crooked Creek Pass Quadrangle, Eagle County, Colorado, by A. R. Wallace and M. J. Blaszkowski. 1989. Lat about 39°22'30" to about 39°30', long about 106°30' to about 106°41'08". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 31 by 40 inches (in color).
- I-1910. SOUTH DAKOTA, WYOMING. Geologic map of the Black Hills area, South Dakota and Wyoming, by Ed DeWitt, J. A. Redden, D. P. Buscher and A. B. Wilson. 1989. Lat 43°07'30" to 45°, long 103° to 104°52'30". Scale 1:250,000 (1 inch = about 4 miles). Sheet 41 by 50 inches (in color).
- I-1922 (MC-9). Atlas of Mars, Tharsis Quadrangle. 1988. Two sheets. Sheet 1 (shaded relief map that supersedes I-926, the first edition of this sheet), lat 0° to 30°, long 90° to 135°; sheet 2 (controlled photomosaic), lat 0° to 30°, long 90° to 135°. Scale 1:5,000,000 (1 mm = 5 km) at 0° latitude (1 inch = about 80 miles). Sheet 1, 27 by 27 inches (in color); sheet 2, 24 by 24 inches. (A series of maps covering the entire surface of Mars was originally compiled from Mariner 9 data. This original series is now being revised and augmented with image data from Viking Orbiter. Mercator projection.)
- I-1924. WISCONSIN. Geologic map of Precambrian rocks of Rice Lake 1° × 2° Quadrangle, northern Wisconsin, compiled by P. K. Sims. 1989. Lat 45° to 46°, long 90° to 92°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 31 by 40 inches (in color).
- I-1928 (MC-30). Atlas of Mars, Mare Australe region. 1988. Two sheets. Sheet 1 (shaded relief map that supersedes I-970, the first edition of this sheet); sheet 2 (controlled photomosaic). Scale 1:4,306,000 (1 mm = 4.3 km) at -65° latitude (1 inch = about 67 miles). Sheet 1, 32 by 36 inches (in color); sheet 2, 29 by 34 inches. (A series of maps covering the entire surface of Mars was originally compiled from Mariner 9 data. This original series is now being revised and augmented with image data from Viking Orbiter. Polar Stereographic projection.)
- I-1932. CALIFORNIA. Geologic map of Paleozoic and Mesozoic rocks in parts of the Darwin and adjacent quadrangles, Inyo County, California, by Paul Stone, G. C. Dunne, C. H. Stevens and R. M. Gulliver. 1989. Two sheets. Lat about 36°15' to about 36°35', long 117°25' to 117°45'. Scale 1:31,250 (1 inch = about 2,640 feet). Sheet 1, 41 by 53 inches; sheet 2, 38 by 41 inches (all in color).
- I-1933. CALIFORNIA. Geologic map of Long Valley Caldera, Mono-Inyo Craters volcanic chain, and vicinity, eastern California, by R. A. Bailey. 1989. Two sheets. Lat about 37°30' to about 37°55', long about 118°35' to about 119°10'. Scale 1:62,500 (1 inch = about 1 mile). Sheet 1, 38 by 56 inches; sheet 2, 41 by 57 inches (all in color). (Accompanied by 11-page text.) (Supersedes Open-file report 77-468.)
- I-1934. Geologic map of the Uruk Sulcus Quadrangle of Ganymede, by J. E. Guest, Remo Bianchi and Ronald Greeley. 1988. Lat -22°S to 22°N, long 144° to 216°. Scale 1:5,000,000 (1 mm = 5 km) at ±13° latitude. Sheet 28 by 40 inches (in color). (Mercator projection.)
- I-1939. COLORADO. Geologic map of the Montrose 30' × 60' Quadrangle, southwestern Colorado, by T. A. Steven and W. J. Hail, Jr. 1989. Lat 38° to 38°30', long 107° to 108°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 34 by 54 inches (in color).
- I-1940. Swelling clays map of the conterminous United States, by W. W. Olive, A. F. Chleborad, C. W. Frahme, Julius Schlocker, R. R. Schneider and R. L. Schuster. 1989. Lat about 25° to about 70°, long about 70° to about 125°. Scale 1:7,500,000 (1 inch = about 12 miles). Sheet 34 by 42 inches.
- I-1949. Geologic map of the Ra Patera area of Io, by Ronald Greeley, P. D. Spudis and J. E. Guest. 1988. Lat -20°S to 5°N, long 290° to 340°. Scale 1:2,000,000 (1 mm = 2 km) at -7.5° latitude. Sheet 28 by 43 inches (in color). (Mercator projection.)
- I-1957-A. NEW MEXICO. Isopach maps of the Westwater Canyon and Brushy Basin Members of the Morrison Formation, showing structural control of sedimentation patterns and uranium deposits, San Juan Basin, New Mexico, by A. R. Kirk and S. M. Condon. 1989. Three sheets. Lat 35°15' to about 35°45', long about 107°45' to about 108°45'. Each sheet, scale 1:100,000 (1 inch = about 1.6 miles). Each sheet 34 by 48 inches (all in color). (Accompanied by 14-page text.)
- I-1957-B. NEW MEXICO. Maps showing percent of sandstone and total thickness of sandstone in the Westwater Canyon and Brushy Basin members of the Morrison Formation, San Juan Basin, New Mexico, by A. R. Kirk and S. M. Condon. 1989. Three sheets. Lat about 35°15' to about 35°45', long about 107°45' to 108°45'. Each sheet, scale 1:100,000 (1 inch = about 1.6 miles). Each sheet 34 by 48 inches (all in color). (Accompanied by 14-page text.)
- I-1957-C. NEW MEXICO. Maps showing the ratio of sandstone to mudstone and the number of mudstone interbeds in the Westwater Canyon Member of the Morrison Formation, San Juan Basin, New Mexico, by A. R. Kirk and S. M. Condon. 1989. Two sheets. Lat about 35°15' to about 35°45', long about 107°45' to about 108°45'. Each sheet, scale 1:100,000 (1 inch = about 1.6 miles). Each sheet 34 by 48 inches (all in color). (Accompanied by 14-page text.)
- I-1957-D. NEW MEXICO. Maps showing structure contours at the base of the Dakota Sandstone, paleotopographic contours at the

- base of the Westwater Canyon Member of the Morrison Formation, and inferred actively rising structures and depocenter axes during Jurassic time, San Juan Basin, New Mexico, by A. R. Kirk and S. M. Condon. 1989. Three sheets. Lat about 35°15' to about 35°45', long about 107°45' to about 108°45'. Each sheet, scale 1:100,000 (1 inch = about 1.6 miles). Each sheet 34 by 48 inches (all in color). (Accompanied by 14-page text.)
- I-1962. Geologic maps of science study Site 1A, East Mangala Valles, Mars, by M. G. Chapman, Harold Masursky and A. L. Dial, Jr. 1989. Two sheets. Lat 7.5°S to 2.5°S, long 145° to 150°. Scale 1:502,000 (1 mm = 502 m) at 150° longitude. Sheet 1, 41 by 44 inches; sheet 2, 24 by 36 inches (all in color). (Transverse Mercator projection.)
- I-1964. WYOMING, COLORADO. Cross section showing correlations of Upper Cretaceous Fox Hills Sandstone and Lance Formation, and lower Tertiary Fort Union and Wasatch formations, southeastern Washakie Basin, Wyoming, and eastern Sand Wash Basin, Colorado, by J. G. Honey and R. D. Hettinger. 1989. Lat 40°30' to 41°15', long 107°25' to 107°45'. Sheet 36 by 56 inches.
- I-1966. Geologic map of the Philus Sulcus Quadrangle of Ganymede, by S. L. Murchie and J. W. Head. 1989. Lat 21° to 66°, long 180° to 270°. Scale 1:5,000,000 (1 mm = 5 km) at 30° and 58° latitude (1 inch = about 80 miles). Sheet 33 by 40 inches (in color).
- I-1968. MONTANA. Geologic map of the Bloom Creek Quadrangle, Powder River County, Montana, by M. W. McLellan and L. H. Biewick. 1989. Lat 45°07'30" to 45°15', long 105°45' to 105°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 25 by 29 inches (in color).
- I-1969. MONTANA, WYOMING. Geologic map of the Moorhead Quadrangle, Powder River County, Montana, and Campbell County, Wyoming, by M. W. McLellan and L. H. Biewick. 1989. Lat 45° to 45°07'30", long 105°45' to 105°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 25 by 29 inches (in color).
- I-1974. UTAH, COLORADO. Detailed cross sections correlating Upper Cretaceous and lower Tertiary rocks between the Uinta Basin of eastern Utah and western Colorado and the Piceance Basin of western Colorado, by R. C. Johnson. Prepared in cooperation with the Utah Geological and Mineral Survey and the Colorado Geological Survey. 1989. Two sheets. Sheet 1, 42 by 58 inches; sheet 2, 41 by 53 inches.
- I-1980. Geologic map of the Ruwa Patera Quadrangle of Io (Ji2), by G. G. Schaber, D. H. Scott and Ronald Greeley. 1989. Lat -50°N to 50°S, long 270°W to 90°. Scale 1:5,000,000 (1 mm = 5 km) at ±34° lat. Sheet 38 by 54 inches (in color). (Mercator projection.)
- I-1983. ALASKA. Geologic map of the Mount Edgecumbe volcanic field, Kruzof Island, southeastern Alaska, by J. R. Riehle, D. A. Brew and M. A. Lanphere. 1989. Lat 57° to 57°10', long 135°35' to 135°50'. Scale 1:63,360 (1 inch = 1 mile). Sheet 28 by 40 inches (in color). (Universal Transverse Mercator projection.)
- I-1992. Oblique maps of Antarctica, by T. R. Alpha and A. B. Ford. 1989. Sheet 30 by 42 inches (in color). (Azimuthal Equal Area projection.)
- I-1994. NEVADA. Geologic map of the surficial deposits of the Jackass Flats Quadrangle, Nye County, Nevada, by W. C. Swadley and D. L. Hoover. Prepared in cooperation with U.S. Department of Energy. 1989. Lat 36°45' to 36°52'30", long 116°15' to 116°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 32 inches (in color).
- I-2002. UTAH. Geologic map of the Crystal Peak Caldera, west-central Utah, by T. A. Steven. 1989. Lat 38°40' to 38°50', long 113°15' to 113°45'. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 26 by 34 inches (in color).
- I-2004. LOUISIANA. Surficial sediment isopleth maps of sand, silt, and clay, offshore the Isles Dernieres barrier islands, Louisiana, by R. C. Círcé, R. R. Wertz, Jr., U.S. Geological Survey; D. G. Harrison, U.S. Army Corps of Engineers; and S. J. Williams, U.S. Geological Survey. 1989. Lat 28°48' to 29°05', long 90°28' to 91°02'. Sheet 35 by 54 inches (in color). (Supersedes Open-file report 88-411.)
- I-2008 (MC-15). Atlas of Mars, Elysium Quadrangle. 1988. Two sheets. Sheet 1 (shaded relief map that supersedes I-1131, the first edition of this sheet), lat 0° to 30°, long 180° to 225°; sheet 2 (controlled photomosaics) lat 0° to 30°, long 180° to 225°. Each sheet, scale 1:5,000,000 (1 inch = about 80 miles). Sheet 1, 26 by 27 inches (in color); sheet 2, 23 by 24 inches. (A series of maps covering the entire surface of Mars was originally compiled from Mariner 9 data. This original series is now being revised and augmented with image data from Viking Orbiter. Mercator projection.)
- I-2018. NEVADA. Geologic map of the surficial deposits of the Topopah Spring Quadrangle, Nye County, Nevada, by W. C. Swadley and D. L. Hoover. Prepared in cooperation with U.S. Department of Energy. 1989. Lat 36°52'30" to 37°, long 116°15' to 116°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 28 by 32 inches (in color).
- I-2023. WYOMING. Geologic map and distribution of heavy minerals in Tertiary rocks of the Gillette 30' × 60' Quadrangle, Campbell, Crook, and Weston counties, Wyoming, by N. M. Denson, D. L. Macke and R. R. Schumann. 1989. Lat 44° to 44°30', long 105° to 106°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 33 by 52 inches (in color).
- I-2025. WYOMING. Geologic map and distribution of heavy minerals in Tertiary rocks of the Reno Junction 30' × 60' Quadrangle, Campbell and Weston counties, Wyoming, by N. M. Denson, D. L. Macke and R. R. Schumann. 1989. Lat 43°30' to 44°, long 105° to 106°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 31 by 53 inches (in color).
- I-2026. WYOMING. Geologic map and distribution of heavy minerals in Tertiary rocks of the Bill 30' × 60' Quadrangle, Converse, Campbell, and Weston counties, Wyoming, by N. M. Denson, D. L. Macke and R. R. Schumann. 1989. Lat 43° to 43°30', long 105° to 106°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 34 by 54 inches (in color).
- I-2030. Atlas of Mars 1:15,000,000 topographic series. 1989. Three sheets. Sheet 1, topographic map of the Polar regions of Mars; sheet 2, topographic map of the Western Equatorial region of Mars; sheet 3, topographic map of the Eastern Equatorial region of Mars. Sheet 2, lat -57° to 57°, long 0° to 180°; sheet 3, lat -57° to 57°, long 180° to 360°. Sheet 1, 28 by 40 inches; sheet 2, 31 by 34 inches; sheet 3, 31 by 34 inches. (Mercator projection.)
- I-2033. VIRGINIA. Geologic map and generalized cross sections of the coastal plain and adjacent parts of the Piedmont, Virginia, Sheet 1 by R. B. Mixon, U.S. Geological Survey; C. R. Berquist, Jr., Virginia Division of Mineral Resources; W. L. Newell,

U.S. Geological Survey; and G. H. Johnson, College of William and Mary. Sheet 2 by R. B. Mixon, D. S. Powars, J. S. Schindler, U.S. Geological Survey; and E. K. Rader, Virginia Division of Mineral Resources. Prepared in cooperation with the Commonwealth of Virginia Department of Mines, Minerals, and Energy, Division of Mineral Resources. 1989. Two sheets. Sheet 1, about 36°45' to 39°, long about 76°15' to 78°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 41 by 50 inches; sheet 2, 29 by 49 inches (all in color). (Transverse Mercator projection.) (Computer technology by J. S. Schindler.)

I-2041. Atlas of Venus 1:15,000,000 topographic series, northern hemisphere, coordinated by R. M. Batson, U.S. Geological Survey; A. T. Basilevsky, G. A. Burba, Vernadsky Institute, USSR; and J. W. Head, Brown University. Prepared for the National Aeronautics and Space Administration from data provided by the USSR Academy of Sciences through the US/USSR Joint Working Group on Solar System Exploration. 1989. Three sheets. Sheet 1, topographic map; sheet 2, shaded relief map; sheet 3, radar image map. Each sheet, scale 1:15,000,000 (1 mm = 15 km at 40° latitude). Sheet 1, 40 by 53 inches (in color); sheets 2 and 3, 40 by 53 inches. (Polar Stereographic projection.)

#### MISCELLANEOUS INVESTIGATIONS SERIES MAPS— QUATERNARY GEOLOGICAL ATLAS OF THE UNITED STATES

I-1420 (NI-16). Quaternary geologic map of the Lookout Mountain 4° × 6° Quadrangle, United States, State compilations by R. A. Miller, S. W. Maher, C. W. Copeland, Jr., K. F. Rheams, T. L. Neathery, W. A. Gilliland, M. S. Friddell, A. K. Van Nostrand, W. H. Wheeler, D. F. Holbrook, and W. V. Bush. Edited and integrated by G. M. Richmond and D. S. Fullerton. Prepared in cooperation with Geological Survey of Alabama, Tennessee Division of Geology, Georgia Geological Survey, Mississippi Geological Survey, University of North Carolina, and Arkansas Geological Commission. 1988. Lat 32° to 36°, long 84° to 90°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 31 by 58 inches (in color).

#### COAL INVESTIGATIONS MAPS

Geologic maps on topographic or planimetric bases; various scales; show bedrock geology, stratigraphy, and structural relations in certain coal-resource areas.

C-0115. COLORADO. Geologic map and coal stratigraphic framework of the Paonia area, Delta and Gunnison counties, Colorado, by C. R. Dunrud. 1989. Two sheets. Lat about 38°52'30" to about 39°07'30", long about 107°15' to about 107°37'30". Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 1, 41 by 42 inches (in color); sheet 2, 37 by 39 inches.

C-0116. COLORADO. Geologic map and coal stratigraphic framework of the Cedaredge area, Delta County, Colorado, by C. R. Dunrud. 1989. Lat 38°50' to about 39°02'30", long about 107°42'30" to about 108°07'30". Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 40 by 48 inches (in color).

C-0118-B. NEW MEXICO. Coal resources maps of the Grants 30' × 60' Quadrangle, west-central New Mexico, by J. K. Dillinger. 1989. Three sheets. Lat 35° to 35°30', long 107° to 108°. Each sheet, scale 1:100,000 (1 inch = about 1.6 miles). Each sheet 32 by 40 inches.

C-0119-A. MONTANA, WYOMING. Stratigraphic framework of the Paleocene coal beds in the Broadus 30' by 60' Quadrangle, Powder River basin, Montana-Wyoming, by M. W. McLellan and L. R. H. Biewick. 1988. Two sheets. Sheet 1, lat 45° to 45°30', long about 105°15' to 106°; sheet 2, lat 44°30' to about 46°, long 105° to about 107°. Sheet 1, scale 1:100,000 (1 inch = about 1.6 miles); sheet 2, scale 1:1,100,000 (1 inch = about 17 miles). Sheet 1, 39 by 56 inches; sheet 2, 32 by 44 inches.

C-0120. WYOMING. Geologic map and measured coal sections of the Point of Rocks Quadrangle, Sweetwater County, Wyoming, by D. J. Madden-McGuire. 1989. Two sheets. Lat 41°37'30" to 41°45', long 108°45' to 108°52'30". Scale 1:24,000 (1 inch = 2,000 feet). (Sheet 1, 34 by 44 inches (in color); sheet 2, 34 by 54 inches. (Supersedes Open-file report 81-869.)

C-0121. WYOMING. Geologic map and measured coal sections of the Bitter Creek NW Quadrangle, Sweetwater County, Wyoming, by D. J. Madden-McGuire. 1989. Two sheets. Sheet 1, lat 41°37'30" to 41°45', long 108°37'30" to 108°45'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 1, 36 by 48 inches (in color); sheet 2, 30 by 48 inches. (Supersedes Open-file report 80-489.)

C-0122-A. MONTANA. Geology, structure, and coal beds of the Fort Union Formation in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan counties, Montana, by J. K. Hardie and H. H. Arndt; prepared in cooperation with the U.S. Bureau of Indian Affairs. 1988. Lat about 48° to about 48°45', long about 104°30' to about 105°30'. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 31 by 50 inches (in color).

C-0124. COLORADO. Geologic map and cross sections of parts of the Grand Junction and Delta 30' × 60' quadrangles, west-central Colorado, by M. S. Ellis and Virginia Gabaldo. 1989. Lat 38°45' to 39°30', long 108° to 109°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 36 by 44 inches (in color).

C-0126-B. MONTANA. Maps showing coal-split boundaries, isopachs of coal splits, coal resources, and coal quality; Mammoth coal bed, Paleocene Tongue River Member of the Fort Union Formation, Bull Mountain coal field, south-central Montana, by C. W. Connor. 1989. Two sheets. Lat about 46°15' to about 46°22'30", long about 108°07'30" to about 108°30'. Each sheet, scale 1:50,000 (1 inch = about 4,200 feet). Each sheet 41 by 52 inches (all in color).

C-0127. WYOMING. Stratigraphic sections showing coal correlations within the lower coal zone of the Paleocene Fort Union Formation, Fillmore Ranch and Seaverson Reservoir quadrangles, Carbon County, Wyoming, by J. G. Honey and R. D. Hettinger. 1989. Two sheets. Lat 41°30' to 41°37'30", long about 107°35' to 107°45'. Sheet 1, 40 by 43 inches; sheet 2, 39 by 46 inches.

C-0135. WYOMING. Stratigraphic sections showing coal correlations within the lower part of the Fort Union Formation in the Baggs area, Carbon County, Wyoming, by J. G. Honey and L. N. Roberts. 1989. Two sheets. Sheet 1, lat about 41°07'30" to 41°15', long 107°37'30" to about 107°40'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 1, 34 by 44 inches; sheet 2, 41 by 58 inches.

#### OIL AND GAS INVESTIGATIONS CHARTS

Charts show stratigraphic information for certain oil and gas fields and other areas having hydrocarbon potential.

OC-0131. UTAH, ARIZONA. Stratigraphic sections of the Middle Jurassic Wanakah Formation, Cow Springs Sandstone, and adjacent rocks from Bluff, Utah, to Lupton, Arizona, by S. M.

Condon. 1989. Lat about 35° to about 37°15', long about 108°30' to about 109°30'. Sheet 40 by 46 inches.

OC-0133. COLORADO. Stratigraphic sections of Middle Jurassic San Rafael Group and related rocks from Slick Rock to Uravan in southwestern Colorado, by R. B. O'Sullivan. 1989. Lat 38° to 38°30', long 108°30' to 109°15'. Sheet 32 by 36 inches.

### MISCELLANEOUS FIELD STUDIES MAPS

Multicolor or black and white maps on topographic or planimetric bases; quadrangle or irregular areas; various scales. Pre-1971 maps show bedrock geology in relation to specific mining or mineral-deposit problems; post-1971 maps are preliminary black and white maps on various subjects such as environmental studies or Wilderness mineral investigations.

MF-1382-G. CALIFORNIA, NEVADA. Maps showing distribution of copper, lead, zinc, cadmium, and silver in samples of minus-60-mesh (0.25-mm) stream sediment and nonmagnetic heavy-mineral concentrate, Walker Lake 1° × 2° Quadrangle, California and Nevada, by M. A. Chaffee, R. H. Hill and S. J. Sutley. 1988. Three sheets. Sheet 1 (maps A-B), lat 38° to 39°, long 118° to 120°; sheet 2 (maps C-E), lat 38° to 39°, long 118° to 120°; sheet 3 (maps F-H), lat 38° to 39°, long 118° to 120°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 36 by 54 inches; sheet 2, 41 by 58 inches; sheet 3, 40 by 58 inches.

MF-1382-H. CALIFORNIA, NEVADA. Maps showing distribution of molybdenum, tin, boron, tungsten, and gold in samples of minus-60-mesh (0.25-mm) stream sediment and (or) nonmagnetic heavy-mineral concentrate, Walker Lake 1° × 2° Quadrangle, California and Nevada, by M. A. Chaffee, R. H. Hill and S. J. Sutley. 1988. Two sheets. Sheet 1 (maps A-C), lat 38° to 39°, long 118° to 120°; sheet 2 (maps D-F), lat 38° to 39°, long 118° to 120°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Each sheet 39 by 57 inches. (Accompanied by 10-page text.)

MF-1382-I. CALIFORNIA, NEVADA. Maps showing distribution of iron, cobalt, barium, strontium, arsenic, antimony, and bismuth in samples of minus-60-mesh (0.25-mm) stream sediment and (or) nonmagnetic heavy-mineral concentrate, Walker Lake 1° × 2° Quadrangle, California and Nevada, by M. A. Chaffee, R. H. Hill and S. J. Sutley. 1988. Three sheets. Sheet 1 (maps A-B), lat 38° to 39°, long 118° to 120°; sheet 2 (maps C-E), lat 38° to 39°, long 118° to 120°; sheet 3 (maps F-H), lat 38° to 39°, long 118° to 120°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 36 by 54 inches; sheet 2, 41 by 58 inches; sheet 3, 41 by 58 inches.

MF-1382-J. CALIFORNIA, NEVADA. Maps showing distribution of 12 selected elements in samples of rock, Walker Lake 1° × 2° Quadrangle, California and Nevada, by M. A. Chaffee, R. H. Hill and S. J. Sutley. 1988. One sheet (maps A-B), lat 38° to 39°, long 118° to 120°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 40 by 50 inches.

MF-1382-K. CALIFORNIA, NEVADA. Maps showing distribution of anomalies based on the use of R-mode factor analysis for selected groupings of elements in samples of minus-60-mesh (0.25-mm) stream sediment and nonmagnetic heavy-mineral concentrate, Walker Lake 1° × 2° Quadrangle, California and Nevada, by M. A. Chaffee. 1988. Two sheets. Sheet 1 (map A), lat 38° to 39°, long 118° to 120°; sheet 2 (maps B-D), lat 38° to 39°, long 118° to 120°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 35 by 41 inches; sheet 2, 38 by 57 inches.

MF-1382-L. CALIFORNIA, NEVADA. Maps showing distribution of anomalies based on the use of SCORESUM plots for selected groupings of elements in samples of minus-60-mesh (0.25-mm) stream sediment, Walker Lake 1° × 2° Quadrangle, California and Nevada, by M. A. Chaffee. 1988. Two sheets. Sheet 1 (map A), lat 38° to 39°, long 118° to 120°; sheet 2 (maps B-D), lat 38° to 39°, long 118° to 120°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Each sheet 35 by 37 inches.

MF-1382-M. CALIFORNIA, NEVADA. Maps showing distribution of anomalies based on the use of SCORESUM plots for selected groupings of elements in samples of nonmagnetic heavy-mineral concentrate, Walker Lake 1° × 2° Quadrangle, California and Nevada, by M. A. Chaffee. 1988. Two sheets. Sheet 1 (maps A-B), lat 38° to 39°, long 118° to 120°; sheet 2 (maps C-E), lat 38° to 39°, long 118° to 120°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 36 by 56 inches; sheet 2, 40 by 58 inches.

MF-1502-B. GEORGIA. Geochemical survey of the Chattahoochee Roadless Area, Towns, Union, and White counties, Georgia, by R. P. Koeppen and A. E. Nelson. 1989. Lat about 34°40' to 34°50', long about 83°42'30" to about 83°52'30". Scale 1:30,000 (1 inch = 2,500 feet). Sheet 40 by 42 inches.

MF-1503-B. GEORGIA. Geochemical survey of the Blood Mountain Roadless Area, Union and Lumpkin counties, Georgia, by R. P. Koeppen and A. E. Nelson. 1989. Lat 34°40' to about 34°45', long about 83°55' to 84°. Scale 1:30,000 (1 inch = 2,500 feet). Sheet 30 by 35 inches.

MF-1539-I. ALASKA. Mineral and energy resource assessment maps of the Ugashik, Bristol Bay, and western Karluk quadrangles, Alaska, by S. E. Church, R. L. Detterman and F. H. Wilson. 1989. Two sheets. Lat 57° to 58°, long 155° to about 159°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 41 by 52 inches; sheet 2, 41 by 48 inches (all in color).

MF-1597-B. WYOMING. Geophysical survey map of the Washakie Wilderness and adjacent roadless areas, Park County, Wyoming, by C. L. Long. 1989. Lat 43°45' to about 44°30', long about 109°15' to about 110°. Scale 1:125,000 (1 inch = about 2 miles). Sheet 35 by 44 inches.

MF-1635-C. COLORADO. Maps showing trace-element geochemistry of the Sangre de Cristo Wilderness Study Area, south-central Colorado, by D. R. Zimbelman. 1989. Four sheets. Lat 37°30' to 38°30', long about 105°30' to about 106°. Each sheet, scale 1:125,000 (1 inch = about 2 miles). Each sheet 41 by 58 inches.

MF-1648-A. TENNESSEE. Mineral resource potential map of the Pond Mountain Addition Roadless Areas, Carter County, Tennessee, by W. R. Griffiths, M. L. Chatman and R. F. Bitar. 1989. Lat 36°15' to 36°22'30", long 82° to 82°10'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 31 by 51 inches. (Accompanied by 9-page text.)

MF-1730. VIRGINIA, WEST VIRGINIA. Maps showing coal resources of the Amonate Quadrangle, Buchanan and Tazewell counties, Virginia, and McDowell County, West Virginia, by J. F. Windolph, Jr. 1986. Lat 37°07'30" to 37°15', long 81°37'30" to 81°45'. Sheet 42 by 48 inches. (Reprint.)

MF-1830-G. MISSOURI. Structure contour maps on the base of Mississippian strata and the top of Upper Cambrian strata, Springfield 1° × 2° Quadrangle, Missouri, by C. M. Seeger, Missouri Department of Natural Resources, Division of Geology and

- Land Survey. Prepared in cooperation with Missouri Department of Natural Resources, Division of Geology and Land Survey. 1989. Lat 37° to 38°, long 92° to 94°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 36 by 48 inches.
- MF-1853-C. ALASKA. Metallogenic map of significant volcanogenic massive-sulfide and related lode deposits in Alaska, by W. J. Nokleberg, U.S. Geological Survey; T. K. Bundtzen, Alaska Division of Geological and Geophysical Surveys; H. C. Berg, 115 Malvern Ave., Fullerton, CA; D. A. Brew, Donald Grybeck, U.S. Geological Survey; M. S. Robinson, and T. E. Smith, Alaska Division of Geological and Geophysical Surveys (Volcanogenic massive sulfide map series, edited by R. L. Earhart). 1989. Lat 55° to 70°, long 140° to 170°. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 37 by 51 inches.
- MF-1853-E. NEVADA. Metallogenic map of volcanogenic massive-sulfide deposits in pre-Tertiary island-arc and ocean-basin environments in Nevada, by M. G. Sherlock (Volcanogenic massive sulfide map series, edited by R. L. Earhart). 1989. Lat 35° to 42°, long 114° to 120°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 24 by 35 inches. (Accompanied by 17-page text.) (Lambert Conformal Conic projection.)
- MF-1888. CALIFORNIA. Sketches of Yosemite National Park, California, from Glacier Point, Sentinel Dome, and Mt. Hoffman, by T. R. Alpha. 1987. Sheet 30 by 58 inches. (Reprint.)
- MF-1948-B. VIRGINIA. Maps showing Quaternary geology of the northern Virginia part of the Chesapeake Bay, by S. M. Colman, U.S. Geological Survey; and C. H. Hobbs III, Virginia Institute of Marine Science. 1988. Three sheets. Lat about 37°30' to about 37°50', long about 75°50' to about 76°20'. Scale 1:125,000 (1 inch = about 2 miles). Sheet 1, 44 by 48 inches; sheet 2, 42 by 42 inches; sheet 3, 41 by 43 inches.
- MF-1948-C. MARYLAND. Maps showing Quaternary geology of the southern Maryland part of the Chesapeake Bay, by S. M. Colman, U.S. Geological Survey; and J. P. Halka, Maryland Geological Survey. Prepared in cooperation with Maryland Geological Survey. 1989. Three sheets. Lat about 38° to about 38°20', long about 75°50' to about 76°20'. Scale 1:125,000 (1 inch = about 2 miles). Sheet 1, 37 by 50 inches; sheet 2, 41 by 43 inches; sheet 3, 41 by 43 inches. (Copies may also be purchased from Maryland Geol. Surv., 2300 St. Paul St., Baltimore, MD 21218.)
- MF-1948-D. MARYLAND. Maps showing Quaternary geology of the northern Maryland part of the Chesapeake Bay, by S. M. Colman, U.S. Geological Survey; and J. P. Halka, Maryland Geological Survey. Prepared in cooperation with the Maryland Geological Survey. 1989. Three sheets. Sheet 1, lat about 37° to about 39°, long about 75° to about 77°. Sheet 1, 41 by 48 inches; sheet 2, 31 by 56 inches; sheet 3, 31 by 56 inches. (Copies may also be purchased from Maryland Geol. Surv., 2300 St. Paul St., Baltimore, MD 21218.)
- MF-1964. CALIFORNIA. Map showing late Quaternary faults and 1978-84 seismicity of the Los Angeles region, California, by J. I. Ziony and L. M. Jones. 1989. Lat 33°15' to 34°45', long 116°45' to 120°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 33 by 50 inches. (Accompanied by 23-page text.)
- MF-1970-A. ALASKA. Bouguer gravity map of the Petersburg Quadrangle and parts of the Port Alexander, Sitka, and Sumdum quadrangles, Alaska, by D. F. Barnes, D. A. Brew and R. L. Morin. 1989. Lat 56° to 57°15', long 132° to 134°30'. Scale 1:250,000 (1 inch = about 4 miles). Sheet 34 by 50 inches. (Universal Transverse Mercator projection.)
- MF-1970-B. ALASKA. Mineral-resource map of the Petersburg Quadrangle and parts of the Port Alexander, Sitka, and Sumdum quadrangles, southeastern Alaska, by D. A. Brew, D. J. Grybeck, J. B. Cathrall, S. M. Karl, R. B. Koch, D. F. Barnes, U.S. Geological Survey; R. J. Newberry, U.S. Geological Survey and University of Alaska; Andrew Griscom, U.S. Geological Survey; and H. C. Berg, Fullerton, CA. 1989. Lat 56° to 57°, long 132° to 134°30'. Scale 1:250,000 (1 inch = about 4 miles). (Accompanied by 47-page text.)
- MF-1978-A. WYOMING. Map showing locations of mines, prospects, and patented mining claims, and classification of mineral deposits in the Sundance West 7 1/2-minute Quadrangle, Black Hills, Wyoming, by Ed DeWitt, D. P. Buscher, A. B. Wilson and T. Johnson. 1988. Lat 44°22'30" to 44°30', long 104°22'30" to 104°30'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 31 by 36 inches.
- MF-1994-A. ARKANSAS, MISSOURI. Summary geochemical maps of the Harrison 1° × 2' Quadrangle, Arkansas and Missouri, by R. L. Erickson, Barbara Chazin and M. S. Erickson. 1988. Three sheets. Lat 36° to 37°, long 92° to 94°. Sheet 1: map A, scale 1:250,000 (1 inch = about 4 miles); maps B-C, scale 1:500,000 (1 inch = about 8 miles). Sheet 2 (maps D-K) and sheet 3 (maps L-R), scale 1:500,000 (1 inch = about 8 miles). Sheet 1, 34 by 38 inches; sheet 2, 34 by 50 inches; sheet 3, 34 by 49 inches (all in color). (Accompanied by 57-page text.)
- MF-1994-B. MISSOURI, ARKANSAS. Geophysical maps and interpretation of basement terrane in the Harrison 1° × 2' Quadrangle, Missouri and Arkansas, by A. E. McCafferty, Lindirthe Cordell and R. E. Bracken. 1989. Two sheets. Lat 36° to 37°, long 92° to 94°. Sheet 1, scale 1:250,000 (1 inch = about 4 miles); sheet 2, scale 1:500,000 (1 inch = about 8 miles). Sheet 1, 32 by 49 inches; sheet 2, 38 by 54 inches.
- MF-1996-B. ALASKA. Summary and interpretation of geochemical maps for stream sediment and heavy mineral concentrate samples, Mount Hayes Quadrangle, eastern Alaska Range, Alaska, by G. C. Curtin, R. B. Tripp and W. J. Nokleberg. 1989. Three sheets. Sheet 1, lat 63° to 64°, long 144° to 147°; sheet 2, lat 63° to 64°, long 144° to 147°. Sheet 1, scale 1:250,000 (1 inch = about 4 miles); sheet 2, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 41 by 49 inches; sheet 2, 41 by 57 inches; sheet 3, 40 by 42 inches. (Accompanied by 11-page text.)
- MF-2001. CALIFORNIA. Reconnaissance geologic map of the Covelo 30- by 60-minute Quadrangle, Northern California, by A. S. Jayko, M. C. Blake, Jr., R. J. McLaughlin, H. N. Ohlin, S. D. Ellen and H. M. Kelsey. 1989. Lat 39°30' to 40°, long 123° to 124°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 38 by 52 inches.
- MF-2006. CALIFORNIA, NEVADA. Geologic map of the Skedaddle Mountain Wilderness Study Area, Lassen County, California, and Washoe County, Nevada, by M. F. Diggles, D. A. Dellinger and L. D. Batatian. 1989. Lat about 40°20' to about 40°25', long about 120° to about 120°10'. Scale 1:48,000 (1 inch = 4,000 feet). Sheet 24 by 39 inches.
- MF-2022. WYOMING, IDAHO, MONTANA. Maps showing earthquake epicenters (1964-81) in Yellowstone National Park and vicinity, Wyoming, Idaho, and Montana, by A. M. Pitt. 1989.

Lat 44° to 45°, long 110° to 112°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 41 by 50 inches.

MF-2038. MONTANA. Maps, sections, and structure-contour diagrams showing the geology and geochemistry of the Mouat nickel-copper prospect, Stillwater Complex, Stillwater County, Montana, by M. L. Zientek, W. J. Bawiec, N. J. Page, U.S. Geological Survey; and R. W. Cooper, Lamar University. 1989. Two sheets. Sheet 1, lat about 45°20' to about 45°30', long 109°45' to 110°15'. Scale 1:2,400 (1 inch = 200 feet). Sheet 1, 41 by 58 inches; sheet 2, 40 by 49 inches. (Accompanied by 9-page text.)

MF-2044. ARIZONA. Geologic map of the Woolsey Peak Wilderness Study Area, Maricopa County, Arizona, by J. A. Peterson, R. J. Miller and S. L. Jones. 1989. Lat about 33°05' to about 33°10', long about 112°50' to about 113°. Scale 1:48,000 (1 inch = 4,000 feet). Sheet 26 by 36 inches.

MF-2048. MARYLAND. Map showing landslide susceptibility in Maryland, by J. S. Pomeroy. 1988. Lat about 38° to about 39°45', long about 75° to about 79°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 41 by 51 inches (in color). (Accompanied by 8-page text.)

MF-2050. NEVADA, CALIFORNIA. Geologic map of Desert Creek Peak Quadrangle, Lyon and Douglas counties, Nevada, and Mono County, California, by J. H. Stewart, G. F. Brem, and J. C. Dohrenwend; prepared in cooperation with the Nevada Bureau of Mines and Geology. 1989. Lat 38°30' to 38°45', long 119°15' to 119°30'. Scale 1:62,500 (1 inch = about 1 mile). Sheet 33 by 43 inches.

MF-2051. MARYLAND. Map showing landslide susceptibility in Prince Georges County, Maryland, by J. S. Pomeroy. 1989. Lat 38°30' to 39°05', long 76°40' to 77°05'. Scale 1:62,500 (1 inch = about 1 mile). Sheet 41 by 49 inches (in color).

MF-2056. SOUTH CAROLINA. High-resolution multichannel seismic-reflection profiles across the Helena Banks strike-slip fault zone offshore of the Charleston, South Carolina, earthquake area, by Annette Yuan and J. C. Behrendt. 1988. Lat 32° to about 33°, long 79° to 81°. Scale 1:750,000 (1 inch = about 12 miles). Sheet 35 by 43 inches.

MF-2057. Heat flow map of the Eastern United States, by Lucy McCartan and R. J. Architzel. 1988. Two sheets. Sheet 1 (Fig. 1), lat about 25° to about 49°, long about 67° to about 96°; sheet 2 (Figs. 3-6), lat about 25° to about 49°, long about 67° to about 96°. Sheet 1, scale 1:2,500,000 (1 inch = about 40 miles); sheet 2, scale 1:7,500,000 (1 inch = about 118 miles). Sheet 1, 41 by 52 inches; sheet 2, 40 by 55 inches (all in color).

MF-2058-A. ALASKA. Mineral resource assessment map of the Healy Quadrangle, Alaska, by D. P. Cox, T. D. Light, Bela Csej-  
tey, Jr., and D. L. Campbell; with a section on Placer gold in the Healy Quadrangle, by Warren Yeend. 1989. Lat 63° to 64°, long 147° to 150°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 40 by 58 inches.

MF-2058-B. ALASKA. Maps showing distribution and abundance of selected elements in stream-sediment samples from a reconnaissance geochemical survey of the Healy Quadrangle, Alaska, by H. D. King, T. D. Light and R. M. O'Leary. 1989. Two sheets. Lat 63° to 64°, long 147° to 150°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 35 by 44 inches; sheet 2, 25 by 44 inches.

MF-2058-C. ALASKA. Maps showing distribution and abundance of selected elements in heavy-mineral-concentrate samples from a reconnaissance geochemical survey of the Healy Quadrangle, Alaska, by T. D. Light, H. D. King and S. J. Sutley. 1989. Two sheets. Lat 63° to 64°, long 147° to 150°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 35 by 44 inches; sheet 2, 25 by 44 inches.

MF-2062. NEVADA. Geologic map of pre-Tertiary rocks of the Paradise Range and southern Lodi Hills, west-central Nevada, by N. J. Silberling and D. A. John. 1989. Lat 38°45' to 39°, long 117°45' to 118°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 40 by 57 inches. (Accompanied by 17-page text.)

MF-2063-A. IDAHO. Geologic map of the Bruneau Formation in the Walters Butte and Initial Point quadrangles, southwestern Idaho, by H. E. Malde. 1989. Lat 43°15' to 43°22'30", long 116°22'30" to 116°37'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 37 inches.

MF-2063-B. IDAHO. Geologic map of the Bruneau Formation in the Sinker Butte and Wild Horse Butte quadrangles, southwestern Idaho, by H. E. Malde. 1989. Lat 43°07'30" to 43°15', long 116°15' to 116°30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 37 inches.

MF-2063-C. IDAHO. Geologic map of the Bruneau Formation in the Oreana and Castle Butte quadrangles, southwestern Idaho, by H. E. Malde. 1989. Lat 43° to 43°07'30", long 116°15' to 116°30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 37 inches.

MF-2063-D. IDAHO. Geologic map of the Bruneau Formation in the Jackass Butte and Dorsey Butte quadrangles, southwestern Idaho, by H. E. Malde. 1989. Lat 43° to 43°07'30", long 116° to 116°15'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 37 inches.

MF-2063-E. IDAHO. Geologic map of the Bruneau Formation in the C. J. Strike Dam and Bruneau quadrangles, southwestern Idaho, by H. E. Malde. 1989. Lat 42°52'30" to 43°, long 115°45' to 116°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 41 inches.

MF-2064. ILLINOIS. Maps showing the bottom topography of the Chicago near-northside lake front, by J. S. Schlee, M. J. Chrzastowski, and L. D. North; prepared in cooperation with the Illinois Department of Energy and Natural Resources and Illinois State Geological Survey. 1988. Scale 1:12,000 (1 inch = 1,000 feet). Sheet 38 by 50 inches. (Transverse Mercator projection used with central meridian at 88°20'. Shoreline and cultural features digitized from aerial photographs dated March 1987.)

MF-2065. NEVADA. Maps showing ages and thermal maturation values of conodonts from the Goshute-Toano Range, Elko County, Nevada, by O. L. Karklins, J. E. Repetski and K. B. Ketner. 1989. One sheet. Map A, lat 40°37'30" to 40°52'30", long 114°07'30" to 114°22'30"; map B, lat about 40°22'30" to 40°37'30", long 114°07'30" to 114°22'30". Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 38 by 50 inches.

MF-2066. NEW JERSEY. Distribution of selected Ordovician conodont faunas in northern New Jersey, by O. L. Karklins and J. E. Repetski. 1989. Lat about 40°45' to about 41°15', long 74°30' to 75°15'. Scale 1:185,000 (1 inch = about 3 miles). Sheet 40 by 58 inches. (Transverse Mercator projection.)



- MF-2067. MONTANA. Correlation chart of Lower Cretaceous rocks, Madison Range to Lima Peaks area, southwestern Montana, by R. G. Tysdal, T. S. Dyman and D. J. Nichols. 1989. Sheet 42 by 42 inches. (Accompanied by 15-page text.)
- MF-2068. COLORADO. North-south stratigraphic cross sections of Upper Cretaceous rocks, northern San Juan Basin, southwestern Colorado, by C. M. Molenaar and J. K. Baird. Prepared in cooperation with U.S. Bureau of Indian Affairs and the Southern Ute Indian Tribe. 1989. Three sheets. Sheet 1, lat 37° to 37°15', long 107° to about 108°. Scale 1:633,600 (1 inch = 10 miles). Sheet 1, 36 by 48 inches; sheet 2, 30 by 56 inches; sheet 3, 39 by 58 inches.
- MF-2069. NEW MEXICO. Preliminary geologic map of the Grey Hill Spring Quadrangle, San Juan and McKinley counties, New Mexico, by R. B. O'Sullivan, D. L. Weide, and G. R. Scott; prepared in cooperation with the U.S. Bureau of Indian Affairs and the Navajo Nation. 1989. Lat 36° to 36°07'30", long 108°30' to 108°37'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 31 by 40 inches.
- MF-2070. CALIFORNIA. Geologic map of the Palen Pass Quadrangle, Riverside County, California, by Paul Stone and M. M. Kelly. 1989. Lat 33°52'30" to 34°, long 115° to 115°07'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 33 by 38 inches.
- MF-2071-A. ALASKA. Geochemical maps showing the distribution and abundance of selected elements in stream-sediment samples, Solomon and Bendeleben 1° by 3° Quadrangles, Seward Peninsula, Alaska, by S. C. Smith, H. D. King and R. M. O'Leary. 1989. One sheet (maps A-B), lat 64°15' to 66°, long 162° to 165°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 39 by 58 inches. (Accompanied by 13-page text.)
- MF-2071-B. ALASKA. Geochemical maps showing the distribution and abundance of selected elements in nonmagnetic heavy-mineral-concentrate samples from stream sediment, Solomon and Bendeleben 1° by 3° Quadrangles, Seward Peninsula, Alaska, by H. D. King, S. C. Smith, S. J. Sutley and K. R. Greene. 1989. One sheet (maps A-B), lat 64°15' to 66°, long 162° to 165°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 39 by 58 inches. (Accompanied by 13-page text.)
- MF-2071-C. ALASKA. Mineralogical maps showing the distribution and abundance of selected minerals in nonmagnetic heavy-mineral-concentrate samples from stream sediment, Solomon and Bendeleben 1° by 3° Quadrangles, Seward Peninsula, Alaska, by H. D. King, S. C. Smith and Scott Werschky. 1989. One sheet (maps A-B), lat 64°15' to 66°, long 162° to 165°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 39 by 58 inches. (Accompanied by 4-page text.)
- MF-2072. CALIFORNIA. Geologic map of the Milligan 15-minute Quadrangle, San Bernardino County, California, by K. A. Howard, Paul Stone and C. F. Miller. 1989. Lat 34°15' to 34°30', long 115° to 115°15'. Scale 1:62,500 (1 inch = about 1 mile). Sheet 26 by 36 inches. (Polyconic projection.)
- MF-2074. ALASKA. Surficial geologic map of the Kigluak Mountains area, Seward Peninsula, Alaska, by D. S. Kaufman, P. E. Calkin, W. B. Whitford, B. J. Przybyl, D. M. Hopkins, B. J. Peck and R. E. Nelson. 1989. Lat about 64°55' to about 65°05', long about 165° to about 166°. Scale 1:63,360 (1 inch = 1 mile). Sheet 41 by 48 inches. (Universal Transverse Mercator projection.)
- MF-2075. NEW MEXICO. Geologic map of the O Bar O Canyon West Quadrangle, Catron County, New Mexico, by D. H. Richter and V. A. Lawrence. 1989. Lat 33°30' to 33°37'30", long 108°15' to 108°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 30 by 46 inches.
- MF-2076. WYOMING. Surface and subsurface correlations showing depositional environments of the Upper Cretaceous Mesaverde Group and associated formations, Lost Soldier Field to Cow Creek, Southwest Wyoming, by H. W. Roehler and D. E. Hansen. 1989. Lat 41°30' to about 42°30', long about 107° to about 108°. Sheet 25 by 39 inches.
- MF-2077. WYOMING, COLORADO. Surface and subsurface correlations showing depositional environments of the Upper Cretaceous Mesaverde Group and associated formations, Cow Creek in Southwest Wyoming to Mount Harris in Northwest Colorado, by H. W. Roehler and D. E. Hansen. 1989. Sheet 25 by 38 inches.
- MF-2078. WYOMING. Surface-subsurface correlations of the Mesaverde Group and associated Upper Cretaceous formations, Rock Springs to Atlantic Rim, Southwest Wyoming, by H. W. Roehler. 1989. Lat about 41° to about 41°45', long about 108° to 109°. Sheet 30 by 39 inches.
- MF-2079. OREGON. Geologic map of the Sheepshead Mountains, Harney and Malheur counties, Oregon, by D. R. Sherrod, S. A. Minor and T. L. Vercoutere. 1989. Lat about 42°45' to about 43°, long 118° to 118°22'30". Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 35 by 43 inches.
- MF-2081-A. UTAH. Complete Bouguer gravity map and related geophysical maps of the Delta 1° × 2° Quadrangle, Utah, by Viki Bankey, U.S. Geological Survey; and K. L. Cook, University of Utah. 1989. Lat 39° to 40°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 40 by 49 inches (in color).
- MF-2082. MINNESOTA. Mineral occurrence and drill-hole location map of the International Falls 1° × 2° Quadrangle, Minnesota and Ontario, by T. L. Klein. 1989. Lat 48° to 49°, long 92° to 94°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 29 by 46 inches.
- MF-2084. Lateral relationships in the Laki Formation, Ganjo Tukur and Saidpur Outlier, Hyderabad District, Sind Province, Pakistan, by R. E. Thomas, U.S. Geological Survey; M. R. Khan, and S. A. Khan, Geological Survey of Pakistan. Prepared in cooperation with Geological Survey of Pakistan. 1989. Lat 25°10' to 25°20', long 68°25'E to 68°21'E. Sheet 37 by 50 inches.
- MF-2085. UTAH. Map showing 1983 landslides in Utah, by E. E. Brabb, G. F. Wiczorek and E. L. Harp. Prepared in cooperation with Utah Geological and Mineral Survey. 1989. Lat 37° to 42°, long 109° to 114°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 38 by 48 inches.
- MF-2086. CALIFORNIA. Geologic map of the eastern parts of the Cadiz Lake and Cadiz Valley 15-minute quadrangles, San Bernardino and Riverside counties, California, by K. A. Howard, E. D. Horrington, D. M. Miller and Paul Stone. 1989. Lat about 34°05' to 34°30', long 115°15' to 115°20'. Scale 1:62,500 (1 inch = about 1 mile). Sheet 31 by 38 inches. (Polyconic projection.)
- MF-2087. UTAH. Geologic map of the Newfoundland Mountains, northwestern Utah, by R. W. Allmendinger and T. E. Jordan. 1989. Lat 41° to about 41°15', long about 113°22'30". Scale 1:31,680 (1 inch = about 2700 feet). Sheet 35 by 46 inches.



MF-2088. CALIFORNIA. Vertical surface displacements along a part of the Newport-Inglewood Zone of folds and faults, Los Angeles and Orange counties, California, by R. O. Castle and J. M. Buchanan-Banks. 1989. Two sheets. Lat about 33°37'30" to 33°52'30", long about 117°52'30" to about 118°15'. Sheet 1, 38 by 50 inches; sheet 2, 41 by 47 inches.

MF-2089. COLORADO. Reconnaissance geologic map of the Medano Pass Quadrangle and part of the Liberty Quadrangle, Alamosa, Huerfano, and Saquache counties, Colorado, by B. R. Johnson, R. M. Bruce and D. A. Lindsey. 1989. Lat 37°45' to 37°52'30", long 105°22'30" to 105°37'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 28 by 51 inches.

MF-2090. CALIFORNIA. Geologic map of the Burro Mountain Quadrangle, Monterey and San Luis Obispo counties, California, by V. M. Seiders. 1989. Lat 35°45' to 35°52'30", long 121°15' to 121°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 26 by 34 inches. (Polyconic projection.)

MF-2091. Map showing the areal distribution of oil shales with associated mineral resources and metal anomalies in the Western United States and Alaska, by L. J. Schmitt. 1989. Two sheets. Sheet 1, lat 23° to 47°, long 96° to 119°. Scale 1:2,500,000 (1 inch = about 40 miles). Sheet 1, 41 by 54 inches; sheet 2, 23 by 26 inches.

MF-2092. CALIFORNIA. Geologic map of the Palen-McCoy Wilderness Study Area and vicinity, Riverside County, California, by Paul Stone and G. J. Pelka. 1989. Lat 33°35' to 34°, long 114°45' to 115°15'. Scale 1:62,500 (1 inch = about 1 mile). Sheet 40 by 49 inches.

MF-2093. COLORADO. Geologic map of the North Mamm Peak Quadrangle, Garfield County, Colorado, by T. R. Donnell, W. E. Yeend and M. C. Smith. 1989. Lat 39°22'30" to 39°30', long 107°45' to 107°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 40 inches. (Supersedes Open-file report 68-80.)

MF-2094. MONTANA. Map showing Quaternary and late-Tertiary terraces of the lower Bighorn River, Montana, by S. S. Agard. 1989. Lat 45°15' 46°11'45", long 107°27'30" to 108°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 34 by 47 inches.

MF-2095. WYOMING, MONTANA, SOUTH DAKOTA. Geologic map of the Powder River basin and surrounding area, Wyoming, Montana, South Dakota, by M. S. Ellis. 1989. Lat 42° to 47°, long 103° to 109°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 42 by 56 inches. (Accompanied by 22-page text.)

MF-2100. COLORADO. Reconnaissance geologic map of the Ridgway Quadrangle, Ouray County, Colorado, by W. J. Hail, Jr. 1989. Lat 38°07'30" to 38°15', long 107°45' to 107°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 28 by 29 inches.

MF-2102. WYOMING. Correlation of surface sections of the intertongued Eocene Wasatch and Green River formations, Great Divide Basin, Southwest Wyoming, by H. W. Roehler. 1989. Sheet 28 by 36 inches.

MF-2103. WYOMING. Correlation of surface sections of the intertongued Eocene Wasatch and Green River formations along the western margins of the greater Green River basin in Southwest Wyoming, by H. W. Roehler. 1989. Sheet 29 by 31 inches.

MF-2104. WYOMING. Correlation of surface sections of the intertongued Eocene Wasatch and Green River formations along the west flank of the Rock Springs Uplift in Southwest Wyoming, by H. W. Roehler. 1989. Sheet 26 by 40 inches.

MF-2105. COLORADO, WYOMING. Correlation of surface sections of the intertongued Eocene Wasatch and Green River formations along the western margins of the Sand Wash Basin, Northwest Colorado, and Washakie Basin, Southwest Wyoming, by H. W. Roehler. 1989. Sheet 41 by 54 inches.

MF-2106. COLORADO, WYOMING. Correlation of surface sections of the intertongued Eocene Wasatch and Green River formations across the central part of the Sand Wash Basin, Northwest Colorado, and eastern part of the Washakie Basin, Southwest Wyoming, by H. W. Roehler. 1989. Sheet 39 by 45 inches.

MF-2107. UTAH. Surficial geologic map of the East Cache fault zone, Cache County, Utah, by James McCalpin. 1989. Lat 41°30' to 42°, long 111°45' to 111°52'30". Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 38 by 47 inches.

MF-2110. KENTUCKY, WEST VIRGINIA, OHIO. Correlation of the Charleston Sandstone of the proposed Pennsylvanian stratotype with strata in eastern Kentucky, western West Virginia, and southern Ohio, by W. F. Outerbridge. 1989. Sheet 32 by 41 inches.

## MINERAL INVESTIGATIONS RESOURCES MAPS

Mineral distribution and classification maps; scales from 1:250,000 to 1:5,000,000; show geographic distribution and grade of mineral-resource commodities. Brief accompanying text may include a general description of the geologic occurrences, a locality index, and a bibliography.

MR-0083. ALASKA. Map showing occurrences of placer gold in Alaska, by E. H. Cobb. 1988. Lat about 52° to about 68°, long about 128° to about 172°. Scale 1:2,500,000 (1 inch = about 40 miles). Sheet 36 by 48 inches. (Accompanied by 18-page text.) (Reprint.)

MR-0095. Metallogenic maps of the northwest quadrant of the Circum-Pacific region, showing inferred mineral belts and distribution of oil and gas fields in accreted terranes and craton, by J. P. Albers and L. A. Fraticelli, U.S. Geological Survey; and K. M. Dawson, Geological Survey of Canada. 1989. Lat 10° to 80°, long 70° to 170°. Scale 1:20,000,000 (1 inch = about 320 miles). Sheet 40 by 56 inches (in color).

## GEOLOGIC MAP INDEXES

UTAH. Geologic map index of Utah, revised and updated by H. K. Fuller, 1988, from original compilation by W. L. McIntosh and M. F. Eister. 1979. Eight sheets. Lat 37° to 42°, long 109° to 114°. Each sheet 11 by 17 inches. (Accompanied by 16-page text.)

## HYDROLOGIC INVESTIGATIONS ATLASES

Multicolored or black and white maps on topographic or planimetric bases presenting a wide range of geohydrologic data; both regular and irregular areas.

HA-0512. WYOMING. Water resources of the Bighorn Basin, northwestern Wyoming; hydrogeologic map and geologic sections and summary of stratigraphy and water-bearing properties, by M. E. Lowry, H. W. Lowham and G. C. Lines. Prepared in cooperation with Wyoming State Engineer. 1976. Two sheets. Lat about 43°30' to 45°, long about 107°15' to 110°30'. Sheet 1, scale 1:250,000 (1 inch = about 4 miles); sheet 2, scale 1:500,000 (1 inch = about 8 miles). Sheet 1, 41 by 58 inches; sheet 2, 38 by 51 inches (all in color). (Reprint.)

- HA-0665. Distribution of fluoride in ground water in the alluvial basins of Arizona and adjacent parts of California, Nevada, and New Mexico, by F. N. Robertson and W. B. Garrett. 1988. Three sheets. Sheet 1, lat about 33°30' to about 36°, long about 111° to about 115°; sheet 2, lat about 31°30' to about 35°, long about 111° to about 115°; sheet 3, lat about 31°30' to about 35°, long about 108° to about 112°. Scale 1:500,000 (1 inch = about 8 miles). Each sheet 34 by 37 inches (in color).
- HA-0694-A. NEVADA, UTAH. Hydrogeology of the Great Basin region of Nevada, Utah, and adjacent states, by R. W. Plume and S. M. Carlton. 1988. Lat about 36° to about 42°, long about 111° to 120°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 33 by 43 inches (in color).
- HA-0694-C. NEVADA, UTAH. Major ground-water flow systems in the Great Basin region of Nevada, Utah, and adjacent states, by J. R. Harrill, J. S. Gates and J. M. Thomas. 1988. Two sheets. Lat about 36° to about 42°, long about 112° to 120°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 38 by 42 inches; sheet 2, 33 by 37 inches (in color).
- HA-0695. Geohydrologic framework of the Gulf Coastal Plain, by R. L. Hosman. 1988. Two sheets. Lat 26° to about 38°, long about 88° to about 100°. Scale 2,500,000 (1 inch = about 40 miles). Sheet 1, 33 by 43 inches; sheet 2, 28 by 40 inches (in color).
- HA-0698. General hydrogeology of the aquifers of Mesozoic age, upper Colorado River basin; excluding the San Juan Basin; Colorado, Utah, Wyoming, and Arizona, by G. W. Freethy, B. A. Kimball, D. E. Wilberg and J. W. Hood. 1988. Two sheets. Lat about 36° to about 43°, long about 106° to about 112°. Scale 1:2,500,000 (1 inch = about 40 miles). Each sheet 36 by 58 inches (in color). (Supersedes Open-file report 84-716.)
- HA-0701. Hydrogeology of clastic Tertiary and Cretaceous regional aquifers and confining units in the southeastern coastal plain aquifer system of the United States, by R. A. Renken, G. L. Mahon and M. E. Davis. 1989. Three sheets. Lat 29° to about 35°, long 81° to about 91°. Scale 1:2,500,000 (1 inch = about 40 miles). Each sheet 34 by 44 inches (all in color).
- HA-0702. Hydrogeology of aquifers of Paleozoic age, upper Colorado River basin—excluding the San Juan Basin—in Colorado, Utah, Wyoming, and Arizona, by J. B. Lindner-Lunsford, B. A. Kimball, D. T. Chafin and C. G. Bryant. 1989. Two sheets. Lat 35°30' to about 43°30', long about 105°30' to about 112°30'. Sheet 1, scale 1:2,500,000 (1 inch = about 40 miles); sheet 2, scale 1:5,000,000 (1 inch = about 80 miles). Sheet 1, 34 by 50 inches; sheet 2, 34 by 45 inches (all in color).
- HA-0705. Distribution of water-quality characteristics that may indicate the presence of acid mine drainage in the Eastern Coal Province of the United States, by K. L. Wetzel and S. A. Hoffman. 1989. Three sheets. Lat about 32° to about 42°, long about 78° to about 88°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 41 by 46 inches; sheet 2, 30 by 42 inches; sheet 3, 30 by 42 inches (all in color).
- HA-0706. Dissolved-solids concentrations and primary water types, Gulf Coast aquifer systems, south-central United States, by R. A. Pettijohn. 1988. Two sheets. Lat 26° to about 36°, long 88° to 100°. Scale 1:5,000,000 (1 inch = about 80 miles). Each sheet 33 by 42 inches (all in color).
- HA-0708. Flow characteristics for selected streams in the Great Plains subregion of the central Midwest regional aquifer system and selected adjacent areas; Kansas and Nebraska, and parts of Colorado, Iowa, Missouri, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming, by E. R. Hedman and G. B. Engel. 1989. Three sheets. Lat 34° to about 43°30', long 94°30' to 105°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 41 by 49 inches; sheet 2, 40 by 58 inches; sheet 3, 41 by 49 inches (all in color).
- HA-0711-B. Major geohydrologic units in and adjacent to the Ozark Plateaus Province, Missouri, Arkansas, Kansas, and Oklahoma; basement confining unit, by J. L. Lines. 1989. Lat 34°30' to 40°, long 89° to 96°. Scale 1:750,000 (1 inch = about 12 miles). Sheet 35 by 40 inches (color used).
- HA-0713. ARIZONA. Potential for aquifer compaction, land subsidence, and earth fissures in the Tucson Basin, Pima County, Arizona, by S. R. Anderson. 1988. Three sheets. Lat 31°45' to 32°30', long about 110°30' to about 111°15'. Scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 34 by 44 inches; sheet 2, 23 by 34 inches; sheet 3, 34 by 44 inches (in color). (Supersedes Open-file report 86-482.)
- HA-0720-I. Hydrogeology of the Dakota Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah, by S. D. Craig, W. L. Dam, J. M. Kernodle and G. W. Levings. 1989. Two sheets. Lat 35° to about 37°30', long about 107° to about 109°. Scale 1:1,000,000 (1 inch = about 16 miles). Each sheet 34 by 44 inches (all in color).

#### HYDROLOGIC UNIT MAPS

ARIZONA. Hydrologic unit map. 1974. State of Arizona. Prepared in cooperation with U.S. Water Resources Council. Lat about 32° to 37°, long 109° to about 115°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 48 by 56 inches (in color). (Reprint.)

INDIANA. Hydrologic unit map. 1974. State of Indiana. Lat about 38° to about 42°, long about 85° to about 88°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 32 by 40 inches (in color). (Reprint.)

MASSACHUSETTS, RHODE ISLAND, CONNECTICUT. Hydrologic unit map. 1988. States of Massachusetts, Rhode Island, and Connecticut, by U.S. Geological Survey; prepared in cooperation with the U.S. Water Resources Council. Lat 41° to 43°, long 70° to about 74°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 23 by 39 inches (in color).

OREGON. Hydrologic unit map. 1974. State of Oregon. Prepared in cooperation with U.S. Water Resources Council. Lat 42° to about 46°, long 117° to about 124°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 42 by 55 inches (in color). (Reprint.)

TEXAS. Hydrologic unit map. 1974. State of Texas. Four sheets. Sheet 1, lat about 30° to about 34°30', long 94° to 100°; sheet 2, lat about 30° to about 35°, long 100° to 103°; sheet 3, lat about 26° to about 30°, long 94° to 100°; sheet 4, lat about 28° to about 30°15', long 100° to about 104°45'. Each sheet, scale 1:500,000 (1 inch = about 8 miles). Each sheet 41 by 42 inches (in color). (Compiled in 1962, edition of 1965.) (Reprint.)

WEST VIRGINIA. Hydrologic unit map. 1989. State of West Virginia. Prepared in cooperation with U.S. Water Resources Council. Lat about 38° to about 41°, long about 78° to about 83°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 34 by 37 inches (in color).

## SPECIAL MAPS

This dynamic planet; a world map of volcanoes, earthquakes, and plate tectonics, compiled by Tom Simkin, Smithsonian Institution; R. I. Tilling, J. N. Taggart, W. J. Jones, and Henry Spall, U.S. Geological Survey. 1989. Published jointly by the U.S. Geological Survey and the Smithsonian Institution to commemorate the 28th International Geological Congress in Washington, D.C., from July 9-19, 1989. This map serves as a contribution to the International Decade of Natural Disaster Reduction to begin in 1990. Scale 1:30,000,000 at the equator (1 inch = about 473 miles). Sheet 41 by 57 inches (in color). (Mercator projection.)

## OUTSIDE PUBLICATIONS

## ARTICLES AND REPORTS

Articles by Geological Survey personnel in non-Geological Survey publications that came to our attention in 1989. Non-Geological Survey personnel who share authorship in articles with U.S. Geological Survey personnel are indicated by an asterisk (\*) immediately following the name. These publications are not available from the U.S. Geological Survey.

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- OP-9. S. T. Algermissen. The nature of the global earthquake risk problem, in *Strategic planning to reduce economic impacts of earthquake hazards throughout the world*. 1988. p. 30-31. Available from: Natl. Acad. Sci., Washington, DC, United States.
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- OP-11. S. T. Algermissen. A program for global earthquake hazard analyses, in *Strategic planning to reduce economic impacts of earthquake hazards throughout the world*. 1988. p. 53. Available from: Natl. Acad. Sci., Washington, DC, United States.
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### ABSTRACTS

Abstracts are condensed but informative summaries of presentations made at meetings of scientific and professional organizations. Typically they summarize the principal conclusions of an author's current work but contain little supporting data. Non-Geological Survey personnel who share authorship in abstracts with U.S. Geological Survey personnel are indicated by an asterisk (\*) immediately following the name. **These publications are not available from the U.S. Geological Survey.**

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- OP-2239. Y. Zhang\*, Wayne Thatcher and R. A. Snay\*. CALIFORNIA. Coseismic slip in the 1940 and 1979 Imperial Valley earthquakes and its implications [abstr.] Eos, Transactions, American Geophysical Union, in AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1433.
- OP-2240. R. A. Zielinski, S. Y. Johnson and J. K. Otton. WASHINGTON. Geologic controls on the formation of a surficial uranium deposit, northeastern Washington [abstr.] Abstracts with Programs - Geological Society of America, in Geological Society of America, Cordilleran Section, 85th annual meeting and Rocky Mountain Section, 42nd annual meeting. v. 21, no. 5, March 1989. p. 163.
- OP-2241. R. A. Zierenberg and J. M. Schmidt. ALASKA. Isotopic evidence for multiple sulfur sources at the Red Dog Zn-Pb-Ag deposit, Noatak District, Alaska [abstr.] Abstracts with Programs - Geological Society of America, in Geological Society of America 1988 centennial celebration; program with abstracts. v. 20, no. 7, 1988. p. 37.
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- OP-2244. M. L. Zoback. State of stress in the Rocky Mountain region [abstr.] Abstracts with Programs - Geological Society of America, in Geological Society of America 1988 centennial celebration; abstracts with programs. v. 20, no. 7, 1988. p. 12.

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### ABBREVIATIONS USED

A-	Antarctic Geologic Map	OC-	Oil and Gas Investigations Chart
B	Bulletin	OM-	Oil and Gas Investigations Map
C	Circular	OF	Open-File Report
C-	Coal Investigations Map	OP	Outside Publication
CAT	Catalog	P	Professional Paper
CF	Coal Map	PB-ADA	Report available only through the National Technical Information Service
EV	Earthquakes and Volcanoes	PDE	Preliminary Determination of Epicenters
GN	General Interest Publication	SGM	Special Geologic Map
GP-	Geophysical Investigations Map	SGMI	Geologic Map Index
GQ-	Geologic Quadrangle Map	SM	Special Map
HA-	Hydrologic Investigations Atlas	STM	State Geologic Map
HUM	Hydrologic Unit Map	TWI	Techniques of Water-Resources Investigations
I-	Miscellaneous Investigations Series	W	Water-Supply Paper
L-	Land Use and Land Cover Map	WRI	Water-Resources Investigations
MF-	Miscellaneous Field Studies Map	YR	Yearbook
MR-	Mineral Investigations Resources Map		
MSB	Miscellaneous and Special Books		

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