

# **Publications of the U.S. Geological Survey, 1991**

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**U.S. DEPARTMENT OF THE INTERIOR**



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

This catalog is a list of (1) books and maps<sup>1</sup> that were published during 1991, and (2) articles by Geological Survey personnel in non-Geological Survey journals and books that came to our attention in 1991; it supplements the permanent catalogs "Publications of the Geological Survey, 1879-1961", "Publications of the Geological Survey, 1962-1970", and "Publications of the U.S. Geological Survey, 1971 through 1981." These permanent catalogs, as well as some others, are available under the conditions indicated below from Book and Open-File Report Sales, Box 25425, Denver, CO 80225. The catalogs are also available over the counter at any of the Geological Survey offices that sell books.

Permanent catalogs "Publications of the Geological Survey, 1879-1961" and "Publications of the Geological Survey, 1962-1970" may be purchased in paperback book form for \$6.00 and as microfiche for \$4.00.

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State catalogs currently available may be purchased in paperback book form and are priced as follows: Alaska, \$3.50; Arkansas, \$1; California, \$4.75; Colorado, \$3.50; Florida, \$1; Massachusetts/Rhode Island/Connecticut, \$1; New York, \$1; Oregon, \$1; Pennsylvania/New Jersey, \$2.50; Utah, \$3.

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Prices of reports released through the NTIS may be obtained by writing to the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161; please include NTIS number preceding each item.

<sup>1</sup>Individual topographic quadrangle maps are not listed, they are shown on State indexes to topographic maps, which are free on application to the U.S. Geological Survey Map Distribution, Federal Center, Box 25286, Denver, CO 80225, and to offices where books and maps are sold over the counter. These indexes also show commercial dealers in each State.



## PUBLICATIONS OF THE U.S. GEOLOGICAL SURVEY, 1991

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WASHINGTON, D.C.—Main Interior Bldg., Room 2650, 1849 C St., NW.

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RESTON, Virginia—507 National Center, Rm. 1C402, 12201 Sunrise Valley Dr.

SALT LAKE CITY, Utah—Federal Bldg., Rm. 8105, 125 South State St.

SAN FRANCISCO, California—Customhouse, Rm. 504, 555 Battery St.

SPOKANE, Washington—U.S. Courthouse, Rm. 678, West 920 Riverside Ave.

ANCHORAGE, Alaska—Rm. 101, 4230 University Dr.

ANCHORAGE, Alaska—Rm. G-84, 605 West 4th Ave.

#### Maps

Maps may be purchased *over the counter* at the U.S. Geological Survey offices where books are sold and also at the following Geological Survey offices:

ROLLA, Missouri—1400 Independence Road

DENVER, Colorado—Map Distribution, Bldg. 810, Federal Center

FAIRBANKS, Alaska—New Federal Bldg., 101 Twelfth Ave.

STENNIS SPACE CENTER, Mississippi—Bldg. 3101

Survey maps are also sold by some 2,800 commercial dealers throughout the United States. Prices charged are generally higher than those shown on this list. Dealers are listed in State Catalogs of Topographic and Other Maps, which are obtainable free of charge by mail or over the counter from Geological Survey offices listed on this page.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes the need for transparency and accountability in financial reporting.

2. The second part of the document outlines the various methods and techniques used to collect and analyze data. It includes a detailed description of the sampling process and the statistical tools employed to interpret the results.

3. The third part of the document presents the findings of the study, which show a significant correlation between the variables under investigation. The results are supported by statistical evidence and are discussed in the context of existing research.

4. The fourth part of the document discusses the implications of the findings for future research and practice. It suggests several areas for further investigation and provides recommendations for how the results can be applied in real-world scenarios.

5. The fifth part of the document concludes the study by summarizing the key points and reiterating the importance of the research. It also includes a final statement on the limitations of the study and the need for continued research in this field.

6. The sixth part of the document provides a list of references to the sources used in the study, ensuring that all information is properly cited and acknowledged.

7. The seventh part of the document includes an appendix with additional data and figures that support the main findings of the study. This section is intended to provide a more comprehensive view of the research results.

8. The eighth part of the document discusses the ethical considerations of the research, including the need to protect the privacy and confidentiality of the participants. It also outlines the steps taken to ensure that the study was conducted in accordance with ethical standards.

9. The ninth part of the document provides a detailed description of the research methodology, including the design of the study, the selection of participants, and the procedures used to collect and analyze the data.

10. The tenth part of the document presents the results of the study, which show a significant correlation between the variables under investigation. The results are supported by statistical evidence and are discussed in the context of existing research.

11. The eleventh part of the document discusses the implications of the findings for future research and practice. It suggests several areas for further investigation and provides recommendations for how the results can be applied in real-world scenarios.

12. The twelfth part of the document concludes the study by summarizing the key points and reiterating the importance of the research. It also includes a final statement on the limitations of the study and the need for continued research in this field.

13. The thirteenth part of the document provides a list of references to the sources used in the study, ensuring that all information is properly cited and acknowledged.

14. The fourteenth part of the document includes an appendix with additional data and figures that support the main findings of the study. This section is intended to provide a more comprehensive view of the research results.

## BOOKS

## PROFESSIONAL PAPERS

Professional papers are mainly comprehensive scientific reports of wide and lasting interest and importance to professional scientists and engineers. Included are reports on the results of resource studies, and of topographic, hydrologic, and geologic investigations. They also include collections of related papers addressing different aspects of a single scientific topic.

P 1012. PUERTO RICO. Hydrogeology of the karst of Puerto Rico, by E. V. Giusti. 1978 (1991). 68 p. 2 plates in pocket. (Reprint.)

P 1078. Tectonics of the Indonesian region, by W. B. Hamilton. Prepared on behalf of the Ministry of Mines, Government of Indonesia, and the Agency for International Development, U.S. Department of State, in cooperation with the Geological Survey of Indonesia, the Australia Bureau of Mineral Resources, Geology and Geophysics, and the Lamont-Doherty Geological Observatory of Columbia University. 1979 (1991). 345 p. 1 plate in pocket. (Reprint.)

P 1273-F. MONTANA, SOUTH DAKOTA, WYOMING. Geochemical evolution of water in the Madison Aquifer in parts of Montana, South Dakota, and Wyoming, by J. F. Busby, L. N. Plummer, R. W. Lee and B. B. Hanshaw. 1991. p. F1-F89. (Geology and hydrology of the Madison Limestone and associated rocks in parts of Montana, Nebraska, North Dakota, South Dakota, and Wyoming.)

P 1367. SOUTH CAROLINA. Studies related to the Charleston, South Carolina, earthquake of 1886; Neogene and Quaternary lithostratigraphy and biostratigraphy. Prepared in cooperation with the U.S. Nuclear Regulatory Commission. 1990. 191 p. (Chapters A-G are issued as a single volume and are not available separately.)

Introduction, by Lucy McCartan, U.S. Geological Survey. p. 1-5.

A. Quaternary stratigraphy in the vicinity of Charleston, South Carolina, and its relationship to local seismicity and regional tectonism, by Lucy McCartan, R. E. Weems, and E. M. Lemon, Jr., U.S. Geological Survey. p. A1-A39.

B. Calcareous nannofossils from Pliocene and Pleistocene deposits in South Carolina, by L. M. Bybell, U.S. Geological Survey. p. B1-B9.

C. Evolution of Neogene and Quaternary marine Ostracoda, United States Atlantic Coastal Plain; evolution and speciation in Ostracoda, IV, by T. M. Cronin, U.S. Geological Survey. p. C1-C43.

D. Biostratigraphic and paleoenvironmental interpretations from late Pleistocene Ostracoda, Charleston, South Carolina, by S. K. Lyon, PEER Consultants. p. D1-D48.

E. Neogene and Pleistocene dinocysts of the Charleston, South Carolina, region, by L. E. Edwards, U.S. Geological Survey. p. E1-E9.

F. Mollusks from the Edisto Formation (lower Miocene) of South Carolina, by L. W. Ward, U.S. Geological Survey; and B. W. Blackwelder, Teemeco. p. F1-F7.

G. A summary of selected stratigraphic occurrences of Neogene and Quaternary invertebrate faunas and microfloras in the Charleston, South Carolina, area, by R. E. Weems and Lucy McCartan, U.S. Geological Survey. p. G1-G31.

P 1386-G. Glaciers of the Middle East and Africa, edited by R. S. Williams, Jr., and J. G. Ferrigno, U.S. Geological Survey. 1991. p. G1-G70. (Satellite image atlas of glaciers of the world, edited by R. S. Williams, Jr., and J. G. Ferrigno.)

1. Glaciers of Turkey, by Ajun Kurter, Istanbul University. p. G1-G30.

2. Glaciers of Iran, by J. G. Ferrigno, U.S. Geological Survey. p. G31-G47.

3. Glaciers of Africa, by J. A. T. Young, University of Edinburgh; and Stefan Hastenrath, University of Wisconsin. p. G49-G70.

P 1391. CALIFORNIA. Cenozoic giant pectinids from California and the Tertiary Caribbean Province; *Lyropecten*, "*Macrochlamis*," *Vertipecten*, and *Nodipecten* species, by J. T. Smith. 1991. 155 p.

P 1392. Climatic atlas of the Delaware River basin, by C. B. Jenner and H. F. Lins. 1991. 127 p.

P 1401-A. CALIFORNIA. Ground water in the Central Valley, California; a summary report, by G. L. Bertoldi, R. H. Johnston and K. D. Evenson. 1991. p. A1-A44. (Regional Aquifer-System Analysis; Central Valley, California.)

P 1404-E. MARYLAND, DELAWARE, DISTRICT OF COLUMBIA. Hydrogeologic framework of the coastal plain of Maryland, Delaware, and the District of Columbia, by D. A. Vroblesky and W. B. Fleck. 1991. p. E1-E45. 2 plates in pocket. (Regional Aquifer-System Analysis; Northern Atlantic Coastal Plain.)

P 1406-C. Geochemistry of ground water in alluvial basins of Arizona and adjacent parts of Nevada, New Mexico, and California, by F. N. Robertson. 1991. p. C1-C90. (Regional Aquifer-System Analysis; southwest alluvial basins, Arizona and adjacent states.)

P 1408-G. IDAHO. Geohydrology of the regional aquifer system, western Snake River plain, southwestern Idaho, by G. D. Newton. 1991. p. G1-G52. 1 plate in pocket. (Regional Aquifer-System Analysis; Snake River plain, Idaho.)

P 1409-D. NEVADA, UTAH. Conceptual evaluation of regional ground-water flow in the carbonate-rock province of the Great Basin, Nevada, Utah, and adjacent states, by T. J. Burbey and D. E. Prudic. 1991. p. D1-D84. (Regional Aquifer-System Analysis, Great Basin, Nevada-Utah.) (Supersedes Open-file report 90-560.)

P 1430. CALIFORNIA, ARIZONA. A contribution to the structural history of the Vidal-Parker region, California and Arizona, by W. J. Carr, with a section on Level line, by D. D. Dickey. Prepared in cooperation with the U.S. Nuclear Regulatory Commission. 1991. 40 p. 5 plates in pocket.

## 2 PUBLICATIONS OF THE U.S. GEOLOGICAL SURVEY, 1991

- P 1494. CALIFORNIA, ARIZONA. Floods of February 1980 in Southern California and central Arizona, by E. H. Chin, National Weather Service; B. N. Aldridge, and R. J. Longfield, U.S. Geological Survey. Prepared jointly by the U.S. Geological Survey and the National Oceanic and Atmospheric Administration. 1991. 126 p. 3 plates in pocket.
- P 1501. CALIFORNIA. The Cenozoic evolution of the San Joaquin Valley, California, by J. A. Bartow. 1991. 40 p. 2 plates in pocket. (Supersedes Open-file report 87-581.)
- P 1502. CALIFORNIA. Microbanded manganese formations; protoliths in the Franciscan Complex, California, by J. S. Huebner and M. J. Flohr. 1990. 72 p.
- P 1503. KENTUCKY. Mississippian rocks in Kentucky, by E. G. Sable, U.S. Geological Survey; and G. R. Dever, Jr., Kentucky Geological Survey. Prepared in cooperation with the Kentucky Geological Survey. 1990. 125 p. 1 plate in pocket.
- P 1504. SOUTH CAROLINA. Earthquake-induced liquefaction features in the coastal setting of South Carolina and in the fluvial setting of the New Madrid seismic zone, by S. F. Obermeier, R. B. Jacobson, J. P. Smoot, R. E. Weems, G. S. Gohn, U.S. Geological Survey; J. E. Monroe, U.S. Army Corps of Engineers; and D. S. Powars, U.S. Geological Survey. 1990. 44 p. 1 plate in pocket.
- P 1505-B,C. COLORADO. Geologic framework and stratigraphy of Cretaceous and Tertiary rocks of the Southern Ute Indian Reservation, southwestern Colorado, by W. M. Aubrey, C. M. Molenaar, and J. K. Baird. Prepared in cooperation with the Southern Ute Tribe and the U.S. Bureau of Indian Affairs. 1991. 36 p. 3 plates in pocket. (Geology and mineral resources of the Southern Ute Indian Reservation, edited by R. S. Zech.) (Chapters B and C are issued as a single volume and are not available separately.)
- B. Geologic framework of Cretaceous and Tertiary rocks in the Southern Ute Indian Reservation and adjacent areas in the northern San Juan Basin, southwestern Colorado, by W. M. Aubrey. p. B1-B24.
- C. Stratigraphic cross sections of Upper Cretaceous rocks in the northern San Juan Basin, Southern Ute Indian Reservation, southwestern Colorado, by C. M. Molenaar and J. K. Baird. p. C1-C12.
- P 1505-D. COLORADO. Coal resources of Upper Cretaceous Fruitland Formation in the Southern Ute Indian Reservation, southwestern Colorado, by D. T. Sandberg. Prepared in cooperation with the Southern Ute Tribe and the U.S. Bureau of Indian Affairs. 1990. p. D1-D24. 3 plates in pocket. (Geology and mineral resources of the Southern Ute Indian Reservation, edited by R. S. Zech.)
- P 1506-B. WYOMING, UTAH, COLORADO. Revised stratigraphic nomenclature for the Wasatch and Green River formations of Eocene age, Wyoming, Utah, and Colorado, by H. W. Roehler. 1991. p. B1-B38. (Geology of the Eocene Wasatch, Green River, and Bridger (Washakie) formations, greater Green River basin, Wyoming, Utah, and Colorado.)
- P 1506-C. WYOMING, COLORADO. Godiva Rim Member, a new stratigraphic unit of the Green River Formation in Southwest Wyoming and Northwest Colorado, by H. W. Roehler. 1991. p. C1-C17. (Geology of the Eocene Wasatch, Green River, and Bridger (Washakie) formations, greater Green River basin, Wyoming, Utah, and Colorado.)
- P 1507. NEW MEXICO. Geology of volcanic and subvolcanic rocks of the Raton-Springer area, Colfax and Union counties, New Mexico, by G. R. Scott, R. E. Wilcox and H. H. Mehnert. 1990. 58 p.
- P 1508. WYOMING, COLORADO, UTAH. Stratigraphy of the Mesaverde Group in the central and eastern greater Green River basin, Wyoming, Colorado, and Utah, by H. W. Roehler. 1990. 52 p. 2 plates in pocket.
- P 1512. Description and development of the Cordilleran orogenic belt in the Southwestern United States and northern Mexico, by Harald Drewes. 1991. 92 p. 2 plates in pocket.
- P 1513-A. MARSHALL ISLANDS. Introduction; Enewetak Atoll and the PEACE program, by T. W. Henry and B. R. Wardlaw. Prepared in cooperation with the U.S. Defense Nuclear Agency. 1990. p. A1-A29. (Geologic and geophysical investigations of Enewetak Atoll, Republic of the Marshall Islands.)
- P 1513-B. MARSHALL ISLANDS. Sediment facies of Enewetak Atoll lagoon, by B. R. Wardlaw, T. W. Henry and W. E. Martin. Prepared in cooperation with the Defense Nuclear Agency. 1991. p. B1-B60. (Geologic and geophysical investigations of Enewetak Atoll, Republic of the Marshall Islands.)
- P 1513-C. MARSHALL ISLANDS. Calcareous nannofossils and planktic foraminifers from Enewetak Atoll, western Pacific Ocean, by L. M. Bybell and R. Z. Poore. Prepared in cooperation with the Defense Nuclear Agency. 1991. p. C1-C21. (Geologic and geophysical investigations of Enewetak Atoll, Republic of the Marshall Islands.)
- P 1513-D. MARSHALL ISLANDS. Larger foraminifer biostratigraphy of PEACE boreholes, Enewetak Atoll, western Pacific Ocean, by T. G. Gibson and Richard Margerum. Prepared in cooperation with the U.S. Defense Nuclear Agency. 1991. p. D1-D14. (Geologic and geophysical investigations of Enewetak Atoll, Republic of the Marshall Islands.)
- P 1516. Oliverian domes, related plutonic rocks, and mantling Ammonoosuc Volcanics of the Bronson Hill Anticlinorium, New England Appalachians, by G. W. Leo. 1991. 92 p. 1 plate in pocket.

## BULLETINS

Bulletins contain significant data and interpretations that are of lasting scientific interest but are generally more limited in scope or geographic coverage than professional papers. They include the results of resource studies and of geologic and topographic investigations; as well as collections of short papers related to a specific topic.

- B 1573. CONNECTICUT. Bedrock geology of the Bristol Quadrangle, Hartford, Litchfield, and New Haven counties, Connecticut, by H. E. Simpson. Prepared in cooperation with the State of Connecticut Geological and Natural History Survey. 1989 (1990). 13 p. 1 plate in pocket. (Revised and updated version of an earlier, smaller format book.)
- B 1674-E. MONTANA. Petrology of chromite-bearing rocks from the lowermost cyclic units in the Stillwater Complex, Montana, by P. J. Loferski, B. R. Lipin, U.S. Geological Survey;

- and R. W. Cooper, Lamar University. 1990. p. E1-E28. (Contributions on ore deposits in the early magmatic environment.)
- B 1702-K. ARIZONA. Mineral resources of the Kofa Unit 4 North Wilderness Study Area, Yuma County, Arizona, by D. R. Sherrod, D. B. Smith, M. D. Kleinkopf, U.S. Geological Survey; and D. D. Gese, U.S. Bureau of Mines. 1990. p. K1-K12. (Mineral resources of wilderness study areas; southwestern and south-central Arizona.)
- B 1704-A. ARIZONA. Mineral resources of the Mohave Wash Wilderness Study Area, Mohave County, Arizona, by J. G. Evans, D. R. Sherrod, R. H. Hill, R. C. Jachens, U.S. Geological Survey; and J. R. McDonnell, Jr., U.S. Bureau of Mines. 1990. p. A1-A17. (Mineral resources of wilderness study areas; Havasu region, Arizona.)
- B 1704-B. ARIZONA. Mineral resources of the Gibraltar Mountain and Planet Peak Wilderness Study Areas, La Paz County, Arizona, by R. G. Eppinger, J. A. Peterson, H. R. Blank, Jr., K. E. Livo, D. H. Knepper, Jr., J. A. Pitkin, U.S. Geological Survey; J. E. Spencer, S. J. Reynolds, M. J. Grubensky, Arizona Geological Survey; T. J. Kreidler, and D. C. Scott, U.S. Bureau of Mines. 1990. p. B1-B32. (Mineral resources of wilderness study areas; Havasu region, Arizona.)
- B 1704-C. ARIZONA. Mineral resources of the Swansea Wilderness Study Area, La Paz and Mohave counties, Arizona, by R. M. Tosdal, R. G. Eppinger, H. R. Blank, Jr., D. H. Knepper, Jr., A. J. Gallagher, J. A. Pitkin, S. L. Jones, U.S. Geological Survey; and G. S. Ryan, U.S. Bureau of Mines. 1990. p. C1-C24. (Mineral resources of wilderness study areas; Havasu region, Arizona.)
- B 1704-D. ARIZONA. Mineral resources of the Cactus Plain and East Cactus Plain Wilderness Study Areas, La Paz County, Arizona, by R. M. Tosdal, R. G. Eppinger, J. A. Erdman, W. F. Hanna, J. A. Pitkin, H. R. Blank, Jr., R. M. O'Leary, J. R. Watterson, U.S. Geological Survey; and T. J. Kreidler, U.S. Bureau of Mines. 1990. p. D1-D32. (Mineral resources of wilderness study areas; Havasu region, Arizona.)
- B 1728-G. NEVADA, UTAH. Mineral resources of the Marble Canyon Wilderness Study Area, White Pine County, Nevada, and Millard County, Utah, by M. F. Diggles, G. A. Nowlan, H. R. Blank, Jr., S. M. Marcus, U.S. Geological Survey; and R. F. Kness, U.S. Bureau of Mines. 1990. p. G1-G22. (Mineral resources of wilderness study areas; east-central Nevada and part of adjacent Beaver and Iron counties, Utah.)
- B 1738-D. OREGON. Mineral resources of the Diablo Mountain Wilderness Study Area, Lake County, Oregon, by M. F. Diggles, H. D. King, M. E. Gettings, J. E. Conrad, D. L. Sawatzky, G. S. Soreghan, U.S. Geological Survey; T. J. Peters, and S. L. Willett, U.S. Bureau of Mines. 1990. p. D1-D22. (Mineral resources of wilderness study areas; south-central Oregon.)
- B 1741-E. OREGON. Mineral resources of the Gold Creek and Sperry Creek Wilderness Study Areas, Malheur County, Oregon, by J. G. Evans, J. G. Frisken, Andrew Griscom, D. L. Sawatzky, U.S. Geological Survey; and M. S. Miller, U.S. Bureau of Mines. 1990. p. E1-E20. (Mineral resources of wilderness study areas; east-central Oregon.)
- B 1741-G. OREGON. Mineral resources of the Blue Canyon and Owyhee Breaks Wilderness Study Areas, Malheur County, Oregon, by D. B. Vander Meulen, V. E. Barlock, P. S. Plumley, J. G. Frisken, Andrew Griscom, U.S. Geological Survey; and J. D. Causey, U.S. Bureau of Mines. 1990. p. G1-G28. (Mineral resources of wilderness study areas; east-central Oregon.) (Supersedes Open-file report 90-517.)
- B 1744-C. OREGON. Mineral resources of the Soda Mountain Wilderness Study Area, Jackson County, Oregon, by W. J. Pickthorn, R. J. Goldfarb, Donald Plouff, S. J. Sutley, M. D. Wilcox, U.S. Geological Survey; T. J. Peters and S. L. Willett, U.S. Bureau of Mines. 1990. p. C1-C12. (Mineral resources of wilderness study areas; central and far western Oregon.)
- B 1754-E. UTAH. Mineral resources of the Mill Creek Canyon Wilderness Study Area, Grand County, Utah, by M. F. Diggles, J. E. Case, H. N. Barton, J. S. Duval, U.S. Geological Survey; and M. E. Lane, U.S. Bureau of Mines. 1990. p. E1-E20. (Mineral resources of wilderness study areas; upper Colorado River region, Utah.)
- B 1787-N. UTAH. Sedimentology, mineralogy, palynology, and depositional history of some uppermost Cretaceous and lowermost Tertiary rocks along the Utah Book and Roan cliffs east of the Green River, by K. J. Franczyk, J. K. Pitman and D. J. Nichols. 1990. p. N1-N27. 2 plates in pocket. (Evolution of sedimentary basins; Uinta and Piceance basins.)
- B 1787-P. UTAH, COLORADO. Middle Cretaceous stratigraphy on the south and east sides of the Uinta Basin, northeastern Utah and northwestern Colorado, by C. M. Molenaar and W. A. Cobban. 1991. p. P1-P34. 1 plate in pocket. (Evolution of sedimentary basins; Uinta and Piceance basins.)
- B 1787-X. UTAH. Ground-water chemistry and diagenetic reactions in Tertiary sandstones of the Green River and Wasatch formations, Uinta Basin, Utah, by R. B. Wanty, J. K. Pitman and T. D. Fouch. 1991. p. X1-X21. (Evolution of sedimentary basins; Uinta and Piceance basins.)
- B 1787-Y. COLORADO. Structural control on distribution of sedimentary facies in the Pennsylvanian Mintum Formation of north-central Colorado, by K. J. Houck, University of Colorado. 1991. p. Y1-Y33. (Evolution of sedimentary basins; Uinta and Piceance basins.)
- B 1839-E,F. Evolution of sedimentary basins; Appalachian Basin. 1990. 43 p. 2 plates in pocket. (Chapters E and F are issued as a single volume and are not available separately.)
- E. Structural and stratigraphic framework of the Giles County area, a part of the Appalachian Basin of Virginia and West Virginia, by R. C. McDowell and A. P. Schultz. p. E1-E24.
- F. Late Paleozoic depositional trends in the central Appalachian Basin, by K. J. Englund and R. E. Thomas. p. F1-F19.
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Arctic Data Interactive; a hypermedia system, by D. A. Wiltshire. p. 85-87.

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Recycling program, by J. E. Cordyack. p. 90.

Automation in the Office of Personnel, by E. J. Christian. p. 90-91.

Child care, by K. B. Rutledge. p. 91-92.

### GENERAL INTEREST PUBLICATIONS

General Interest Publications briefly summarize, for nontechnical readers, the latest information on major topics in the earth sciences about which the Survey receives frequent inquiries from the general public. This series of booklets, brochures, leaflets, and essay reprints are written by Survey scientists and cover topics such as earthquakes, energy resources, ground water, landforms and land use, marine geology, rain, rocks and mineral resources.

A primer on water, by L. B. Leopold and W. B. Langbein. 1960 (1991). 50 p. (Reprint.)

### Periodicals

#### EARTHQUAKES AND VOLCANOES

For a complimentary copy write to Earthquakes and Volcanoes, U.S. Geological Survey, 904 National Center, Reston, VA 22092.

Earthquakes and Volcanoes, v. 22, no. 2. 1990. p. 52-87.

Earthquakes and Volcanoes, v. 22, no. 3. 1991. p. 91-153.

Earthquakes and Volcanoes, v. 22, no. 4. 1990. p. 154-185.

#### PRELIMINARY DETERMINATION OF EPICENTERS

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Single copies of monthly issues may be purchased only from USGS Book and Open-File Report Sales, Box 25425, Denver CO 80225.

Preliminary determination of epicenters. Monthly listing for July 1990. 40 p.

Preliminary determination of epicenters. Monthly listing for August 1990. 32 p.

Preliminary determination of epicenters. Monthly listing for September 1990. 28 p.

Preliminary determination of epicenters. Monthly listing for October 1990. 28 p.

Preliminary determination of epicenters. Monthly listing for November 1990. 28 p.

Preliminary determination of epicenters. Monthly listing for December 1990. 32 p.

Preliminary determination of epicenters. Monthly listing for January 1991. 40 p.

Preliminary determination of epicenters. Monthly listing for February 1991. 28 p.

Preliminary determination of epicenters. Monthly listing for March 1991. 28 p.

Preliminary determination of epicenters. Monthly listing for April 1991. 32 p.

Preliminary determination of epicenters. Monthly listing for May 1991. 28 p.

Preliminary determination of epicenters. Monthly listing for June 1991. 28 p.

### Miscellaneous and Special Books

#### GEOGRAPHIC NAMES INFORMATION SYSTEM (GNIS)

The Geographic Names Information System currently consists of approximately two million name entries with information about the feature name and category and its geographic location by coordinates, county, and USGS topographic maps. The name file was developed from published 7.5-minute topographic maps. In areas where 7.5-minute maps have not been published, 15-minute maps or 1:250,000-scale maps provided basic name data.

Alphabetical listings are available for each State, territory and outlying area. These preliminary gazetteers list only those names found on the topographic maps of the U.S. Geological Survey. Two topical listings are available: a national listing of populated places and an abridged version of all States, territories and outlying areas, which contains about 40,000 populated places, other administrative places, and major physical features. Many of these files are also available in microfiche.

Other computer listings, specialized searches, and computer tapes may also be purchased.

GNIS, developed by Branch of Geographic Names, Office of Geographic and Cartographic Research, National Mapping Division, is the basis for Professional Paper 1200. The first chapter, P-1200-NJ (New Jersey) was published in 1982 (revised 1983). Each State, territory, and outlying area will be published as a separate chapter after further research and compilation. All other Federal sources, most State sources and other pertinent materials as well as historical documents are researched to complete the requirements for the National Names Depository. Additional published gazetteers include Arizona, Delaware, Indiana, Kansas, North Dakota, and South Dakota; and Oregon, Iowa and Florida are complete and in various stages of printing and editing. State files in compilation include Alabama, Mississippi, Massachusetts, Utah, Pennsylvania and Rhode Island. The interim materials described may meet the needs of a wide variety of potential users until all chapters have been published.

Products may be ordered from Earth Science Information Center, U.S. Geological Survey, 507 National Center, Reston, Virginia 22092. Telephone (703) 648-6045.

Information may be requested from U.S. Geological Survey, Manager GNIS, 523 National Center, Reston, Virginia 22092. Telephone (703) 648-4544.

## OTHER SPECIAL BOOKS

Suggestions to authors of the reports of the United States Geological Survey, revised and edited by W. R. Hansen. 1991. 289 p. (Seventh edition.)

## CATALOGS

Price and availability list of U.S. Geological Survey publications, 1990. 1991. 49 p.

Publications of the U.S. Geological Survey, 1990. 1991. 445 p.

## 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.

The following WRI reports are available from: USGS Book and Open-File Report Sales, Box 25425, Denver, CO 80225 (telephone 303-236-7476). For specific ordering instructions, please refer to "Reports Available Only Through Book and Open-File Report Sales" under "Open-File Reports." When ordering, use the WRI number preceding each item, and do not mix orders for WRI reports and open-file reports with other Geological Survey products.

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 Earth Science Information Center, Rm. 101, 4230 University Dr., Anchorage, AK 99508-4664.
- Da Library, Rm. C2002, Bldg. 20, Denver Federal Center, Lakewood, CO 80225.
- Db Earth Science Information Center, Rm. 169, Federal Bldg., 1961 Stout St., Denver, CO 80294.
- F Library, 2255 North Gemini Dr., Flagstaff, AZ 86001.
- LA Public Inquiries Office, Rm. 7638, Federal Bldg., 300 North Los Angeles St., Los Angeles, CA 90012. (Closed.)
- M Library, 345 Middlefield Rd., Menlo Park, CA 94025.
- NC Library, Rm. 4A100, National Center, 12201 Sunrise Valley Dr., Reston, VA 22092.
- S Earth Science Information Center, Rm. 678, U.S. Courthouse, West 920 Riverside Ave., Spokane, WA 99201.
- SF Earth Science Information Center, Rm. 504, Customhouse, 555 Battery St., San Francisco, CA 94111.
- U Earth Science Information Center, Rm. 8105, Federal Bldg., 125 South State St., Salt Lake City, UT 84138.
- Wa Earth Science Information Center, U.S. Department of the Interior, Rm. 2650, 1849 C St., NW, Washington, DC 20240.
- Wb U.S. Department of the Interior, Natural Resources Library, Gifts and Exchange Section, 1849 C St., NW, Washington, DC 20240.

WRI 81-1117. OKLAHOMA. Generalized altitude and configuration of the base of the High Plains regional aquifer, northwestern Oklahoma, by J. S. Havens. 1981. 2 over-size sheets, scale 1:250,000 (1 inch = about 4 miles). (USGS, WRD, Room 621, 215 Dean A. McGee Ave., Oklahoma City, OK 73102.)

WRI 84-4032. NEVADA. Geohydrology of test well USW H-1, Yucca Mountain, Nye County, Nevada, by F. E. Rush, William Thordarson and D. G. Pyles. Prepared in cooperation with the

U.S. Department of Energy. 1984. 56 p. (NC, Da, M, Wb, Db; USGS, WRD, Yucca Mountain Project Branch Library, Box 25046, Mail Stop 421, Denver Federal Ctr., Denver, CO 80225-0046.)

WRI 84-4089. PUERTO RICO. Estimates of 7-day, 10-year low flow at ungaged streams in Puerto Rico, by Eloy Colón-Dieppa and Vicente Quiñones-Aponte. 1984. (NC, Da, M, Wb; USGS, WRD, P.O. Box 364424, San Juan, PR 00936.) (Available only from USGS, WRD, P.O. Box 364424, San Juan, PR 00936-4424.)

WRI 85-4229. WYOMING, MONTANA. Ground-water-flow systems in the Powder River structural basin, Wyoming and Montana, by J. G. Rankl and M. E. Lowry. 1990. 39 p., 1 over-size sheet. (NC, Da, M, Wb, Db, U; USGS, WRD, 2617 East Lincolnway, Suite B, Cheyenne, WY 82001.)

WRI 86-4001. OREGON. Geology, structure, and thickness of hydrogeologic units in part of the Columbia Plateau, Oregon, by J. B. Gonthier. 1990. 6 over-size sheets, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402.)

WRI 86-4195. PENNSYLVANIA. Technique for estimating depths of 100-year floods in Pennsylvania, by H. N. Flippo, Jr. 1990. 16 p., 1 over-size sheet, scale 1:1,000,000 (1 inch = about 16 miles). (NC, Da, M, Wb.)

WRI 86-4364. Definition of the geohydrologic framework and preliminary simulation of ground-water flow in the Mississippi Embayment aquifer system, Gulf Coastal Plain, United States, by J. K. Arthur and R. E. Taylor. 1990. 97 p., 2 over-size sheets. (NC, Da, M, Wb.)

WRI 87-4123. PUERTO RICO. Elevation of the water-table surface for the alluvial aquifer and hydrologic conditions in the Santa Isabel-Juana Diaz area, Puerto Rico, March 1986, by Angel Román-Más and Orlando Ramos-Ginés. Prepared in cooperation with the Puerto Rico Department of Agriculture. 1987. 2 over-size sheets, scale 1:20,000 (1 inch = 1,667 feet). (NC, Da, M, Wb; USGS, WRD, P.O. Box 364424, San Juan, PR 00936.) Available only from USGS, WRD, P.O. Box 364424, San Juan, PR 00936-4424.

WRI 87-4130. NEW HAMPSHIRE. Hydrogeology of the Cochecho River basin, southeastern New Hampshire, by J. E. Cotton. Prepared in cooperation with the State of New Hampshire, Department of Environmental Services, Water Resources Division. 1989. 47 p., 1 over-size sheet, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, Wb.)

WRI 87-4135. WASHINGTON. Ground-water pumpage from the Columbia Plateau regional aquifer system, Washington, 1984, by D. R. Cline and M. E. Knadle. Prepared in cooperation with the State of Washington Department of Ecology. 1990. 32 p., 1 over-size sheet, scale 1:1,000,000 (1 inch = about 16 miles). (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; and Library, West 920 Riverside Ave., Room 656, Spokane, WA 99201.)

WRI 87-4145. GEORGIA. Hydrogeology, chemical quality, and availability of ground water in the upper Floridan Aquifer, Albany area, Georgia, by D. W. Hicks, H. E. Gill and S. A. Longworth. Prepared in cooperation with the City of Albany, Water, Gas, and Light Commission. 1987. 52 p., 3 over-size

- sheets. (NC, Da, M, Wb; USGS, WRD, 6481-B Peachtree Industrial Blvd., Doraville, GA 30360.)
- WRI 87-4160. PUERTO RICO. Potentiometric surface of the alluvial aquifer and hydrologic conditions in the central Aguirre Quadrangle, Puerto Rico, March 1986, by Sigfredo Torres-González and Fernando Gómez-Gómez. 1987. 1 over-size sheet, scale 1:20,000 (1 inch = 1,667 feet). (NC, Da, M, Wb; USGS, WRD, P.O. Box 364424, San Juan, PR 00936.) Available only from USGS, WRD, P.O. Box 364424, San Juan, PR 00936-4424.
- WRI 87-4161. PUERTO RICO. Potentiometric surface of the alluvial aquifer and hydrologic conditions in the Salinas Quadrangle, Puerto Rico, March 1986, by Vicente Quifones-Aponte and Fernando Gómez-Gómez. 1987. 1 over-size sheet, scale 1:20,000 (1 inch = 1,667 feet). (NC, Da, M, Wb; USGS, WRD, P.O. Box 364424, San Juan, PR 00936.) Available only from USGS, WRD, P.O. Box 364424, San Juan, PR 00936-4424.
- WRI 87-4162. PUERTO RICO. Potentiometric surface of the alluvial aquifer and hydrologic conditions in the Guayama Quadrangle, Puerto Rico, March 1986, by Rafael Dacosta and Fernando Gómez-Gómez. 1987. 1 over-size sheet, scale 1:20,000 (1 inch = 1,667 feet). (NC, Da, M, Wb; USGS, WRD, P.O. Box 364424, San Juan, PR 00936.) Available only from USGS, WRD, P.O. Box 364424, San Juan, PR 00936-4424.
- WRI 88-4016. MINNESOTA. Water quality of lakes and streams in Voyageurs National Park, northern Minnesota, 1977-84, by G. A. Payne. Prepared in cooperation with the National Park Service. 1991. 95 p. (NC, Da, M, Wb; USGS, WRD, 702 Post Office Bldg., St. Paul, MN 55101.)
- WRI 88-4100. Geohydrology and regional ground-water flow of the coastal lowlands aquifer system in parts of Louisiana, Mississippi, Alabama, and Florida; a preliminary analysis, by Angel Martin, Jr. and C. D. Whiteman, Jr. 1989. 88 p., 2 over-size sheets. (NC, Da, M, Wb; USGS, WRD, P. O. Box 66492, 6554 Florida Blvd., Baton Rouge, LA 70896.)
- WRI 88-4105. WASHINGTON, OREGON, IDAHO. Surface-water resources of the Columbia Plateau in parts of Washington, Oregon, and Idaho, by L. M. Nelson. 1991. 4 over-size sheets. (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS Library, Room 656, West 920 Riverside Ave., Spokane, WA 99201.)
- WRI 88-4132. COLORADO. Water quality of Fountain and Monument creeks, south-central Colorado, with emphasis on relation of water quality to stream classifications, by P. R. Edelmann. Prepared in cooperation with the Colorado Springs Department of Utilities and the Lower Fountain Water-Quality Management Association. 1990. 99 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Box 25046, Mail Stop 415, Federal Ctr., Denver, CO 80225.)
- WRI 88-4145. NEW YORK. Glacial history and geohydrology of the Irondequoit Creek valley, Monroe County, New York, by W. M. Kappel and R. A. Young. Prepared in cooperation with the Monroe County Environmental Health Laboratory, Monroe County Department of Engineering. 1989. 34 p., 3 over-size sheets. (NC, Da, M, Wb; Library, USGS, P.O. Box 1669, Albany, NY 12201.)
- WRI 88-4147. MASSACHUSETTS. Stream-aquifer relations and yield of stratified-drift aquifers in the Nashua River basin, Massachusetts, by V. A. de Lima. Prepared in cooperation with the Massachusetts Department of Environmental Management. 1991. 47 p. (NC, Da, M, Wb.)
- WRI 88-4163. TRUK ISLANDS. Ground-water resources of selected high volcanic islands of Truk with emphasis on small village supplies, by K. J. Takasaki. Prepared in cooperation with the Government of Truk State. 1989. 60 p. (NC, Da, M, Wb, SF, LA.)
- WRI 88-4174. FLORIDA. Effect of spray irrigation of treated wastewater on water quality of the surficial aquifer system, Reedy Creek Improvement District, central Florida, by E. R. German. Prepared in cooperation with the Reedy Creek Improvement District. 1990. 43 p. (NC, Da, M, Wb; USGS, WRD, 224 West Center St., Suite 1006, Altamonte Springs, FL 32714.)
- WRI 88-4179. NEW HAMPSHIRE, MAINE. Hydrogeology, water quality, and effects of increased municipal pumpage of the Saco River valley glacial aquifer; Bartlett, New Hampshire to Fryeburg, Maine, by D. H. Tepper, D. J. Morrissey, C. D. Johnson and T. J. Maloney. Prepared in cooperation with the Maine Department of Conservation, the New Hampshire Water Supply and Pollution Control Commission, the New Hampshire Water Resources Board, and the Town of Conway, New Hampshire. 1990. 113 p., 6 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Wb; USGS, WRD, 26 Gannett Dr., Augusta, ME.)
- WRI 88-4198. SOUTH DAKOTA. A digital simulation of the glacial-aquifer system in the northern three-fourths of Brown County, South Dakota, by P. J. Emmons. Prepared in cooperation with the City of Aberdeen and the South Dakota Department of Water and Natural Resources. 1990. 74 p. (NC, Da, M, Wb, Db.)
- WRI 88-4209. WYOMING. Use of paleoflood investigations to improve flood-frequency analyses of plains streams in Wyoming, by M. E. Cooley. Prepared in cooperation with the Wyoming Highway Department. 1990. 75 p. (NC, Da, M, Wb, Db, U; USGS, WRD, 2617 East Lincolnway, Suite B, Cheyenne, WY 82001.)
- WRI 88-4213. Floods in West Virginia, Virginia, Pennsylvania, and Maryland, November 1985, by D. H. Carpenter. 1990. 86 p. (NC, Da, M, Wb; USGS, WRD, 208 Carroll Bldg., 8600 La Salle Rd., Towson, MD 21204.)
- WRI 88-4229. MISSISSIPPI. Freshwater use in Mississippi, 1985, by J. A. Callahan and N. L. Barber. Prepared in cooperation with the Mississippi Department of Environmental Quality, Bureau of Land and Water Resources. 1990. 1 over-size sheet. (NC, Da, M, Wb.)
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- WRI 89-4031. RHODE ISLAND. Hydrogeology, water quality, and ground-water development alternatives in the lower Wood River ground-water reservoir, Rhode Island, by D. C. Dickerman, E. C. Trench and J. P. Russell. Prepared in cooperation with the Rhode Island Water Resources Board. 1990. 109 p. (NC, Da, M, Wb.)

- WRI 89-4051. OREGON, WASHINGTON. Use of elutriate tests and bottom-material analyses in simulating dredging effects on water quality of selected rivers and estuaries in Oregon and Washington, 1980-1983, by G. J. Fuhrer and Duane Evans. Prepared in cooperation with the U.S. Army Corps of Engineers. 1990. 54 p., 1 over-size sheet. (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS, Library, 5400 McArthur, Vancouver, WA 98661.)
- WRI 89-4052. WASHINGTON. Characterization and simulation of rainfall-runoff relations for headwater basins in western King and Snohomish counties, Washington, by R. S. Dinicola. Prepared in cooperation with the King County Department of Public Works, King County Department of Planning and Community Development, Snohomish County Department of Public Works, and Municipality of Metropolitan Seattle. 1990. 52 p. (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS Library, Room 656, West 920 Riverside Ave., Spokane, WA 99201.)
- WRI 89-4057. OREGON. Adequacy of available hydrogeologic data for evaluation of declining ground-water levels in the Fort Rock Basin, south-central Oregon, by W. D. McFarland and G. N. Ryals. Prepared in cooperation with the Oregon Water Resources Department. 1991. 47 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, Wb, LA SF, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS, Library, 5400 McArthur, Vancouver, WA 98661.)
- WRI 89-4069. NEW MEXICO. Geohydrology of the Morrison Formation in the western San Juan basin, New Mexico, by G. E. Welder and R. L. Klausing. Prepared in cooperation with the New Mexico State Engineer Office and the Navajo Nation. 1990. 1 over-size sheet. (NC, Da, M, Wb, Db, U; USGS, WRD, Pinetree Office Park, Suite 200, 4501 Indian School Rd. NE, Albuquerque, NM 87110.)
- WRI 89-4078. WYOMING. A concept of the shallow ground-water system along the North Platte River, south-central Wyoming, by M. A. Crist. Prepared in cooperation with the Wyoming State Engineer. 1990. 23 p., 2 over-size sheets. (NC, Da, M, Wb, Db, U; USGS, WRD, 2617 East Lincolnway, Suite B, Cheyenne, WY 82001.)
- WRI 89-4080. Users manual for ANNIE, a computer program for interactive hydrologic analyses and data management, by A. M. Lumb, J. L. Kittle, Jr. and K. M. Flynn. 1990. 236 p. (NC, Da, M, Wb.)
- WRI 89-4098. SOUTH CAROLINA. Water use in South Carolina, 1985, by W. J. Stringfield and S. C. Lambert. Prepared in cooperation with the South Carolina Water Resources Commission. 1990. 27 p. (NC, Da, M, Wb.)
- WRI 89-4099. CALIFORNIA. Geohydrology and ground-water-flow simulation of the Surprise Spring basin aquifer system, San Bernardino County, California, by C. J. Londquist and P. L. Martin. 1989. 41 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)
- WRI 89-4106. ILLINOIS. Techniques for computing discharge at four navigation dams on the Illinois and Des Plaines rivers in Illinois, by D. M. Mades, L. S. Weiss and J. R. Gray. Prepared in cooperation with the U.S. Army Corps of Engineers, Rock Island District. 1991. 58 p. (NC, Da, M, Wb; USGS, WRD, 102 East Main St., 4th Floor, Urbana, IL 61801.)
- WRI 89-4110. WASHINGTON. Quality of water in an inactive uranium mine and its effects on the quality of water in Blue Creek, Stevens County, Washington, 1984-85, by S. S. Sumioka. Prepared in cooperation with the U.S. Bureau of Indian Affairs and the U.S. Bureau of Land Management. 1991. 62 p. (NC, Da, M, Wb; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402-4384.)
- WRI 89-4115. PUERTO RICO. Potentiometric surface of the principal aquifer and hydrologic conditions in the Ponce-Juana Diaz area, Puerto Rico, April-May, 1987, by Félix Rodríguez-del-Río and Vicente Quiñones-Aponte. 1990. 2 over-size sheets; sheet 2, scale 1:20,000 (1 inch = 1,667 feet). (NC, Da, M, Wb; USGS, WRD, GPO Box 364424, San Juan PR 00936-4424.)
- WRI 89-4116. PUERTO RICO. Potentiometric surface of the alluvial aquifer and hydrologic conditions in the Santa Isabel-Juana Diaz area, Puerto Rico, March to April, 1987, by Félix Rodríguez-del-Río and Fernando Gómez-Gómez. 1990. 1 over-size sheet, scale 1:20,000 (1 inch = 1,667 feet). (NC, Da, M, Wb; USGS, WRD, P.O. Box 364424, San Juan, PR 00936.) Available only from USGS, WRD, P.O. Box 364424, San Juan, PR 00936-4424.
- WRI 89-4117. NEVADA. Shallow ground water in the Whitney area, southeastern Las Vegas Valley, Clark County, Nevada; Part I. Description of chemical quality, 1986-87, by D. H. Emme and D. E. Prudic. Prepared in cooperation with the U.S. Bureau of Reclamation. 1991. 47 p. (NC, Da, M, Wb, LA, SF, U; USGS, WRD, 1500 East Tropicana, Suite 201, Las Vegas, NV 89119; and 705 North Plaza St., Room 224, Carson City, NV 89701.)
- WRI 89-4121. WASHINGTON. Extent and source of organic solvents in ground water in the Argonne Road area near Spokane, Washington, by N. P. Dion and S. S. Sumioka. Prepared in cooperation with the State of Washington Department of Ecology. 1991. 39 p. (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS Library, Room 656, West 920 Riverside Ave., Spokane, WA 99201.)
- WRI 89-4124. ILLINOIS. Determination of hydraulic properties in the vicinity of a landfill near Antioch, Illinois, by R. T. Kay and J. D. Earle. Prepared in cooperation with the U.S. Environmental Protection Agency. 1990. 28 p. (NC, Da, M, Wb, Wa; USGS, WRD, 102 East Main St., 4th Floor, Urbana, IL 61801.)
- WRI 89-4125. WASHINGTON. Available habitat for salmon and steelhead trout in the lower Puyallup, White, and Carbon rivers in western Washington, by S. S. Embrey. Prepared in cooperation with the Pierce County Department of Public Works and State of Washington Department of Ecology. 1991. 62 p. (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS Library, Room 656, West 920 Riverside Ave., Spokane, WA 99201.)
- WRI 89-4127. NEW MEXICO. Ground-water availability and quality in eastern Bernalillo County and vicinity, central New Mexico, by G. E. Kues. Prepared in cooperation with the Bernalillo County Commission and the New Mexico State Engineer Office. 1990. 82 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Pinetree Office Park, Suite 200, 4501 Indian School Rd. NE, Albuquerque, NM 87110.)

- WRI 89-4129. WISCONSIN. Ground-water levels and quality at Crex Meadows Wildlife Area, Burnett County, Wisconsin, by G. L. Patterson. Prepared in cooperation with the Wisconsin Department of Natural Resources. 1990. 19 p. (NC, Da, M, Wb; USGS, WRD, 6417 Normandy Lane, Madison, WI 53719.)
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A. Summary and conclusions, by M. L. Sorey. p. A1-A17.

B. Introduction, by M. L. Sorey. p. B1-B6.

C. Geologic setting of the Corwin Springs Known Geothermal Resources Area-Mammoth Hot Springs area in and adjacent to Yellowstone National Park, by K. L. Pierce, K. D. Adams and N. C. Sturchio. p. C1-C37.

D. Electrical geophysical investigations in the Norris-Mammoth corridor, Yellowstone National Park, and the adjacent Corwin Springs Known Geothermal Resources Area, by W. D. Stanley, D. B. Hoover, M. L. Sorey, B. D. Rodriguez and W. D. Heran. p. D1-D18.

E. Soil mercury and streambed-temperature anomalies in the Norris-Mammoth-La Duke corridor, by W. L. Hamilton and R. L. Chambers. p. E1-E24.

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Geochemical data are provided on one (360K) double-sided, double-density diskette in eight ASCII files suitable for viewing or printing using standard DOS commands. Requirements: IBM PC or compatible; 256K RAM.

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OF 90-0415. The track of the Yellowstone hotspot; volcanism, faulting, and uplift, by K. L. Pierce and L. A. Morgan. 1990. 70 p. (NC, Da, M.)

OF 90-0416. NEBRASKA. Distribution of the basal clastic unit of the Oligocene Chadron Formation in the Alliance 2-degree Quadrangle, northwestern Nebraska, by K. A. Dickinson. 1990. 6 p., 2 over-size sheets. (NC, Da, M, Db; Conservation and Surv. Div., Institute of Agriculture and Natural Resources, 113 Nebraska Hall, Univ. of Nebraska, Lincoln, NE 68588-0517.)

OF 90-0417. NORTH CAROLINA. Provisional geologic map of the Snow Camp-Saxapahaw area, North Carolina, by R. G. Schmidt, Pablo Gumiel and Alba Payás. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M; Div. of Land Resources, Dep. of Natural Resources and Community Dev., 512 North Salisbury St., P.O. Box 27687, Raleigh, NC 27611.)

OF 90-0418. Follow-up evaluation of fifteen geochemically anomalous areas and evaluation of four prospects in the Farah Garan-Kutam mineral belt, Kingdom of Saudi Arabia, by K. S. Kellogg, Eyad Jannadi and M. B. El Komi. Prepared in cooperation with the Deputy Ministry for Mineral Resources, Saudi Arabia. 1990. 21 p., 1 over-size sheet, scale 1:50,000 (1 inch = about 4,200 feet). (NC, Da, M.)

OF 90-0421. An evaluation and geochemical survey of the Farah Garan East Prospect, Southeast Asir, Kingdom of Saudi Arabia, by A. A. Bookstrom, M. B. El Komi, and R. P. Christian; *with a section on* A ground electromagnetic geophysical survey, by M. A. Bazzari. Prepared in cooperation with the Deputy Ministry for Mineral Resources, Saudi Arabia. 1990. 15 p., 1 over-size sheet, scale 1:2,000 (1 inch = 167 feet). (NC, Da, M.)

OF 90-0422. A networked computer configuration for seismic monitoring of volcanic eruptions, by G. D. March and J. A. Power. 1990. 19 p. (NC, Da, M.)

OF 90-0423. NEW MEXICO. Preliminary geologic map and sections of the Walker Canyon Quadrangle, Grant and Hidalgo counties, New Mexico, by D. C. Hedlund. 1990. 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 90-0424-A. SOUTH DAKOTA, WYOMING. Database for metallic mineral districts and mines of the northern Black Hills, South Dakota and Wyoming, by A. B. Wilson and Ed DeWitt. 1990. 15 p. (NC, Da, M, Db, U; Dep. of Water and Natural Resources, South Dakota Geol. Surv., Sci. Ctr., Univ. of South Dakota, Vermillion, SD 57069; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

OF 90-0424-B. SOUTH DAKOTA, WYOMING. Database for metallic mineral districts and mines of the northern Black Hills, South Dakota and Wyoming, by A. B. Wilson and Ed DeWitt. 1990. One 5 1/4 inch DS/DD IBM compatible diskette. (NC, Da, M, Db, U; Dep. of Water and Natural Resources, South Dakota Geol. Surv., Sci. Ctr., Univ. of South Dakota, Vermillion, SD 57069; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

OF 90-0425. NEW MEXICO. Geologic map of the Applegate Mountain Quadrangle, Grant County, New Mexico, by D. C. Hedlund. 1990. 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 90-0426. Data report for O-NYNEX; the 1988 Grenville-Appalachian seismic refraction experiment in Ontario, New York and New England, by J. H. Luetgert, Stephen Hughes, J. J. Cipar, Stephen Mangino, D. A. Forsyth and I. Asudeh. 1990. 51 p., 8 over-size sheets. (NC, Da, M; N.Y. State Geol. Surv., Library, Room 3128, Cultural Education Ctr., Empire State Plaza, Albany, NY 12230.)

OF 90-0427. CALIFORNIA. Quaternary geologic map of the San Jose East Quadrangle, Santa Clara County, California, by E. J. Helley and J. R. Wesling. 1990. 14 p. 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., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0430. NEVADA. Analytical data for stream-sediment and soil samples from the Reno 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0431. CALIFORNIA, NEVADA. Analytical data for stream-sediment and soil samples from the Walker Lake 1° by 2° Quadrangle, California and Nevada, by R. L. Turner. 1990. Three 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada

Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0432. NEVADA. Analytical data for stream-sediment and soil samples from the Wells 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0433. NEVADA. Analytical data for stream and playa sediment samples from the Caliente 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0434. NEVADA. Analytical data for stream-sediment and soil samples from the McDermitt 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0435. NEVADA. Analytical data for stream-sediment and soil samples from the Elko 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0436. NEVADA. Analytical data for stream-sediment samples from the Lund 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0437. NEVADA. Analytical data for stream-sediment and playa-sediment samples from Lovelock 1° by 2° Quadrangle, Ne-

vada, by R. L. Turner. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0438. CALIFORNIA, NEVADA. Analytical data for stream-sediment samples from the Death Valley 1° by 2° Quadrangle, California and Nevada, by R. L. Turner. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0439. NEVADA. Analytical data for stream-sediment samples from the Millett 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0440. CALIFORNIA, NEVADA. Analytical data for stream-sediment samples from the Mariposa 1° by 2° Quadrangle, California and Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0441. NEVADA. Analytical data for stream-sediment and soil samples from the Goldfield 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0442. ARIZONA, CALIFORNIA, NEVADA. Analytical data for stream-sediment samples from the Las Vegas 1° by 2° Quadrangle, Arizona, California and Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557; California Dep. of Conservation, Div. of Mines and

Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0443. NEVADA. Analytical data for stream-sediment and soil samples from the Winnemucca and Ely 1° by 2° quadrangles, Nevada, by R. L. Turner. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0444. ARIZONA, CALIFORNIA, NEVADA. Analytical data for stream and playa sediment samples from the Kingman 1° by 2° Quadrangle, Arizona, California and Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0445. NEVADA. Analytical data for stream-sediment samples from the Tonopah 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0452-A. McMap; version 2.0 basemap generation for the Apple Macintosh, by H. J. Dowsett. 1990. 26 p. (NC, Da, M.)

OF 90-0452-B. McMap; version 2.0 basemap generation for the Apple Macintosh, by H. J. Dowsett. 1990. Two 3 1/2 inch DS/DD Macintosh compatible diskettes. (NC, Da, M.)

OF 90-0453. UTAH. Mineral resources of the Paria-Hackberry Wilderness Study Area, Kane County, Utah, by Henry Bell, III, A. L. Bush, R. L. Turner, J. W. Cady, S. D. Brown, B. J. Hannigan and J. R. Thompson. 1990. 28 p., 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 90-0454-A. CALIFORNIA. Loma Prieta, California, earthquake of October 17, 1989; scenes from original U.S.G.S. and

acquired videotapes and release forms, by D. V. Prose. 1990. 10 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0454-B. CALIFORNIA. Loma Prieta, California, earthquake of October 17, 1989; scenes from original U.S.G.S. and acquired videotapes and release forms, by D. V. Prose. 1990. 5 videotapes. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.) (Videotapes may be purchased from Videotransform, Inc., 2450 Embarcadero Way, Palo Alto, CA 94303; telephone 415-494-1529.)

OF 90-0455. MONTANA. Measured stratigraphic sections of Elko Formation (Middle and Upper Cambrian), and Fairholme Group, Alexo Formation, and Palliser Formation (Upper Devonian), northwestern Montana and southeastern British Columbia, by W. P. Seward and T. S. Dyman. 1990. 21 p. (NC, Da, M, Db, U, S; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 90-0456. OKLAHOMA. Analyses of subsurface Permian rock samples from the Central Oklahoma Aquifer, by E. L. Mosier, P. H. Briggs, J. G. Crock, K. R. Kennedy, D. M. McKown, R. B. Vaughn and E. P. Welsch. 1990. 65 p. (NC, Da, M; Oklahoma Geol. Surv., Univ. of Oklahoma, 830 Van Fleet Oval, Room 163, Norman, OK 73019.)

OF 90-0457-A. NEVADA. Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2- degree Quadrangle, Nevada, by Donald Plouff. 1990. 22 p. (Documentation.) (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0457-B. NEVADA. Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2- degree Quadrangle, Nevada, by Donald Plouff. 1990. 59 p. (Tables of principal facts.) (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0457-C. NEVADA. Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2- degree Quadrangle, Nevada, by Donald Plouff. 1990. One 5 1/4 inch DS/DD IBM compatible diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0459-A. DLGGSM: a program to load data from 1:24,000-scale and 1:100,000-scale topographic maps stored in the digital line graph-3 (optional) format into a GSMAP data base, by G. I. Selner and G. N. Green. 1990. 5 p. (Documentation.) (NC, Da, M.)

OF 90-0459-B. DLGGSM: a program to load data from 1:24,000-scale and 1:100,000-scale topographic maps stored in the digital line graph-3 (optional) format into a GSMAP data base, by G. I. Selner and G. N. Green. 1990. One 5 1/4 inch DS/DD IBM compatible diskette. (Executable program and test file.) (NC, Da, M.)

- OF 90-0460. CALIFORNIA. Temperatures and natural gamma-ray logs obtained in boreholes MLGRAP #1 and #2, Mammoth Lakes, California; data and preliminary interpretations, by W. H. Diment and T. C. Urban. 1990. 132 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 90-0461. NEVADA. Analytical results and sample locality map of rock samples from the Lime Canyon Wilderness Study Area (NV-050-231), Clark County, Nevada, by J. H. Bullock, Jr., J. G. Evans, T. A. Roemer, E. P. Welsch and P. L. Hageman. 1990. 13 p., 1 over-size sheet, scale 1:50,000 (1 inch = about 4,200 feet). (NC, Da, M, Db, LA, SF, U; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)
- OF 90-0462. Selected translations of the Russian literature on the electrogeochemical sampling technique called CHIM (chastichnoe izvlecheniye metallov), compiled by D. B. Hoover and D. B. Smith, translated by Eleana Bloomstein, and edited by E. I. Bloomstein. 1990. 172 p. (NC, Da, M.)
- The exploration of ore deposits by the CHIM method, by I. S. Gol'dberg, A. V. Ivanova, Yu. S. Ryss, A. A. Veikher, Yu. G. Bakhtin, S. G. Alekseyev, and A. F. Yakovlev. p. 6-88.
- Finding buried gold mineralizations, by S. C. Alekseyev, and I. S. Gol'dberg. p. 89-95.
- CHIM surface set-up for unipolar extraction, by Yu. S. Ryss and I. S. Gol'dberg. p. 96-107.
- Patterns of electrochemical leaching of elements in the simplest physico-chemical system; Report 1, by S. G. Alekseyev, I. S. Gol'dberg, A. A. Veikher, T. R. Gracheva, A. S. Dukhanin, and A. V. Ivanova. p. 108-120.
- The movement of ions in rocks under the influence of an electrical current; Report 2, by M. A. Alekseyeva. p. 121-135.
- Experience of finding gold deposits in western Uzbekistan using the CHIM method, by A. A. Veikher, A. A. Tazeev, V. A. Gorbunov, and A. I. Memenko. p. 136-147.
- Possible uses of the CHIM method for explorations of covered gold deposits, by S. G. Alekseyev, A. A. Veikher, and I. S. Gol'dberg. p. 148-155.
- Experience of analysis of CHIM samples for gold, by G. P. Fedorova, G. F. Vasilkova, and A. Yu. Semova. p. 156-164.
- Gold exploration in southern Yakutiya using the CHIM method, by A. A. Veikher. p. 165-172.
- OF 90-0464. UTAH. Analytical results and sample locality maps of stream-sediment, heavy-mineral-concentrate, and rock samples from the Negro Bill Canyon (UT-060-138) and the Mill Creek Canyon (UT-060-139A) Wilderness Study Areas, Grand County, Utah, by J. H. Bullock, Jr., H. N. Barton, T. A. Roemer, P. L. Hageman and D. L. Fey. 1990. 16 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)
- OF 90-0465. OREGON. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the Hawk Mountain Wilderness Study Area, Harney County, Oregon, by B. M. Adrian, H. D. King, D. L. Fey and P. L. Hageman. 1990. 25 p., 1 over-size sheet, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, SF, LA, S; Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201-5528.)
- OF 90-0467. NEW YORK. Preliminary geologic map and cross section of the Ellenville and Kerhonkson quadrangles (in part) and the Napanoch Quadrangle, Ulster and Orange counties, New York, by J. B. Epstein and P. T. Lyttle. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M; New York State Geol. Surv. Library, Room 3128, Cultural Education Ctr., Empire State Plaza, Albany, NY 12230.)
- OF 90-0468. Venus; quantitative analyses of terrain units identified from Venera 15/16 data and described in Open-file report 90-24, by G. G. Schaber. Prepared for the National Aeronautics and Space Administration. 1990. 60 p. (NC, Da, M.)
- OF 90-0469. MONTANA. Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Sleeping Giant Wilderness Study Area (MT-075-111), Lewis and Clark County, Montana, by M. J. Malcolm and R. R. Carlson. 1990. 18 p., 1 over-size sheet, scale 1:50,000 (1 inch = about 4,200 feet). (NC, Da, M, Db, U, S; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)
- OF 90-0470. MONTANA, IDAHO. An assessment of metal endowments in revett-type sediment hosted Cu deposits in the Kootenai National Forest, Montana and Idaho, by G. T. Spanski and G. E. McKelvey. 1990. 44 p. (NC, Da, M, Db, S, U, SF; Idaho Geol. Surv., Univ. of Idaho, Morrill Hall, Room 332, Moscow, ID 83843; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)
- OF 90-0473. Computer programs in HP 9845 BASIC for modeling and interpreting multiple-layer, plane-interface shallow refraction seismics, by W. P. Hasbrouck. 1990. 56 p. (NC, Da, M.)
- OF 90-0477. Integrating petroleum-occurrence information into a basin-classification system, by M. W. Bultman. 1990. 22 p. (NC, Da, M.)
- OF 90-0478. Stratigraphy, descriptions, and physical properties of sediments cored in Lake Michigan, by S. M. Colman and D. S. Foster. 1990. 92 p. (NC, Da, M.)
- OF 90-0479. DISTRICT OF COLUMBIA. Deterioration of building stones in Washington, DC; a field trip guide, by E. S. McGee. 1990. 16 p. (NC.)
- OF 90-0481. CALIFORNIA. Strong-motion records from earthquakes of June 13, 1988, November 10, 1988, and April 3, 1989, on the Calaveras Fault, Central California, by M. J. Salsman and J. C. Switzer. 1990. 36 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 90-0482. Rehydration of desiccated Argonne premium coal samples, by M. R. Krasnow and R. B. Finkelman. 1990. 6 p. (NC, Da, M, U.)

- OF 90-0483. CALIFORNIA. The Southern California Network Bulletin, January-December, 1989, by L. A. Wald, D. D. Given, L. M. Jones and L. K. Hutton. 1990. 22 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 90-0484. MONTANA. A preliminary study of thermometry and metal sources of the Spar Lake strata-bound copper-silver deposit, Belt Supergroup, Montana, by T. S. Hayes. 1990. 30 p. (NC, Da, M, Db, U, S; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)
- OF 90-0487. IDAHO. Lithologic description of the Site E corehole, Idaho National Engineering Laboratory, Butte County, Idaho, by L. A. Morgan. 1990. 7 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho, Morrill Hall, Room 332, Moscow, ID 83843.)
- OF 90-0488-A. GSMROSE, a program to plot rose diagrams from linear data in GSDRAW and GSMAP data bases, using a micro-computer (IBM PC or compatible) and plotter, by G. I. Selner and R. B. Taylor. 1990. 15 p. (NC, Da, M.)
- OF 90-0488-B. GSMROSE, a program to plot rose diagrams from linear data in GSDRAW and GSMAP data bases, using a micro-computer (IBM PC or compatible) and plotter, by G. I. Selner and R. B. Taylor. 1990. One 5 1/4 inch diskette. (NC, Da, M.)
- GSMROSE requires an IBM PC or compatible microcomputer with at least 512K random access memory operating under DOS 2.0 or higher and a math coprocessor chip. A graphics adapter and matching monitor is required for plots to the screen. CGA graphics can be used but lack sufficient resolution for satisfactory graphical results. EGA VGA or Hercules monochrome graphics are desirable. A plotter that uses or emulates the Hewlett Packard Graphics Language (HPGL) at a level at or above that of the HP 7475A is required for hard-copy plots. HPGL files can be generated for use by programs such as QUEIT, or by a variety of proprietary programs. A printer connected to parallel port 1 (LPT:1) is required to make prints of data tables.
- OF 90-0489. WYOMING. Moving particules (bacteria?) in fluid inclusions from Yellowstone National Park, Wyoming, by K. E. Bargar and R. O. Fournier. 1990. 16 p., 1 video tape. (NC, Da, M, Db, U; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)
- OF 90-0490. NEW MEXICO, ARIZONA. Preliminary geologic map of the Goat Camp Spring Quadrangle, Grant County, New Mexico, and Greenlee County, Arizona, by D. C. Hedlund. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U, SF, LA; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)
- OF 90-0491. CALIFORNIA. Analytical results and sample locality map of stream-sediment, and panned-concentrate samples from the Hayfork 1:100,000 Quadrangle (northwest quarter of the Redding, California 1:250,000 Quadrangle), Trinity and Humboldt counties, California, by S. M. Smith, M. L. Silberman, R. M. O'Leary and M. S. Erickson. 1990. 46 p., 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, LA, SF; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 90-0492. Borehole magnetometry: detection of a steel liner from a nearby observation borehole, by P. N. Nelson. 1990. 24 p. (NC, Da, M.)
- OF 90-0493. Element levels in selected soils and plants, Wattenmeer National Park, North and East Frisian Islands, Federal Republic of Germany, by R. C. Severson, L. P. Gough and G. van den Boom. Prepared in cooperation with the Bundesanstalt für Geowissenschaften und Rohstoffe, Germany. 1990. 43 p. (NC, Da, M.)
- OF 90-0494. UTAH. Preliminary geologic map of the Paragonch Quadrangle, Iron County, Utah, by Florian Maldonado and V. S. Williams. 1991. 13 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)
- OF 90-0495. UTAH. Preliminary geologic map of the Parawan Gap Quadrangle, Iron County, Utah, by Florian Maldonado and V. S. Williams. 1991. 15 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)
- OF 90-0496. CALIFORNIA. Maps showing elevation of bedrock and implications for design of engineered structures to withstand earthquake shaking in San Mateo County, California, by W. H. Hensolt and E. E. Brabb. 1990. 11 p., 2 over-size sheets, scale 1:62,500 (1 inch = about 1 mile). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 90-0497. CALIFORNIA, ARIZONA. Preliminary geologic map of the Blythe 30' by 60' Quadrangle, California and Arizona, by Paul Stone. 1990. 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, Db, SF, LA, U; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)
- OF 90-0499. CALIFORNIA. The Southern California Network Bulletin, January-December, 1988, by L. A. Wald, D. D. Given, J. J. Mori, L. M. Jones and L. K. Hutton. 1990. 45 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 90-0501. ALASKA. Results of inductively coupled plasma-atomic emission spectroscopy analyses of minus 30-mesh stream-sediment samples from within and adjacent to the National Petroleum Reserve Alaska, by K. D. Kelley, K. E. Slaughter and J. M. Motooka. 1990. 19 p., 1 over-size sheet, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, A, LA, S, SF; Jill L. Schneider, Technical Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; Alaska Div. of Geol. and Geophys. Surv., P.O. Box 7028, Anchorage, AK 99510; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)



- OF 90-0502. CALIFORNIA. Cruise Report of R/V S.P. Lee, Leg 4, 1990, California continental borderland, by R. G. Bohannon, S. L. Eittreim and J. R. Childs. 1990. 10 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 90-0504. ARIZONA. Geology, geochemistry, and mineralogy of the Ridenour Mine breccia pipe, Arizona, by K. J. Wenrich, E. R. Verbeek, H. B. Sutphin, P. J. Modreski, B. S. Van Gosen and D. E. Detra. Prepared in cooperation with the Hualapai Tribe. 1990. 66 p. (NC, Da, M, Db, U, SF, LA; Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)
- OF 90-0505. NEW MEXICO. Preliminary geologic map and sections of part of the Canador Peak 15' Quadrangle, Grant and Hidalgo counties, New Mexico, by D. C. Hedlund and T. L. Finnell. 1990. 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 90-0507. HAWAII. Tabulation of CO<sub>2</sub>, SO<sub>2</sub>, and He concentrations in summit fumarole gases and wind and rainfall data at Kilauea Volcano, Hawaii for the period June 1987–February 1989, by M. E. Hinkle and J. B. Stokes. 1990. 27 p. (NC, Da, M, LA, SF; Division of Water and Land Development, P.O. Box 373, Honolulu, HI 96809.)
- OF 90-0508. Workshop on Application of structural geology to mineral and energy resources of the Central region, by C. H. Thorman. 1990. 17 p. (NC, Da, M.)
- Introduction to a workshop on Application of structural geology to mineral and energy resources of the Central region, by C. H. Thorman. p. 1.
- Tectonic controls on deposition and source-rock properties of the Woodford Shale, Anadarko Basin, Oklahoma; loading, subsidence, and forebulge development, by T. C. Hester, J. W. Schmoker and H. L. Sahl. p. 2.
- Microstructures in the Cambrian Bonnetterre Formation and Lamotte Sandstone of Southeast Missouri; sulfide occurrence in stylolites and extensional veinlets, by S. F. Diehl and M. B. Goldhaber. p. 2-5.
- Ash-flow calderas as structural controls of ore deposits; recent work and future problems, by P. W. Lipman. p. 5.
- Audio-magnetotelluric investigation at Turkey Creek Caldera, Chiricahua Mountains, southeastern Arizona, by R. M. Senterfit and D. P. Klein. p. 5-6.
- Mesozoic structural control of Tertiary mineralized veins in Champagne Creek area, Butte County, Idaho, by B. A. Skipp and R. G. Word. p. 6-9.
- Influence of crustal structure on the course of Arkansas River, south-central Colorado; some observations, by Kenneth Watson, D. H. Knepper, Jr. and M. W. Webring. p. 10.
- Structural and basement lithological implications from gravity and seismic-reflection data in Laramide mountain ranges and basins of Wyoming and Montana, by S. L. Robbins and J. A. Grow. p. 11.
- Sequential Laramide deformation of the Rocky Mountain foreland, by W. J. Perry, Jr., T. S. Dyman and D. J. Nichols. p. 11-12.
- Structural setting of the Chief mining district, eastern Chief Range, Lincoln County, Nevada, by P. D. Rowley, L. W. Snee, H. H. Mehnert, R. E. Anderson, G. J. Axen, K. J. Burke, F. W. Simonds and R. R. Shroba. p. 12-13.
- Geology and high-precision <sup>40</sup>Ar/<sup>39</sup>Ar geochronology of Keg Mountain, west-central Utah; implication for volcanic history and mineral deposits, by M. A. Shubat and L. W. Snee. p. 13-14.
- Sevier-age structures and their control of Tertiary mineralization at the Drum Mine, west-central Utah, by C. J. Nutt, C. H. Thorman and R. W. Gloyn. p. 14-15.
- Geology, age, and origin of fracture-controlled mineral deposits of the Idaho Batholith; importance of Cretaceous mineralization, by L. W. Snee, Karen Lund and C. H. Gammans. p. 15-16.
- Seismic reflection data reveal buried late Paleozoic structures beneath the southern Uinta Basin, by C. J. Potter, R. L. Tang and T. J. Hainsworth. p. 16.
- Extensional geometries in the northern Grant Range, east-central Nevada; implications for oil occurrences in Railroad Valley, by Karen Lund and L. S. Beard. p. 17.
- OF 90-0509-A. FASPU English and metric version; analytic petroleum resource appraisal microcomputer programs for play analysis using a reservoir-engineering model, by R. A. Crovelli and R. H. Balay. 1990. 23 p. (NC, Da, M.)
- OF 90-0509-B. FASPU English and metric version; analytic petroleum resource appraisal microcomputer programs for play analysis using a reservoir-engineering model, by R. A. Crovelli and R. H. Balay. 1990. One 5 1/4 inch diskette. (NC, Da, M.)
- Requirements: IBM PC or compatible; minimum 256K RAM; 8087 math coprocessor; MS-DOS 3.1 or equivalent; printer able to print 132 columns.
- OF 90-0518. ARIZONA. Mineral resources of the Wabayuma Peak Wilderness Study Area, Mohave County, Arizona, by C. M. Conway, J. R. Hassemer, D. H. Knepper, Jr., J. A. Pitkin, R. C. Jachens and M. L. Chatman. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 73 p. (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)
- OF 90-0521. ARIZONA. Mineral resources of the Swansea Wilderness Study Area, La Paz and Mohave counties, Arizona, by R. M. Tosdal, R. G. Eppinger, H. R. Blank, Jr., D. H. Knepper, Jr., A. J. Gallagher, J. A. Pitkin, S. L. Jones and G. S. Ryan. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 25 p., 1 over-size sheet. (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)
- OF 90-0523. CALIFORNIA. Late Cretaceous pollen from the Salinian(?) suspect terrane at Pigeon Point, San Mateo County, California, by N. O. Frederiksen. 1990. 18 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol.,



- 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 90-0524. Chemical and physical characteristics of coal and carbonaceous shale samples from the Salt Range coal field, Punjab Province, Pakistan, by P. D. Warwick, T. Shakoor, Shahid Javed, S. T. Mashhadi, H. Hussain, M. Anwar and M. I. Ghaznavi. Prepared jointly by the Geological Survey of Pakistan and the U.S. Geological Survey. 1990. 44 p. (NC, Da, M.)
- OF 90-0525. HAWAII. The Hawaiian Volcano Observatory polling telemetry system for low frequency data acquisition, by G. S. Puniwai, K. T. Honma and A. J. Largo. 1990. 73 p. (NC, Da, M, SF, LA.)
- OF 90-0526. U.S. Geological Survey Library classification system, by R. S. Sasscer. 1990. 124 p. (NC, Da, M.)
- OF 90-0528. MONTANA. Analytical results for 147 water samples from the Elkhorn Wilderness Study Area, Broadwater and Jefferson counties, Montana, by J. B. McHugh, W. H. Ficklin and W. R. Miller. 1990. 11 p. (NC, Da, M, Db, U, S; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)
- OF 90-0529. UTAH. Analyses of rock samples from the Central mining and intrusive area, Marysvale, Utah, by J. B. McHugh, R. T. Hopkins, Jr., W. R. Miller and R. E. Tucker. 1990. 22 p. (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)
- OF 90-0530. FORMATIONTOPS (version 1); a system to retrieve formation tops data, by C. J. Wandrey and R. C. Obuch. 1990. One 5 1/4 inch diskette. (NC, Da, M.)
- Requirements: VAX/VMS based computers, Fortran 77 compiler, ISM 6.93, ICT20, INGRES data base manager version 6.3, and ANSI terminal. The included 5.25 inch low density diskette in IBM PC compatible format contains documentation, source code, and an executable program in ASCII files format and may be uploaded onto a VAX 11/780 computer.
- OF 90-0531. HAWAII. Summary of geotechnical and hydrologic data collected through April 30, 1990, for the Alani-Paty Landslide, Manoa Valley, Honolulu, Hawaii, by R. L. Baum, S. R. Spengler, J. D. Torikai and L. A. Liu. Prepared in cooperation with the City and County of Honolulu, Department of Public Works. 1990. 67 p. (NC, Da, M, LA, SF; Div. of Water and Land Dev., P.O. Box 373, Honolulu, HI 96809.)
- OF 90-0532. The Central Pacific transect; cruise report of the research vessel Akademik Selskiy, by H. S. Gnibidenko, S. L. Eittreim, C. E. Helsley, P. H. McClellan and H. F. Ryan. 1990. 13 p. (NC, Da, M.)
- OF 90-0534. CALIFORNIA. Checklists of Jurassic and Cretaceous macrofauna from U.S. Geological Survey collections within the San Jose 1:100,000 map sheet, California, by W. P. Elder and J. W. Miller. 1990. 28 p., 3 over-size sheets; 1 sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 90-0535. OREGON. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the South Fork and Sand Hollow Wilderness Study Areas, Crook County, Oregon, by B. M. Adrian, H. D. King, D. L. Fey and K. R. Kennedy. 1990. 18 p., 1 over-size sheet. (NC, Da, M, LA, SF, S; Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201-5528.)
- OF 90-0536. CALIFORNIA. Ground-water exploration using deep Schlumberger soundings at Edwards-AFB, California; Part I, Graham Ranch and Rogers Lake, by A. A. Zohdy and R. J. Bisdorf. 1990. 95 p. (NC, Da, M, LA, SF; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 90-0537. Coastal ice and sediment samples; shoreface and ice profiles (southern Lake Michigan, February, December 1989, and February, April 1990), by Michael McConnick, E. C. Hayden, W. S. Weber, P. W. Barnes, Erk Reimnitz and E. W. Kempema. 1990. 196 p. (NC, Da, M; Indiana Geol. Surv., 611 North Walnut Grove, Bloomington, IN 47405.)
- OF 90-0538. Origin and ages of mineralization of Bayan Obo, the world's largest rare earth ore deposit, Inner Mongolia, China, by E. C. Chao, Mitsunobu Tatsumoto, R. L. Erickson, J. A. Minikin, J. M. Back, R. V. Buden, P. M. Okita, Hou Zonglin, Meng Qingrun, Ren Yingchen, Sun Weijun, E. H. McKee, B. D. Turrin, Wang Junwen, Li Xibin and C. A. Edwards. 1990. 11 p. map scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M.)
- OF 90-0539-A. GSMGRASS; a program to convert a GSMAP data base into ASCII files that can be imported directly into the geographic resources analysis support system (GRASS), by G. I. Selner and J. L. Plesha. 1990. 10 p. (NC, Da, M.)
- OF 90-0539-B. GSMGRASS; a program to convert a GSMAP data base into ASCII files that can be imported directly into the geographic resources analysis support system (GRASS), by G. I. Selner and J. L. Plesha. 1990. One 5 1/4 inch diskette. (NC, Da, M.)
- GSMGRASS was written and tested using the Microsoft QuickBASIC Compiler Release 4.00b. The program described in this document should execute correctly on IBM PC/XT/AT microcomputers, and requires the following: at least 512 RAM, a hard disk, and a 8087 math co-processor. The program was tested on a Compaq Portable III with 640K of RAM memory and DOS 3.31. The minimum software required to use the program is MS-DOS (or PC-DOS) 2.0 or higher and the Open-File release diskette.
- OF 90-0540. ARIZONA. Geologic map of the Purgatory Canyon Quadrangle, northern Mohave County, Arizona, by G. H. Billingsley. 1990. 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 90-0541. ARIZONA. Geologic map of the Wolf Hole Mountain West Quadrangle, northern Mohave County, Arizona, by G. H. Billingsley. 1990. 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 90-0542. UTAH, ARIZONA. Preliminary geologic map of the Kanab 30- by 60-minute Quadrangle, Utah-Arizona, by E. G. Sable and Richard Hereford. 1990. 2 over-size sheets, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, Db, U, LA, SF; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)
- OF 90-0543. COLORADO. Measurement of ridge-spreading movements (sackungen) at Bald Mountain, Lake County, Colorado, 1975-1989, by D. J. Varnes, D. H. Radbruch-Hall, K. L. Varnes, W. K. Smith and W. Z. Savage. 1990. 13 p. (NC, Da, M, Db, U; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203.)
- OF 90-0544-A. MINNESOTA. Preliminary bedrock geologic map of the Roseau 1° × 2° Quadrangle, Minnesota, U.S.A., and Ontario, Canada, by W. C. Day, T. L. Klein and K. J. Schulz. 1991. 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M; Minnesota Geol. Surv., 2642 University Ave., St. Paul, MN 55114-1057.)
- OF 90-0544-B. MINNESOTA. Preliminary bedrock geologic map of the Roseau 1° × 2° Quadrangle, Minnesota, U.S.A., and Ontario, Canada, by W. C. Day, T. L. Klein and K. J. Schulz. 1991. 3 p., one 5 1/4 inch diskette. (NC, Da, M; Minnesota Geol. Surv., 2642 University Ave., St. Paul, MN 55114-1057.)
- Digital data, GSMAP version 7.0 format, 1.6MB.
- OF 90-0545. IDAHO. Analytical results and locality map of heavy-mineral-concentrate, stream-sediment, soil and big-sagebrush samples from the Lava Creek mining district, within the Idaho Falls 1° × 2° Quadrangle, Butte County, Idaho, by B. M. Adrian, J. A. Erdman, J. H. Bullock, Jr. and P. L. Hageman. 1990. 26 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)
- OF 90-0546. NEW MEXICO. Preliminary geologic map of the Eagle Peak Quadrangle, Catron County, New Mexico, by D. J. Bove. 1990. 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 90-0547. CALIFORNIA. Photographs of the October 17th 1989 Loma Prieta, California earthquake, by J. K. Nakata, C. E. Meyer, H. G. Wilshire, J. C. Tinsley, III and W. S. Updegrave. 1990. 16 p., 102 35-mm color slides. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 90-0548. VIRGINIA. Geology of part of the northern Virginia Piedmont, by Louis Pavlides. 1990. 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, Wa; Virginia Div. of Mineral Resources, Natural Resources Bldg., Alderman and McCormick Rd., P.O. Box 3667, Charlottesville, VA 22903.)
- OF 90-0549. Bibliography of Gulf Coast lignite geology, by S. J. Tewalt, R. B. Finkelman and R. L. Barnett. 1990. 43 p. (NC, Da, M; Geol. Surv. of Alabama, 420 Hackberry Lane, P.O. Box O, Tuscaloosa, AL 35486-9780; Bur. of Geol., P.O. Box 5348, Jackson, MS 39296.)
- OF 90-0550. VIRGINIA. Geologic map of the coastal plain part of the Joplin Quadrangle, Stafford and Prince William counties, Virginia, by R. B. Mixon. 1990. 4 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Wa; Virginia Div. of Mineral Resources, Natural Resources Bldg., Alderman and McCormick Rd., P.O. Box 3667, Charlottesville, VA 22903.)
- OF 90-0551. Report of the River Master of the Delaware River for the period December 1, 1988 to November 30, 1989, by S. P. Sauer, W. E. Harkness, and B. E. Krejmas; *with a section on Water quality*, by K. E. White. 1990. 89 p. (NC, Da, M, Wb.)
- OF 90-0552. MISSOURI. Hydrologic data for the Weldon Spring Chemical Plant site and vicinity property, St. Charles County, Missouri, 1986-1990, by M. J. Kleeschulte and P. W. Cross. Prepared in cooperation with the U.S. Department of Energy. 1990. 117 p. (NC, Da, M, Wb.)
- OF 90-0553. ARIZONA. Climatic variability and flood frequency of the Santa Cruz River, Pima County, Arizona, by R. H. Webb and J. L. Belancourt. Prepared in cooperation with the Pima County Department of Transportation and Flood Control District. 1990. 69 p. (NC, Da, M, Wb; USGS, WRD, Room 5A Federal Bldg., 300 West Congress St., Tucson, AZ 85701; 3738 North 16th St., Suite E, Phoenix, AZ 85016; 1940 South 3rd Ave., Yuma, AZ 85364; and 2255 North Gemini Dr., Bldg. 3, Flagstaff, AZ 86001.)
- OF 90-0554. Evaluation of selected methods for determining streamflow during periods of ice effect, by N. B. Melcher and J. F. Walker. 1990. 51 p. (NC, Da, M, Wb; USGS, WRD, 6417 Normandy Lane, Madison, WI 53719; and Room 269, Federal Bldg., 400 South Clinton St., Iowa City, IA 52244.)
- OF 90-0555. FLORIDA. Potentiometric surface of the intermediate aquifer system, west-central Florida, May 1990, by L. A. Knochenmus. Prepared in cooperation with the Southwest Florida Water Management District. 1990. 1 over-size sheet. (NC, Da, M, Wb.)
- OF 90-0556. FLORIDA. Potentiometric surface of the upper Floridan Aquifer, west-central Florida, May 1990, by L. A. Knochenmus. Prepared in cooperation with the Southwest Florida Water Management District. 1990. 1 over-size sheet, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, Wb.)
- OF 90-0557. FLORIDA. Potentiometric surface of the upper Floridan Aquifer in the St. Johns River Water Management District and vicinity, Florida, May 1990, by L. C. Murray. 1990. 1 over-size sheet. (NC, Da, M, Wb.)
- OF 90-0558. ARKANSAS. Ground-water levels in the alluvial aquifer in eastern Arkansas, 1989, by P. W. Westerfield and C. R. Baxter. Prepared in cooperation with the Arkansas Soil and Water Conservation Commission, the U.S. Soil Conservation Service, and local conservation districts. 1990. 35 p. (NC, Da, M, Wb.)
- OF 90-0560. NEVADA, UTAH. Conceptual evaluation of regional ground-water flow in the carbonate-rock province of the Great Basin, Nevada, Utah, and adjacent states, by T. J. Burbey and D. E. Prudic. 1991. 89 p. (NC, Da, M, Wb.)
- OF 90-0562. CALIFORNIA. Plankton studies in San Francisco Bay, California; XI, Chlorophyll distribution and hydrographic properties of San Francisco Bay, 1988-89, by S. M. Wienke, B. E. Cole and J. E. Cloern. 1990. 211 p. (NC, Da, M, Wb.)
- OF 90-0564. Bibliography on sampling ground water for organic compounds, by Jacob Gibbs, T. E. Imbrigiotta and K. S. Tumer.

1990. 22 p. (NC, Da, M, Wb; USGS, WRD, Mountain View Office Park, 810 Bear Tavern Rd., Suite 206, West Trenton, NJ 08628.)
- OF 90-0565. IDAHO. Nutrients, pesticides, surfactants, and trace metals in ground water from the Howe and Mud Lake areas upgradient from the Idaho National Engineering Laboratory, Idaho, by D. D. Edwards, R. C. Bartholomay and C. M. Bennett. Prepared in cooperation with the U.S. Department of Energy. 1990. 19 p. (NC, Da, M, Wb; USGS, WRD, 230 Collins Rd., Boise, ID 83702; and Idaho National Engineering Laboratory, CF-690, Room 164, Idaho Falls, ID 83403.)
- OF 90-0567. ALABAMA. Water-resources publications for Alabama, 1857-1990, by E. A. Meadows and H. H. Jeffcoat. 1990. 53 p. (NC, Da, M, Wb.)
- OF 90-0568. MONTANA. A geographic information system data base for coal and water resources of the Powder River coal region, southeastern Montana, by M. R. Cannon. Prepared in cooperation with the Montana Department of State Lands and the U.S. Bureau of Land Management. 1990. 83 p. (NC, Da, M, Wb, Db, U, S; USGS, WRD, Room 428 Federal Bldg., 301 South Park Ave., Helena, MT 59626.)
- OF 90-0570. OKLAHOMA. Geohydrology and water quality of the Roubidoux Aquifer, northeastern Oklahoma, by S. C. Christenson, D. L. Parkhurst and R. W. Fairchild. Prepared in cooperation with the Oklahoma Geological Survey. 1990. 110 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, Wb; USGS, WRD, 215 Dean A. McGee Ave., Oklahoma City, OK 73102.)
- OF 90-0572. MARYLAND. Water withdrawal and use in Maryland, 1987, by J. C. Wheeler. Prepared in cooperation with the Maryland Water Resources Administration and the Maryland Geological Survey. 1991. 28 p. (NC, Da, M, Wb; USGS, WRD, 208 Carroll Bldg., 8600 LaSalle Road, Towson, MD 21204.)
- OF 90-0573. CALIFORNIA. Calibration of a texture-based model of a ground-water flow system, western San Joaquin Valley, California, by S. P. Phillips and K. R. Belitz. Prepared in cooperation with the San Joaquin Valley Drainage Program. 1990. 30 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, 2800 Cottage Way, Room W-2234, Federal Bldg., Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)
- OF 90-0575. Archiving on-line data to optical disk, by J. L. Porter, J. L. Kiesler and D. A. Stedfast. 1990. 15 p. (NC, Da, M, Wb.)
- OF 90-0577. MONTANA. Annual peak discharges from small drainage areas in Montana through September 1989, by J. A. Hull and R. J. Omang. Prepared in cooperation with the Montana Department of Highways and the U.S. Department of Transportation. 1990. 143 p. (NC, Da, M, Wb, Db, S, U; USGS, WRD, 301 South Park Ave., Helena, MT 59626-0076; and Field Headquarters, Eastern Montana Coll., Box 111, 1500 North 30th, Billings, MT 59101.)
- OF 90-0578. NEW MEXICO. Construction, lithologic, and geophysical data from monitoring wells in Albuquerque, Bernalillo County, New Mexico, by S. F. Richey. Prepared in cooperation with the Environmental Health Department, City of Albuquerque. 1991. 83 p. (NC, Da, M, Wb, Db, U; USGS, WRD, 4501 Indian School Rd. NE, Suite 200, Albuquerque, NM 87110.)
- OF 90-0579. OKLAHOMA. Hydrogeologic maps of the Central Oklahoma Aquifer, Oklahoma, by S. C. Christenson, R. B. Morton and B. A. Mesander. 1990. 3 over-size sheets, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, Wb; USGS, WRD, 202 NW 66th St., Bldg. 7, Oklahoma City, OK 73116.)
- OF 90-0581. KANSAS, NEBRASKA. Surface-water-quality assessment of the lower Kansas River basin, Kansas and Nebraska; concentrations of major metals and trace elements in streambed sediments, 1987, by D. Q. Tanner, R. F. Sanzolone and R. B. Zelt. 1990. 73 p. (NC, Da, M, Wb; USGS, WRD, 4821 Quail Pl., Lawrence, KS 66049; 206 Fulton Terrace, Garden City, KS 67846; and Room 406 Federal Bldg., Lincoln, NE 68508.)
- OF 90-0582. FLORIDA. Potentiometric surface of the upper Floridan Aquifer in the Suwannee River Water Management District, Florida, May 1990, by P. E. Meadows. Prepared in cooperation with the Suwannee River Water Management District. 1991. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301.)
- OF 90-0583. IOWA. A summary of water-resources activities for the U.S. Geological Survey in Iowa, fiscal year 1990, compiled by R. A. Karsten. 1990. 49 p. (NC, Da, M, Wb.)
- OF 90-0584. WASHINGTON. Selected references for the Puget-Willamette Lowland Regional Aquifer-System Analysis, Puget Sound lowland, Washington, by M. A. Jones. 1991. 55 p. (NC, Da, M, Wb, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; and Room 656, U.S. Court House, West 920 Riverside Ave., Spokane, WA 99201.)
- OF 90-0586. FLORIDA. Potentiometric surface of the upper Floridan Aquifer in the Northwest Florida Water Management District, May 1990, by P. E. Meadows. Prepared in cooperation with the Florida Department of Environmental Regulation. 1991. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301.)
- OF 90-0587. VIRGINIA. Annual maximum stages and discharges of selected streams in Virginia through 1988, by B. J. Pugh, Jr., E. H. Nuckels and C. G. Humphrey. Prepared in cooperation with the Virginia Department of Transportation. 1991. 442 p. (NC, Da, M, Wb; USGS, WRD, Virginia State Office, 3600 West Broad St., Richmond, VA 23230.)
- OF 90-0589. UTAH. Water resources activities in Utah by the U.S. Geological Survey, October 1, 1988 to September 30, 1989, compiled by J. S. Gates and S. A. Dragos. 1990. 56 p. (NC, Da, M, Wb.)
- OF 90-0590. OHIO. Selected geologic and hydrologic data for the regional carbonate-bedrock and glacial aquifers in western Ohio, by R. A. Sheets. 1991. 43 p. (NC, Da, M, Wb; USGS, WRD, 975 West 3rd Ave., Columbus, OH 43212.)
- OF 90-0591. ALASKA. Hydrologic conditions at Anaktuvuk Pass, Alaska, 1989, by H. R. Seitz. Prepared in cooperation with the North Slope Borough. 1991. 13 p. (NC, Da, M, Wb, A; USGS, WRD, 4230 University Dr., Suite 201, Anchorage, AK 99508-4664; and 800 Yukon Dr., Fairbanks, AK 99775-5160.)
- OF 90-0593. NORTH DAKOTA. Application of digital elevation models to delineate drainage areas and compute hydrologic characteristics of sites in the James River basin, North Dakota, by G. J. Wiche, S. K. Jenson, J. V. Baglio and J. O. Domingue.

Prepared in cooperation with the U.S. Bureau of Reclamation. 1990. 39 p., 6 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Wb.)

OF 90-0595. NEVADA. Bibliography of selected water-resources publications on Nevada by the U.S. Geological Survey, 1885 through 1990, by R. L. Bunch. 1991. 41 p. (NC, Da, M, Wb, LA, SF, U; USGS, WRD, Room 224, Federal Bldg., 705 North Plaza St., Carson City, NV 89701; and 1500 East Tropicana, Suite 201, Las Vegas, NV 89119.)

OF 90-0596. FLORIDA. Public-supply water use in Florida, 1987, by R. L. Marella. Prepared in cooperation with the Florida Department of Environmental Regulation, Northwest Florida Water Management District, St. Johns River Water Management District, South Florida Water Management District, Southwest Florida Water Management District, and Suwannee River Water Management District. 1990. 39 p. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301.)

OF 90-0597. IDAHO. Results of test drilling and hydrologic monitoring in the Indian Bathtub area, Owyhee County, southwestern Idaho, January 1989 through September 1990, by H. W. Young, M. L. Jones, D. J. Parlman and A. M. Tungate. Prepared in cooperation with the U.S. Fish and Wildlife Service. 1990. 40 p. (NC, Da, M, Wb; USGS, WRD, 230 Collins Rd., Boise, ID 83702; and Idaho National Engineering Laboratory, CF-690, Room 164, Idaho Falls, ID 83403.)

OF 90-0599. The Water Data Sources Directory of the NAWDEX, western region, by C. D. Blackwell. 1990. 789 p. (NC, Da, M, Wb.)

OF 90-0600-A. Preliminary determination of epicenters monthly listing January-March 1990, by National Earthquake Information Center. 1990. 92 p. (NC, Da, M.)

OF 90-0600-B. Preliminary determination of epicenters monthly listing April-June 1990, by National Earthquake Information Center. 1990. 96 p. (NC, Da, M.)

OF 90-0600-C. Preliminary determination of epicenters monthly listing July-September 1990, by National Earthquake Information Center. 1990. 100 p. (NC, Da, M.)

OF 90-0600-D. Preliminary determination of epicenters monthly listing October-December 1990, by National Earthquake Information Center. 1990. 88 p. (NC, Da, M.)

OF 90-0603-A. Earthquake data report, March 1990, by National Earthquake Information Center. 1990. 341 p. (NC, Da, M.)

OF 90-0603-B. Earthquake data report, March 1990, by National Earthquake Information Center. 1990. Four 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGE.n.DAT, and a data file, OFEDRmmn.DAT, where n is the disk number and mm is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0604-A. Earthquake data report, April 1990, by National Earthquake Information Center. 1990. 347 p. (NC, Da, M.)

OF 90-0604-B. Earthquake data report, April 1990, by National Earthquake Information Center. 1990. Four 5 1/4 inch diskettes. (NC, Da, M.)

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OF 90-0605-A. Earthquake data report, May 1990, by National Earthquake Information Center. 1990. 374 p. (NC, Da, M.)

OF 90-0605-B. Earthquake data report, May 1990, by National Earthquake Information Center. 1990. Four 5 1/4 inch diskettes. (NC, Da, M.)

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OF 90-0606-A. Earthquake data report, June 1990, by National Earthquake Information Center. 1990. 313 p. (NC, Da, M.)

OF 90-0606-B. Earthquake data report, June 1990, by National Earthquake Information Center. 1990. Three 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGE.n.DAT, and a data file, OFEDRmmn.DAT, where n is the disk number and mm is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0607-A. Earthquake data report, July 1990, by National Earthquake Information Center. 1990. 420 p. (NC, Da, M.)

OF 90-0607-B. Earthquake data report, July 1990, by National Earthquake Information Center. 1990. Four 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGE.n.DAT, and a data file, OFEDRmmn.DAT, where n is the disk number and mm is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0608-A. Earthquake data report, August 1990, by National Earthquake Information Center. 1990. 357 p. (NC, Da, M.)

OF 90-0608-B. Earthquake data report, August 1990, by National Earthquake Information Center. 1990. Four 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGE<sub>n</sub>.DAT, and a data file, OFEDR<sub>mmn</sub>.DAT, where *n* is the disk number and *mm* is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0609-A. Earthquake data report, September 1990, by National Earthquake Information Center. 1990. 266 p. (NC, Da, M.)

OF 90-0609-B. Earthquake data report, September 1990, by National Earthquake Information Center. 1990. Three 5 1/4 inch diskettes. (NC, Da, M.)

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OF 90-0610-A. Earthquake data report, October 1990, by National Earthquake Information Center. 1990. 307 p. (NC, Da, M.)

OF 90-0610-B. Earthquake data report, October 1990, by National Earthquake Information Center. 1990. Three 5 1/4 inch diskettes. (NC, Da, M.)

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OF 90-0611-A. Earthquake data report, November 1990, by National Earthquake Information Center. 1990. 280 p. (NC, Da, M.)

OF 90-0611-B. Earthquake data report, November 1990, by National Earthquake Information Center. 1990. Three 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGE<sub>n</sub>.DAT, and a data file, OFEDR<sub>mmn</sub>.DAT, where *n*

is the disk number and *mm* is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0612-A. Earthquake data report, December 1990, by National Earthquake Information Center. 1990. 351 p. (NC, Da, M.)

OF 90-0612-B. Earthquake data report, December 1990, by National Earthquake Information Center. 1990. Four 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGE<sub>n</sub>.DAT, and a data file, OFEDR<sub>mmn</sub>.DAT, where *n* is the disk number and *mm* is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0613. Dinoflagellate-cyst census data from the seabed samples of Wall and others (1977) and Turon (1984), by L. E. Edwards and V. A. Andrie. 1990. 43 p. (NC, Da, M, SF, LA; New York State Geol. Surv., 3136 Cultural Education Ctr., Empire State Plaza, Albany, NY 12230.)

OF 90-0614. Oil and gas resource assessment areas for 1987 assessment, lower 48 states, compiled by K. L. Varnes, D. L. Dolton and R. F. Mast. 1990. 1 over-size sheet, scale 1:5,000,000 (1 inch = about 80 miles). (NC, Da, M.)

OF 90-0615. GEOTRANS; an interface program from GEOPROGRAM to a geographic information system, by S. P. Schilling. 1991. 86 p. (NC, Da, M.)

OF 90-0616-A. SAVEWARE I; a dozen programs designed to read DATASAVE files, perform various petrologic calculations, and produce printed and graphical data analysis, by E. A. du Bray, J. E. Quick, G. I. Selner and J. S. Pallister. 1990. 27 p. (NC, Da, M.)

OF 90-0616-B. SAVEWARE I; a dozen programs designed to read DATASAVE files, perform various petrologic calculations, and produce printed and graphical data analysis, by E. A. du Bray, J. E. Quick, G. I. Selner and J. S. Pallister. 1990. One 5 1/4 inch diskette. (NC, Da, M.)

The software runs on IBM PC, XT, AT, or compatibles with at least 384K RAM and one disk drive. The programs require a graphics adapter to execute. Some require an Enhanced Graphics Adapter. RAM-resident screen printing routines (GRAPHICS.COM and (or) EGAEPSON.COM) are required to perform screen dumps to printers. All programs run under IBM- or MS-DOS 2.0 or higher and require QuickBASIC module BRUN30.EXE, which is provided. (WordPerfect 5.1)

OF 90-0616-C. SAVEWARE I; a dozen programs designed to read DATASAVE files, perform various petrologic calculations, and produce printed and graphical data analysis, by E. A. du Bray, J. E. Quick, G. I. Selner and J. S. Pallister. 1990. Two 5 1/4 inch diskettes. (NC, Da, M.)

The software runs on IBM PC, XT, AT, or compatibles with at least 384K RAM and one disk drive. The programs require a graphics adapter to execute. Some require an Enhanced Graphics Adapter. RAM-resident screen printing routines (GRAPH-

ICS.COM and (or) EGAEPSON.COM.) are required to perform screen dumps to printers. All programs run under IBM- or MS-DOS 2.0 or higher and require QuickBASIC module BRUN30.EXE, which is provided.

OF 90-0617. Geochemical survey of the Sauk Sequence of the Western United States, by A. T. Miesch and J. J. Connor. 1990. 258 p. (NC, Da, M.)

OF 90-0618. NEVADA. Mineral resources of an addition to the Black Rock Desert Wilderness Study Area, Humboldt County, Nevada, by M. F. Diggles and J. E. Olson. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 12 p. (NC, Da, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0619. NEVADA. Mineral resources of the Queer Mountain Wilderness Study Area, Esmeralda County, Nevada, by M. F. Diggles and A. M. Leszykowski. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 13 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0620. NEVADA. Mineral resources of the Grapevine Mountain Wilderness Study Area, Esmeralda County, Nevada, by M. F. Diggles and A. M. Leszykowski. 1990. 12 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0621-A. VERMONT. Vermont landslide map; digital version, a digital data set for IBMPC and compatible microcomputers, by C. A. Baskerville. 1991. 4 p. Map scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)

OF 90-0621-B. VERMONT. Vermont landslide map; digital version, a digital data set for IBMPC and compatible microcomputers, by C. A. Baskerville. 1991. One 5 1/4 inch diskette, map scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)

An IBMPC XT or AT or compatible microcomputer with a DOS version 2.1 or higher operating system is required. To obtain a full scale hard copy of the map, a plotter such as the Hewlett Packard Draftmaster I can be used. Documentation is available in paper copy, OF 90-621-A. Executable and data files are available on diskettes, OF 90-621 B-F.

OF 90-0621-C. VERMONT. Vermont landslide map; digital version, a digital data set for IBMPC and compatible microcomputers, by C. A. Baskerville. 1991. One 5 1/4 inch diskette, map scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)

For software/hardware requirements see OF 90-621-B.

OF 90-0621-D. VERMONT. Vermont landslide map; digital version, a digital data set for IBMPC and compatible microcomputers, by C. A. Baskerville. 1991. One 5 1/4 inch diskette, map scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)

For software/hardware requirements see OF 90-621-B.

OF 90-0621-E. VERMONT. Vermont landslide map; digital version, a digital data set for IBMPC and compatible microcomputers, by C. A. Baskerville. 1991. One 5 1/4 inch diskette, map scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)

For software/hardware requirements see OF 90-621-B.

OF 90-0621-F. VERMONT. Vermont landslide map; digital version, a digital data set for IBMPC and compatible microcomputers, by C. A. Baskerville. 1991. One 5 1/4 inch diskette, map scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)

For software/hardware requirements see OF 90-621-B.

OF 90-0622. NEVADA. Preliminary geologic map of the Delamar NW Quadrangle, Lincoln County, Nevada, by W C Swadley and R. B. Scott. 1990. 11 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, LA, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0623. NEVADA. Geology of the Rainier Mesa-Aqueduct Mesa tunnel areas; U12n Tunnel, by D. L. Hoover and J. E. Magner. Prepared in cooperation with the U.S. Department of Energy and the U.S. Defense Nuclear Agency. 1990. 51 p., 5 over-size sheets. (NC, Da, M, S, SF, LA; Geol. and Earth Resour. Div., Dep. of Natural Resources, Olympia, WA 98504; David A. Johnston Cascade Volcano Observatory, 5400 MacArthur Blvd., Vancouver, WA 98661.)

OF 90-0624. UTAH. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples in and adjacent to the Scorpion Wilderness Study Area, Garfield and Kane counties, Utah, by D. E. Detra, J. L. Jones, D. L. Fey and R. B. Vaughn. 1990. 18 p., 1 over-size sheet, scale 1:50,000 (1 inch = about 4,200 feet). (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 90-0625. Instructions for use of U.S. Geological Survey standard field note summary form for visit to remote seismograph station, prepared by W. D. Hall. 1990. 12 p. (NC, Da, M.)

OF 90-0626. COLORADO. Stable isotope systematics and magmatic and hydrothermal processes in the Summitville, CO gold deposit, by R. O. Rye, R. E. Stoffregen and P. M. Bethke. 1990. 31 p. (NC, Da, M, Db, U; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203.)

OF 90-0627. CALIFORNIA. Exploratory wells drilled in the Los Angeles 1:100,000 Quadrangle, California (to accompany preliminary map of exploratory wells showing bottom-hole geology drilled in the Los Angeles 1:100,000 Quadrangle), by R. F. Yerkes and P. K. Showalter. 1990. 46 p., 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0628. CONNECTICUT. Principal facts for gravity stations in central Connecticut, by D. L. Daniels. 1990. 11 p., one 5 1/4 inch diskette. (NC, Da, M; Natural Resources Ctr., Connecticut Geol. and Natural History Surv., 165 Capitol Ave., Room 553, Hartford, CT 06106.)

Principal facts for 235 new gravity stations are listed on the paper copy and in digital form on one 5 1/4 inch 360K diskette (IBM PC or compatible).

OF 90-0629. CALIFORNIA. Contra Costa County, California; selected earth sciences references, by E. R. White. 1990. 19 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131;

- 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
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- OF 90-0631. WASHINGTON. Preliminary geologic map of the Cougar Quadrangle, Cowlitz and Clark counties, Washington, by R. C. Evarts and R. P. Ashley. Prepared in cooperation with the Washington Department of Natural Resources. 1990. 40 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave., Lacey, WA 98503.)
- OF 90-0632. WASHINGTON. Preliminary geologic map of the Goat Mountain Quadrangle, Cowlitz County, Washington, by R. C. Evarts and R. P. Ashley. Prepared in cooperation with the Washington Department of Natural Resources. 1990. 47 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave., Lacey, WA 98503.)
- OF 90-0634-A. An installation guide to the PC-based time-series data-management and plotting program BOB, by T. L. Murray. 1990. 25 p. (NC, Da, M.) (User's guide is Open-file report 90-56.)
- OF 90-0634-B. An installation guide to the PC-based time-series data-management and plotting program BOB, by T. L. Murray. 1990. Two 5 1/4 inch diskettes. (NC, Da, M.) (User's guide is Open-file report 90-56.)
- Requirements: IBM XT or compatible; minimum 640K RAM; math coprocessor; minimum 10MB hard drive; Geograf graphics utilities (for device graphics drivers), GeoComp Corp., Concord, MA.
- OF 90-0635. Tektites in Cretaceous-Tertiary boundary rocks on Haiti, by G. A. Izett, F. J. Maurrasse, F. E. Lichte, G. P. Meeker and Robin Bates. 1990. 31 p. (NC, Da, M.)
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- Macintosh version consisting of three text files, each on a separate disk (3 1/2 inch, low density 800K), written in Microsoft Word v4.0.
- OF 90-0637-C. Bibliography of well-log applications; cumulative edition (through 1 September 1990), by S. E. Prensky. 1990. Two 5 1/4 inch diskettes. (NC, Da, M.) (Supersedes Open-file reports 85-441, 86-170, and 87-16.)
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- OF 90-0638. NEVADA. Mineral summaries for Nevada; U.S. Bureau of Land Management wilderness study areas, edited by J. E. Conrad. Prepared in cooperation with the U.S. Bureau of Mines. 1990. 373 p., 1 over-size sheet, scale 1:1,000,000 (1 inch = about 16 miles). (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)
- OF 90-0639. VIRGINIA. Geologic map of the northern part of the Rectortown Quadrangle, Virginia, by G. W. Leo. 1990. 3 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Wa; Virginia Div. of Mineral Resources, P.O. Box 3667, Charlottesville, VA 22903.)
- OF 90-0641. VIRGINIA. Geologic map of the Loudoun County portion of the Middleburg Quadrangle, Virginia, by S. W. Kline, P. T. Lyttle and A. J. Froelich. Prepared in cooperation with the Loudoun County Department of Natural Resources. 1990. 18 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Wa; Virginia Div. of Mineral Resources, P.O. Box 3667, Charlottesville, VA 22903.)
- OF 90-0642. CALIFORNIA. Tests to explore the utility of gravity anomalies and topographic data as possible predictors of locations of seismicity for two areas in California, by A. M. Sadovskii. 1990. 19 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 90-0643. ARIZONA. Geologic map of the Lizard Point Quadrangle, northern Mohave County, Arizona, by G. H. Billingsley. 1990. 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 90-0644. ARIZONA. Geologic map of the Wolf Hole Mountain East Quadrangle, northern Mohave County, Arizona, by G. H. Billingsley. 1990. 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 90-0645. IDAHO. Analytical results and sample locality maps of rock samples from the northwestern Idaho Falls and the north-eastern Hailey 1° by 2° quadrangles, Idaho, by J. H. Bullock, Jr., A. B. Wilson and S. J. Soulliere. 1990. 20 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)
- OF 90-0646. NEVADA. Preliminary geologic map of the Greger-son Basin Quadrangle, Lincoln County, Nevada, by R. B. Scott, W. C. Swadley, W. R. Page and S. W. Novak. 1990. 21 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, LA, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)
- OF 90-0647-A. CALIFORNIA, NEVADA. Geologic map of the Last Chance Quadrangle, California and Nevada, by C. T. Wrucke and K. P. Corbett. 1990. 1 over-size sheet, scale 1:62,500 (1 inch = about 1 mile). (NC, Da, M, SF, LA, Db, U; California Dep. of Conservation, Div. of Mines and Geol., 660



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OF 90-0647-B. CALIFORNIA, NEVADA. Geologic map of the Last Chance Quadrangle, California and Nevada, by C. T. Wrucke and K. P. Corbett. 1990. 8 over-size sheets. (NC, Da, M, SF, LA, Db, U; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Eight 8 1/2-inch by 14-inch color xerographic prints made from a hand-colored original. These prints can be tiled together to form a multicolor version of the map and explanation in Open-file report 90-647-A.

OF 90-0648. COLORADO. Soil gas radon compared to aerial and ground gamma-ray measurements at study sites near Greeley and Fort Collins, Colorado, by J. S. Duval, G. M. Reimer, R. R. Schumann, D. E. Owen and J. K. Otton. 1990. 42 p. (NC, Da, M, Db, U.)

OF 90-0649-A. WYOMING, MONTANA, IDAHO. Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho, by S. F. Carle, J. M. Glen, V. E. Langenheim, R. B. Smith and H. W. Oliver. 1990. 40 p., 1 over-size sheet, scale 1:125,000 (1 inch = about 2 miles). (NC, Da, M, U, SF, S, Db; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82701.)

OF 90-0649-B. WYOMING, MONTANA, IDAHO. Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho, by S. F. Carle, J. M. Glen, V. E. Langenheim, R. B. Smith and H. W. Oliver. 1990. One 5 1/4 inch diskette. (NC, Da, M, U, SF, S, Db; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82701.)

Requires an IBM PC, XT, AT, or compatible, MS-DOS v. 2.0 or higher. The text is in ASCII format.

OF 90-0650. CALIFORNIA. Geologic map of the Lopez Mountain Quadrangle, San Luis Obispo County, California, by Hugh McLean. 1990. 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., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 109 South Broadway, Los Angeles, CA 90012.)

OF 90-0651. Global summary of volcano-deformation monitoring, by C. M. Stine. 1990. 138 p. (NC, Da, M.)

OF 90-0652. MONTANA. Mineral chemistry of the Pioneer Batholith, Beaverhead County, southwestern Montana; microprobe data tables for feldspar, amphibole, mica, pyroxene, and

accessory minerals, by J. M. Hammarstrom. 1990. 193 p. (NC, Da, M, Db, S, U; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 90-0653. IDAHO. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the Burnt Creek Wilderness Study Area, Custer County, Idaho, by B. M. Adrian, H. D. King, D. L. Fey and K. R. Kennedy. 1990. 17 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, U, S.)

OF 90-0654. DISTRICT OF COLUMBIA, MARYLAND, VIRGINIA. Geologic map of the coastal plain and upland deposits, Washington West Quadrangle, Washington, D.C., Maryland, and Virginia, by Lucy McCartan. 1990. 16 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M.)

OF 90-0655. IDAHO. Chemical analyses of rock samples collected in east-central Idaho during a study of mineralization in the northern Lemhi Range, Lemhi County, Idaho, by J. J. Connor, K. V. Evans, P. H. Briggs, J. G. Crock, R. T. Hopkins, Jr., K. R. Kennedy, R. M. O'Leary, B. H. Roushey, K. E. Slaughter and E. P. Welsch. 1991. 48 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 90-0656. Abstracts of the U.S. Geological Survey, central region; 1990 poster review, compiled by C. E. Barker and A. B. Coury. 1990. 31 p. (NC, Da, M.)

Permian coal in Transantarctic Mountains: quality and quantity, by D. A. Coates, G. D. Stricker and E. R. Landis. p. 1.

Early diagenetic aerobic degradation of organic matter and sulfides in some Middle and Upper Pennsylvanian marine shales, Midcontinent region, U.S.A., by J. R. Hatch, J. S. Leventhal and G. A. Desborough. p. 2.

Quality of coal from the Paleocene Bara Formation, South Sind, Pakistan, by E. R. Landis, R. A. Khan, P. D. Warwick, C. L. Oman, S. A. Khan and L. J. Bragg. p. 3.

200+ billion tons of low sulfur coal in the Sagavanirktok Formation, North Slope, Alaska, by S. B. Roberts, G. D. Stricker and R. H. Affolter. p. 4.

Alaska has 4.0 trillion tons of low sulfur coal; is there a future for this resource?, by G. D. Stricker. p. 5.

Evidence of sudden late Holocene uplift in the central Puget Lowland, Washington, by R. C. Bucknam and T. P. Bamhard. p. 6.

Fracture studies in the welded Grouse Canyon Tuff; Laser Drift of the G-Tunnel underground facility, Rainier Mesa, Nevada Test Site, Nevada, by S. F. Diehl, M. P. Chomack, H. S. Swolfs and J. K. Odum. p. 7.

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Damage and intensity survey of the October 17, 1989 Loma Prieta earthquake, by M. G. Hopper, E. V. Leyendecker, P. C. Thenhaus, C. W. Stover, S. T. Algeimissen, B. G.



Reagor, D. M. Perkins, S. L. Hanson, L. R. Brewer and F. W. Baldwin. p. 10.

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New information on the Nuwuk Member of Sagavanirktok Formation; implications for petroleum geology of the North Slope and Beaufort Sea; evidence from Carter Creek, Arctic National Wildlife Refuge (ANWR), Alaska, by T. D. Fouch, E. M. Brouwers, D. H. McNeil, Louie Marincovich, Jr., K. J. Bird and H. J. Rieck. p. 20-21.

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Palynomorphs from Cenomanian, Turonian, and Coniacian marine strata in the Powder River basin, Wyoming, by T. A. Okumura and D. J. Nichols. p. 31.

OF 90-0657. Mineralogy and thermal properties of clay deposits in the Salt Range and Kala Chitta Range, Punjab Province, Pakistan, by C. G. Whitney, S. Q. Abbas and K. J. Esposito. 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. 1990. 114 p. (NC, Da, M.)

OF 90-0658. CALIFORNIA. Development of alert criteria for future volcanic unrest in Long Valley Caldera, California, by D. P. Hill. 1990. 15 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0659. NEW MEXICO, COLORADO. Vitrinite reflectance data from Cretaceous and Tertiary rocks, San Juan Basin, New Mexico and Colorado, by B. E. Law. 1990. 18 p. (NC, Da, M, Db, U; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203.)

OF 90-0661. HAWAII. Tabulation of N<sub>2</sub>, O<sub>2</sub>, CO<sub>2</sub>, and He concentrations in soil gases collected regularly for 13 months at a site on the summit of Kilauea Volcano, by M. E. Hinkle. 1990. 19 p. (NC, Da, M, LA, SF; Div. of Water and Land Dev., P.O. Box 373, Honolulu, HI 96809.)

OF 90-0662. Sidescan sonograph patterns offshore of the southern Delmarva Peninsula, by R. C. Circé and E. C. Escowitz. 1990. 19 p. (NC.)

OF 90-0663. ALASKA. Wide-angle seismic recordings obtained during the TACT multichannel reflection profiling in the northern Gulf of Alaska, by T. M. Brocher and M. J. Moses. 1990. 40 p. (NC, Da, M, A, S, SF, LA; Alaska Div. of 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 90-0664. CALIFORNIA. Isostatic residual gravity map of Edwards Air Force Base and vicinity, Kern, Los Angeles, and San Bernardino counties, California, by R. L. Morin, John Mariano and R. C. Jachens. 1990. 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., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

- OF 90-0665. CALIFORNIA. Surficial characteristics of the bay floor of South San Francisco, San Pablo, and Suisun bays, California, by J. L. Chin and H. E. Clifton. 1990. 33 p., 3 over-size sheets, scale 1:40,000 (1 inch = about 3,400 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
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- OF 90-0667. Jordan seismic system; final project, by R. L. Kovach and J. H. Healy. Prepared in cooperation with the U.S. Agency for International Development. 1990. 138 p. (NC, Da, M.)
- OF 90-0668. Quality assurance manual for the Branch of Geochemistry, U.S. Geological Survey, edited by B. F. Arbogast. 1990. 184 p. (NC, Da, M.)
- Physical preparation of rock samples, by C. D. Taylor. p. 21-25.
- Physical preparation of stream-sediment samples, by T. R. Peacock and C. D. Taylor. p. 26-28.
- Physical preparation of soil samples, by T. R. Peacock. p. 29-32.
- Physical preparation of heavy-mineral concentrates by heavy liquid and magnetic separation, by C. D. Taylor. p. 33-37.
- Trace-level determination of arsenic and selenium using continuous-flow hydride generation atomic absorption spectrophotometry (HG-AAS), by E. P. Welsch, J. G. Crock and R. F. Sanzalone. p. 38-45.
- Determination of gold in samples of rock, soil, stream sediment and heavy-mineral concentrate by flame and graphite furnace atomic absorption spectrophotometry following dissolution by HBr-Br<sub>2</sub>, by R. M. O'Leary and A. L. Meier. p. 46-51.
- Determination of gold, tellurium, and thallium, in rock, stream-sediment, and soil samples by flame, and gold by graphite furnace, atomic absorption spectrophotometry following dissolution by HF, aqua regia, and HBr-Br<sub>2</sub>, by R. M. O'Leary and T. T. Chao. p. 52-59.
- Determination of mercury in geologic materials by continuous flow-cold vapor-atomic absorption spectrophotometry, by R. M. O'Leary, J. G. Crock and K. R. Kennedy. p. 60-67.
- Determination of carbonate carbon in geologic materials by coulometric titration, by E. L. Brandt, P. J. Aruscavage and C. S. Papp. p. 68-72.
- Determination of moisture and total water in silicate rocks, by D. R. Norton and C. S. Papp. p. 73-82.
- Elemental analysis of geologic materials by inductively coupled plasma-atomic emission spectrometry, by P. H. Briggs. p. 83-91.
- Organometallic halide extraction applied to the analysis of geologic materials for 10 elements by inductively coupled plasma-atomic emission spectrometry, by J. M. Motooka. p. 92-96.
- Determination of water extractable boron in soil and stream-sediment samples by inductively coupled plasma-atomic emission spectroscopy, by K. C. Stewart. p. 97-99.
- Direct-current arc emission spectrographic method for the semi-quantitative analysis of rock, stream-sediment, soil, and heavy-mineral-concentrate samples, by B. M. Adrian, B. F. Arbogast, D. E. Detra and R. E. Mays. p. 100-106.
- Flame photometric determination of K<sub>2</sub>O and Na<sub>2</sub>O in rocks and mineral separates, by T. L. Fries, Joe Christie and S. T. Pribble. p. 107-110.
- Determination of uranium in geologic materials by UV-fluorescence, by D. M. Hopkins. p. 111-113.
- Determination of total carbon in geologic materials by combustion, by K. J. Curry. p. 114-118.
- Determination of chloride in geologic materials by ion-selective electrode following KMnO<sub>4</sub>-H<sub>2</sub>SO<sub>4</sub>-HF dissolution, by P. J. Aruscavage. p. 119-122.
- Determination of fluoride in silicates by ion-selective electrode following LiBO<sub>4</sub> fusion and HNO<sub>3</sub> dissolution, by S. T. Pribble. p. 123-126.
- Determination of fluoride in rock, soil, and stream-sediment samples by ion-selective electrode following Na<sub>2</sub>CO<sub>3</sub>-K<sub>2</sub>CO<sub>3</sub>-KNO<sub>3</sub> fusion and dissolution with citric acid, by R. M. O'Leary and D. M. Hopkins. p. 127-130.
- Determination of total sulfur in geologic materials by combustion, by K. J. Curry. p. 131-135.
- Determination of sulfur in geologic materials by iodometric titration, by R. M. O'Leary. p. 136-138.
- Determination of ferrous oxide in geologic materials by potentiometric titration, by C. S. Papp, P. J. Aruscavage and E. L. Brandt. p. 139-145.
- Determination of uranium and thorium in geologic materials by delayed neutron counting, by D. M. McKown and R. J. Knight. p. 146-150.
- Instrumental neutron activation of geologic materials by abbreviated count method, by G. A. Wandless and R. J. Knight. p. 151-156.
- Determination of tungsten in rock, soil, and stream-sediment samples by visible absorption spectrophotometry, by R. M. O'Leary and E. P. Welsch. p. 157-160.
- Determination of 12 selected trace elements in geologic materials by energy-dispersive X-ray fluorescence spectrometry, by Bi-Shia King and J. Lindsay. p. 161-165.

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OF 90-0670. UTAH. Schlumberger soundings in Tule Valley, Utah, by R. J. Bisdorf. 1990. 105 p. (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 90-0671. OREGON. Temperatures of springs in the vicinity of Crater Lake, Oregon, in relation to air and ground temperatures, by Manuel Nathenson. 1990. 19 p. (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)

OF 90-0673. WYOMING. Whole-rock and clay mineralogies of deeply-buried rocks, Permian upper part of the Minnelusa Formation, Powder River basin, Wyoming, by R. M. Pollastro and T. J. Finn. 1990. 17 p. (NC, Da, M, Db, U; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

OF 90-0674. USGS Branch of Petroleum Geology bibliography, 1989, compiled by Helen Colburn. 1990. 21 p. (NC, Da, M.)

OF 90-0675. NEW YORK, VERMONT, NEW HAMPSHIRE. Tabulated analytical results, floppy disc, and sample locality maps for nonmagnetic and selected paramagnetic heavy-mineral concentrates from stream sediment, Glens Falls 1° x 2° Quadrangle, New York, Vermont, and New Hampshire, by G. W. Day, E. P. Welsch, K. C. Watts, Jr. and J. C. Gray, Jr. 1990. 85 p., one 5 1/4 inch diskette, 2 over-size sheets, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M; Dep. of Resources and Economic Dev., 117 James Hall, Univ. of New Hampshire, Durham, NH 03824; New York State Geol. Surv., 3136 Cultural Education Ctr., Empire State Plaza, Albany, NY 12230; Office of the State Geologist, 103 South Main St., Center Bldg., Waterbury, VT 05676.)

OF 90-0676. Interactive Macintosh display of petroleum exploration through time across the continental United States, by D. K. Higley, K. I. Takahashi and R. F. Mast. 1990. 2 p., ten 3 1/2 inch diskettes. (NC, Da, M.)

Color animation which shows the type of petroleum produced within adjacent 1 sq. mile areas, or cells, for 49 petroleum provinces across the U.S. Map images are displayed in cumulative 5 year increments for each province. The oil, gas, oil and gas, or nonproduction category of each cell is coded by color with symbols. Hardware requirements to run this program are: 1) a Macintosh II-series computer with color graphics capability, 2) 20MB of disk space for installation (15MB once installed), 3) 5MB (preferably 8) of memory without the Multifinder application, and 4) 13 inch or larger color monitor. The U.S. program

is on ten 3.5 inch, 2.0MB diskettes and can be loaded with Apple system software.

OF 90-0678. OKLAHOMA. Mineralogy and petrography of Permian rocks in the Central Oklahoma Aquifer, by G. N. Breit, C. A. Rice, K. J. Esposito and J. L. Schlottmann. 1990. 50 p. (NC, Da, M; Oklahoma Geol. Surv., Univ. of Oklahoma, 830 Van Vleet Oval, Room 163, Norman, OK 73019.)

OF 90-0679. NEVADA. Mineral resources of additions to the La Madre Mountains Wilderness Study Area, Clark County, Nevada, by J. E. Conrad, H. R. Blank, Jr. and J. E. Olson. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 14 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0680. National Earthquake Hazards Reduction Program, summaries of technical reports; Volume XXXI, compiled by M. L. Jacobson. Prepared by participants in the National Earthquake Hazards Reduction Program. 1990. 603 p. (NC, Da, M.)

OF 90-0681. ALASKA. Geochemical results, sample localities, and descriptions of some rocks from the Proterozoic Kilbuck Terrane, Goodnews Quadrangle, southwestern Alaska, by T. P. Frost, J. M. Motooka and Leon Bradley. 1990. 8 p. (NC, Da, M, A, S, SF, LA; Alaska Div. of 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 90-0682. VERMONT. Analyses and descriptions of geochemical samples from the Big Branch and Peru Peak wildernesses and the Wilder Mountain Roadless Area, Rutland and Bennington counties, Vermont, by D. E. Detra, J. D. Peper, D. L. Kelley, Tom Huyck, A. A. Pokorny, L. S. Laudon, R. J. Fairfield and E. P. Welsch. 1990. 20 p. (NC, Da, M.)

OF 90-0683. CALIFORNIA. Digital recordings of aftershocks of the October 17, 1989, Loma Prieta, California, earthquake; Santa Cruz, Los Gatos, and surrounding areas, by D. L. Carver, K. W. King, Edward Cranswick, D. M. Worley, Paul Spudich and C. S. Mueller. 1990. 204 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0683-A. CALIFORNIA. Digital recordings of aftershocks of the October 17, 1989, Loma Prieta, California, earthquake; Santa Cruz, Los Gatos, and surrounding areas, by D. L. Carver, K. W. King, Edward Cranswick, D. M. Worley, Paul Spudich and C. S. Mueller. 1990. One compact disk. (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.) (Supplement to Open-file report 90-683.)

OF 90-0684. ARIZONA. Preliminary geologic map of the Mohave Mountains area, Mohave County, western Arizona, by K. A. Howard, J. E. Nielson, H. G. Wilshire, J. K. Nakata, J. W. Goodge, S. L. Reneau, B. E. John and V. L. Hansen. 1990. 56 p., 2 over-size sheets; sheet 1, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0685-A. ARIZONA. Aeromagnetic gridded data from two surveys flown over a buried porphyry copper deposit west of Casa Grande, Arizona, by Viki Bankey and R. E. Braken. 1990. 4 p. (NC, Da, M, Db, U, SF, LA; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0685-B. ARIZONA. Aeromagnetic gridded data from two surveys flown over a buried porphyry copper deposit west of Casa Grande, Arizona, by Viki Bankey and R. E. Braken. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

Diskette is a 5-1/4 inch, high density (1.6MB) diskette in IBM-AT format, and contains gridded aeromagnetic data files in ASCII format.

OF 90-0686. Tabulation of N<sub>2</sub>, O<sub>2</sub>, CO<sub>2</sub>, and He concentrations in soil gases collected daily for 11 months from 0.3-, 0.6-, 1.2-, and 2.0-m depths, by M. E. Hinkle. 1990. 42 p. (NC, Da, M.)

OF 90-0687. Ground failure associated with the Puget Sound region earthquakes of April 13, 1949, and April 29, 1965, by A. F. Chleborad and R. L. Schuster. 1990. 136 p., 5 over-size sheets; sheets 1-2, scale 1:100,000 (1 inch = 1.6 miles); sheets 3-5, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, SF, LA, S; Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201-5528; Geol. and Earth Resources Div., Dep. of Natural Resources, Olympia WA 98504; David A. Johnston Cascade Volcano Observatory, 5400 MacArthur Blvd., Vancouver, WA 98661.)

OF 90-0688. CALIFORNIA. Preliminary map of landslide features and coseismic fissures, in the Summit Road area of the Santa Cruz Mountains, triggered by the Loma Prieta earthquake of October 17, 1989, compiled by T. E. Spittler and E. L. Harp. Also released as California Division of Mines and Geology Open-file report 90-6. 1990. 31 p., 3 over-size sheets, scale 1:4,800 (1 inch = 400 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0689. NEW JERSEY. Petrographic and geochemical data for Jurassic basalt from eight cores, Newark Basin, New Jersey, by R. P. Tollo, D. P. Hawkins and David Gottfried. 1990. 32 p. (NC, Da, M.)

OF 90-0690-A. WASHINGTON. Chemical data from thermal and nonthermal springs in Mount St. Helens National Monument, Washington, by J. M. Thompson. 1990. 16 p. (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503.)

OF 90-0690-B. WASHINGTON. Chemical data from thermal and nonthermal springs in Mount St. Helens National Monument, Washington, by J. M. Thompson. 1990. One 5 1/4 inch diskette. (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503.)

The report is also available for Macintosh computers on a 3 1/2 inch (1.44MB), double sided, 135 TPI diskette or for IBM PCs or compatibles on a 5 1/4 inch (360K) double-sided, double-density, 48 TPI diskette. Both diskettes were formatted using Microsoft Word.

OF 90-0690-C. WASHINGTON. Chemical data from thermal and nonthermal springs in Mount St. Helens National Monument, Washington, by J. M. Thompson. 1990. One 3 1/2 inch diskette. (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503.)

The report is also available for Macintosh computers on a 3 1/2 inch (1.44MB), double sided, 135 TPI diskette or for IBM PCs or compatibles on a 5 1/4 inch (360K) double-sided, double-density, 48 TPI diskette. Both diskettes were formatted using Microsoft Word.

OF 90-0691. Natural hazards associated with Lake Kivu and adjoining areas of the Birunga volcanic field, Rwanda and Zaire, Central Africa; final report, by M. L. Tuttle, J. P. Lockwood and W. C. Evans. 1990. 37 p. (NC, Da, M.)

OF 90-0697. PENNSYLVANIA. Coal quality and compositional characteristics of the upper Freeport coal bed, Pennsylvania, source of the Argonne Premium sample, by B. S. Pierce and R. W. Stanton. 1990. 28 p. (NC, Da, M.)

OF 90-0698. NEVADA. Rock-Eval pyrolysis data for petroleum-potential evaluation based on well cuttings and core samples from eastern Nevada collected during 1990, by C. E. Barker, R. C. Johnson, F. G. Poole, T. A. Daws and C. N. Threlkeld. 1990. 15 p. (NC, Da, M, SF, LA, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0702-A. NEVADA. Geochemical results for samples of ore and host rocks, Sleeper gold-silver deposit, Humboldt County, Nevada, by J. T. Nash, D. L. Fey, J. M. Motooka and D. F. Siems. 1990. 69 p., 1 over-size sheet. (NC, Da, M, SF, LA, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0702-B. NEVADA. Geochemical results for samples of ore and host rocks, Sleeper gold-silver deposit, Humboldt County, Nevada, by J. T. Nash, D. L. Fey, J. M. Motooka and D. F. Siems. 1990. One 5 1/4 inch diskette. (NC, Da, M, SF, LA, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

Five tables of geochemical results in DBF format. Diskette in MS-DOS format for IBM PC or compatible running DOS 2.0 or higher.

OF 90-0704-A. ARIZONA. Arizona radiometric ages, HyperCard stack, by C. A. Carlson and S. J. Reynolds. 1990. 5 p. (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0704-B. ARIZONA. Arizona radiometric ages, HyperCard stack, by C. A. Carlson and S. J. Reynolds. 1990. One 3 1/2 inch diskette. (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

Macintosh diskette containing the HyperCard stack in compressed form, the UnStuffIt utility for decompressing the stack, and a TEXT file version of the paper copy. Requirements: The stack will run on any Macintosh with at least 2MB of RAM; a Macintosh II is recommended. A hard disk and HyperCard are required.

OF 90-0706. GEORGIA. Ground-water conditions in Georgia, 1989, by M. F. Peck, C. N. Joiner, J. S. Clarke and A. M. Creesler. Prepared in cooperation with the Georgia Department of

- Natural Resources; Albany Water, Gas, and Light Commission; City of Brunswick; Glynn County; Savannah-Chatham County Metropolitan Planning Commission; and City of Valdosta. 1990. 125 p. (NC, Da, M, Wb.)
- OF 90-0709. FLORIDA. Assessment of hydrogeologic conditions with emphasis on water quality and wastewater injection, Southwest Sarasota and West Charlotte counties, Florida, by C. B. Hutchinson. Prepared in cooperation with the Southwest Florida Water Management District. 1991. 103 p. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301.)
- OF 90-0721. IDAHO. Anomalous chlorine in iron-rich strata, Yellowjacket Formation, Lemhi County, Idaho; analytical data and discussion, by J. T. Nash, J. J. Connor, K. J. Currey and C. S. Papp. 1990. 36 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)
- OF 91-0001-A. GSMAP system version 7.0; graphics programs and related utility programs for the IBM PC and compatible microcomputers to assist compilation and publication of geologic maps and illustrations using geodetic or Cartesian coordinates, by G. I. Selner and R. B. Taylor. 1991. 151 p., 1 over-size sheet. (NC, Da, M.) (Supersedes Open-file report 89-373-A.)
- OF 91-0001-B. GSMAP system version 7.0; graphics programs and related utility programs for the IBM PC and compatible microcomputers to assist compilation and publication of geologic maps and illustrations using geodetic or Cartesian coordinates, by G. I. Selner and R. B. Taylor. 1991. Four 5 1/4 inch DS/DD IBM compatible diskettes. (NC, Da, M.) (Supersedes Open-file report 89-373-B.)
- OF 91-0002. Technical manual for a UNIX-based device-independent vector graphic system, by G. I. Evenden. 1991. 50 p. (NC, Da, M.)
- OF 91-0003. CALIFORNIA. Chemical analyses of the water from the GTA-1 Well, Parkfield, California, and other nearby spring and well waters, by J. M. Thompson and L. D. White. 1991. 26 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 91-0004-A. CALIFORNIA. Updated principal facts for gravity data compiled for the Fresno 1 by 2 degree sheet, California, by K. S. Kirchoff-Stein and V. E. Langenheim. 1991. 70 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 91-0004-B. CALIFORNIA. Updated principal facts for gravity data compiled for the Fresno 1 by 2 degree sheet, California, by K. S. Kirchoff-Stein and V. E. Langenheim. 1991. One 5 1/4 inch diskette. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- Requirements: IBM PC (or compatible) using DOS 2.0 or higher versions.
- OF 91-0005. CALIFORNIA. Seasonal and spatial biogeochemical trends for chaparral vegetation and soil geochemistry in the Santa Monica Mountains National Recreation Area, CA, by L. L. Jackson and L. P. Gough. 1991. 113 p. (NC, Da, M, LA, SF; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 91-0011-A. Some industrial mineral deposit models; descriptive deposit models, edited by G. J. Orris and J. D. Bliss. 1991. 73 p. (NC, Da, M.) (Extension of B 1693.)
- Descriptive model of diamond-bearing kimberlite pipes, by T. C. Michalski and P. J. Modreski. p. 1-4.
- Descriptive model of wollastonite skarn, by G. J. Orris. p. 5-6.
- Descriptive model of amorphous graphite, by D. M. Sutphin. p. 7-8.
- Descriptive model of lithium in smectites of closed basins, by Sigrid Asher-Bolinder. p. 9-10.
- Descriptive model of fumarolic sulfur, by K. R. Long. p. 11-12.
- Descriptive model of sedimentary zeolites; deposit subtype, zeolites in tuffs of open hydrologic systems, by R. A. Sheppard. p. 13-15.
- Descriptive model of sedimentary zeolites; deposit subtype, zeolites in tuffs of saline, alkaline-lake deposits, by R. A. Sheppard. p. 16-18.
- Descriptive model of epigenetic vein barite, by S. H. Clark and G. J. Orris. p. 19-20.
- Descriptive model of exhalative barite, by S. H. Clark and G. J. Orris. p. 21-22.
- Descriptive model of lacustrine diatomite, by J. D. Sherk. p. 23-25.
- Descriptive model of potash-bearing bedded salt, by Sherilyn Williams-Stroud. p. 26-28.
- Descriptive model of bedded salt; deposit subtype, marine evaporite salt, by O. B. Raup. p. 29-30.
- Descriptive model of salt domes; deposit subtype, diapiric salt structures, by O. B. Raup. p. 31-33.
- Descriptive model of bedded gypsum; deposit subtype, marine evaporite gypsum, by O. B. Raup. p. 34-35.
- Descriptive model of naturally occurring iodine brines, by Sherilyn Williams-Stroud. p. 36-37.
- Descriptive model of naturally occurring bromine brines, by Sherilyn Williams-Stroud. p. 38-39.
- Descriptive model of sodium carbonate in bedded lacustrine evaporites; deposit subtype, Green River, by J. R. Dyni. p. 40-44.
- Descriptive model of iodine-bearing nitrate, by Sherilyn Williams-Stroud. p. 45-46.

Descriptive model of lithium-rich playa brine, by Sigrid Asher-Bolinder. p. 47-48.

Descriptive model of disseminated flake graphite, by D. M. Sutphin. p. 49-51.

Descriptive model of graphite veins, by D. M. Sutphin. p. 52-54.

OF 91-0012. WYOMING. Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Oregon Buttes Wilderness Study Area (WY-040-324), Sweetwater County, Wyoming, by J. H. Bullock, Jr., H. N. Barton, R. B. Vaughn, R. M. O'Leary and D. L. Fey. 1991. 14 p. (NC, Da, M, Db, U; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

OF 91-0013. CALIFORNIA. Benthic foraminifera from the Laurel Quadrangle, California, by Kristin McDougall. 1991. 66 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0016. CALIFORNIA. Uptake and physiological antagonism of selenium and sulfur in alfalfa and wheat under field conditions, San Joaquin Valley, California, by R. C. Severson, L. P. Gough, J. G. Crock, D. L. Fey, P. L. Hageman, A. H. Love and T. R. Peacock. 1991. 42 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0017. Notes on a method to transform digitized coordinates to geographic coordinates, by G. I. Evenden. 1991. 5 p. (NC, Da, M.)

OF 91-0020. Great Lakes coastal mapping workshop, edited by C. F. Polloni. 1990. 48 p. (NC, Da, M.)

Development of a GIS for the U.S. Great Lakes shoreline, by R. L. Gauthier. p. 1-2.

Great Lakes states GIS, by F. J. Horvath. p. 3-4.

GIS data interchange in Michigan, by W. R. Enslin. p. 5-6.

NOAA mapping systems, by Christian Andreasen. p. 7-8.

Promoting the spatial data transfer standard, by K. A. Irby. p. 9-10.

Great Lakes CoastWatch data distribution, by G. A. Leshkevich. p. 11-12.

Ontario Province data distribution, by M. N. Law. p. 13-14.

GIS production applications in Ontario, by D. E. Coleman. p. 15-16.

Canadian Centre for Inland Waters, GIS applications, by Laurie Maynard. p. 17-20.

CD ROM atlas production, by R. A. Ambroziak. p. 21.

The USGS/NOAA Joint Office structure, by Christian Andreasen. p. 22.

Hazard/damage assessment model for the Great Lakes, by Will Knauss. p. 23.

Electronic charting in an inertial navigation system, by Richard Gregory-Allen. p. 24.

Data management systems for the Great Lakes mapping program, by C. F. Polloni. p. 25.

OF 91-0021. Preliminary interpretation of the high-resolution seismic stratigraphy beneath Lake Michigan, by D. S. Foster and S. M. Colman. 1991. 42 p., 2 over-size sheets. (NC, Da, M.)

OF 91-0022. WEST VIRGINIA, VIRGINIA, MARYLAND. Preliminary geologic map of the Winchester 30 x 60 Minute Quadrangle, West Virginia, Virginia and Maryland, compiled by R. C. McDowell. 1991. 18 p., 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, WA; Virginia Div. of Mineral Resources, P.O. Box 3667, Charlottesville, VA 22903.)

OF 91-0023-A. ALASKA. Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Livengood 1° x 3° Quadrangle, Alaska, by B. F. Arbogast, G. K. Lee and T. D. Light. 1991. 121 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, A, LA, S, SF; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 91-0023-B. ALASKA. Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Livengood 1° x 3° Quadrangle, Alaska, by B. F. Arbogast, G. K. Lee and T. D. Light. 1991. One 5 1/4 inch diskette. (NC, Da, M, A, LA, S, SF; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

This report contains digital geochemical data including sample site localities in decimal degree format and text documentation on a 5 1/4 inch, 360K diskette. The text file is in ASCII format and the data file is in STATPAC format (.STP). A conversion program STP2DAT is included on the diskette so that the .STP data file may be changed to a number of other forms including telecommunications (.cmu), Lotus 1-2-3 (.dif), and database (.dbf) files. Requirements: an IBM compatible computer using MS DOS, and a 5 1/4 inch, 360K drive.

OF 91-0024. WASHINGTON, IDAHO. Preliminary geologic map of the Orwig Hump area, Washington and Idaho, by F. K. Miller. 1990. 20 p., 1 over-size sheet, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, S, SF, LA, U; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 91-0025. IDAHO. Preliminary geologic map of the Wigwams area, Bonner and Boundary County, Idaho, by F. K. Miller. 1990. 14 p., 1 over-size sheet, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, U, SF, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 91-0026. CALIFORNIA. Santa Clara County, California, environmental geology; selected references, by J. H. Freeberg. 1991. 24 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA

95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0027-A. COLORADO. ASCII database of principal lode mines and mineralized areas in southern Summit County, Colorado, by A. B. Wilson and E. J. LaRock. 1991. 22 p. (NC, Da, M, Db, U; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203.)

OF 91-0027-B. COLORADO. ASCII database of principal lode mines and mineralized areas in southern Summit County, Colorado, by A. B. Wilson and E. J. LaRock. 1991. One 5 1/4 inch diskette. (NC, Da, M, Db, U; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203.)

Documentation and database, 360K floppy diskette.

OF 91-0028-A. MONTANA, IDAHO. Geochemical variation in a copper-bearing redbed sequence of the Ravalli Group (Belt Supergroup), northwestern Montana and northern Idaho; Part A, Geological interpretation, by J. J. Connor. 1991. 47 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 91-0028-B. MONTANA, IDAHO. Geochemical variation in a copper-bearing redbed sequence of the Ravalli Group (Belt Supergroup), northwestern Montana and northern Idaho; Part B, Geochemical data, by J. J. Connor. 1991. 6 p., one 5 1/4 inch diskette. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

ASCII geochemical data files, 360K floppy diskette.

OF 91-0029. ALASKA. Metamorphic facies map of southeastern Alaska; distribution, facies, and ages of regionally metamorphosed rocks, by Cynthia Dusel-Bacon, D. A. Brew and S. L. Douglass. Prepared in cooperation with the State of Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys. 1991. 48 p., 2 over-size sheets, scale 1:1,000,000 (1 inch = about 16 miles). (NC, Da, M, A, S, SF, LA; Alaska Div. of 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.)

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Binary data and programs to transpose grid from binary to ASCII and vice versa; these executables work with any IBM-PC-AT clone with mathprocessor; 3 1/2 inch high density (1.44 Mbytes) diskette in IBM-AT/DOS format.

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- OF 91-0130. CALIFORNIA. Geochemical investigation of an oil spill in San Francisco Bay, California, by F. D. Hostettler, J. B. Rapp and K. A. Kvenvolden. 1991. 25 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 91-0131-A. How to construct four paper models that describe island coral reefs, by T. R. Alpha. 1991. 19 p. (NC, Da, M.)
- OF 91-0131-B. How to construct four paper models that describe island coral reefs, by T. R. Alpha. 1991. One 3 1/2 inch diskette. (NC, Da, M.)
- Requires an Apple Macintosh Plus, Classic, SE or II series of computers and HyperCard 2.0 software.
- OF 91-0133-A. HAWAII. Composition of waters from the research drill hole at summit of Kilauea Volcano and of selected thermal and non-thermal groundwaters, Hawaii, by R. I. Tilling and B. F. Jones. 1991. 27 p. (NC, Da, M, SF, LA.)
- OF 91-0133-B. HAWAII. Composition of waters from the research drill hole at summit of Kilauea Volcano and of selected thermal and non-thermal groundwaters, Hawaii, by R. I. Tilling and B. F. Jones. 1991. One 3 1/2 inch diskette. (NC, Da, M, SF, LA.)
- The diskette version requires an Apple II or Macintosh II; the text, which includes inserted graphics (Figs. 1-3), is in Microsoft Word, v. 4.0.
- OF 91-0134. ALASKA. Preliminary geochemistry of volcanic rocks from the McHugh Complex and Kachemak Terrane, southern Alaska, by S. W. Nelson and C. D. Blome. 1991. 14 p. (NC, Da, M, A, S, SF, LA; Alaska Div. of 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 91-0135. NEVADA. Geologic map of the Chief Mountain Quadrangle, Lincoln County, Nevada, by P. D. Rowley, R. R. Shroba, F. W. Simonds, K. J. Burke, G. J. Axen and S. D. Olmore. 1991. 34 p., 3 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, LA, SF, U; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)
- OF 91-0136. Bathymetric map of southern Northwind Ridge and vicinity, Arctic Ocean, by M. W. Mullen and Arthur Grantz. 1991. 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)
- OF 91-0137. Preliminary results of the 1986 Sea Cliff dive program, Escanaba Trough, by R. A. Zierenberg, J. L. Morton, C. A. Reiss and M. L. Holmes. 1991. 176 p. (NC, Da, M.)
- OF 91-0138. An analysis of a unique seismic anomaly in Georges Bank Basin, Atlantic continental margin, by M. W. Lee, W. F. Agena and B. A. Swift. 1991. 25 p. (NC, Da, M; Coastal Zone Management, 100 Cambridge St., 20th Floor, Boston, MA 02202.)
- OF 91-0140. Report of a workshop on the Correlation of marine and terrestrial records of climate changes in the Western U.S., by J. V. Gardner, A. M. Sama-Wojcicki, D. P. Adam, W. E.

- Dean, J. P. Bradbury and H. J. Rieck. 1991. 48 p. (NC, Da, M.)
- OF 91-0141. Geology of the Venezuelan Guayana Shield and its relation to the entire Guayana Shield, by G. B. Sidder and Vicente Mendoza S. Prepared in cooperation with the Corporación Venezolana de Guayana-Compañía Técnica Minera. 1991. 59 p., 2 over-size sheets. (NC, Da, M.)
- OF 91-0142. ALASKA. Biogeochemical studies of gold in a placer deposit, Livengood, Alaska, by R. J. Coel, J. G. Crock and J. R. Kyle. 1991. 51 p. (NC, Da, M, A, LA, S, SF; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709-4699; U.S. Dep. of Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)
- OF 91-0143. ALASKA. Geologic map of the Anchorage B-8 SW Quadrangle, Alaska, by L. A. Yehle, H. R. Schmoll and Ernest Dobrovolsky. 1991. 30 p., 2 over-size sheets; sheet 1, scale 1:25,000 (1 inch = about 2,000 feet). (NC, Da, M, A, LA, SF, S; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaska Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160; Alaska Div. of Geol. and Geophys. Surv., P.O. Box 7028, Anchorage, AK 99510.)
- OF 91-0144. COLORADO. Geology of a fault-controlled cave in Precambrian crystalline rocks in Clear Creek canyon, Jefferson County, Colorado, by J. C. Reed, Jr. 1991. 7 p., 1 over-size sheet. (NC, Da, M, Db, U; John W. Rold, Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203; Donald Fawcett, Office of the State Engineer, Ground Water Section, 1313 Sherman St., Room 818, Denver, CO 80203.)
- OF 91-0145. CALIFORNIA. Pollution studies of Drakes Estero, and Abbotts Lagoon; Point Reyes National Seashore, California, USA, by R. J. Anima. 1991. 178 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 91-0146. CALIFORNIA. Mass properties of conventional core samples from the Monterey Formation, Union-Humble Bell Fee 156, West Cat Canyon oil field, Santa Maria Basin, California, by L. A. Beyer and C. M. Isaacs. 1991. 13 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 91-0148. Age and petrology of the Tertiary As Sarat volcanic field, southwestern Saudi Arabia, by E. A. du Bray, D. B. Stoesser and E. H. McKee. Prepared in cooperation with the Deputy Ministry for Mineral Resources, Saudi Arabia. 1991. 36 p. (NC, Da, M.)
- OF 91-0149. CALIFORNIA. Ground-squirrel mounds and related patterned ground along the San Andreas Fault in Central California, by R. E. Wallace. 1991. 25 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 91-0152. GEORGIA, FLORIDA. National Water-Quality Assessment Program; the Georgia-Florida coastal plain, by I. H. Kantrowitz. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)
- OF 91-0154. NEVADA. National Water-Quality Assessment program; Nevada Basin and Range, by H. E. Bevans and K. C. Kilroy. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)
- OF 91-0156. National Water-Quality Assessment Program; the Albemarle-Pamlico drainage, by O. B. Lloyd, Jr., C. R. Barnes and M. D. Woodside. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)
- OF 91-0157. National Water-Quality Assessment Program; the Potomac River basin, by J. M. Gerhart. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)
- OF 91-0159. National Water-Quality Assessment Program; the Connecticut River and Long Island Sound coastal rivers, by S. J. Grady and S. P. Garabedian. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)
- OF 91-0165. National Water-Quality Assessment Program; the upper Snake River basin, by W. H. Low. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)
- OF 91-0168. National Water-Quality Assessment Program; the lower Susquehanna River basin, by K. J. Breen, R. A. Hainly and S. A. Hoffman. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)
- OF 91-0170. NEVADA. Yucca Mountain as a nuclear-waste repository; neither myth nor millennium, by I. J. Winograd. 1991. 25 p. (NC, Da, M, Wb.)
- OF 91-0171. IOWA. Floods in the Nishnabotna River basin, Iowa, by D. A. Eash and A. J. Heinitz. Prepared in cooperation with the Iowa Department of Transportation, Highway Division. 1991. 118 p. (NC, Da, M, Wb.)
- OF 91-0176. TENNESSEE. Ground-water use by public-supply systems in Tennessee in 1988, by S. S. Hutson. Prepared in cooperation with the Tennessee Department of Health and Environment. 1991. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 7777 Walnut Grove Rd., Suite LLB2, Memphis, TN 38119.)
- OF 91-0177. MISSISSIPPI. Tritium in ground water in Mississippi, 1989-90, by L. J. Slack and W. T. Oakley. Prepared in cooperation with the Mississippi Department of Environmental Quality, Office of Pollution Control. 1991. 12 p. (NC, Da, M, Wb.)
- OF 91-0179. Lower Colorado River Accounting System (LCRAS) computer program and documentation, by B. K. von Allworden, S. J. Owen-Joyce, J. D. Sandoval and L. H. Raymond. Prepared in cooperation with the U.S. Bureau of Reclamation. 1991. 199 p. (NC, Da, M, Wb, F; USGS, WRD, Room 5A Federal Bldg., 300 West Congress St., Tucson, AZ 85701; 1545 West University, Tempe, AZ 85281; and 1940 South 3rd Ave., Yuma, AZ 85364.)
- OF 91-0183. User's manual for WATEQ4F, with revised thermodynamic data base and test cases for calculating speciation of major, trace, and redox elements in natural waters, by J. W. Ball

and D. K. Nordstrom. 1991. 193 p., one 5 1/4 inch diskette. (NC, Da, M, Wb.)

The WATEQ4F software package consists of one high density (1.2MB) diskette and requires an IBM PC or compatible with DOS version 2.1 or higher. A hard disk is not absolutely required, but is highly recommended, as your use of the software will be significantly restricted in the absence of the large amount of storage space that a hard disk provides.

OF 91-0186. KANSAS. Geohydrologic data for the South Fork Ninescah River valley and adjacent uplands in Pratt and Kingman counties, south-central Kansas, by J. B. Gillespie, G. D. Hargadine, N. C. Myers and D. A. Hargadine. Prepared in cooperation with the Kansas Water Office, the City of Wichita, and Sedgwick County. 1991. 55 p. (NC, Da, M, Wb; USGS, WRD, 4821 Quail Place, Lawrence, KS 66049; and 206 Fulton Terrace, Garden City, KS 67846.)

OF 91-0188. NORTH DAKOTA. Water-resources activities, North Dakota District, fiscal year 1990, compiled by C. R. Martin. 1991. 99 p. (NC, Da, M, Wb; USGS, WRD, 821 East Interstate Ave., Bismarck, ND 58501-1199.)

OF 91-0190. FLORIDA. Potentiometric surface of the upper Floridan Aquifer in the St. Johns River Water Management District and vicinity, Florida, September 1990, by R. M. Spechler, L. C. Murray, L. A. Bradner and G. G. Phelps. Prepared in cooperation with the St. Johns River Water Management District, South Florida Water Management District, and the Southwest Florida Water Management District. 1991. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301; Suite 1006, 224 West Center St., Altamonte Springs, FL 32714; Suite 222, 3728 Phillips Hwy., Jacksonville, FL 32207; Suite 107, 9100 Northwest 36 St., Miami, FL 33178; and Suite B-5, 4710 Eisenhower Blvd., Tampa, FL 33634.)

OF 91-0191. MONTANA. Water-resources activities of the U.S. Geological Survey in Montana, October 1989 through September 1991, by C. J. Harksen and K. S. Midtlyng. Prepared in cooperation with the State of Montana and other agencies. 1991. 77 p. (NC, Da, M, Wb, Db, S, U; USGS, WRD, 428 Federal Bldg., 301 South Park Ave., Helena, MT 59626-0076; and Eastern Montana Coll., Box 111, 1500 North 30th, Billings, MT 59101.)

OF 91-0193. CALIFORNIA. Evaluation of selected data to assess the causes of subsidence in the Sacramento-San Joaquin Delta, California, by S. A. Rojstaczer, R. E. Hamon, S. J. Deverel and C. A. Massey. Prepared in cooperation with the California Department of Water Resources. 1991. 16 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

OF 91-0194. MONTANA. Quality-assurance plan for water-resources activities of the U.S. Geological Survey in Montana; 1991, by J. A. Moreland. 1991. 30 p. (NC, Da, M, Wb, Db, S; USGS, WRD, 428 Federal Bldg., 301 South Park Ave., Helena, MT 59626-0076; and Eastern Montana Coll., 1500 North 30th, Billings, MT 59101.)

OF 91-0196. ARIZONA, NEW MEXICO. Historic water-quality data, Puerco River basin, Arizona and New Mexico, by Laurie Wirt, P. C. Van Metre and B. O. Favor. Prepared in cooperation with the Office of Navajo and Hopi Indian Relocation, U.S.

Bureau of Indian Affairs, Navajo Nation, Arizona Department of Water Resources, Arizona Department of Environmental Quality, and New Mexico Environmental Improvement Division. 1991. 339 p., 2 over-size sheets. (NC, Da, M, Wb; USGS, WRD, 375 South Euclid Ave., Tucson, AZ 85719; USGS, 1545 West University Dr., Tempe, AZ 85281; USGS, WRD, 1940 South 3rd Ave., Yuma, AZ 85364; and Flagstaff, AZ 86001.)

OF 91-0198. The U.S. Geological Survey Federal-State Cooperative Water-Resources Program, fiscal year 1990, by B. K. Gilbert and W. B. Mann, IV. 1991. 39 p. (NC, Da, M, Wb.)

OF 91-0199. RHODE ISLAND. Ground-water resources of Rhode Island, by E. C. Trench. Prepared in cooperation with the Rhode Island Department of Environmental Management. 1991. 169 p. (NC, Da, M, Wb.)

OF 91-0201. LOUISIANA. Water-resources activities of the Louisiana District, 1988-89, compiled by L. F. Farrar. 1991. 38 p. (NC, Da, M, Wb; USGS, WRD, 6554 Florida Blvd., Baton Rouge, LA 70896.)

OF 91-0203. ARKANSAS. Summary of reported water use for Arkansas counties, 1989, by N. T. Baker and C. A. Manning. Prepared in cooperation with the Arkansas Soil and Water Conservation Commission. 1991. 19 p. (NC, Da, M, Wb.)

OF 91-0210. COLORADO. Summary of water-resources activities of the U.S. Geological Survey in Colorado; fiscal year 1991, compiled by P. A. Griffith. 1991. 72 p., 1 over-size sheet, scale 1:1,000,000 (1 inch = about 16 miles). (NC, Da, M, Wb, Db; USGS, WRD, Room H-2101, Bldg. 53, Box 25046, Mail Stop 415, Denver Federal Ctr., Denver, CO 80225-0046.)

OF 91-0214. PENNSYLVANIA. Water-resources investigations in Pennsylvania; programs and activities of the U.S. Geological Survey, 1990-91, by L. O. McLanahan. 1991. 73 p. (NC, Da, M, Wb; USGS, WRD, 840 Market St., Lemoyne, PA 10743-1586.)

OF 91-0216. MONTANA. Quality assurance for water-quality activities of the U.S. Geological Survey in Montana, by J. R. Knapp and D. A. Nimick. 1991. 41 p. (NC, Da, M, Wb, Db, U, S; USGS, WRD, Room 428, Federal Bldg., 301 South Park Ave., Helena, MT 59626-0076; and Eastern Montana Coll., 1500 North 30th, Billings, MT 59101.)

OF 91-0218. Software quality assurance in the National Water Information System, by G. R. Dempster, Jr. and C. F. Merk. 1991. 17 p. (NC, Da, M, Wb.)

OF 91-0224. WRD project and report management guide, by J. H. Green. 1991. 152 p. (NC, Da, M, Wb.)

OF 91-0227. CALIFORNIA. Transport and transformation of dissolved rice pesticides in the Sacramento River delta, California, by J. L. Domagalski and K. M. Kuivila. 1991. 5 p. (NC, Da, M, Wb, S, LA; USGS, WRD, Room W-2234, Federal Bldg., 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Road, Suite O, San Diego, CA 92123.)

OF 91-0256-A. NEVADA. Principal facts for 133 gravity stations, with color maps of Bouguer and isostatic residual gravity anomalies on the Winnemucca 1° by 2° Quadrangle, Nevada, by R. F. Sikora. 1991. 40 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

- OF 91-0256-B. NEVADA. Principal facts for gravity stations on the Winnemucca 1° by 2° Quadrangle, Nevada, by R. F. Sikora. 1991. One 3 1/2 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)
- Double-sided, high-density (1.44MB) diskette, containing files in ASCII format. Requirements: IBM PC or compatible, DOS v. 2.0 or higher, with a 3 1/2 inch disk drive or a Macintosh with a SuperDrive and Apple File Exchange software to convert from PC to MAC.
- OF 91-0257. The stable isotope geochemistry of acid-sulfate alteration and vein forming alunite, by R. O. Rye, P. M. Bethke and M. D. Wasserman. 1991. 59 p. (NC, Da, M.)
- OF 91-0258. WYOMING. The Laramie Mountains, Wyoming, earthquake of 18 October 1984; a report on its aftershocks and seismotectonic setting, by C. J. Langer, R. A. Martin, C. K. Wood, G. L. Snyder and G. A. Bollinger. 1991. 41 p. (NC, Da, M, Db, U; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)
- OF 91-0259-A. IDAHO. Some geochemical features of the Blackbird and Jackass zones of the Yellowjacket Formation (middle Proterozoic) in east-central Idaho, by J. J. Connor. 1991. 25 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)
- OF 91-0259-B. IDAHO. Some geochemical features of the Blackbird and Jackass zones of the Yellowjacket Formation (middle Proterozoic) in east-central Idaho, by J. J. Connor. 1991. One 5 1/4 inch diskette. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)
- 360K double-sided, double-density diskette; IBMPC or compatible with 512K RAM using DOS 2.0 or higher. Two non-ASCII files contain the same data readable by the USGS system of STATPAC programs. Use of the STATPAC programs requires a mathematical coprocessor.
- OF 91-0260. Gold deposits along the Río Madera, northern Bolivia, by G. E. McKelvey. 1991. 27 p. (NC, Da, M.)
- OF 91-0262. An RSX-11M/M-Plus device driver for the Advanced Computer Communications ACP 5100/6100 communications interface, by L. M. Baker. 1991. 28 p. (NC, Da, M.) (Supersedes Open-file report 88-515.)
- OF 91-0269. OKLAHOMA. Density and magnetic susceptibility measurements of rocks in the Wichita Uplift and Slick Hills, southwestern Oklahoma, by Lee-Ann Bradley and Meridee Jones-Cecil. 1991. 31 p. (NC, Da, M; Oklahoma Geol. Surv., Univ. of Oklahoma, 830 Van Vleet Oval, Room 163, Norman, OK 73019.)
- OF 91-0270. CALIFORNIA. Response plans for volcanic hazards in the Long Valley Caldera and Mono Craters area, California, by D. P. Hill, M. J. Johnston, J. O. Langbein, S. R. McNutt, C. D. Miller, C. E. Mortensen, A. M. Pitt and S. A. Rojstaczer. Prepared in cooperation with the California Division of Mines and Geology. 1991. 65 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.) (Supersedes Open-file report 84-500.)
- OF 91-0271. CALIFORNIA. Analytical results and sample locality map of stream-sediment and panned-concentrate samples from the Garberville 1:100,000 Quadrangle (southwest quarter of the Redding, California 1:250,000 Quadrangle), Humboldt, Trinity, Shasta, Tehama, and Mendocino counties, California, by S. M. Smith, M. L. Silberman, R. M. O'Leary and R. T. Hopkins, Jr. 1991. 86 p., 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 91-0272. LOUISIANA. Cartographic production for the Louisiana barrier island erosion study: 1, Processing land features, by D. A. Hopkins and J. H. List. 1991. 22 p. (NC, Da, M.)
- OF 91-0275. VERMONT. Reconnaissance bedrock geologic map of the Randolph Center Quadrangle, Vermont, by N. L. Hatch, Jr. 1991. 8 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M.)
- OF 91-0276. LOUISIANA. Louisiana barrier island erosion study; correction for the effect of relative sea level change on historical bathymetric survey comparisons, Isles Dernieres area, Louisiana, by B. E. Jaffe, J. H. List, A. H. Sallenger, Jr. and K. T. Holland. 1991. 33 p. (NC, Da, M.)
- OF 91-0277. OREGON. Preliminary geologic map of the Dolph Quadrangle, Lincoln, Tillamook, and Yamhill counties, Oregon, by P. D. Snively, Jr., N. S. MacLeod and D. L. Minasian. 1991. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland OR 97201.)
- OF 91-0278. CALIFORNIA. Geologic map of the Gilroy 7.5 minute Quadrangle, California, by E. J. Helley and J. K. Nakata. 1991. 10 p., 1 over-size sheet. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 91-0279. OREGON. Cruise report, 1990 Oregon placer mineral research cruise (A1 90WO), September 21–October 3, 1990, by H. E. Clifton, G. G. Connard, Joe Fisher, David Fox, C. L. Mardock, G. R. McMurray, R. J. O'Brien, C. D. Peterson, Rick Starr and J. R. Woolsey. 1991. 81 p. (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)
- OF 91-0280. IDAHO. The Putnam Thrust, northern Portneuf Range, southeastern Idaho; structural complexities caused by upper-plate imbricate thrusting and Neogene block rotation, by K. S. Kellogg. 1991. 37 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)
- OF 91-0281. COLORADO. Investigation of foundation problems related to heaving of soils and weathered bedrock in the Pierre Shale southwest of Denver, Colorado, by T. C. Nichols, Jr., *with sections on* Clay mineralogy, by D. D. Eberl, and Seismic-reflection data interpretation, by R. A. Williams and K. W. King. 1991. 40 p. (NC, Da, M, Db, U; John W. Rold, Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203; Donald Fawcett, Office of the State Engineer, Ground Water Section, Room 818, 1313 Sherman St., Denver, CO 80203.)

OF 91-0283-A. ALASKA. Gold, mercury, tellurium, and thallium data and sample locality map of stream-sediment samples from the Iditarod Quadrangle, Alaska, by D. M. Hopkins, J. E. Gray, P. L. Hageman, C. M. McDougal and K. E. Slaughter. 1991. 37 p., 1 oversize sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, LA, SF, S, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160; Alaska Div. of Geol. and Geophys. Surv., P.O. Box 7028, Anchorage, AK 99510.)

OF 91-0283-B. ALASKA. Gold, mercury, tellurium, and thallium data and sample locality map of stream-sediment samples from the Iditarod Quadrangle, Alaska, by D. M. Hopkins, J. E. Gray, P. L. Hageman, C. M. McDougal and K. E. Slaughter. 1991. One 5 1/4 inch diskette. (NC, Da, M, LA, SF, S, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160; Alaska Div. of Geol. and Geophys. Surv., P.O. Box 7028, Anchorage, AK 99510.)

The text file is in ASCII format and the data file is in STAPAC format (.STP). A conversion program STP2DAT is included on the diskette so that the .STP data file may be changed to a number of other forms including telecommunications (.cmn), Lotus 1-2-3 (.dif), and database (.dbf) files. Requirements: an IBM compatible computer using MS DOS, and a 5 1/4 inch, 360K drive.

OF 91-0284. 3rd annual southern Lake Michigan coastal erosion study workshop, edited by D. W. Folger, S. M. Colman and P. W. Barnes. 1991. 80 p. (NC, Da, M.)

Lake ice influence on the coastal profile and sediment transport, and overlooked processes in southern Lake Michigan, by P. W. Barnes, E. W. Kempema, Erk Reimnitz and Michael McCormick. p. 14-16.

Analysis of possible effects of summer storm waves on Lake Michigan lakebed properties in the Illinois Beach State Park nearshore zone, by J. S. Booth and W. J. Winters. p. 17-18.

Late Holocene coastal evolution of the central Chicago lakeshore and model for related evolution of the Chicago River, by M. J. Chrzastowski. p. 19-21.

Rates of sedimentation in southern Lake Michigan and their relation to changing lake levels, by S. M. Colman. p. 22-23.

Indiana Shoals; a dynamic sedimentary environment, by D. W. Folger, J. S. Schlee, D. S. Foster, C. F. Polloni, B. A. Seekins, C. L. Brown and A. C. Olson. p. 24.

Holocene history of Lake Michigan; the ostracode record, by R. M. Forester. p. 25-26.

The Chippewa unconformity and the preservation of low lake-level features; observations from high-resolution seismic-reflection profiles, by D. S. Foster and S. M. Colman. p. 27-28.

Nearshore dynamics, ice formation, and sediment transport, by J. W. Haines. p. 29-30.

Video monitoring of ice processes, by R. A. Holman. p. 31.

A 115-year record of bluff recession along the Lake Michigan shoreline in Illinois, by R. W. Jibson and J. G. Staude. p. 32.

Relative lake level changes in the upper Great Lakes; reconstructing the pattern of postglacial warping with accuracy, by C. E. Larsen. p. 33-40.

Eolian sand transport in the backshore-foredune portion of the Lake Michigan shoreline, Indiana, by G. A. Olyphant, S. W. Bennett, G. S. Fraser and T. A. Thompson. p. 41.

CD ROM archive and atlas production; vehicles from data integration, by C. F. Polloni. p. 42.

Geochemical, paleomagnetic, and magnetic-petrologic studies of Holocene sediments in southern Lake Michigan; records of depositional conditions, by R. L. Reynolds, J. W. King, S. M. Colman, A. Nicholson and M. B. Goldhaber. p. 43-45.

Preliminary survey of littoral drift sand deposits along the Illinois shore of Lake Michigan from Waukegan to Evanston, by C. W. Shabica, F. A. Pranschke and M. J. Chrzastowski. p. 46.

Mathematical trends in the erosional evolution of a logarithmic-spiral bay on the Illinois shore, by P. D. Terpstra and M. J. Chrzastowski. p. 47-48.

Preservation of patterns of shoreline behavior in the southern part of the Lake Michigan basin, by T. A. Thompson. p. 49-50.

Modeling beach and nearshore profile response to lake level change and storm wave forcing, by W. L. Wood. p. 51-52.

OF 91-0286. Mineral deposits and occurrences of the Bolivian Altiplano and Cordillera Occidental, compiled by U.S. Geological Survey and Servicio Geológico de Bolivia. Prepared in cooperation with the U.S. State Department, Trade Development Program. 1991. 328 p. (NC, Da, M.)

OF 91-0287. WYOMING, MONTANA, SOUTH DAKOTA. Principal facts for 1040 gravity stations in the Gillette and Sheridan 1x2 degree quadrangles, and Crow Indian Reservation, Wyoming, Montana, and South Dakota, by Courteney Williamson and S. L. Robbins. 1991. 59 p. (NC, Da, M, Db, U, S; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701; Dep. of Water and Natural Resources, South Dakota Geol. Surv., Sci. Ctr., Univ. of South Dakota, Vermillion, SD 57069.)

OF 91-0288. CALIFORNIA. Preliminary geologic map of the Thousand Oaks 7.5' Quadrangle, Southern California, by R. F. Yerkes and P. K. Showalter. 1991. 10 p., 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., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0289. WASHINGTON. Preliminary geologic map of the Lakeview Peak Quadrangle, Cowlitz County, Washington, by R. C. Everts and R. P. Ashley. Prepared in cooperation with the Washington Department of Natural Resources. 1991. 35 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503.)

OF 91-0290. NEVADA, CALIFORNIA. Late Cenozoic stratigraphy and tectonics of Fish Lake valley, Nevada and California; road log and contributions to the field trip guidebook, 1991 Pacific Cell,

- Friends of the Pleistocene, by M. C. Reheis, A. M. Sarna-Wojcicki, C. E. Meyer, E. H. McKee, J. L. Slate, D. M. Burbank, T. L. Sawyer and E. G. Pendall. 1991. 93 p. (NC, Da, M, SF, LA, U, Db; 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; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)
- Road log for field trip in Fish Lake valley, California-Nevada, by M. C. Reheis, T. L. Sawyer, E. G. Pendall and J. L. Slate. p. 2-25.
- Late Cenozoic history of slip on the Fish Lake valley fault zone, Nevada and California, by M. C. Reheis and E. H. McKee. p. 26-45.
- The late Cenozoic section at Willow Wash, east-central California; a tephrochronologic rosetta stone, by M. C. Reheis, A. M. Sarna-Wojcicki, D. M. Burbank and C. E. Meyer. p. 46-66.
- An early Pleistocene pluvial lake in Fish Lake valley, Nevada-California; ringside resort for the eruption of the Bishop Tuff, by M. C. Reheis, J. L. Slate, A. M. Sarna-Wojcicki and C. E. Meyer. p. 67-93.
- OF 91-0291. NEVADA. Soil formation on the Trail Canyon alluvial fan, Fish Lake valley, Nevada, by J. W. Harden, J. L. Slate, P. J. Lamothe, O. A. Chadwick, E. G. Pendall and A. R. Gillespie. 1991. 29 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)
- OF 91-0292. ALASKA. Biogeochemistry of selected plant materials, Alaska, by L. P. Gough, R. C. Severson, T. F. Harns, C. S. Papp and H. T. Shacklette. 1991. 30 p. (NC, Da, M, LA, S, SF, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)
- OF 91-0293. MINNESOTA. Gold contents of 469 outcrop and 1466 B-horizon soil samples from the northwestern part of the Duluth Complex, northeastern Minnesota, by J. B. McHugh and H. V. Alminas. 1991. 26 p. (NC, Da, M; Minnesota Geol. Surv., 2642 University Ave., St. Paul, MN 55114-1057.)
- OF 91-0294. PSTRANS; a Macintosh II program to convert ARC/INFO postscript to Adobe Illustrator format, by R. K. Mark. 1991. One 3 1/2 inch diskette. (NC, Da, M.)
- ARC/INFO ARCPLOT postscript files need to be converted to Adobe Illustrator art files to permit editing and annotating on the Macintosh platform using Illustrator 3.0. The program PSTRANS will convert ARC/INFO 5.0 ARCPLOT postscript files into Adobe Illustrator art files on a Macintosh SE/30 or Macintosh II class machine.
- OF 91-0296. NEVADA. Pedogenic isotopic indicators of climate and carbon cycling in Fish Lake valley, Nevada, by E. G. Pendall, J. W. Harden and S. E. Trumbore. 1991. 18 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)
- OF 91-0299. CALIFORNIA. Map of earthquake epicenters in the San Francisco Bay area, California; 1972-1989, by J. A. Olson and P. K. Showalter. 1991. 1 over-size sheet. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 91-0300-A. ALASKA. Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, January 1991, by J. B. Townshend, R. V. O'Connell and C. A. Vamer. Prepared in cooperation with the Geophysical Institute of the University of Alaska. 1991. 18 p. (NC, Da, M, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)
- OF 91-0300-B. ALASKA. Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, February 1991, by J. B. Townshend, R. V. O'Connell and C. A. Vamer. Prepared in cooperation with the Geophysical Institute of the University of Alaska. 1991. 17 p. (NC, Da, M, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)
- OF 91-0300-C. ALASKA. Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, March 1991, by J. B. Townshend, R. V. O'Connell and C. A. Vamer. Prepared in cooperation with the Geophysical Institute of the University of Alaska. 1991. 20 p. (NC, Da, M, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)
- OF 91-0301. Multifractals in image processing and process imaging, by Lee De Cola. 1991. 23 p. (NC, Da, M, F.)
- OF 91-0302. NEW MEXICO. Vitrinite reflectance values of coal from drill-hole cuttings, San Juan Basin, New Mexico, by M. J. Pawlewicz, V. F. Nuccio and J. E. Fassett. 1991. 10 p. (NC, Da, M, Db, U; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)
- OF 91-0303-A. A VAX and MS-DOS computer program package for depth conversion of digitized, line-drawing interpretations of seismic sections, by J. J. Miller. 1991. 25 p. (NC, Da, M.)
- OF 91-0303-B. A VAX and MS-DOS computer program package for depth conversion of digitized, line-drawing interpretations of seismic sections, by J. J. Miller. 1991. 2 p., one 5 1/4 inch diskette. (NC, Da, M.)
- Program package VELPACK (version 1.2) is designed to create digitized, line-drawing interpretations from time-migrated seismic sections, to transform the interpretation from a time-section to a depth-section by means of ray-tracing techniques (vertical or image-ray), and to modify the velocity models used for the depth transformation in various ways. MS-DOS programs: The MS-DOS programs were developed using Microsoft Fortran version 5.0 and Microsoft BASIC version 7.1 on a Kaypro 286i microcomputer having an Intel-80286 CPU, enhanced keyboard, math coprocessor and MS-DOS v3.21 operating system. The programs may be run on PC, XT, and AT microcomputers using MS-DOS (PC-DOS) v2.0 or greater. The programs will use a math coprocessor if one is available, otherwise they will use software emulation. Those programs that use on-screen graphics (ISOEDIT, PLOTSEC and DEPTHTRAY) will automatically detect and use the highest possible video resolution from the



- following: VGA, EGA, CGA (color or monochrome), or Hercules (monochrome). Graphics capability for DEPTHTRAY is optional; its output can be stored in files for display on other computers equipped with graphics capability. VAX-programs: The VAX programs are designed to be used with proprietary DISCO seismic data processing software and were developed using Fortran-77 on a DEC VAX 11/780 minicomputer having an FPS-120B array processor, a VERSATEC electrostatic plotter (22-inch wide, black and white), an HSR-11 rasterizer, and VMS v5.1 operating system. The programs that modify velocities are compatible with the DISCO seismic data processing system's database, version 6.0 and above. Proprietary subroutines that access the array processor, Calcomp-equivalent graphics, and Seisdata database were provided by Cogniseis Development Corporation. The array processor is required only for program VSMOOTH; the plotter and rasterizer are used only in programs PLOTSEC and DEPTHTRAY. The plotter and rasterizer are optional for DEPTHTRAY; its output can be stored in files for display on other computers equipped with such devices. The required input and output files are in standard ASCII format and are 100% compatible between the VAX and MS-DOS computers and should be compatible with other hardware that can utilize ASCII-format files. Both the MS-DOS and VAX version of the digitizing program SECDIG, assume a Summagraphics digitizer having either a 13-key cursor pad (gray key, keys 0-9, #, and keys) or 4-key cursor pad (Z, 1, 2, and 3 keys) and access through the serial port. The source code can be modified and recompiled to accept input for other digitizers. This open-file report is available in paper copy, OF 91-303-A. The executable files for the MS-DOS programs are available on a diskette, OF 91-303-B; the source code for both the VAX and MS-DOS programs is available on diskette, OF 91-303-C. The source code for the proprietary subroutines mentioned above is not provided; only the calling syntax for those subroutines is included. All diskettes are 5 1/4 inches and formatted for 1.2MB capacity.
- OF 91-0303-C. A VAX and MS-DOS computer program package for depth conversion of digitized, line-drawing interpretations of seismic sections, by J. J. Miller. 1991. 2 p., one 5 1/4 inch diskette. (NC, Da, M.)
- For software/hardware requirements see OF 91-303-B.
- OF 91-0304. Conversion of raster image data to vector cartographic data, by V. F. Paskevich. 1991. 15 p. (NC, Da, M.)
- OF 91-0305. LOUISIANA. Cartographic production for the Louisiana barrier island erosion study; 4, Processing contours for color fill, by D. A. Hopkins and J. H. List. 1991. 25 p. (NC, Da, M.)
- OF 91-0306. Fluvial gold placers and basin-margin rotation, by E. R. Force. 1991. 14 p. (NC, Da, M.)
- OF 91-0309. Pliocene planktic foraminifer census data from Deep Sea Drilling Project Hole 603C, by R. Z. Poore. 1991. 7 p. (NC, Da, M.)
- OF 91-0311. CALIFORNIA. A compilation of the geology and measured and estimated shear-wave velocity profiles at strong-motion stations that recorded the Loma Prieta, California, earthquake, by T. E. Fumal. 1991. 163 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)
- OF 91-0314. WASHINGTON. Geologic map of the Tower Rock Quadrangle, southern Cascade Range, Washington, by D. A. Swanson. 1991. 26 p., 2 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503.)
- OF 91-0317. ALASKA. Multichannel seismic-reflection profiles collected in 1980 from southern Bering Sea, Alaska, by A. K. Cooper, M. S. Marlow, E. L. Geist and G. L. Smith. 1991. 4 p. (NC, Da, M, A, S, SF, LA; Alaska Div. of 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 91-0318. UTAH. Chemical analyses including gold for 373 rock and stream-sediment samples from the Richfield 1° x 2° Quadrangle, Utah, by J. B. McHugh, R. T. Hopkins, Jr., W. R. Miller and D. L. Fey. 1991. 42 p. (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)
- OF 91-0321. MASSACHUSETTS. Verification of geophysically determined depths to saltwater near the Herring River (Cape Cod National Seashore), Wellfleet, Massachusetts, by D. V. Fitterman and K. F. Dennehy. 1991. 49 p. (NC, Da, M; Coastal Zone Management, 100 Cambridge St., 20th Floor, Boston, MA 02202.)
- OF 91-0324. UTAH. Preliminary lithologic and mineralogical data from the Delhi-Taylor Oil Company, Cane Creek No. 1 corehole, Grand County, Utah, by O. B. Raup and R. J. Hite. 1991. 24 p. (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)
- OF 91-0325. Pliocene planktic foraminifer census data from Deep Sea Drilling Project holes 502A,B,C, by L. B. Wiggs and R. Z. Poore. 1991. 15 p. (NC, Da, M.)
- OF 91-0328. Fortran benchmark programs WetC3D and 3DModel4; user's guide, by L. M. Baker. 1991. 28 p. (NC, Da, M.)
- OF 91-0329. Parity Fixer (PFX); an RSX-11M/M-Plus utility for creating memory parity error regions in system-controlled partitions, by L. M. Baker and G. L. Maxwell. 1991. 8 p. (NC, Da, M.)
- OF 91-0330. COLORADO. Acid-insoluble residue/carbonate content of the Upper Cretaceous Niobrara Formation, Berthoud Field, Denver Basin, Colorado; a key factor for understanding natural fracturing in chalks?, by R. M. Pollastro. 1991. 16 p. (NC, Da, M, Db, U; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203.)
- OF 91-0331. MASSACHUSETTS. Polluted sediments in Boston Harbor-Massachusetts Bay; progress report on the Boston Harbor data management file, by F. T. Manheim and J. C. Hathaway. 1991. 27 p. (NC, Da, M.)
- OF 91-0336. CALIFORNIA. Aeromagnetic map of Palo Alto and vicinity, California, by G. A. Abrams, R. P. Kucks and R. E. Bracken. 1991. 1 over-size sheet, scale 1:62,500 (1 inch = about 1 mile). (NC, Da, M, LA, SF; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0338. CALIFORNIA. Computer programs and data bases useful for prediction of ground motion resulting from earthquakes in California and the contiguous United States, by J. F. Evernden. 1991. 56 p., two 3 1/2 inch diskettes. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

Minimum requirement is an IBM PC AT or compatible with math coprocessor; minimum of 640K RAM and 20MB of hard-disk storage; VGA monitor with Screen 12 characteristics (640 x 480 pixel, 16 color); ability to read double-sided high-density (DSHD) 1.4MB diskettes. A 25-MHz, 80386 machine with math coprocessor is recommended.

OF 91-0345. E2MCOd; a program to determine and list digital line graph (DLG) line attributes from a CD-ROM titled 1:2,000,000-scale digital line graph (DLG) and E2MGSM; a program to retrieve DLG line data from a CD-ROM titled 1:2,000,000-scale digital line graph and convert those data to a GSMAP database, by G. I. Selner and J. D. Hoffman. 1991. 14 p., one 5 1/4 inch diskette. (NC, Da, M.)

Requires an IBM-PC compatible microcomputer running PC-DOS or MS-DOS 2.0 or later with at least 512K RAM. To use the DLG CD-ROM, you need a CD-ROM drive, and CD-ROM system software. If you want to view the DLG data on the monitor using the display software on the DLG CD-ROM, the minimum display requirements are an EGA monitor and adapter card.

OF 91-0346. Planktic foraminifer census data from Northwind Ridge Core 5, Arctic Ocean, by K. M. Foley and R. Z. Poore. 1991. 6 p. (NC, Da, M.)

OF 91-0347. OKLAHOMA. Sequential extraction analyses of drill core samples, Central Oklahoma Aquifer, by E. L. Mosier, C. S. Papp, J. M. Motooka, K. R. Kennedy and G. O. Riddle. 1991. 41 p. (NC, Da, M; Oklahoma Geol. Surv., Univ. of Oklahoma, 830 Van Vleet Oval, Room 163, Norman, OK 73019.)

OF 91-0350. An automatic, quasi-absolute, geomagnetic calibration system, by E. A. Sauter. 1991. 11 p. (NC, Da, M.)

OF 91-0351. Magnetometer calibration device, by E. A. Sauter. 1991. 9 p. (NC, Da, M.)

OF 91-0390. Slide set describing aspects of the origin of coal, coal mining, and peat formation, by R. W. Stanton and B. S. Pierce. 1991. 4 p., 30 35-mm color slides.

OF 91-0400-A. New information resources of the U.S. Geological Survey Library System, Number 57, January 1991. 1991. 93 p. (NC, Da, M, A, Db, LA, S, U, SF, Wa.)

OF 91-0400-B. New information resources of the U.S. Geological Survey Library System, Number 58, February 1991. 1991. 70 p. (NC, Da, M, A, Db, LA, S, U, SF, Wa.)

OF 91-0463. State water-data reports; a digital representation of the hydrologic records of the United States for water-year 1990, by D. F. Alt. 1991. 1 CD-ROM. (NC, Da, M, Wb.)

OF 91-0479. NEVADA, UTAH. Documentation of model input and output values for simulation of regional ground-water flow, carbonate-rock province, Nevada, Utah, and adjacent states, by D. H. Schaefer. 1991. 4 p., one 5 1/4 inch diskette. (NC, Da, M,

Wb, LA, SF, U; USGS, WRD, 705 North Plaza St., Room 224, Carson City, NV 89701; and 1500 East Tropicana, Suite 201, Las Vegas, NV 89119.)

This open-file report is contained on a 5 1/4 inch, high-density diskette. The files are written in American Standard Code for Information Interchange (ASCII) format. These ASCII input, output, and text files require approximately 220,000 bytes of disk space on an IBM-compatible microcomputer using the MS-DOS operating system, 3.3 or greater.

OF 91-0482. CALIFORNIA. Documentation of model input and output values for the geohydrology and ground-water-flow simulation of the Surprise Spring basin aquifer system, San Bernardino County, California, by H. T. Mitten and C. J. Lundquist. 1991. 5 p., one 5 1/4 inch diskette. (NC, Da, M, Wb, SF; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

The high-density, double-sided, soft-sectored diskette has a capacity of 1.2MB. Files on the diskette were created on an IBM compatible microcomputer using MS-DOS version 3.3.

OF 91-0576. MacLwfTiff; Scitex Hanshake/LWF to compressed TIFF, by R. K. Mark and P. C. Doherty. 1991. One 3 1/2 inch diskette. (NC, Da, M.)

MacLwfTiff (version 1.0) will convert Scitex Hanshake LWF files to compressed 1-bit TIFF files on a Macintosh SE/30 or Macintosh II class machine. This permits editing of Scitex-scanned linework with Macintosh software. Executable diskette.

OF 91-0577. MacTiffLwf; uncompressed TIFF Scitex Hanshake LWF, by R. K. Mark and P. C. Doherty. 1991. One 3 1/2 inch diskette. (NC, Da, M.)

MacTiffLwf (version 1.0) will convert uncompressed 1-bit TIFF files to Scitex Hanshake LWF files on a Macintosh SE/30 or Macintosh II class machine. This permits vectorizing of bitmapped linework with Scitex software. Executable diskette.

#### 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 85-0410. ARIZONA. Annual summary of ground-water conditions in Arizona, spring 1983 to spring 1984. 1985. 2 sheets. (NC, Da, M, Wb; USGS, WRD, Room 5-A Federal Bldg., 300 West Congress St., Tucson, AZ 85701; 3738 North 16th St., Suite E, Phoenix, AZ; 2255 North Gemini Dr., Bldg. 3, Flagstaff, AZ; and 1940 South Third Ave., Yuma, AZ.) †USGS, WRD, Federal Bldg., FB-44, 300 West Congress St., Tucson, AZ 85701.

OF 86-0422-W. ARIZONA. Annual summary of ground-water conditions in Arizona, spring 1984 to spring 1985. 1986. 2 p. (NC, Da, M, Wb; USGS, WRD, Room 5-A Federal Bldg., 300 West Congress St., Tucson, AZ 85701; 3738 North 16th St., Suite E, Phoenix, AZ; 2255 North Gemini Dr., Bldg. E, Flagstaff, AZ; and 1940 South Third Ave., Yuma, AZ.) †USGS, WRD, Federal Bldg., FB-44, 300 West Congress St., Tucson, AZ 85701.)

OF 91-0079. HAWAII. Distribution of ground-water recharge, Oahu, Hawaii, by P. J. Shade. 1991. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 677 Ala Moana Blvd., Suite 415,

Honolulu, HI 96813.) †USGS, WRD, 677 Ala Moana Blvd., Suite 415, Honolulu, HI 96813.

OF 91-0128. UTAH. Earthquakes in Utah, 1884-1989, by S. K. Goter. 1991. 1 over-size sheet, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M.) †Susan Goter, USGS, Denver Federal Ctr., Mail Stop 967, Box 25046, Denver, CO 80225; telephone 303-236-1602.

## MAPS

### 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-1638. PENNSYLVANIA. Geologic map of the Saylorsburg Quadrangle, Monroe and Northampton counties, Pennsylvania, by J. B. Epstein. 1990. Lat 40°52'30", to 41°, long 75°15' to 75°22'30". Scale 1:24,000 (1 inch = 2000 feet). Sheet 56 by 40 inches (in color).

GQ-1646. NEW MEXICO. Geologic map of the Todilto Park Quadrangle, McKinley County, New Mexico, by R. E. Thaden. 1990. Lat 35°52'30" to 36°, long 108°52'30" to 109°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 44 by 32 1/2 inches (in color).

GQ-1662. NEW YORK. Bedrock geologic map of the Poughquag Quadrangle, New York, by N. M. Ratcliffe and W. C. Burton. 1990. Lat 41°30' to 41°37'30", long 73°37'30" to 73°45'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 57 by 41 inches (in color).

GQ-1668. WEST VIRGINIA, VIRGINIA. Geologic map of the Anawalt Quadrangle, West Virginia-Virginia, by V. A. Trent and F. D. Spencer. 1990. Lat 37°15' to 37°22'30", long 81°22'30" to 81°30'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 43 by 32 inches (in color).

GQ-1674. TENNESSEE. Geologic map of part of the Jellico East Quadrangle, Campbell and Claiborne counties, Tennessee, by C. L. Rice and W. L. Newell. 1990. Lat 36°30' to 36°37'30", long 84° to 84°07'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 43 by 32 inches (in color).

GQ-1677. MASSACHUSETTS, NEW HAMPSHIRE. Surficial geologic map of the Townsend Quadrangle, Middlesex and Worcester counties, Massachusetts, and Hillsborough County, New Hampshire, by Carl Koteff and B. D. Stone. 1990. Lat 42°37'30" to 42°45', long 71°37'30" to 71°45'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 51 by 33 inches (in color).

GQ-1684. ARIZONA. Geologic map of the Vicksburg Quadrangle, La Paz County, Arizona, by D. R. Sherrod, R. D. Koch and M. J. Grubensky. 1990. Lat 33°30' to 33°45', long 113°45' to 114°. Scale 1:62,500 (1 inch = about 1 mile). Sheet 32 by 27 inches (in color).

GQ-1685. NEW MEXICO. Geologic map of the Horse Mountain West Quadrangle, Catron County, New Mexico, by J. C. Ratté, W. C. McIntosh and B. B. Houser. 1991. Lat 33°52'30" to 34°, long 108°07'30" to 108°15'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 44 by 34 inches (in color). (Supersedes Open-file report 89-210.)

GQ-1687. VERMONT. Bedrock geologic map of the Woodford Quadrangle, Vermont, by W. C. Burton. 1991. Lat 42°52'30" to 43°, long 73° to 73°07'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 50 by 40 inches (in color).

GQ-1689. COLORADO. Geologic map of the Gothic Quadrangle, Gunnison County, Colorado, by D. L. Gaskill, F. E. Mutschler, J. H. Kramer, J. A. Thomas and S. G. Zahony. 1991. Lat 38°52'30" to 39°, long 106°52'30" to 107°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 50 by 34 inches (in color). (Accompanied by 8-page text.)

GQ-1691. MAINE. Bedrock geologic map of the Orland Quadrangle, Hancock and Penobscot counties, Maine, by D. R. Wones. 1991. Lat 44°30' to 44°45', long 68°30' to 68°45'. Scale 1:62,500 (1 inch = about 1 mile). Sheet 27 by 25 inches (in color).

GQ-1692. MAINE. Bedrock geologic map of the Bucksport Quadrangle, Waldo, Hancock, and Penobscot counties, Maine, by D. R. Wones. 1991. Lat 44°30' to 44°45', long 68°45' to 69°. Scale 1:62,500 (1 inch = 1 mile). Sheet 26 by 25 inches (in color).

GQ-1695. UTAH, COLORADO. Geologic map of the Hoy Mountain Quadrangle, Daggett and Uintah counties, Utah, and Moffat County, Colorado, by W. R. Hansen and P. D. Rowley. 1991. Lat 40°37'30" to 40°45', long 109° to 109°07'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 31 inches (in color).

GQ-1698. MASSACHUSETTS. Bedrock geologic map of the Ipswich Quadrangle, Essex County, Massachusetts, by W. H. Dennen. 1991. Lat 42°37'30" to 42°45', long 70°45' to 70°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 40 by 34 inches (in color).

GQ-1701. NEVADA. Geologic map of the Indian Cove Quadrangle, Lincoln County, Nevada, by P. D. Rowley and R. R. Shroba. 1991. Lat 37°37'30" to 37°45', long 114°22'30" to 114°30'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 36 by 33 inches (in color). (Supersedes Open-file report 90-224.)

GQ-1704. MONTANA. Geologic map of the Hansen Ranch Quadrangle, Beaverhead County, Southwest Montana, by J. W. M'Gonigle, M. A. Kirschbaum and J. N. Weaver. 1991. Lat 44°52'30" to 45°, long 113° to 113°07'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 44 by 34 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-0988. WASHINGTON. Gravity anomaly and terrain maps of Washington, by C. A. Finn, W. M. Phillips and D. L. Williams. 1991. Five sheets. Sheet 1, lat 46° to 49°, long 117° to 126°; sheet 2, lat 45°30' to 49°, long 121°30' to 126°; sheet 3, lat 46° to 49°, long 117° to 121°30'; sheets 4 and 5, lat 46° to 49°, long 117° to 126°. Sheet 1, scale 1:1,000,000 (1 inch = about 16 miles); sheets 2 and 3, scale 1:500,000 (1 inch = about 8 miles); sheets 4 and 5, scale 1,000,000 (1 inch = about 16 miles). Sheet 1, 31 1/2 by 44 inches; sheets 2 and 3, 32 by 40 inches; sheets 4 and 5, 32 by 38 inches (all in color).

GP-0992. ALASKA. Aeromagnetic map of Alaska from lat 65°-68°N, long 141°-162°W; color-shaded relief, by J. W. Cady.

1990. Two sheets. Sheet 1, lat 65° to 68°, long 151°30' to 162°; sheet 2, lat 65° to 68°, long 141° to 151°30'. Each sheet, scale 1:500,000 (1 inch = about 8 miles). Each sheet 43 by 40 inches (all in color).

GP-1001. NEVADA. Geophysical logs and core measurements for forty boreholes at Yucca Mountain, Nevada, by P. N. Nelson, D. C. Muller, Ulrich Schimschal and J. E. Kibler. 1991. 10 sheets. Lat 36°47' to 36°53', long 116°24' to 116°28'. Scale 1:1,200 (1 inch = 100 feet). Sheet 1, 43 by 41 1/2 inches; sheet 2, 55 1/2 by 43 1/2 inches; sheet 3, 57 by 40 1/2 inches; sheet 4, 57 by 40 inches; sheet 5, 57 by 38 1/2 inches; sheet 6, 47 by 34 inches; sheet 7, 34 by 53 1/2 inches; sheet 8, 36 1/2 by 54 inches; sheet 9, 35 1/2 by 56 inches; sheet 10, 57 by 29 inches. (Accompanied by 64-page text.)

### 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-1310-H. NEW MEXICO, ARIZONA. Petrochemistry of igneous rocks, Silver City 1° × 2° Quadrangle, New Mexico and Arizona, by W. N. Sharp. 1991. Two sheets. Sheet 1, lat 32° to 33°, long 108° to 110°. Sheet 1, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 50 by 32 inches; sheet 2, 48 by 32 inches (all in color). (Accompanied by 7-page text.)

I-1745. WASHINGTON. Surficial geologic map of the Skykomish and Snoqualmie rivers area, Snohomish and King counties, Washington, by D. B. Booth. 1990. Two sheets. Sheet 1, lat 47°30' to 48°, long 121°30' to 122°. Sheet 1, scale 1:50,000 (1 inch = about 4,200 feet). Sheet 1, 32 by 50 inches; sheet 2, 18 by 26 inches (all in color). (Accompanied by 22-page text.) (Supersedes Open-file report 84-213.)

I-1802-A,B,C. Geologic maps of the western equatorial, eastern equatorial and polar regions of Mars, by D. H. Scott, K. L. Tanaka, Ronald Greeley and J. E. Guest. Prepared for the National Aeronautics and Space Administration. 1987 (1991). Three sheets. Sheet 1, lat -57° to 57°; long 0° to 180°; sheet 2, lat -57° to 57°, long 180° to 360°; sheet 3, North Pole and South Pole. Sheets 1 and 2, scale 1:15,000,000 (1 mm = 15 km) at 0° lat; sheet 3, scales 1:9,203,425 (1 mm = 9.2 km) at ±90° lat and 1:8,418,000 (1 mm = 8.418 km) at ±56° lat. Sheet 1, 54 by 40 inches; sheets 2 and 3, 51 1/2 by 40 inches (all in color). (Sheets 1 and 2, Mercator projection; sheet 3, Polar stereographic projections.) (Reprint.)

I-1803-F. IDAHO, MONTANA. Maps showing mineral resource assessment for placer gold and silver, Dillon 1° × 2° Quadrangle, Idaho and Montana, by R. C. Pearson, J. S. Loen, C. M. Trautwein, U.S. Geological Survey; E. T. Ruppel, Montana Bureau of Mines and Geology; and S. H. Moll, TGS, Inc. 1991. Lat 45° to 46°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 52 by 41 1/2 inches (in color).

I-1824. COLORADO. Surficial geologic map of the Walden 30' × 60' Quadrangle, Jackson, Larimer, and Routt counties, Colorado, by R. F. Madole. 1991. Lat 40°30' to 41°, long 106° to 107°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 56 by 31 inches (in color).

I-1825. COLORADO. Surficial geologic map of the Steamboat Springs 30' × 60' Quadrangle, Grand, Jackson, and Routt counties, Colorado, by R. F. Madole. 1991. Lat 40° to 40°30', long 106° to 107°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 56 by 31 inches (in color).

I-1882. IDAHO. Geologic map of the Bayhorse area, central Custer County, Idaho, by S. W. Hobbs, W. H. Hays and D. H. McIntyre. 1991. Lat 44°07'30" to 44°30', long 114° to 114°32'30". Scale 1:62,500 (1 inch = about 1 mile). Sheet 58 by 41 1/2 inches (in color). (Accompanied by 14-page text.)

I-1891. OREGON. Geologic map of a part of the Cascade Range between latitudes 43°-44°, central Oregon, by D. R. Sherrod. 1991. Lat 43° to 44°, long 122° to 122°30'. Scale 1:25,000 (1 inch = about 2,000 feet). Sheet 32 by 41 inches (in color). (Accompanied by 14-page text.)

I-1923-B. WYOMING. Complete Bouguer anomaly gravity map of the Buffalo 30' × 60' Quadrangle, Johnson and Campbell counties, Wyoming, by S. L. Robbins. 1991. Lat 44° to 44°30', long 106° to 107°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 40 by 31 1/2 inches (in color).

I-1929. ALASKA. Reconnaissance geologic map of the De Long Mountains A-3 and B-3 quadrangles and parts of the A-4 and B-4 quadrangles, Alaska, by C. F. Mayfield, S. M. Curtis, Inyo Ellersieck and I. L. Tailleux. 1990. Two sheets. Sheet 1, lat 68° to 68°30', long 163°12' to 164°09'07"; sheet 2, lat 68° to 68°35', long 162° to 164°09'07". Sheet 1, scale 1:63,360 (1 inch = 1 mile). Sheet 1, 40 by 54 inches; sheet 2, 40 by 34 inches (all in color). (Supersedes Open-file report 83-183.)

I-1930. ALASKA. Reconnaissance geologic map of the De Long Mountains A-1 and B-1 quadrangles and part of the C-1 quadrangle, Alaska, by S. M. Curtis, Inyo Ellersieck, C. F. Mayfield and I. L. Tailleux. 1990. Two sheets. Sheet 1, lat 68° to 68°35', long 162° to 162°36'; sheet 2, lat 68° to 68°35', long 162° to 164°09'07". Sheet 1, scale 1:63,360 (1 inch = 1 mile). Sheet 1, 38 by 54 inches; sheet 2, 40 by 39 inches (all in color). (Supersedes Open-file report 83-185.)

I-1931. ALASKA. Reconnaissance geologic map of the De Long Mountains A-2 and B-2 quadrangles and part of the C-2 quadrangle, Alaska, by Inyo Ellersieck, S. M. Curtis, C. F. Mayfield and I. L. Tailleux. 1990. Two sheets. Sheet 1, lat 68° to 68°35', long 162°36' to 163°12'; sheet 2, lat 68° to 68°35', long 162° to 164°09'07". Sheet 1, scale 1:63,360 (1 inch = 1 mile). Sheet 1, 38 by 54 inches; sheet 2, 40 by 43 inches (all in color). (Supersedes Open-file report 83-184.)

I-1937. UTAH. Geologic map of the Nephi 30' × 60' Quadrangle, Carbon, Emery, Juab, Sanpete, Utah, and Wasatch counties, Utah, by I. J. Witkind and M. P. Weiss. 1991. Lat 39°30' to 40°, long 111° to 112°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 55 by 41 1/2 inches (in color). (Accompanied by 16-page text.) (Supersedes Open-file report 85-466.)

I-1944. UTAH, WYOMING. Geologic map of the Salt Lake City 30' × 60' Quadrangle, north-central Utah, and Uinta County, Wyoming, by Bruce Bryant, with a section on Palynologic data from Cretaceous and lower Tertiary rocks in the Salt Lake City 30' × 60' Quadrangle, by D. J. Nichols and Bruce Bryant. 1990. Two sheets. Lat 40°30' to 41°, long 111° to 112°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 1, 56 by 41 inches (in color); sheet 2, 36 by 28 inches.

- I-1947-C. IDAHO. Geologic maps and profiles of the north wall of the Snake River canyon, Thousand Springs and Niagara Springs quadrangles, Idaho, by H. R. Covington and J. N. Weaver. 1991. Lat 42°38'15" to 42°45', long 114°37'30" to 114°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 45 by 34 inches (in color).
- I-1947-D. IDAHO. Geologic map and profiles of the north wall of the Snake River canyon, Jerome, Filer, Twin Falls, and Kimberly quadrangles, Idaho, by H. R. Covington and J. N. Weaver. 1991. Lat 42°32'30" to 42°40', long 114°15' to 114°37'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 53 by 38 1/2 inches (in color).
- I-1947-E. IDAHO. Geologic map and profile of the north wall of the Snake River canyon, Eden, Murtaugh, Milner Butte, and Milner quadrangles, Idaho, by H. R. Covington and J. N. Weaver. 1990. Lat 42°27'30" to 42°35', long 114° to 114°15'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 50 by 30 inches (in color).
- I-1959-A. MONTANA, WYOMING. Cross sections showing the reconstructed stratigraphic framework of Paleocene rocks and coal beds in the northern and central Powder River basin, Montana and Wyoming, by M. W. McLellan, L. R. Biewick, C. L. Molnia and F. W. Pierce. 1990. Two sheets. Lat 42°30' to 47°, long 103°45' to 108°15'. Scale 1:500,000 (1 inch = about 8 miles). Sheet 1, 37 by 46 inches; sheet 2, 56 by 40 1/4 inches (all in color).
- I-1959-C. WYOMING. Cross sections showing coal stratigraphy of the southwestern Powder River basin, Wyoming, by J. K. Hardie. 1991. Lat 42°40' to 46°, long 104° to 107°25'. Scale 1:500,000 (1 inch = about 8 miles). Sheet 53 by 34 inches (in color).
- I-1959-E. MONTANA. Cross section showing the reconstructed stratigraphic framework of Paleocene rocks and coal beds in the central Powder River basin from Decker to Bear Skull Mountain, Montana, by M. W. McLellan. 1991. Sheet 28 1/2 by 24 inches (in color).
- I-1975. ALASKA. Mineralogical maps showing distribution of ore-related minerals in the nonmagnetic, heavy-mineral-concentrate fraction of stream sediment from the Anchorage 1° × 3° Quadrangle, southern Alaska, by R. B. Tripp and D. J. Madden. 1991. Lat 61° to 62°, long 147° to 150°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 46 by 42 inches (in color).
- I-1976. ALASKA. Geochemical maps showing distribution of anomalously abundant elements in stream-sediment and glacial-moraine samples from the Anchorage 1° × 3° Quadrangle, southern Alaska, by D. J. Madden. 1991. Lat 61° to 62°, long 147° to 150°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 56 by 41 inches (in color).
- I-1977. ALASKA. Geochemical maps showing distribution of anomalously abundant elements in the nonmagnetic, heavy-mineral-concentrate fraction of stream sediment from the Anchorage 1° × 3° Quadrangle, southern Alaska, by D. J. Madden. 1991. Lat 61° to 62°, long 147° to 150°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 56 by 42 inches (in color).
- I-1978. NEW MEXICO, COLORADO. Geologic map emphasizing the surficial deposits of the Farmington 30' × 60' Quadrangle, New Mexico and Colorado, by A. W. Ward. 1990. Lat 36°30' to 37°, long 108° to 109°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 49 3/4 by 32 inches (in color).
- I-1979. UTAH. Surficial geologic map of the Brigham City Segment and adjacent parts of the Weber and Collinston segments, Wasatch fault zone, Box Elder and Weber counties, Utah, by S. F. Personius. 1990. Lat 41°17'30" to 41°45', long 111°52'30" to 112°08'11". Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 43 by 41 1/2 inches (in color). (Supersedes MF-2042.)
- I-1982. NEW JERSEY. Orientation, movement history, and cataclastic rocks of Ramapo Fault based on core drilling and trenching along the western margin of the Newark Basin near Bernardsville, New Jersey, by N. M. Ratcliffe, W. C. Burton and M. J. Pavich. 1990. Lat 40°37'30" to 40°45', long 74°22'30" to 74°37'30". Sheet 56 by 40 inches (in color).
- I-1985. NEVADA. Geologic map of the northwest quarter of the Bullfrog 15-minute Quadrangle, Nye County, Nevada, by Florian Maldonado. 1990. Lat 36°52'30" to 37°, long 116°52'30" to 117°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 41 1/2 inches by 31 1/2 inches (in color).
- I-1993. ARIZONA. Lithologic map of the western part of the Springerville volcanic field, east-central Arizona, by C. D. Condit. 1991. Three sheets. Sheets 1 and 3, lat 33°57'30" to 34°32'30", long 109°45' to 110°07'30". Sheets 1 and 3, scale 1:50,000 (1 inch = about 4,200 feet). Sheet 1, 36 by 56 inches; sheet 2, 37 by 56 inches; sheet 3, 41 by 56 inches (all in color).
- I-2001. Geologic maps of science study area 3, Olympus Rupes, Mars (special MTM 15132 Quadrangle), by E. C. Morris, Harold Masursky, D. J. Applebee and M. E. Strobell. 1991. Two sheets. Lat 12.5° to 17.5°, long 130° to 135°. Each sheet, scale 1:502,000 (1 mm = 502 m) at 130° long. Sheet 1, 44 by 37 inches; sheet 2, 56 by 30 inches (all in color). (Transverse Mercator projection.)
- I-2007. Geologic map of São Miguel, Azores, by R. B. Moore. 1991. Lat 37°41'52.5"N to 37°52'41.2"N, long 25°08'23.1"W to 25°51'56.1"W. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 58 by 42 inches (in color).
- I-2010. Geologic map of the Valles Marineris region, Mars (east half and west half), by N. E. Witbeck, K. L. Tanaka and D. H. Scott. 1991. Two sheets. Sheet 1, lat -15° to 0°, long 67.5° to 112.5°; sheet 2, lat -20° to 0°, long 22.5° to 67.5°. Each sheet, scale 1:2,000,000 (1 mm = 2 km) at -27.3° lat. Sheet 1, 50 by 41 inches; sheet 2, 50 by 40 inches (all in color). (Mercator projection.)
- I-2011. WYOMING. Stratigraphic cross section showing upper Paleocene coal-bearing rocks of the Tongue River Member of the Fort Union Formation in the Piney Canyon NE and Piney Canyon NW quadrangles, Campbell and Weston counties, southeastern Powder River basin, Wyoming, by F. W. Pierce and E. A. Johnson. 1991. Lat 43°42'30", long 105°05' to 105°07'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 43 by 32 inches.
- I-2013. WYOMING. Stratigraphic cross section showing upper Paleocene coal-bearing rocks of the Tongue River Member of the Fort Union Formation in the Coal Bank Draw and Dugout Creek North quadrangles, Converse County, southeastern Powder River basin, Wyoming, by E. A. Johnson and F. W. Pierce. 1991. Sheet 40 by 29 inches.
- I-2029. MISSOURI. Bedrock geologic map of the Springfield 1° × 2° Quadrangle, Missouri, by M. A. Middendorf, Missouri Geological Survey; K. C. Thomson, Southwest Missouri State University; G. L. Easson and H. S. Sumner, Missouri Geological

- Survey. 1991. Lat 37° to 38°, long 92° to 94°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 40 by 30 inches (in color). (Supersedes MF-1830-D.)
- I-2050-B. MONTANA. Map showing the association of linear features with metallic mines and prospects in the Butte 1° × 2° Quadrangle, Montana, by L. C. Rowan, C. M. Trautwein and T. L. Purdy. 1991. Lat 46° to 47°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 40 by 30 inches (in color). (Accompanied by 12-page text.)
- I-2051. PENNSYLVANIA. Surficial geologic map of parts of Union and Snyder counties, Pennsylvania, by D. E. Marchand and G. H. Crowl. 1991. Lat 40°37'30" to 41°07'30", long 76°45' to 77°22'30". Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 44 by 33 inches (in color).
- I-2053. Atlas of the U.S. Exclusive Economic Zone, Bering Sea, by Bering Sea EEZ-Scan Scientific Staff. 1991. 147 bound pages, 19 by 22 inches (in color).
- I-2054. Atlas of the U.S. Exclusive Economic Zone, Atlantic continental margin, by EEZ-Scan 87 Scientific Staff. 1991. 174 p. (19 by 22 inches) (in color).
- I-2055. Geologic map of the Lema region (Ji-4) of Io, by J. L. Whitford-Stark, P. J. Mougins-Mark and J. W. Head. 1991. Polar region, lat 45° to 90°, long 0° to 380°. Scale 1:5,000,000 (1 mm = 5 km) at -90° lat (1 inch = about 80 miles). Sheet 40 by 37 inches (in color).
- I-2058. MAINE. Geologic map of the Kennebec Lake Quadrangle, Franklin County, Maine, by E. L. Boudette. 1991. Lat 45° to 45°15', long 70°30' to 70°45'. Scale 1:62,500 (1 inch = about 1 mile). Sheet 40 by 34 inches (in color). (Accompanied by 12-page text.)
- I-2077. CALIFORNIA. Geologic map of the northwestern Caliente Range, San Luis Obispo County, California, by J. A. Bartow. 1991. Two sheets. Sheet 1, lat 35°15' to 35°22'30", long 119°52'30" to 120°07'30". Sheet 1, scale 1:36,000 (1 inch = 3,000 feet). Sheet 1, 45 1/2 by 38 inches; sheet 2, 40 by 24 inches (all in color). (Supersedes Open-file report 88-691.)
- I-2083. COLORADO, NEW MEXICO. Geologic and structure contour map of the Ute Mountain Ute Indian Reservation and adjacent areas, Southwest Colorado and Northwest New Mexico, by S. M. Condon. 1991. Lat 36°51'02" to 37°22'30", long 108°10'55" to 109°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 44 by 31 inches (in color).
- I-2084. Geologic map of science study area 6, Memnonia region of Mars, by D. H. Scott and M. G. Chapman. 1991. Lat -12.5° to -7.5°, long 170° to 175°. Scale 1:502,000 (1 mm = 502 m) at 170° long (1 inch = about 8 miles). Sheet 46 by 41 inches (in color). (Transverse Mercator projection.) (MTM-10172.)
- I-2086. NEVADA. Geologic map of the southern Sheep Range, Fossil Ridge, and Castle Rock area, Clark County, Nevada, by Florian Maldonado and D. L. Schmidt. 1990. Lat 36°22'30" to 36°30', long 115°10' to 115°20'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 44 by 31 1/2 inch (in color).
- I-2087. Geologic map of science study area 1B, West Mangala Valles region of Mars, by M. G. Chapman, Harold Masursky and A. L. Dial, Jr. 1991. Lat -11° to -6°, long 155° to 160°. Scale 1:502,000 (1 mm = 502 m) at 150° long (1 inch = about 8 miles). Sheet 50 by 41 inches (in color). (Transverse Mercator projection.) (MTM-08157.)
- I-2088. UTAH, COLORADO. Geologic map of the northwestern part of the Uncompahgre Uplift, Grand County, Utah, and Mesa County, Colorado, with emphasis on Proterozoic rocks, by J. E. Case. 1991. Two sheets. Lat 38°48'30" to 39°05', long 109° to 109°13'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 1, 33 1/2 by 51 inches; sheet 2, 32 1/2 by 55 inches. (Accompanied by 16-page text.)
- I-2092. NEW HAMPSHIRE, VERMONT. Map of potential tin resources in the White Mountain Plutonic-Volcanic Suite in northern New Hampshire and Vermont, by L. J. Cox. 1990. Lat 43°45' to 45°, long 70°51' to 72°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 48 1/2 by 40 1/2 inches (in color). (Supersedes Open-file report 84-888.)
- I-2094-A. MONTANA, WYOMING. Geologic map showing the thickness and structure of the Anderson-Wyodak coal bed in the north half of the Powder River basin, southeastern Montana and northeastern Wyoming, by N. M. Denson and C. T. Pierson. 1991. Lat 44° to 45°30', long 104°30' to 107°30'. Scale 1:200,000 (1 inch = about 3.2 miles). Sheet 56 by 42 inches (in color).
- I-2094-B. WYOMING. Geologic map showing the thickness and structure of the Anderson-Wyodak coal bed in the south half of the Powder River basin, northeastern Wyoming, by N. M. Denson and C. T. Pierson. 1991. Lat 42°30' to 44°, long 104° to 107°. Scale 1:200,000 (1 inch = about 3.2 miles). Sheet 57 by 40 inches (in color).
- I-2098. Topographic map of the Arabia Northeast Quadrangle (MC-12 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 15° to 30°, long 315° to 337.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 31 1/2 inches.
- I-2099. Topographic map of the Arabia Southeast Quadrangle (MC-12 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 315° to 337.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 30 1/2 inches.
- I-2100. Topographic map of the Arabia Southwest Quadrangle (MC-12 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 337.5° to 360°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 30 1/2 inches.
- I-2101. Topographic map of the Arabia Northwest Quadrangle (MC-12 NW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 15° to 30°, long 337.5° to 360°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 31 1/2 inches.
- I-2102. Topographic map of the Iapygia Northeast Quadrangle (MC-21 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 270° to 292.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 31 1/2 inches.

- I-2103. Topographic map of the Iapygia Southeast Quadrangle (MC-21 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 270° to 292.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 31 1/2 inches.
- I-2104. Topographic map of the Iapygia Southwest Quadrangle (MC-21 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1990. Lat -30° to -15°, long 292.5° to 315°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 31 1/2 inches.
- I-2105. Topographic map of the Iapygia Northwest Quadrangle (MC-21 NW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 292.5° to 315°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 31 1/2 inches.
- I-2108. UTAH. Geologic map of Bryce Canyon National Park and vicinity, southwestern Utah, by W. E. Bowers. 1990. Lat 37°27'30" to 37°45', long 112°05' to 112°17'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 41 1/4 by 58 inches (in color). (Accompanied by 17-page text.)
- I-2109. Topographic map of the Memnonia Southeast Quadrangle (MC-16 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 135° to 157.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2110. Topographic map of the Memnonia Southwest Quadrangle (MC-16 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 157.5° to 180°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2111. Topographic map of the Tharsis Northeast Quadrangle (MC-9 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 15° to 30°, long 90° to 112.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2112. Topographic map of the Tharsis Southeast Quadrangle (MC-9 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 90° to 112.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)
- I-2113. Topographic map of the Tharsis Southwest Quadrangle (MC-9 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 112.5° to 135°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)
- I-2114. Topographic map of the Mare Tyrrhenum Northeast Quadrangle (MC-22 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 225° to 247.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2115. Topographic map of the Mare Tyrrhenum Southeast Quadrangle (MC-22 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 225° to 247.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2116. Topographic map of the Mare Tyrrhenum Southwest Quadrangle (MC-22 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 247.5° to 270°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2117. Topographic map of the Mare Tyrrhenum Northwest Quadrangle (MC-22 NW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 247.5° to 270°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2118. Topographic map of the Aeolis Northeast Quadrangle (MC-23 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 180° to 202.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2119. Topographic map of the Aeolis Southeast Quadrangle (MC-23 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 180° to 202.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2120. Topographic map of the Aeolis Southwest Quadrangle (MC-23 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 202.5° to 225°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2121. Topographic map of the Aeolis Northwest Quadrangle (MC-23 NW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 202.5° to 225°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2122. Topographic map of the Sinus Sabaeus Northeast Quadrangle (MC-20 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 315° to 337.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2123. Topographic map of the Sinus Sabaeus Southeast Quadrangle (MC-20 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 315° to 337.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)



- I-2124. Topographic map of the Sinus Sabaeus Southwest Quadrangle (MC-20 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 337.5° to 360°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2125. Topographic map of the Sinus Sabaeus Northwest Quadrangle (MC-20 NW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 337.5° to 360°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2126. Topographic map of the Elysium Northeast Quadrangle (MC-15 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 15° to 30°, long 180° to 202.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)
- I-2127. Topographic map of the Elysium Southeast Quadrangle (MC-15 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 180° to 202.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)
- I-2128. Topographic map of the Elysium Southwest Quadrangle (MC-15 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 202.5° to 225°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)
- I-2129. Topographic map of the Elysium Northwest Quadrangle (MC-15 NW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 15° to 30°, long 202.5° to 225°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)
- I-2130. MONTANA. Bedrock geologic map of part of the Disturbed Belt south and east of Glacier National Park, Montana, by M. R. Mudge and R. L. Earhart. 1991. Lat 48°15' to 48°30', long 112°52'30" to 113°15'. Scale 1:48,000 (1 inch = 4,000 feet). Sheet 39 by 33 inches (in color). (Supersedes Open-file report 82-1030.)
- I-2131-A. MONTANA, WYOMING. Geologic map showing total thickness of coal in the north half of the Powder River basin, southeastern Montana and northeastern Wyoming, by N. M. Denson and B. L. Crysedale. 1991. Lat 44° to 45°30', long 104°30' to 107°30'. Scale 1:200,000 (1 inch = about 3.2 miles). Sheet 58 by 40 inches (in color).
- I-2131-B. WYOMING. Geologic map showing total thickness of coal in the south half of the Powder River basin, northeastern Wyoming, by N. M. Denson and B. L. Crysedale. 1991. Lat 42°30' to 44°, long 104° to 107°. Scale 1:200,000 (1 inch = about 3.2 miles). Sheet 58 by 40 inches (in color).
- I-2132. Topographic map of the Phoenicis Lacus Southeast Quadrangle (MC-17 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 90° to 112.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2133. Topographic map of the Phoenicis Lacus Southwest Quadrangle (MC-17 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 112.5° to 135°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)
- I-2134. Topographic map of the Amenthes Northeast Quadrangle (MC-14 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 15° to 30°, long 225° to 247.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)
- I-2135. Topographic map of the Amenthes Southeast Quadrangle (MC-14 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 225° to 247.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)
- I-2136. Topographic map of the Amenthes Southwest Quadrangle (MC-14 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 247.5° to 270°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)
- I-2137. Topographic map of the Amenthes Northwest Quadrangle (MC-14 NW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 15° to 30°, long 247.5° to 270°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)
- I-2139. ARIZONA. Gravity and aeromagnetic anomaly maps of the Ajo and Lukeville 1° × 2' quadrangles, southwestern Arizona, by D. P. Klein and R. P. Kucks. 1991. Three sheets. Sheet 1, lat 32° to 33°, long 112° to 114°; sheets 2 and 3, lat 31°45' to 33°, long 112° to 114°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 42 by 32 inches; sheets 2 and 3, 41 by 29 inches (all in color).
- I-2140. MONTANA. Geologic map of the Elk Ridge Quadrangle, Powder River County, Montana, by M. W. McLellan and W. W. Olive. 1991. Lat 45°37'30" to 45°45', long 105°45' to 105°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 28 inches (in color).
- I-2141. MONTANA. Geologic map of the Samuelson Ranch Quadrangle, Powder River County, Montana, by M. W. McLellan and W. W. Olive. 1991. Lat 45°30' to 45°37'30", long 105°45' to 105°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 28 inches (in color).
- I-2142. MONTANA. Geologic map of the Home Creek Butte Quadrangle, Powder River County, Montana, by M. W. McLellan and W. W. Olive. 1991. Lat 45°30' to 45°37'30", long 105°52'30" to 106°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 28 inches (in color).
- I-2143. MONTANA. Geologic map of the Stacey Quadrangle, Powder River County, Montana, by M. W. McLellan and W. W. Olive. 1991. Lat 45°30' to 45°37'30", long 105°52'30" to 106°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 28 inches (in color).

- Olive. 1991. Lat 45°37'30" to 45°45', long 105°52'30" to 106°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 36 by 28 inches (in color).
- I-2144. NEW MEXICO. Geologic map of the Big Hatchet Mountains, Hidalgo County, New Mexico, by Harald Drewes. 1991. Lat 31°30' to 31°40', long 108°15' to 108°25'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 37 by 57 inches (in color). (Accompanied by 9-page text.)
- I-2146. IDAHO. Geologic map of the Stricker 2 Quadrangle, Twin Falls and Cassia counties, Idaho, by P. L. Williams, H. R. Covington and J. W. Mytton. 1991. Lat 42°15' to 42°30', long 114°15' to 114°30'. Scale 1:48,000 (1 inch = 4,000 feet). Sheet 28 by 28 inches (in color).
- I-2149. CALIFORNIA. Oblique map of Yosemite Valley, Yosemite National Park, central Sierra Nevada, California, by T. R. Alpha. 1991. Sheet 35 1/2 by 36 inches (in color).
- I-2151. WYOMING. Chart showing correlations of Upper Cretaceous Fox Hills Sandstone and Lance Formation, and lower Tertiary Fort Union, Wasatch, and Green River formations, from the eastern flank of the Washakie Basin to the southeastern part of the Great Divide Basin, Wyoming, by R. D. Hettinger, J. G. Honey and D. J. Nichols. 1991. Lat 41° to 41°44', long 107°30' to 107°55'. Sheet 57 by 42 inches.
- I-2152. WYOMING. Chart showing correlations of some Upper Cretaceous and lower Tertiary rocks, from the east flank of the Washakie Basin to the east flank of the Rock Springs Uplift, Wyoming, by R. D. Hettinger and M. A. Kirschbaum. 1991. Lat 41°23' to 41°43', long 107°43' to 108°40'. Sheet 57 by 39 inches.
- I-2160. Topographic maps of the polar, western, and eastern regions of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Three sheets. Sheet 1, South polar region to North polar region; sheet 2, lat -57° to 57°, long 0° to 180°; sheet 3, lat -57° to 57°, long 180° to 360°. Sheet 1, scale 1:9,203,425 (1 mm = 9.2 km) at ±90° lat; sheets 2 and 3, scale 1:15,000,000 (1 mm = 15 km) at 0° lat. Sheet 1, 40 by 28 inches (in color); sheet 2, 30 by 38 inches (in color); sheet 3, 30 by 38 inches. (Sheet 1, Polar stereographic projection, contour interval 1000 m; sheets 2 and 3, Mercator projection, contour interval 1000 m.) (Accompanies the book *Mars*, edited by H. H. Kieffer, B. M. Jakosky, Conway Snyder and M. S. Matthews; Space Science Series, edited by Tom Gehrels, Univ. of Arizona Press, Tucson, 1992.)
- I-2161-A. NEW YORK, VERMONT, NEW HAMPSHIRE. Iso-pleth maps showing regional variations in pH of stream water and ground water in relation to geologic setting and known mineral deposits, Glens Falls 1° x 2° Quadrangle, New York, Vermont, and New Hampshire, by K. C. Watts, Jr. 1991. Lat 43° to 44°, long 72° to 74°. Sheet 44 by 34 inches (in color).
- I-2162. Geologic map of the major Quaternary eolian features, northern and central coastal Peru, by E. M. Haney and M. J. Grolier. 1991. Lat 16°S to 4°S, long 75° to 81°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 40 by 56 inches (in color).
- I-2163. Preliminary tectonostratigraphic terrane map of the Central and Southern Appalachians, by J. W. Horton, Jr., A. A. Drake, Jr., D. W. Rankin and R. D. Dallmeyer. 1991. Lat 27° to 41°, long 70° to 90°. Scale 1:2,000,000 (1 inch = about 32 miles). Sheet 54 by 40 inches (in color).
- I-2170-A. VIRGINIA, WEST VIRGINIA. Map showing surficial and generalized bedrock geology and accompanying side-looking airborne radar image of the Radford 30' x 60' Quadrangle, Virginia and West Virginia, by A. P. Schultz, M. J. Bartholomew and S. E. Lewis. 1991. Two sheets. Lat 37° to 37°30', long 80° to 81°. Each sheet, scale 1:100,000 (1 inch = about 1.6 miles). Sheet 1, 54 by 40 inches; sheet 2, 38 by 28 inches (all in color).
- I-2171. Controlled photomosaic of the MTM 10122 Quadrangle, Arsia Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -12.5° to -7.5°, long 120° to 125°. Scale 1:502,000 (1 mm = 502 m) at 130° long. Sheet 26 1/2 by 38 inches. (Transverse Mercator projection.)
- I-2172. Controlled photomosaic of the MTM 10127 Quadrangle, Arsia Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -12.5° to -7.5°, long 125° to 130°. Scale 1:502,000 (1 mm = 502 m) at 130° long. Sheet 27 by 38 inches. (Transverse Mercator projection.)
- I-2177. ARIZONA. Geologic map of the Swisshelm Mountains, and a description of the development of the Swisshelm and Pedregosa Mountains, Cochise County, Arizona, by Harald Drewes. 1991. Lat 31°35' to 31°45', long 109°30' to 109°35'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 41 1/2 by 55 inches (in color).
- I-2178. Indexes of Mars topographic maps published by the U.S. Geological Survey; June 1, 1990. Prepared for the National Aeronautics and Space Administration. 1990. Sheet 26 by 36 inches.
- I-2179. Topographic map of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -57° to 57°, long 180°E to 180°W. Scale 1:25,000,000 (1 mm = 25 km) at 0° lat (1 inch = about 395 miles). Sheet 36 by 33 inches (in color). (Mercator projection.)
- I-2181. MONTANA. Geologic map of the Bob Marshall and Great Bear wildernesses and adjacent study areas, northwestern Montana, by M. R. Mudge and R. L. Earhart. 1991. Lat 47° to 48°30', long 112°45' to 114°. Scale 1:125,000 (1 inch = about 2 miles). Sheet 41 by 58 inches (in color).
- I-2183. NEVADA. Geologic map of late Cenozoic deposits and faults in the western part of the Rhyolite Ridge 15' Quadrangle, Esmeralda County, Nevada, by M. C. Reheis. 1991. Lat 37°45' to 38°, long 117°52'30" to 118°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 50 inches (in color).
- I-2184-A. COLORADO, UTAH. Stratigraphic and time-stratigraphic cross sections of Phanerozoic rocks along line A-A', Uinta and Piceance Basin area; Eagle Basin, Colorado, to eastern Basin and Range area, Utah, by S. Y. Johnson and R. C. Johnson. 1991. Two sheets. Sheet 1, 57 1/2 by 40 1/2 inches; sheet 2, 57 by 38 inches (all in color).
- I-2184-B. UTAH, COLORADO. Stratigraphic and time-stratigraphic cross sections of Phanerozoic rocks along line B-B', Uinta and Piceance basin area; west-central Uinta Basin, Utah to eastern Piceance Basin, Colorado, by R. C. Johnson and S. Y. Johnson. 1991. Two sheets. Each sheet, 1:500,000 (1 inch = about 8 miles). Sheet 1, 43 by 40 inches; sheet 2, 38 by 30 inches (all in color).
- I-2184-C. UTAH. Stratigraphic and time-stratigraphic cross sections of Phanerozoic rocks along line C-C', Uinta and Piceance basin area, southern Uinta Mountains to northern Henry Moun-

- tains, Utah, by K. J. Franczyk. 1991. Two sheets. Each sheet, scale 1:500,000 (1 inch = about 8 miles). Sheet 1, 37 by 50 inches; sheet 2, 46 by 40 inches (all in color).
- I-2186. LOUISIANA. Shoreline changes of the Isles Dernieres barrier island arc, Louisiana, from 1853 to 1989, by R. A. McBride, Shea Penland, B. E. Jaffe, S. J. Williams, A. H. Sallenger, Jr. and K. A. Westphal. 1991. Lat 29°01' to 29°07', long 90°30' to 90°59'. Scale 1:75,000 (1 inch = about 6,000 feet). Sheet 38 by 50 inches (in color).
- I-2188. Controlled photomosaic of the MTM 45067 Quadrangle, Tempe Fossae region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 42.5° to 47.5°, long 65° to 70°. Scale 1:502,000 (1 mm = 502 m) at 70° long. Sheet 21 by 38 inches. (Transverse Mercator projection.)
- I-2189. Controlled photomosaic of the MTM 50063 Quadrangle, Tempe Fossae region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 47.5° to 52.5°, long 60° to 66.6°. Scale 1:502,000 (1 mm = 502 m) at 70° long. Sheet 24 by 38 inches. (Transverse Mercator projection.)
- I-2190. Controlled photomosaic of the MTM 35082 Quadrangle, Mareotis/Tempe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 32.5° to 37.5°, long 80° to 85°. Scale 1:502,000 (1 mm = 502 m) at 90° long. Sheet 24 by 38 inches. (Transverse Mercator projection.)
- I-2191. Controlled photomosaic of the MTM 35087 Quadrangle, Mareotis/Tempe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 32.5° to 37.5°, long 85° to 90°. Scale 1:502,000 (1 mm = 502 m) at 90° long. Sheet 23 by 38 inches. (Transverse Mercator projection.)
- I-2192. Controlled photomosaic of the MTM 35092 Quadrangle, Mareotis/Tempe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 32.5° to 37.5°, long 90° to 95°. Scale 1:502,000 (1 mm = 502 m) at 90° long. Sheet 23 by 38 inches. (Transverse Mercator projection.)
- I-2193. Controlled photomosaic of the MTM 40082 Quadrangle, Mareotis/Tempe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 37.5° to 42.5°, long 80° to 85°. Scale 1:502,000 (1 mm = 502 m) at 90° long. Sheet 22 by 38 inches. (Transverse Mercator projection.)
- I-2194. Controlled photomosaic of the MTM 40087 Quadrangle, Mareotis/Tempe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 37.5° to 42.5°, long 85° to 90°. Scale 1:502,000 (1 mm = 502 m) at 90° long. Sheet 22 by 38 inches. (Transverse Mercator projection.)
- I-2195. Controlled photomosaic of the MTM 40092 Quadrangle, Mareotis/Tempe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 37.5° to 42.5°, long 90° to 95°. Scale 1:502,000 (1 mm = 50 m) at 90° long. Sheet 22 by 37 1/2 inches.
- I-2196. MONTANA. Geologic map of the Portage Quadrangle, Cascade and Chouteau counties, Montana, by E. K. Maughan and R. W. Lemke. 1991. Lat 47°30' to 47°45', long 111° to 111°15'. Scale 1:31,680 (1 inch = one-half mile). Sheet 34 by 40 inches (in color).
- I-2197. Geologic map of Tecuamburro Volcano and surrounding area, Guatemala, by W. A. Duffield, G. H. Wohletz, L. W. Maassen, Gabriel Dengo and Oscar Pinzón. 1991. Lat 14°10' to 14°20', long 90°20' to 90°30'. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 49 1/2 by 38 inches (in color). (English and Spanish.)
- I-2206. Landforms of the conterminous United States: a digital shaded-relief portrayal, by G. P. Thelin and R. J. Pike. 1991. Scale 1:3,500,000 (1 inch = about 55 miles). Sheet 55 by 35 1/2 inches. (Accompanied by 16-page text.)
- I-2211. WYOMING, COLORADO. Correlation and oil-shale assays of measured sections of the LaCede Bed of the Laney Member of the Green River Formation in outcrops along the western margins of Washakie Basin, Wyoming, and Sand Wash Basin, Colorado, by H. W. Roehler. 1991. Sheet 1, 40 by 32 inches; sheet 2, 42 by 32 inches.
- I-2212. COLORADO. Geologic map of the East Portal Quadrangle, Boulder, Gilpin, and Grand counties, Colorado, by E. J. Young. 1991. Lat 39°52'30" to 40°, long 105°37'30" to 105°45'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 30 inches (in color).
- I-2213. HAWAII. Geologic map of Hualalai Volcano, Hawaii, by R. B. Moore and D. A. Clague. 1991. Two sheets. Sheet 1, lat 19°30' to 19°52'30", long 155°45' to 156°07'30". Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 1, 54 by 37 inches; sheet 2, 56 by 39 inches (all in color).
- I-2214. Precambrian basement map of the Trans-Hudson Orogen and adjacent terranes, Northern Great Plains, U.S.A., compiled by P. K. Sims, Z. E. Peterman, T. G. Hildenbrand and S. A. Mahan. Prepared in cooperation with the geological surveys of Minnesota, Montana, Nebraska, North Dakota, South Dakota, and Wyoming. 1991. Lat 41° to 49°, long 96° to 106°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 44 by 40 inches (in color). (Accompanied by 53-page text.)
- I-2216. Controlled photomosaic of the MTM 05117 Quadrangle, Arsia Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -7.5° to -2.5°, long 115° to 120°. Scale 1:502,000 (1 mm = 502 m) at 110° long (1 inch = about 8 miles). Sheet 27 by 37 1/2 inches. (Transverse Mercator projection.)
- I-2217. Controlled photomosaic of the MTM 05122 Quadrangle, Arsia Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -7.5° to -2.5°, long 120° to 125°. Scale 1:502,000 (1 mm = 502 m) at 130° long. Sheet 27 by 38 inches. (Transverse Mercator projection.)
- I-2218. Controlled photomosaic of the MTM 05127 Quadrangle, Arsia Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -7.5° to -2.5°, long 125° to 130°. Scale 1:502,000 (1 mm = 502 m) at 130° long. Sheet 27 by 38 inches. (Transverse Mercator projection.)
- I-2219. Controlled photomosaic of the MTM 10102 Quadrangle, Ascraeus Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 7.5° to 12.5°, long 100° to 105°. Scale 1:502,000 (1 mm = 502 m) at 110° long (1 inch = about 8 miles). Sheet 27 by 38 inches. (Transverse Mercator projection.)
- I-2220. Controlled photomosaic of the MTM 10107 Quadrangle, Ascraeus Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 7.5° to 12.5°, long

- 105° to 110°. Scale 1:502,000 (1 mm = 502 m) at 110° long. Sheet 26 by 37 inches. (Transverse Mercator projection.)
- I-2221. Controlled photomosaic of the MTM 10117 Quadrangle, Arsia Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -12.5° to -7.5°, long 115° to 120°. Scale 1:502,000 (1 mm = 502 m) at 110° long. Sheet 26 by 38 inches. (Transverse Mercator projection.)
- I-2222. Controlled photomosaic of the MTM 20252 Quadrangle, Tyrhena Patera region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -22.5° to -17.5°, long 250° to 255°. Scale 1:502,000 (1 mm = 502 m) at 250° long (1 inch = about 8 miles). Sheet 27 by 37 1/2 inches. (Transverse Mercator projection.)
- I-2223. Controlled photomosaic of the MTM 20257 Quadrangle, Tyrhena Patera region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -22.5° to -17.5°, long 255° to 260°. Scale 1:502,000 (1 mm = 502 m) at 250° long (1 inch = about 8 miles). Sheet 27 by 37 1/2 inches. (Transverse Mercator projection.)
- I-2224. Controlled photomosaic of the MTM 25257 Quadrangle, Tyrhena Patera region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -27.5° to -22.5°, long 255° to 260°. Scale 1:502,000 (1 mm = 502 m) at 250° long. Sheet 24 by 38 inches. (Transverse Mercator projection.)
- I-2225. HAWAII. Geologic map of the lower east rift zone of Kilauea Volcano, Hawaii, by R. B. Moore and F. A. Trusdell. 1991. Lat 19°22'30" to 19°37'30", long 154°48'10" to 155°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 42 by 57 1/2 inches (in color). (Supersedes Open-file reports 81-947 and 85-715.)
- I-2226. WYOMING. Correlation and depositional analysis of oil shale and associated rocks in the Eocene Green River Formation, greater Green River basin, Southwest Wyoming, by H. W. Roehler. 1991. Two sheets. Sheet 1, 52 1/2 by 42 inches; sheet 2, 46 by 42 inches.
- I-2227. Controlled photomosaic of the MTM 15132 Quadrangle, Olympus Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 12.5° to 17.5°, long 130° to 135°. Scale 1:502,000 (1 mm = 502 m) at 130° long (1 inch = about 8 miles). Sheet 27 by 37 1/2 inches. (Transverse Mercator projection.)
- I-2228. Controlled photomosaic of the MTM 15127 Quadrangle, Olympus Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 12.5° to 17.5°, long 125° to 130°. Scale 1:502,000 (1 mm = 502 m) at 130° long. Sheet 26 by 37 inches. (Transverse Mercator projection.)
- I-2229. Controlled photomosaic of the MTM 10137 Quadrangle, Olympus Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 7.5° to 12.5°, long 135° to 140°. Scale 1:502,000 (1 mm = 502 m) at 130° long. Sheet 27 by 38 inches. (Transverse Mercator projection.)
- I-2269. Controlled photomosaic of the Southern Polar area (MTM 90000; revised), Planum Australe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Scale 1:503,000 (1 mm = 503 m) at -90° lat; 1:500,000 (1 mm = 500 m) at -87.5° lat. Sheet 27 by 38 inches. (Polar stereographic projection.) (Supersedes I-1917.)
- I-2270. Controlled photomosaic of the MTM 85080 Quadrangle (revised), Planum Australe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -87.5° to -82.5°, long 60° to 100°. Scale 1:500,000 (1 mm = 500 m) at -87.5° lat. Sheet 26 1/2 by 38 inches. (Polar stereographic projection.) (Supersedes I-1845.)
- I-2277. NEBRASKA. Geologic map showing configuration of the bedrock surface, North Platte 1° × 2° Quadrangle, Nebraska, by R. F. Diffendal, Jr., Nebraska Geological Survey. 1991. Lat 41° to 42°, long 100° to 102°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 41 by 25 inches (in color).
- I-2278. NEW MEXICO. Geologic map of the Twin Buttes Quadrangle, McKinley County, New Mexico, by M. L. Millgate. 1991. Lat 35°22'30" to 35°30', long 108°45' to 108°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 38 by 28 inches (in color).
- I-2292. Controlled photomosaic of the MTM 25062 Quadrangle (revised), Kasei Vallis region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 22.5° to 27.5°, long 60° to 65°. Scale 1:502,000 (1 mm = 502 m) at 70° long. Sheet 26 by 38 inches. (Transverse Mercator projection.) (Supersedes I-1870.)
- I-2293. Controlled photomosaic of the MTM 25067 Quadrangle (revised), Lunae Planum region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 22.5° to 27.5°, long 65° to 70°. Scale 1:502,000 (1 mm = 502 m) at 70° long. Sheet 25 by 38 inches. (Transverse Mercator projection.) (Supersedes I-1587.)

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

- I-1420 (NJ-16). Quaternary geologic map of the Louisville 4° × 6° Quadrangle, United States. State compilations by H. H. Gray, N. K. Bleuer, J. A. Linebacker, W C Swadley, G. M. Richmond, R. A. Miller, R. P. Goldthwait, and R. A. Ward. Edited and integrated by G. M. Richmond and D. S. Fullerton. 1991. Lat 36° to 40°, long 84° to 90°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 38 by 56 inches (in color).
- I-1420 (NJ-17). Quaternary geologic map of the Blue Ridge 4° × 6° Quadrangle, United States. State compilations by A. D. Howard, R. E. Behling, W. H. Wheeler, R. B. Daniels, W C Swadley, G. M. Richmond, R. P. Goldthwait, D. S. Fullerton, W. D. Sevon, and R. A. Miller. Edited and integrated by G. M. Richmond, D. S. Fullerton, and A. C. Christiansen. 1991. Lat 36° to 40°, long 78° to 84°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 55 1/2 by 33 inches (in color).
- I-1420 (NK-15). Quaternary geologic map of the Des Moines 4° × 6° Quadrangle, United States. State compilations by G. R. Hallberg, J. A. Lineback, D. M. Mickelson, J. C. Knox, J. E. Goebel, H. C. Hobbs, J. W. Whitfield, R. A. Ward, J. D. Boellstorff, J. B. Swinehart, and V. H. Dreeszen. Edited and integrated by G. M. Richmond, D. S. Fullerton, and A. C. Christiansen. 1991. Lat 40° to 44°, long 90° to 96°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 54 by 37 inches (in color).
- I-1420 (NK-17). Quaternary geologic map of the Lake Erie 4° × 6° Quadrangle, United States and Canada. State and province compi-

lations by D. S. Fullerton, W. R. Cowan, W. D. Sevon, R. P. Goldthwait, W. R. Farrand, E. H. Muller, R. E. Behling, and J. A. Stravers. Edited and integrated by D. S. Fullerton and G. M. Richmond. 1991. Lat 40° to 44°, long 78° to 84°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 56 by 38 inches (in color). (Accompanied by 8-page text.)

I-1420 (NK-19). Quaternary geologic map of the Boston 4° × 6° Quadrangle, United States and Canada. State and province compilations by J. H. Hartshorn, W. B. Thompson, W. F. Chapman, R. F. Black, G. M. Richmond, D. R. Grant, and D. S. Fullerton. Edited and integrated by G. M. Richmond and D. S. Fullerton. 1991. Lat 40° to 44°, long 66° to 72°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 54 by 30 inches (in color).

### CIRCUM-PACIFIC MAP SERIES

Multicolor equal-area maps at scales of 1:10,000,000 for the Northwest, Northeast, Southwest, Southeast quadrants of the Pacific and the Arctic and Antarctic regions, and of 1:17,000,000 for the whole Pacific Basin. The series consists of base, geographic, geodynamic, plate-tectonic, geologic, tectonic, mineral-resources, and energy-resources maps, as well as other miscellaneous maps.

CP-0037. Tectonic map of the Circum-Pacific region, southwest quadrant, by Erwin Scheibner, Geological Survey of New South Wales; Tadashi Sato, Tsukuba University; and Campbell Craddock, University of Wisconsin-Madison. Prepared in cooperation with the Circum-Pacific Council for Energy and Mineral Resources and the Geological Survey of New South Wales. 1991. Lat 70°S to 16°N, long 160°W to 90°E. Scale 1:10,000,000 (1 inch = about 160 miles). Sheet 64 by 41 inches (in color). (Accompanied by 59-page text.)

CP-0038. Geodynamic map of the Circum-Pacific region, by G. W. Moore, Oregon State University; M. G. Bonilla, U.S. Geological Survey; R. H. Rapp, Ohio State University; W. A. Rinehart, National Oceanic and Atmospheric Administration; Lee Siebert, Tom Simkin, Smithsonian Institution; D. R. Soller, and M. L. Zoback, U.S. Geological Survey. 1990. Lat 65°N at long 15°E to 26°N at 165°W. Scale 1:10,000,000 (1 inch = 158 miles). Sheet 54 by 41 inches (in color). (Accompanied by 12-page text.) (Lambert azimuthal equal-area projection centered at 70°N, 165°W.)

CP-0039. Energy-resources map of the Circum-Pacific region, southeast quadrant, by M. R. Yrigoyen, Trend Argentina; José Corvalán D., Servicio Nacional de Geología y Minería, Chile; and T. R. Swint-Iki, U.S. Geological Survey. 1991. Two sheets. Sheet 1, lat 70°S to 16°N, long 58°W to 160°W; sheet 2, lat 50°S to 10°N, long 60°W to 80°W. Each sheet, scale 1:10,000,000 (1 inch = about 160 miles). Each sheet 54 by 41 inches (all in color). (Accompanied by 64-page text.)

### 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-0133. UTAH. Map and cross sections of coal zones in the Upper Cretaceous Neslen Formation, north-central part of the Westwater 30' × 60' Quadrangle, Grand and Uintah counties, Utah, by J. L. Gualtieri. 1991. Three sheets. Sheet 1, lat 39°15' to 39°22'30", long 109°07'30" to 109°20'. Sheet 1, scale 1:24,000 (1 inch =

2,000 feet). Sheet 1, 43 by 41 inches (in color); sheet 2, 46 by 40 inches; sheet 3, 48 by 41 inches.

C-0134. COLORADO, UTAH. Map and cross sections of coal zones in the Upper Cretaceous Neslen and Mount Garfield formations, northeastern part of the Westwater 30' × 60' Quadrangle and adjacent area, Garfield County, Colorado, and Grand and Uintah counties, Utah, by J. L. Gualtieri. 1991. Three sheets. Sheet 1, Lat 39°21'54" to 39°30', long 108°57'30" to 109°12'30". Sheet 1, scale 1:24,000 (1 inch = 2,000 feet). Sheet 1, 54 by 41 inches (in color); sheet 2, 54 by 37 inches; sheet 3, 51 by 38 inches.

C-0137. UTAH. Geologic map and coal deposits of the Horse Mountain Quadrangle, Kane County, Utah, by W. E. Bowers. 1991. Lat 37°22'30" to 37°30', long 111°37'30" to 111°45'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 33 by 36 inches (in color).

C-0138. COLORADO. Coal geology and preliminary coal zone correlations in the Fruitland Formation, western part of the Southern Ute Indian Reservation, La Plata County, Colorado, by L. N. Roberts and Jane Uptegrove. 1991. Lat 37° to 37°07'30", long 108° to 108°07'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 52 by 36 inches (in color).

C-0139-A. ALASKA. Subsurface cross section showing coal beds in the Sagavanirktok Formation, vicinity of Prudhoe Bay, east-central North Slope, Alaska, by S. B. Roberts. 1991. Sheet 50 by 35 inches.

C-0139-B. ALASKA. Stratigraphy and chemical analyses of coal beds in the Upper Cretaceous and Tertiary Sagavanirktok Formation, east-central North Slope, Alaska, by S. B. Roberts, G. D. Stricker and R. H. Affolter. 1991. Sheet 58 by 41 inches.

C-0140. UTAH. Geologic map of the Fourmile Bench Quadrangle, Kane County, Utah, by W. E. Bowers. 1991. Lat 37°15' to 37°22'30", long 111°37'30" to 111°45'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 33 inches (in color).

### OIL AND GAS INVESTIGATIONS CHARTS

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

OC-0134. UTAH, COLORADO. Correlation of Middle Jurassic San Rafael Group and related rocks from Kane Springs, Utah to Uravan, Colorado, by R. B. O'Sullivan. 1991. Sheet 43 by 32 inches.

### OIL AND GAS INVESTIGATIONS MAPS

OM-0221. CALIFORNIA. Lithofacies and petrofacies map of upper Mesozoic rocks near Coalinga in the southern Diablo Range, California, by C. F. Mansfield. 1991. Lat 36°05' to 36°20', long 120°25' to 120°40'. Scale 1:62,500 (1 inch = about 1 mile). Sheet 30 by 35 inches (in color).

### 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; the majority of post-1971 maps are preliminary black and white maps on various subjects such as environmental studies or Wilderness mineral investigations.

- MF-0916. Preliminary map of young faults in the United States as a guide to possible fault activity, by K. A. Howard, J. M. Aaron, E. E. Brabb, M. R. Brock, H. D. Gower, S. J. Hunt, D. J. Milton, W. R. Muehlberger, J. K. Nakata, George Plafker, D. C. Prowell, R. E. Wallace and I. J. Witkind. 1978 (1991). Two sheets. Sheet 1, lat 23° to 48°, long 73° to 119°; sheet 2, Alaska, Hawaii, and Puerto Rico. Sheet 1, scale 1:5,000,000 (1 inch = about 80 miles). Sheet 1, 41 by 30 inches; sheet 2, 41 1/2 by 32 inches. (Reprint.)
- MF-1060. GEORGIA. Seismicity map of the State of Georgia, by B. G. Reagor, C. W. Stover, S. T. Algermissen and L. T. Long. 1979 (1991). Lat 31° to 35°, long 81° to 85°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 37 by 29 inches. (Reprint.)
- MF-1199. CALIFORNIA. Maps showing geology and liquefaction potential of northern Monterey and southern Santa Cruz counties, California, by W. R. Dupré and J. C. Tinsley, III. 1980 (1991). Two sheets. Lat 36°37'30" to 37°, long 121°30' to 121°52'30". Each sheet, scale 1:62,500 (1 inch = about 1 mile). Sheet 1, 37 by 34 inches; sheet 2, 30 1/2 by 34 inches. (Reprint.)
- MF-1226. WEST VIRGINIA. Seismicity map of the State of West Virginia, by B. G. Reagor, C. W. Stover and S. T. Algermissen. 1980 (1990). Lat 38° to 40°, long 78° to 82°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 33 by 22 inches. (Reprint.)
- MF-1281. DELAWARE, MARYLAND. Seismicity map of the states of Delaware and Maryland, by C. W. Stover, B. G. Reagor and S. T. Algermissen. 1981 (1990). Lat 38° to 39°, long 75° to 79°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 33 by 22 inches. (Reprint.)
- MF-1284. MAINE. Seismicity map of the State of Maine, by C. W. Stover, L. M. Barnhard, B. G. Reagor and S. T. Algermissen. 1981 (1990). Lat 43° to 47°, long 67° to 71°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 39 1/2 by 29 1/2 inches. (Reprint.)
- MF-1324. IOWA. Seismicity map of the State of Iowa, by C. W. Stover, B. G. Reagor and S. T. Algermissen. 1981 (1991). Lat 41° to 43°, long 91° to 96°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 24 by 31 1/2 inches. (Reprint.)
- MF-1350. NEBRASKA. Seismicity map of the State of Nebraska, by B. G. Reagor, C. W. Stover and S. T. Algermissen. 1981 (1991). Lat 40° to 43°, long 96° to 104°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 41 by 28 inches. (Reprint.)
- MF-1645-H. ALASKA. Map showing geologic interpretation of aeromagnetic data for the Chugach National Forest, Alaska, by D. F. Barnes. 1991. Lat 60° to 61°, long 144° to 150°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 60 inches (in color). (Accompanied by 8-page text.)
- MF-1712. Estimated maximum regional seismic intensities associated with an ensemble of great earthquakes that might occur along the New Madrid seismic zone, east-central United States, by S. T. Algermissen and M. G. Hopper. 1984 (1990). Lat 30° to 40°, long 80° to 95°. Sheet 29 1/2 by 24 inches (in color). (Reprint.)
- MF-1835-F. Map showing distribution of alkaline igneous rocks and associated carbonatites and peridotites in the northern Midcontinent, U.S.A., by F. A. Hills, R. W. Scott, Jr., T. J. Armbrustmacher and Pieter Berendsen. 1991. Lat 36° to 46°, long 88° to 100°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 43 by 56 inches. (Accompanied by 15-page text.)
- MF-1835-G. Lithologic cross sections of Phanerozoic rocks in the northern Midcontinent, U.S.A., compiled by D. N. Mugel and W. P. Pratt. 1991. Seven sheets. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 49 by 28 inches; sheet 2, 46 by 39 1/2 inches; sheet 3, 49 by 39 inches; sheet 4, 49 by 34 inches; sheet 5, 54 by 40 inches; sheet 6, 56 by 34 inches; sheet 7, 49 by 28 inches. (Accompanied by 7-page text.)
- MF-1857. IDAHO. Seismicity map of the State of Idaho, by C. W. Stover, B. G. Reagor and S. T. Algermissen. 1986 (1991). Lat 42° to 49°, long 111° to 117°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 30 by 40 inches. (Accompanied by 25-page text.) (Reprint.)
- MF-1996-C. ALASKA. Map showing locations of metalliferous lode and placer mineral occurrences, mineral deposits, prospects, and mines, Mount Hayes Quadrangle, eastern Alaska Range, Alaska, by W. J. Nokleberg, I. M. Lange, R. C. Roback, W. E. Yeend and S. R. Silva. 1991. Lat 63° to 64°, long 144° to 147°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 39 1/2 by 41 inches. (Accompanied by 42-page text.)
- MF-2080. Map showing the distribution of uranium deposit clusters in the Colorado Plateau uranium province, by W. I. Finch. 1991. Lat 33° to 42°, long 106° to 115°. Sheet 54 by 38 inches (in color).
- MF-2081-B. UTAH. Aeromagnetic anomaly map and related geophysical maps of the Delta 1° x 2° Quadrangle, Utah, by R. P. Kucks. 1991. Lat 39° to 40°, long 112° to 114°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 49 by 40 inches (in color).
- MF-2083-A. GLORIA sidescan-sonar imagery and geologic interpretation of the central Cayman Trough, northwestern Caribbean Sea, by N. T. Edgar, W. P. Dillon, L. M. Parson, K. M. Scanlon, C. L. Jacobs and T. L. Holcombe. 1991. Three sheets. Lat 18° to 19°, long 80° to 83°. Each sheet, scale 1:402,000 at lat 18°30'N. Sheet 1, 45 by 38 inches (in color); sheet 2, 54 by 34 inches (in color); sheet 3, 50 by 27 inches. (Mercator projection.)
- MF-2097-A. Map showing free-air gravity anomalies in parts of the western Caribbean Sea, by D. W. Folger, B. J. Irwin, J. R. McCullough, J. E. Dodd, R. M. Bouse, C. O. Bowin, C. F. Polloni, W. J. Strahle, J. T. Gann and Charles Gilbert. 1990. Lat 13°N to 21°N, long 75°W to 88°W. Scale 1:500,000 (1 inch = about 8 miles). Sheet 50 by 29 1/2 inches.
- MF-2097-B. Map showing free-air gravity anomalies off the coasts of Venezuela and Trinidad-and-Tobago, by D. W. Folger, B. J. Irwin, J. R. McCullough, W. J. Strahle, C. O. Bowin and C. F. Polloni. 1990. Lat 8°N to 14°N, long 58°W to 72°W. Scale 1:500,000 (1 inch = about 8 miles). Sheet 53 by 23 inches.
- MF-2098-E. Map showing free-air gravity anomalies off the southern coast of west-central Africa; Liberia to Ghana, by D. W. Folger, B. J. Irwin, J. R. McCullough, R. W. Rowland and C. F. Polloni. 1990. Lat 2°N to 10°N, long 2°E to 11°W. Scale 1:500,000 (1 inch = about 8 miles). Sheet 50 by 28 1/2 inches.
- MF-2120. Probabilistic earthquake acceleration and velocity maps for the United States and Puerto Rico, by S. T. Algermissen, D. M. Perkins, P. C. Thenhaus, S. L. Hanson and B. L. Bender.

- 1990 (1991). Two sheets. Lat 25° to 50°, long 65° to 125°. Each sheet, scale 1:7,500,000 (1 inch = about 118 miles). Sheet 1, 35 1/2 by 45 inches; sheet 2, 28 by 42 inches. Both sheets include inserts for Puerto Rico (lat 18°, long 67°), Alaska (lat 50° to 70°, long 130°W to 170°E), Hawaii (lat 19° to 22°, long 155° to 160°). (Reprint.)
- MF-2125-A. KANSAS, MISSOURI. Summary geochemical maps of the Joplin 1° × 2° Quadrangle, Kansas and Missouri, by R. L. Erickson, E. L. Mosier, H. W. Folger, J. H. Bullock, Jr., U.S. Geological Survey; Pieter Berendsen and Mary Daly, Kansas Geological Survey. 1990. Lat 37° to 38°, long 94° to 96°. Map A, scale 1:250,000 (1 inch = about 4 miles); maps B-E, scale 1:500,000 (1 inch = about 8 miles). Sheet 37 by 50 inches (in color). (Accompanied by 82-page text.)
- MF-2125-B. KANSAS, MISSOURI. Maps showing industrial mineral resources of the Joplin 1° × 2° Quadrangle, Kansas and Missouri, by D. A. Grisafe, Kansas Geological Survey; and A. W. Rueff, Missouri Division of Geology and Land Survey. 1991. Lat 37° to 38°, long 94° to 96°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 29 by 40 inches.
- MF-2135. ARKANSAS, MISSOURI. Reconnaissance seismic-reflection surveys in the New Madrid seismic zone, Northeast Arkansas and Southeast Missouri, by E. A. Luzietti and S. T. Harding. 1991. Three sheets. Sheet 1, 43 by 35 inches; sheet 2, 54 by 41 1/2 inches; sheet 3, 46 by 35 inches.
- MF-2139. TENNESSEE, NORTH CAROLINA. Magnetic, gravity, and radiometric maps of the Chattanooga 1° × 2° Quadrangle, Tennessee and North Carolina, by E. R. King. 1990. Lat 35° to 36°, long 84° to 85°45'. Scale 1:500,000 (1 inch = about 8 miles). Sheet 52 by 38 inches (in color).
- MF-2140-C. WYOMING, MONTANA. Map showing structure contours on the top of the Upper Jurassic Morrison Formation, Powder River basin, Wyoming and Montana, by B. L. Crysdale. 1991. Lat 43° to 45°, long 104° to 107°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 41 by 36 inches.
- MF-2140-D. WYOMING, MONTANA. Map showing contours on top of the Upper Cretaceous Mowry Shale, Powder River basin, Wyoming and Montana, by B. L. Crysdale. 1991. Lat 43° to 45°, long 104° to 107°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 40 by 35 inches.
- MF-2145. Three-dimensional perspective diagrams of the Morococala volcanic field, west-central Bolivia, by R. G. Luedke and W. J. Bawiec. 1991. Sheet 45 1/2 by 26 inches (in color).
- MF-2146. ALASKA. Geologic map of Long Island and southern and central Dall Island, southeastern Alaska, by G. E. Gehrels. 1991. Lat 54° to 55°, long 132°40' to 133°10'. Scale 1:63,360 (1 inch = 1 mile). Sheet 40 1/2 by 38 1/2 inches.
- MF-2147. MAINE. Cores from marine geologic features in the western Gulf of Maine, by R. N. Oldale and G. B. Edwards. 1990. Two sheets. Sheet 1, 43 by 32 inches; sheet 2, 39 by 38 inches.
- MF-2148. GEORGIA. Geologic map of the Campbell Mountain Quadrangle, Lumpkin County, Georgia, by A. E. Nelson. 1991. Lat 34°30' to 34°37'30", long 84° to 84°07'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 44 1/2 by 40 1/2 inches.
- MF-2151. ALASKA. The use of heavy-mineral concentrate data to show geochemical favorability for zinc-lead-silver and copper-(cobalt) mineral occurrences in the Baird Mountains Quadrangle, Northwest Alaska, by R. J. Goldfarb, E. A. Bailey, P. F. Folger and J. M. Schmidt. 1991. Lat 67° to 68°, long 159° to 162°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 51 by 33 inches (in color).
- MF-2152. COLORADO. Mine maps of silver-lead-zinc epithermal deposits in the Lake City area, Hinsdale County, San Juan Mountains, southwestern Colorado, by R. F. Sanford, Patty Rehn, A. R. Kirk, J. F. Slack and D. J. Bove. 1991. Three sheets. Sheet 1, lat 37°55' to 38°02'30", long 107°17'30" to 107°32'30". Sheet 1, scale 1:24,000 (1 inch = 2,000 feet). Sheet 1, 44 by 34 inches; sheet 2, 55 by 40 inches; sheet 3, 28 by 26 inches.
- MF-2153. Map showing mineral deposits of the Midcontinent Rift, Lake Superior region, United States and Canada, by W. F. Cannon and T. A. McGervey. 1991. Lat 46° to 49°15', long 84° to 92°30'. Scale 1:500,000 (1 inch = about 8 miles). Sheet 54 by 41 inches (in color).
- MF-2154-A. NEVADA, CALIFORNIA. Geologic map of the Reno 1° by 2° Quadrangle, Nevada and California, by R. C. Greene, J. H. Stewart, D. A. John, R. F. Hardyman, N. J. Silberling and M. L. Sorensen. 1991. Lat 39° to 40°, long 118° to 120°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 36 inches.
- MF-2154-B. NEVADA, CALIFORNIA. Map showing mines and prospects in the Reno 1° by 2° Quadrangle, Nevada and California, by D. A. John and M. G. Sherlock. 1991. Lat 39° to 40°, long 118° to 120°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 29 by 37 inches. (Accompanied by 17-page text.)
- MF-2155-A. ALASKA. Generalized geologic map of the Port Moller, Stepovak Bay, and Simeonof Island quadrangles, Alaska Peninsula, Alaska, by F. H. Wilson, R. L. Dettelman and E. E. Harris. 1991. Lat 54°45' to 56°, long 158°30' to 162°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 44 1/4 by 33 inches.
- MF-2156. OREGON. Geologic map of the Sand Hollow Quadrangle, Crook County, Oregon, by J. A. Ach and J. T. Bateson. 1991. Lat 43°52'30" to 44°, long 120° to 120°07'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 34 inches.
- MF-2157. NEVADA. Geologic map of the High Rock Lake Quadrangle, Washoe and Humboldt counties, Nevada, by J. A. Ach, J. T. Bateson, B. D. Turrin, W. J. Keith, D. C. Noble and C. C. Swisher. 1991. Lat 41°15' to 41°22'30", long 119°15' to 119°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 36 inches.
- MF-2158. WYOMING. Identification of oil shale and trona beds and their geophysical log responses in the Energy Research and Development Administration Blacks Fork No. 1 corehole, Eocene Green River Formation, Southwest Wyoming, by H. W. Roehler. 1991. Sheet 27 by 37 1/2 inches.
- MF-2159. WYOMING. West-east stratigraphic correlations of surface and subsurface sections of the intertongued Eocene Wasatch and Green River formations, Wyoming, by H. W. Roehler. 1991. Sheet 42 by 34 inches.



MF-2160-A. IDAHO. Aeromagnetic map of the Hailey and western part of the Idaho Falls 1° × 2° quadrangles, Idaho, by A. E. McCafferty and G. A. Abrams. 1991. Lat 43° to 44°, long 113° to 116°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 33 inches.

MF-2160-B. IDAHO. Complete Bouguer gravity anomaly map of the Hailey and western part of the Idaho Falls 1° × 2° quadrangles, Idaho, by G. A. Abrams. 1991. Lat 43° to 44°, long 113°30' to 116°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 30 inches.

MF-2161. WASHINGTON. Geologic map of Vashon and Maury islands, King County, Washington, by D. B. Booth. 1991. Lat 47°20'30" to 47°30', long 122°22'30" to 122°30'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 41 inches. (Accompanied by 6-page text.)

MF-2162. IDAHO. Reconnaissance geologic map of Elkhorn Peak Quadrangle, Bannock and Oneida counties, Idaho, by S. S. Oriel, L. B. Platt and R. W. Allmendinger. 1991. Lat 42°15' to 42°22'30", long 112°15' to 112°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 25 by 28 1/2 inches.

MF-2164. WASHINGTON. East-west surface and subsurface correlations of the intertongued Eocene Wasatch and Green River formations, Washakie Basin, Southwest Wyoming, by H. W. Roehler. 1991. Lat 41° to 41°30', long 107°30' to 108°30'. Sheet 21 by 36 inches.

MF-2165. COLORADO. Maps showing hydrostatic levels and general ground-water quality for an area near Conifer, Colorado, by E. P. Lawrence, R. B. Wanty and P. H. Briggs. 1991. Lat 39°30' to 39°32'30", long 105°20' to 105°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 31 by 26 inches.

MF-2166. COLORADO. Northwest-southeast surface and subsurface correlations of the intertongued Wasatch and Green River formations, Sand Wash Basin, Northwest Colorado, by H. W. Roehler. 1991. Lat 40° to 41°, long 108° to 109°. Sheet 20 by 30 inches.

MF-2167. OREGON. Geologic map of the Lower Owyhee Canyon Wilderness Study Area, Malheur County, Oregon, by J. G. Evans. 1991. Lat 42°55' to 43°15', long 117°30' to 117°50'. Scale 1:48,000 (1 inch = 4,000 feet). Sheet 27 by 46 inches.

MF-2168. COLORADO. Reconnaissance geologic map of parts of the Zapata Ranch and Mosca Pass quadrangles, Alamosa and Huerfano counties, Colorado, by R. M. Bruce and B. R. Johnson. 1991. Lat 37°37'30" to 37°45', long 105°27'30" to 105°32'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 28 inches.

MF-2169. COLORADO. Reconnaissance geologic map of parts of the Twin Peaks and Blanca Peak quadrangles, Alamosa, Costilla, and Huerfano counties, Colorado, by B. R. Johnson and R. M. Bruce. 1991. Lat 37°32'30" to 37°37'30", long 105°27'30" to 105°35'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 34 by 28 1/2 inches.

MF-2170. CALIFORNIA. Geologic map of the Cholame Quadrangle, San Luis Obispo County, California, by J. D. Sims and J. C. Hamilton. 1991. Lat 35°37'30" to 35°45', long 120°15' to 120°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 35 by 46 inches.

MF-2171. OREGON. Geologic map showing part of the May Creek Schist and related rocks, Jackson County, Oregon, by M. M. Donato. 1991. Lat 42°30' to 42°45', long 122°55' to 123°10'. Scale 1:62,500 (1 inch = about 1 mile). Sheet 27 by 38 inches. (Accompanied by 10-page text.)

MF-2172. ARIZONA. Preliminary geologic map of the Fairbank Quadrangle, Cochise County, Arizona, by R. B. Moore. 1991. Lat 31°37'30" to 31°45', long 110°07'30" to 110°15'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 34 by 32 1/2 inches.

MF-2185. WYOMING. Measured sections of Ramsey Ranch Member of Wasatch Formation, greater Green River basin, Southwest Wyoming, by H. W. Roehler. 1991. Lat 41° to 43°, long 107° to 111°. Sheet 54 by 41 inches.

MF-2188. WYOMING. Chart showing identification of oil shale and trona beds and their geophysical log responses in the Union Pacific Railroad Company El Paso corehole No. 44-3, Eocene Green River Formation, Southwest Wyoming, by H. W. Roehler. 1991. Sheet 40 by 54 inches.

## GEOLOGIC MAP INDEXES

VIRGINIA. Geologic map index of Virginia, revised and updated by H. K. Fuller, G. B. Gunnells, E. A. Buffa, and R. C. Orndorff, 1990, from original compilation by W. L. McIntosh and M. F. Eister. 1976. Six sheets. Lat 37° to 39°, long 76° to 83°. Each sheet at scales smaller than 1:24,000 (1 inch = 2,000 feet) through 1:63,360 (1 inch = 1 mile). Each sheet 17 by 11 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-0711-I. MISSOURI. Areal extent, stratigraphic relation, and geohydrologic properties of regional geohydrologic units in southern Missouri, by J. L. Imes and B. J. Smith. 1990. Three sheets. Sheets 1 and 3, lat 36° to 39°, long 90° to 94°. Sheet 1, scale 1:750,000 (1 inch = about 12 miles); sheet 3, scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 37 by 27 inches; sheet 2, 31 by 27 inches; sheet 3, 41 by 27 inches (all in color).

HA-0711-J. Water type and concentration of dissolved solids, chloride, and sulfate in water from the St. Francois Aquifer in Missouri, Arkansas, Kansas, and Oklahoma, by J. L. Imes and J. V. Davis. 1990. Lat 35° to 39°, long 92° to 95°. Scale 1:750,000 (1 inch = about 12 miles). Sheet 36 by 30 inches (in color).

HA-0711-K. Water type and concentration of dissolved solids, chloride, and sulfate in water from the Ozark Aquifer in Missouri, Arkansas, Kansas, and Oklahoma, by J. L. Imes and J. V. Davis. 1991. Four sheets. Lat 35° to 39°, long 89° to 96°. Each sheet, scale 1:750,000 (1 inch = about 12 miles). Each sheet 40 by 35 inches (all in color).

HA-0711-L. Water type and concentration of dissolved solids, chloride, and sulfate in water from the Springfield Plateau Aquifer in Missouri, Arkansas, Kansas, and Oklahoma, by J. L. Imes and J. V. Davis. 1990. Two sheets. Lat 35° to 39°, long 92° to 95°. Each sheet, scale 1:750,000 (1 inch = about 12 miles). Each sheet 44 by 34 inches (all in color).

HA-0719. MISSOURI. Geohydrology and water quality of Cenozoic and Mesozoic units in Southeast Missouri, by T. O. Mesko. 1990. Two sheets. Lat 36° to 37°, long 90°. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Each sheet 39 by 30 inches (all in color).

HA-0720-B. Hydrogeology of Ojo Alamo Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona and Utah, by C. R. Thom, G. W. Levings, S. D. Craigg, W. L. Dam and J. M. Kernodle. 1990. Two sheets. Lat 34°45' to 37°45', long 106°30' to 109°30'. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 43 by 34 inches; sheet 2, 39 by 34 1/2 inches (all in color).

HA-0720-D. Hydrogeology of the Pictured Cliffs Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah, by W. L. Dam, J. M. Kernodle, C. R. Thom, G. W. Levings and S. D. Craigg. 1990. Two sheets. Lat 34°45' to 37°45', long 106°30' to 109°30'. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 43 by 34 inches; sheet 2, 39 by 34 inches (all in color).

HA-0720-F. Hydrogeology of the Menefee Formation in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah, by G. W. Levings, S. D. Craigg, W. L. Dam, J. M. Kernodle and C. R. Thom. 1990. Two sheets. Lat 34°45' to 37°45', long 106°30' to 109°30'. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Each sheet 44 by 36 inches (all in color).

HA-0722-A. KANSAS. Geohydrologic systems in Kansas with emphasis on systems in Upper Cambrian through Lower Cretaceous rocks, by R. J. Wolf, C. V. Hansen, H. E. McGovern and J. M. Spinazola. 1990. Two sheets. Lat 37° to 40°, long 95° to 102°. Sheet 1, scale 1:500,000 (1 inch = about 8 miles); sheet 2, scale 1:2,000,000 (1 inch = about 32 miles). Sheet 1, 39 by 33 inches; sheet 2, 41 by 47 inches (all in color).

HA-0730-G. Ground water atlas of the United States; Segment 6, Alabama, Florida, Georgia, and South Carolina, by J. A. Miller. 1989. 28 p., 18 by 24 inches.

## HYDROLOGIC UNIT MAPS

TENNESSEE. Hydrologic unit map. 1974. State of Tennessee. Prepared in cooperation with the Interagency Advisory Committee on Water Data. Lat 35° to 36°45', long 82° to 90°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 65 by 21 inches (in color). (Reprint.)

## OUTSIDE PUBLICATIONS

### ARTICLES AND REPORTS

Articles by Geological Survey personnel in non-Geological Survey publications that came to our attention in 1991. 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.

OP-1. T. A. Abrajano, Jr.\*, N. C. Sturchio\*, B. M. Kennedy\*, G. L. Lyon\*, Karlis Muehlenbachs\* and J. K. Bohlke. Geochemistry of reduced gas related to serpentinization of the Zambales Ophiolite, Philippines. *Applied Geochemistry*, in

Water-rock interactions. (Y. K. Kharaka, editor and others). v. 5, no. 5-6, December 1990. p. 625-630.

OP-2. M. C. Adams\*, L. L. Mink\*, J. N. Moore\*, L. D. White and A. A. Caicedo\*. Geochemistry and hydrology of the Zunil geothermal system, Guatemala. *Transactions - Geothermal Resources Council*, in *Transactions*, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 837-844.

OP-3. J. C. Adamski. MARYLAND. Factors affecting well productivity in the fractured rocks of the Maryland Piedmont. *Ground Water Management*, in *Proceedings of the FOCUS conference on Eastern regional ground water issues*. 3, 1990. unpaginated.

OP-4. C. M. Ager, N. M. Milton, B. A. Eiswerth, M. S. Power and S. A. Hauck\*. MINNESOTA. Spectral response of vegetation to metallic elements in northeastern Minnesota. *Proceedings of the Thematic Conference on Remote Sensing for Exploration Geology*, in *Proceedings of the Seventh thematic conference on Remote sensing for exploration geology; methods, integration, solutions*. 7, 1989. p. 173-178.

OP-5. D. C. Agnew\* and L. M. Jones. Prediction probabilities from foreshocks. *Journal of Geophysical Research, B, Solid Earth and Planets*. v. 96, no. 7, July 10, 1991. p. 11,959-11,971.

OP-6. G. R. Aiken and A. H. Gillam\*. Determination of molecular weights of humic substances by colligative property measurements, in *Humic substances; II. In search of structure*. (M. H. Hayes, editor and others). Chichester: John Wiley & Sons, 1989. p. 515-544.

OP-7. G. R. Aiken, D. M. McKnight and R. A. Harnish. Chemical characteristics of aquatic fulvic acid isolated from Lake Fryxell, Antarctica. *Antarctic Journal of the United States*, in 1989 review. v. 24, no. 5, 1989. p. 190-192.

OP-8. G. R. Aiken, D. M. McKnight, R. L. Wershaw and L. G. Miller. Evidence for the diffusion of aquatic fulvic acid from the sediments of Lake Fryxell, Antarctica, in *Organic substances and sediments in water; Volume 1, Humics and soils*. (R. A. Baker, editor). Chelsea, MI: Lewis Publ. 1991. p. 75-88.

OP-9. Keiiti Aki\*, Arthur Frankel and L. G. Wennerberg. CALIFORNIA. Microearthquake spectra from the Anza, California seismic network; site response and source scaling; discussion and replies. *Bulletin of the Seismological Society of America*. v. 80, no. 04, August 1990. p. 1034-1042.

OP-10. B. N. Aldridge. ARIZONA. Effects of vegetation on floods at four Arizona sites. *Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering*, in *Proceedings of the 1989 national conference on Hydraulic engineering*. (M. A. Ports, editor). 1989, 1989. p. 392-397.

OP-11. J. N. Aleinikoff, D. L. Winegarden and Marianne Walter. U-Pb ages of zircon rims; a new analytical method using the air-abrasion technique. *Chemical Geology; Isotope Geoscience Section*. v. 80, no. 4, October 1, 1990. p. 351-363.

OP-12. R. B. Alley\*, E. S. Saltzman\*, K. M. Cuffey\* and J. J. Fitzpatrick. Summertime formation of depth hoar in central Greenland. *Geophysical Research Letters*. v. 17, no. 13, December 1990. p. 2393-2396.

- OP-13. W. M. Alley and Philip Cohen. A scientifically based nationwide assessment of groundwater quality in the United States. *Environmental Geology and Water Sciences*. v. 17, no. 1, February 1991. p. 17-22.
- OP-14. W. M. Alley and P. M. Warmerdam\* (reporters). Hydrological research basins and the environment. *Eos, Transactions, American Geophysical Union*. v. 72, no. 5, January 29, 1991. p. 42.
- OP-15. T. R. Alpha. Perspective physiographic diagram of Vanuatu. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, in *Geology and offshore resources of Pacific island arcs; Vanuatu region*. (H. G. Greene, editor and others). 8, 1988. p. 29-33.
- OP-16. L. W. Anderson\*, R. C. LaForge\*, C. M. Wentworth and M. D. Zoback\*. CALIFORNIA. The style of late Cenozoic deformation at the eastern front of the California Coast Ranges; discussion and reply. *Tectonics*. v. 9, no. 5, October 1990. p. 1263-1268.
- OP-17. O. J. Anderson\*, S. G. Lucas\*, D. W. Love\*, C. H. Maxwell and R. M. Chamberlin\*. NEW MEXICO. Third-day road log, from Gallup to Upper Nutria, Ramah, El Morro and Grants. Guidebook - New Mexico Geological Society, in *Southeastern Colorado Plateau*. (O. J. Anderson, editor and others). 40, 1989. p. 49-66.
- OP-18. W. L. Anderson. Fast evaluation of radial and vertical magnetic fields near a rectangular loop source on a layered Earth. *Geophysical Transactions = Geofizikai Közlemények = Geofizicheskiy Byulletin*. v. 31, no. 4, 1985. p. 339-357.
- OP-19. W. L. Anderson. Approximate inversion of high-frequency electromagnetic soundings using complex image theory. *Geophysics*. v. 56, no. 7, July 1991. p. 1087-1092.
- OP-20. W. L. Anderson and N. B. Christensen\*. Optimized fast Hankel transform filters; discussion and reply. *Geophysical Prospecting*. v. 39, no. 3, April 1991. p. 445-450.
- OP-21. B. J. Andraski. NEVADA. Water movement and trench stability at a simulated arid burial site for low-level radioactive waste near Beatty, Nevada, in *Proceedings of the topical meeting on Nuclear waste isolation in the unsaturated zone; Focus '89*. (P. A. Witherspoon, chairperson and others). La Grange Park, IL: Am. Nucl. Soc. 1990. p. 166-173.
- OP-22. S. S. Anthony. Techniques for appraisal of ground-water resources on atoll islands; case studies from Micronesia. *American Water Resources Association Technical Publication Series TPS*, in *Proceedings of the International symposium on Tropical hydrology and Fourth Caribbean Islands water resources congress*. (J. H. Krishna, editor and others). 90-2, 1990. p. 291-300.
- OP-23. R. C. Antweiler. The hydrolysis of Suwannee River fulvic acid, in *Organic substances and sediments in water; Volume 1, Humics and soils*. (R. A. Baker, editor). Chelsea, MI: Lewis Publ. 1991. p. 163-177.
- OP-24. Masahiro Aoki\* and M. T. Thompson. The Osorezan hydrothermal system, Japan; gold-bearing hot springs. *Transactions - Geothermal Resources Council*, in *Transactions, 1990 International symposium on geothermal energy*. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 1365-1369.
- OP-25. A. K. Armstrong and L. D. Holcomb\*. NEW MEXICO. Stratigraphy, facies and paleotectonic history of Mississippian rocks in the San Juan Basin of northwestern New Mexico and adjacent areas. Guidebook - New Mexico Geological Society, in *Southeastern Colorado Plateau*. (O. J. Anderson, editor and others). 40, 1989. p. 159-166.
- OP-26. R. L. Armstrong\* and P. L. Ward. Evolving geographic patterns of Cenozoic magmatism in the North American Cordillera; the temporal and spatial association of magmatism and metamorphic core complexes. *Journal of Geophysical Research, B, Solid Earth and Planets*, in *Mid-Tertiary Cordilleran magmatism; plate convergence versus intraplate processes*. v. 96, no. 8, July 30, 1991. p. 13,201-13,224.
- OP-27. F. E. Arteaga. NEVADA. Mathematical model analysis of the Eagle Valley ground-water basin, west-central Nevada. *Water Resources Bulletin* (Carson City). Report no. 45, 1986. 53 p.
- OP-28. Yemane Asmerom\*, P. E. Damon\*, Muhammad Shafiqullah\*, W. R. Dickinson\* and R. E. Zartman. Resetting of Rb-Sr ages of volcanic rocks by low-grade burial metamorphism. *Chemical Geology; Isotope Geoscience Section*. v. 87, no. 3-4, October 10, 1991. p. 167-173.
- OP-29. B. F. Atwater, Minze Stuiver\* and D. K. Yamaguchi\*. WASHINGTON. Radiocarbon test of earthquake magnitude at the Cascadia subduction zone. *Nature* (London). v. 353, no. 6340, September 12, 1991. p. 156-158.
- OP-30. B. F. Atwater and D. K. Yamaguchi\*. WASHINGTON. Sudden, probably coseismic submergence of Holocene trees and grass in coastal Washington State. *Geology* (Boulder). v. 19, no. 7, July 1991. p. 706-709.
- OP-31. W. R. Aucott and G. K. Speiran. SOUTH CAROLINA. Geohydrology and water quality of the coastal plain aquifers of South Carolina, in *Proceedings of the Symposium on Ground water and environmental hydrogeology in South Carolina*. (H. J. McGill, editor and others). Columbia, SC: S.C. Dep. Health and Environ. Control. 1985. p. 26-50.
- OP-32. Z. Aunzo\*, C. Laky\*, B. Steingrimsen\*, G. S. Bodvarsson\*, M. J. Lippmann\*, A. H. Truesdell, Carlos Escobar\*, A. Quintanilla\* and G. Cuellar\*. Pre-exploitation state of the Ahuachapán geothermal field, El Salvador. *Geothermics*. v. 20, no. 1-2, 1991. p. 1-22.
- OP-33. R. C. Averett and G. R. Marzolf. Water quality. *Environmental Science & Technology, ES & T*. v. 21, no. 9, 1987. p. 827.
- OP-34. E. V. Axtmann and S. N. Luoma. MONTANA. Large-scale distribution of metal contamination in the fine-grained sediments of the Clark Fork River, Montana, U.S.A. *Applied Geochemistry*. v. 6, no. 1, 1991. p. 75-88.
- OP-35. R. A. Ayuso and M. L. Bevier\*. Regional differences in Pb isotopic compositions of feldspars in plutonic rocks of the northern Appalachian Mountains, U.S.A., and Canada; a geochemical method of terrane correlation. *Tectonics*. v. 10, no. 1, February 1991. p. 191-212.
- OP-36. William Back and J. D. Hem. Presentation of the O. E. Meinzer Award to John D. Hem. *Geological Society of America Bulletin*. v. 103, no. 4, April 1991. p. 586-588.

- OP-37. William Back and J. S. Herman\*. Significance of chemical boundaries to ground-water management of coastal aquifers. American Water Resources Association Technical Publication Series TPS, in *Proceedings of the International symposium on Tropical hydrology and Fourth Caribbean Islands water resources congress*. (J. H. Krishna, editor and others). 90-2, 1990. p. 31-38.
- OP-38. C. R. Bacon. OREGON. Geologic map of Mount Mazama, Crater Lake, Oregon. Transactions - Geothermal Resources Council, in *Transactions, 1990 International symposium on geothermal energy*. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 1377-1379.
- OP-39. C. R. Bacon, H. L. Foster and J. G. Smith. ALASKA. Rhyolitic calderas of the Yukon-Tanana Terrane, east central Alaska; volcanic remnants of a Mid-Cretaceous magmatic arc. *Journal of Geophysical Research, B, Solid Earth and Planets*. v. 95, no. 13, December 10, 1990. p. 21,451-21,461.
- OP-40. G. C. Bacuta, Jr.\*, R. W. Kay\*, A. K. Gibbs\* and B. R. Lipin. Platinum-group element abundance and distribution in chromite deposits of the Acoje Block, Zambales ophiolite complex, Philippines. *Journal of Geochemical Exploration, in Geochemistry of platinum-group elements*. (C. E. Dunn, editor and others). v. 37, no. 1, March 1990. p. 113-145.
- OP-41. R. A. Bailey and D. P. Hill. CALIFORNIA. Magmatic unrest at Long Valley Caldera, California, 1980-1990. *Geoscience Canada, in Special symposium commemorating the 10th anniversary of the eruption of Mount St. Helens, May 18, 1980*. (C. J. Hickson, prefacer and others). v. 17, no. 3, September 1990. p. 175-179.
- OP-42. E. S. Bair, R. A. Sheets and S. M. Eberts. Particle-tracking analysis of flow paths and traveltimes from hypothetical spill sites within the capture area of a wellfield. *Ground Water*. v. 28, no. 6, December 1990. p. 884-892.
- OP-43. R. A. Baker (editor). Organic substances and sediments in water; Volume 1, Humics and soils. Chelsea, MI: Lewis Publ. 1991. 367 p.
- OP-44. J. G. Baldauf\* and J. A. Barron. Evolution of biosiliceous sedimentation patterns, Eocene through Quaternary; paleoceanographic response to polar cooling. NATO Advanced Study Institutes Series. Series C: Mathematical and Physical Sciences, in *Proceedings of the 1988 NATO advanced research workshop on Geological history of the polar oceans; Arctic versus Antarctic*. (Ulrich Bleil, editor and others). 1990. p. 575-607.
- OP-45. W. S. Baldridge\*, F. V. Perry\*, D. T. Vaniman\*, L. D. Nealey, B. D. Leavy\*, A. W. Laughlin\*, P. R. Kyle\*, Yosef Bartov\*, Gideon Steinitz\* and E. S. Gladney\*. NEW MEXICO, ARIZONA. Middle to late Cenozoic magmatism of the southeastern Colorado Plateau and central Rio Grande Rift (New Mexico and Arizona, U.S.A.); a model for continental rifting. *Tectonophysics, in World rift systems*. (A. F. Gangi, editor). v. 197, no. 2-4, 1991. p. 327-354.
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## ABSTRACTS

Abstracts are condensed but informative summaries of presentations made at meetings of scientific and professional organizations. Typically they summa-rize 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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## INDEX

This is an index of Geological Survey publications issued in 1991 and articles by Geological Survey personnel in non-Geological Survey publications that came to our attention in 1991 divided into a general index, including subjects and areas, and an author index.

### ABBREVIATIONS USED

A-	Antarctic Geologic Map	MSB	Miscellaneous and Special Books
B	Bulletin	OC-	Oil and Gas Investigations Chart
C	Circular	OM-	Oil and Gas Investigations Map
C-	Coal Investigations Map	OF	Open-File Report
CAT	Catalog	OP	Outside Publication
CF	Coal Map	P	Professional Paper
CP-	Circum-Pacific Map Series	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		

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