U.S. Department of the Interior
U.S. Geological Survey

New Publications of the U.S. Geological Survey

Lists 1101–1103—Publications issued April–June 2000

AVAILABILITY OF U.S. GEOLOGICAL SURVEY CATALOGS

These permanent catalogs, as well as some others, are available under the conditions indicated below from USGS Information Services, Box 25286, Federal Center, Denver, CO 80225. The catalogs are also available over the counter at any of the U.S. Geological Survey offices that sell books.

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Prices of available publications, except informal reports released to the open files and through the National Technical Information Service (NTIS), are given in current issues of the quarterly catalog "New Publications of the U.S. Geological Survey." Limited quantities of Circulars and publications of general interest are free.

"New Publications of the U.S. Geological Survey" is also available electronically through the USGS at http://pubs.usgs.gov/publications/.

The U.S. Geological Survey Publications Data Base includes comprehensive bibliographic information on USGS reports and maps published from 1880 to the present and references for non-USGS publications with USGS authors published from 1983 to date—a total of approximately 110,000 publications. Free public access to the data base is provided as a public service by the U.S. Geological Survey at http://usgs-georef.cos.com and through the USGS home page at http://www.usgs.gov.

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ANNOUNCING NEW DISTRIBUTION SERVICES

Disc-On-Demand Distribution

The U.S. Geological Survey announces a new distribution service called "disc-on-demand." Disc-on-demand distribution uses CD-R (compact disc-recordable) technology to make limited-audience publications available and affordable.

Disc-on-demand products can be ordered by the following methods:

(1) On the World Wide Web at http://edcwww.cr.usgs.gov/webglis
(2) By mail at USGS Information Services, Box 25286, Federal Center, Denver, CO 80225
(3) By telephone at 1-888-ASK-USGS
(4) By fax at 303-202-4693

Products that will be available through this new distribution technology will be identified as "disc-on-demand" in the catalog "New Publications of the U.S. Geological Survey"; prices will vary.

Map-On-Demand Distribution

Currently, the USGS uses conventional lithographic printing techniques to produce paper copies of most of its mapping products. This practice is not economical for those products where the demand is low. With the advent of new print-on-demand technologies, however, the USGS can provide an alternative to traditional large-volume printing. Maps that might otherwise not be available can be printed on an as-needed basis (that is, map-on-demand or MOD).

The paper and inks used in the MOD process are not as durable as those used for traditional USGS lithographic products. Although the inks are ultraviolet resistant, they are not water stable. These products must be protected from high humidity and wet conditions and from prolonged and consistent exposure to the sun and other radiation sources. The MOD products can be written on with either ink or pencil with no smudging, and they can be heat-laminated with no "bleeding" of colors.

To learn more about MOD, view the products available, or link to a site where you can download the digital data, please visit the MOD web site at:

http://rockyweb.cr.usgs.gov/mod/index.html

MOD products can be ordered by writing to the USGS Information Services, Box 25286, Denver, CO 80225 or by calling 1-888-ASK-USGS. Each MOD sheet costs $20.00 (plus a $5.00 handling charge per order). There are no discounts on MOD products, and because an MOD product is printed at the request of the customer, it cannot be returned or exchanged.

Products that will be available through this new distribution technology will be identified as "map-on-demand" in the catalog "New Publications of the U.S. Geological Survey."

CONTENTS

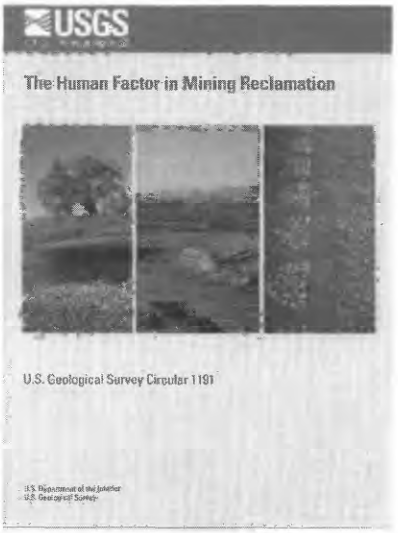
* No new publications in this series for this quarter.

NEW PUBLICATIONS OF SPECIAL INTEREST

Circular 1126

Dams and rivers; a primer on the downstream effects of dams, by Michael Collier, R. H. Webb and J. C. Schmidt. 2000. 94 p. Second, revised printing.

Dams have major downstream effects in settings throughout the United States. These effects depend on the operating regime of the dam, the extent of flood control, the amount of sediment deprivation downstream, and the nature of riverine and aquatic ecosystems in the river. This publication provides an overview of the effects of six dams on the downstream environment, written in a style for lay audiences.



Circular 1191

The human factor in mining reclamation, by B. F. Arbogast, D. H. Knepper, Jr. and W. H. Langer. 2000. 28 p.

Rapid urbanization of the landscape results in less space available for wildlife habitat, agriculture, and recreation. Mineral resources (especially nonmetallic construction materials) become unrecoverable due to inaccessibility caused by development. This report both describes mine sites with serious problems and draws attention to thoughtful reclamation projects for better future management. It presents information from selected sites in terms of their history, landform, design approach, and visual discernment. Examples from Colorado are included to introduce the broader issue of regions soundly developing mining sites, permitting the best utilization of natural resources, and respecting the landscape.

Circular 1182

Land subsidence in the United States, edited by D. L. Galloway, D. R. Jones and S. E. Ingebritsen. 1999. 177 p.

This report explores the role of science in defining and understanding subsidence problems, and shows that the optimal use of our land and water resources may depend on improved scientific understanding to minimize subsidence. More than 80 percent of the identified land subsidence in the Nation is a consequence of human impact on subsurface water, and is an often overlooked environmental consequence of our land- and water-use practices. Nine illustrative case studies demonstrate the role of subsurface water in human-induced land subsidence. These studies represent three distinct processes that account for most of the water-related subsidence—compaction of aquifer systems, drainage and subsequent oxidation of organic soils, and dissolution and collapse of susceptible rocks.

Digital Data Series 0060

U.S. Geological Survey World Petroleum Assessment 2000; description and results, by U. S. Geological Survey, World Energy Assessment Team. 2000. Four CD-ROMs. Also available on the web at
http://greenwood.cr.usgs.gov/energy/WorldEnergy/DDS-60/

The set of 4 CD-ROM discs documents the U.S. Geological Survey World Petroleum Assessment 2000 and includes estimates of the quantities of conventional oil, gas, and natural gas liquids outside the United States that have the potential to be added to reserves in the next 30 years (1995 to 2025). Two components, undiscovered resources and reserve growth, are estimated. One hundred and forty nine total petroleum systems and two hundred and forty six assessment units (subdivisions of total petroleum systems) were assessed. The supporting maps, data, text and tables produced by the World Energy Assessment Team during this five-year project (1995-2000) are included in the set.

DIGITAL DATA SERIES

The Digital Data Series encompasses a broad range of digital data, including computer programs, interpreted results of investigations, comprehensive reviewed data bases, spatial data sets, digital images and animation, and multimedia presentations that are not intended for printed release. Scientific reports in this series cover a wide variety of subjects on all facets of U.S. Geological Survey investigations and research that are of lasting scientific interest and value. Releases in the Digital Data Series offer access to scientific information that is available in digital form; the information is primarily for viewing, processing, and (or) analyzing by computer.

DDS-0052. U. S. Geological Survey mineral databases; MRDS and MAS/MILS, by E. J. McFaul, G. T. Mason, Jr., W. B. Ferguson and B. R. Lipin. 2000. Two CD-ROMs. $42.

These CD-ROMs were produced in accordance with the ISO 9660 standard and are designed to be run in a Windows 95, 98, or NT environment.

These two CD-ROMs contain the latest version of the Mineral Resources Data System (MRDS) database and the Minerals Availability System/Minerals Industry Location System (MAS/MILS) database for coverage of North America and the world outside North America. The records in the MRDS database each contain almost 200 data fields describing metallic and nonmetallic mineral resources, deposits, and commodities. The records in the MAS/MILS database each contain almost 100 data fields describing mines and mineral processing plans.

DDS-0057. MONTANA. Stratigraphic framework of Lower and Upper Cretaceous rocks in central and eastern Montana, by S. M. Condon. 2000. One CD-ROM. $32.

This CD-ROM was produced in accordance with the ISO 9660 standard and can be accessed by any computer system that has the appropriate software to read ISO 9660 discs. The minimum system requirements to read the data on this disc are as follows: (1) Windows 95 or higher, (2) IBM or compatible personal computer, (3) 16 MB RAM, (4) Microsoft MSCDEX version 2.1 or later, (5) CD-ROM drive with ISO 9660 software drive, (6) Hard disk drive, (7) VGA color graphics system, and (8) Adobe Acrobat Reader software, version 3.0 or later.

This study shows the lithology, thickness, distribution, and correlation of Lower and Upper Cretaceous rocks in central and eastern Montana. The described stratigraphic units range from the Aptian Kootenai Formation (oldest) to the Maastrichtian Hell Creek Formation (youngest). An included text report describes the units, and most formations or members are also represented by isopach maps. Structure contour maps of three horizons are also included. Correlations across the study area are shown on a series of cross sections. All text and illustrations are included as Adobe PDF files.

DDS-0059. ALASKA. Organic geochemistry data of Alaska, compiled by C. N. Threlkeld, R. C. Obuch and G. L. Gunther. 2000. One CD-ROM. $32.

The data and text on this CD-ROM require a computer system with a CD-ROM reader capable of reading the ISO 9660 standard. Any standard text viewer or editor (such as vi, notepad, or WordPad) and any web browser capable of handling ASCII tables can be utilized to open the documents on this CD-ROM.

In order to archive the results of various petroleum geochemical analyses of the Alaska resource assessment, the USGS developed an Alaskan Organic Geochemical Data Base (AOGDB) in 1978 to house the data generated from USGS and subcontracted laboratories. Prior to the AOGDB, the accumulated data resided in a flat data file entitled "PGS" that was maintained by Petroleum Information Corporation with technical input from the USGS. The information herein is a breakout of the master flat file format into a relational data base table format (akdata).

DDS-0060. U.S. Geological Survey World Petroleum Assessment 2000; description and results, by U. S. Geological Survey, World Energy Assessment Team. 2000. Four CD-ROMs. Also available on the web at
http://greenwood.cr.usgs.gov/energy/WorldEnergy/DDS-60/

Supported systems and minimum requirements to use the data with the software provided on this disc are as follows: Macintosh, Apple Power Macintosh or compatible computer. Mac OS software version 7.1.2 or later, 4.5 MB of available RAM (6.5 MB recommended), and 8 MB of available hard-disk space. Windows; i486™ or Pentium processor-based personal computer, Microsoft Windows 95, Windows 98, or Windows NT 4.0 with Service Pack 3 or later, 10 MB of available RAM on Windows 95 and Windows 98 (16 MB recommended), 16 MB of available RAM on Windows NT (24 MB recommended) and 10 MB of available hard-disk space. Versions of Adobe Acrobat Reader software are available for IBM AIX, DEC OSF/1, HP-UX, SGI IRIX, LINUX, Sun Solaris X86 and Sun Solaris SPARCstation.

The set of 4 CD-ROM discs documents the U.S. Geological Survey World Petroleum Assessment 2000 and includes estimates of the quantities of conventional oil, gas, and natural gas liquids outside the United States that have the potential to be added to reserves in the next 30 years (1995 to 2025). Two components, undiscovered resources and reserve growth, are estimated. One hundred and forty nine total petroleum systems and two hundred and forty six assessment units (subdivisions of total petroleum systems) were assessed. The supporting maps, data, text and tables produced by the World Energy Assessment Team during this five-year project (1995-2000) are included in the set.

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 1177-B. NORTH CAROLINA. The Outer Banks of North Carolina, by Robert Dolan and Harry Lins. Prepared in cooperation with the National Park Service. 2000. 49 p. (Reprint.) $11.

Understanding the natural dynamics of barrier islands in the key to recognizing and estimation both the short-term and the long-term hazards of living on them. This report summarizes how the barrier islands were created, how they have changed, and why they will continue to change in spite of efforts to halt the natural processes. The Outer Banks of North Carolina are used as an example in this report, but the principles outlined are applicable to other barrier islands on the Atlantic and Gulf coasts.

P 1600. IDAHO. Stratigraphy and depositional environments of middle Proterozoic rocks, northern part of the Lemhi Range, Lemhi County, Idaho, by R. G. Tysdal. 2000. 40 p. $3.75.

Geologic mapping shows middle Proterozoic strata form two packages of strata north and south of the Tertiary Lem Peak normal fault. Strata north of the fault, the main focus of this report, contain thicknesses and lithofacies of the Big Creek and Apple Creek formations of the Lemhi Group that contrast with those south of the fault. Strata south of the fault, examined mainly in reconnaissance, may have been thrust eastward prior to being downdropped.

P 1608. NEVADA. Geophysical framework of the southwestern Nevada volcanic field and hydrogeologic implications, by V. J. Grauch, D. A. Sawyer, C. J. Fridrich and M. R. Hudson. 1999. 39 p. $4.75. Also available on the web at http://greenwood.cr.usgs.gov/pub/ppapers/p1608

Gravity and magnetic data, when integrated with other geophysical, geological, and rock-property data, provide a regional framework to view the subsurface geology in the southwestern Nevada volcanic field. The region has been loosely divided into six domains based on structural style and overall geophysical character. For each domain, the subsurface tectonic and magmatic features that have been inferred or interpreted from previous geophysical work has been reviewed. Where possible, abrupt changes in geophysical fields as evidence for potential structural lithologic control on ground-water flow has been noted. Inferred lithology is used to suggest associated hydrogeologic units in the subsurface. The resulting framework provides a basis for investigators to develop hypotheses from regional ground-water pathways where no drill-hole information exists.

P 1621. First-principles calibration of ^{38}Ar tracers; implications for the ages of $^{40}Ar/^{39}Ar$ fluence monitors, by M. A. Lanphere and G. B. Dalrymple. 2000. 10 p. $2.25.

We describe the analytical procedure for first-principles calibrations of ^{38}Ar tracers in the U.S. Geological Survey (USGS) Laboratory in Menlo Park, California. The ages of fluence monitors determined in the USGS laboratory and those reported in the literature differ by nearly 2 percent. However, the radiogenic-^{40}Ar content of the primary mineral standard on which these ages are based has never been verified by first-principles measurement in other laboratories.

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 2174-A. CALIFORNIA. Organic metamorphism in the California petroleum basins; Chapter A, Rock-Eval and vitrinite reflectance, by L. C. Price, Mark Pawlewicz and Ted Daws. 1999. 34 p. Available only on the web at http://greenwood.cr.usgs.gov/pub/bulletins/b2174-a/

The results of Rock-Eval and vitrinite reflectance analyses of a large sample base from more than 70 wells located in three oil-rich California petroleum basins are reported. The cores from these wells have a wide range of present-day burial temperatures (40° to 220°C). The rocks in these basins were deposited under highly variable conditions, sometimes resulting in substantially different organic matter (OM) types in rocks tens of meters vertically apart from each other in one well. The kinetic response of these different OM types to equivalent well-known burial histories is a pivotal point of this study.

B 2174-B. CALIFORNIA. Organic metamorphism in the California petroleum basins; Chapter B, Insights from extractable bitumen and saturated hydrocarbons, by L. C. Price. 2000. 33 p. Available only on the web at http://greenwood.cr.usgs.gov/pub/bulletins/b2174-b/

Seventy-five shales from the Los Angeles, Ventura, and southern San Joaquin Valley basins were extracted and analysed for this report. Samples were chosen on the basis of Rock-Eval analyses of a much larger sample base. The samples ranged in burial temperatures from 40° to 220°C, and contained hydrogen-poor to hydrogen-rich organic matter (OM), based on OM visual typing and a correlation of elemental kerogen hydrogen to carbon ratios with Rock-Eval hydrogen indices.

B 2176. The Jajur coal deposit, northwestern Armenia, by Brenda Pierce, Gourgen Malkhasian and Artur Martirosyan. 2000. 71 p. Available only on the web at http://pubs.usgs.gov/bulletin/b2176/

For the first time, all data relating to the Jajur coal deposit, stratigraphic, coal quality, and resource information, are contained in one comprehensive, interpretive report. This report is the result of a multiyear study of coal exploration and resource assessment of Armenia. Reported here is a synopsis of the previously unaccessible data contained either in the state archives of the former U.S.S.R. Ministry of Geology and current Republic of Armenia's Ministry of Environment or the former Soviet and current Republic of Armenia Academy of Sciences.

WATER-SUPPLY PAPER

Water-Supply Papers are comprehensive reports that present significant interpretive results of hydrologic investigations of wide interest to professional geologists, hydrologists, and engineers. The series covers investigations in all phases of hydrology, including hydrogeology, availability of water, quality of water, and use of water.

W 2427. Simulation and analysis of soil-water conditions in the Great Plains and adjacent areas, central United States, 1951-80, by J. T. Dugan and R. B. Zelt. 2000. 81 p. $10.50.

Ground-water recharge and consumptive-irrigation requirements in the Great Plains and adjacent areas largely depend upon an environment extrinsic to the ground-water system. This extrinsic environment, which includes climate, soils, and vegetation, determines the water demands of evapotranspiration, the availability of soil water to meet these demands, and the quantity of soil water remaining for potential ground-water recharge after these demands are met. The geographic extent of the Great Plains contrib-

utes to large regional differences among all elements composing the extrinsic environment, particularly the climatic factors. A soil-water simulation program, SWASP, which synthesizes selected climatic, soil, and vegetation factors, was used to simulate the regional soil-water conditions during 1951-80. The output from SWASP consists of several soil-water characteristics, including surface runoff, infiltration, consumptive water requirements, actual evapotranspiration, potential recharge or deep percolation under various conditions, consumptive irrigation requirements, and net fluxes from the ground-water system under irrigated conditions. Simulation results indicate that regional patterns of potential recharge, consumptive irrigation requirements, and net fluxes from the ground-water system under irrigated conditions are largely determined by evapotranspiration and precipitation. The local effects of soils and vegetation on potential recharge cause potential recharge to vary by more than 50 percent in some areas having similar climatic conditions.

CIRCULARS

Circulars present technical or nontechnical information of wide popular interest in a format designed for distribution at no cost to the public. They are published to disseminate administrative information or important scientific information of an ephemeral nature.

C 1126. Dams and rivers; a primer on the downstream effects of dams, by Michael Collier, R. H. Webb and J. C. Schmidt. 2000. 94 p. Second, revised printing.

Dams have major downstream effects in settings throughout the United States. These effects depend on the operating regime of the dam, the extent of flood control, the amount of sediment deprivation downstream, and the nature of riverine and aquatic ecosystems in the river. This publication provides an overview of the effects of six dams on the downstream environment, written in a style for lay audiences.

C 1151. GEORGIA, FLORIDA. Water quality in the Georgia-Florida coastal plain, Georgia and Florida, 1992-96, by M. P. Berndt, H. H. Hatzell, C. A. Crandall, Michael Turtora, J. R. Pittman and E. T. Oaksford. National Water-Quality Assessment Program. 1998. 34 p. Available only on the web at http://water.usgs.gov/pubs/circ1151/

This report is intended to summarize major findings that emerged between 1992 and 1995 from the water-quality assessment of the Georgia-Florida Coastal Plain Study Unit and to relate these findings to water-quality issues of regional and national concern. The information is primarily intended for those who are involved in water-resource management. Yet, the information contained here may also interest those who simply wish to know more about the quality of water in the rivers and aquifers in the area where they live.

C 1156. WISCONSIN, MICHIGAN. Water quality in the Western Lake Michigan Drainages, Wisconsin and Michigan, 1992-95, by C. A. Peters, D. M. Robertson, D. A. Saad, D. J. Sullivan, B. C. Scudder, F. A. Fitzpatrick, K. D. Richards, J. S. Stewart, S. A. Fitzgerald and B. N. Lenz. 1998. Available only on the web at http://water.usgs.gov/pubs/circ1156/

This report is intended to summarize major findings that emerged between 1992 and 1995 from the water-quality assessment of the Western Lake Michigan Drainages Study Unit and torelate these findings to water-quality issues of regional and national concern. The information in primarily intended for those who are involved in water-resource management. Yet, the information contained here may also interest those who simply wish to know more about the quality of water in the rivers and aquifers in the area where they live.

C 1157. NORTH CAROLINA, VIRGINIA. Water quality in the Albemarle-Pamlico drainage basin, North Carolina and Virginia, 1992-95, by T. B. Spruill, D. A. Harned, P. M. Ruhl, J. L. Eimers, Gerard McMahon, K. E. Smith, D. R. Galeone and M. D. Woodside. 1998. 36 p. Available only on the web at http://water.usgs.gov/pubs/circ1157/

This report is intended to summarize major findings that emerged between 1992 and 1995 from the water-quality assessment of the Albemarle-Pamlico Drainage Study Unit and to relate these findings to water-quality issues of regional and national concern. The information is primarily intended for those who are involved in water-resource management. Yet, the information contained here may also interest those who simply wish to know more about the quality of water in the rivers and aquifers in the area where they live.

C 1158. Water quality in the Ozark Plateaus, Arkansas, Kansas, Missouri, and Oklahoma, 1992-95, by J. C. Petersen, J. C. Adamski, R. W. Bell, J. V. Davis, S. R. Femmer, D. A. Freiwald and R. L. Joseph. 1998. 33 p. Available only on the web at http://water.usgs.gov/pubs/circ1158/

This report is intended to summarize major findings that emerged between 1992 and 1995 from the water-quality assessment of the Ozark Plateaus Study Unit and to relate these findings to water-quality issues of regional and national concern. The information is primarily intended for those who are involved in water-resource management. Yet, the information contained here may also interest those who simply wish to know more about the quality of water in the rivers and aquifers in the area where they live.

C 1159. CALIFORNIA. Water quality in the San Joaquin-Tulare basins, California, 1992-95, by N. M. Dubrovsky, C. R. Kratzer, L. R. Brown, J. M. Gronberg and K. R. Burow. 1998. 38 p. Available only on the web at http://water.usgs.gov/pubs/circ1159/

This report is intended to summarize major findings that emerged between 1992 and 1995 from the water-quality assessment of the San Joaquin-Tulare Basins Study Unit and to relate these findings to water-quality issues of regional and national concern. The information is primarily intended for those who are involved in water-resource management. Yet, the information contained here may also interest those who simply wish to know more about the quality of water in the rivers and aquifers in the area where they live.

C 1160. IDAHO, WYOMING. Water quality in the upper Snake River basin, Idaho and Wyoming, 1992-95, by G. M. Clark, T. R. Maret, M. G. Rupert, M. A. Maupin, W. H. Low and D. S. Ott. 1998. 35 p. Available only on the web at http://water.usgs.gov/pubs/circ1160/

This report is intended to summarize major findings that emerged between 1992 and 1995 from the water-quality assessment of the Upper Snake River Basin Study Unit and to relate these findings to water-quality issues of regional and national concern.

This information is primarily intended for those who are involved in water-resource management. Yet, the information contained here may also interest those who simply wish to know more about the quality of water in the rivers and aquifers in the area where they live.

C 1161. OREGON. Water quality in the Willamette Basin, Oregon, 1991-95, by D. A. Wentz, B. A. Bonn, K. D. Carpenter, S. R. Hinkle, M. L. Janet, F. A. Rinella, M. A. Uhrich, I. R. Waite, Antonius Laenen and K. E. Bencala. 1998. 34 p. Available only on the web at
http://water.usgs.gov/pubs/circ1161/

This report is intended to summarize major findings that emerged between 1991 and 1995 from the water-quality assessment of the Willamette Basin Study Unit and to relate these findings to water-quality issues of regional and national concern. The information is primarily intended for those who are involved in water-resource management. Yet, the information contained here may also interest those who simply wish to know more about the quality of water in the rivers and aquifers in the area where they live.

C 1168. PENNSYLVANIA, MARYLAND. Water quality in the lower Susquehanna River basin, Pennsylvania and Maryland, 1992-95, by B. D. Lindsey, K. J. Breen, M. D. Bilger and R. A. Brightbill. 1998. 38 p. Available only on the web at
http://water.usgs.gov/pubs/circ1168/

This report is intended to summarize major findings that emerged between 1992 and 1995 from the water-quality assessment of the Lower Susquehanna River Basin Study Unit and to relate these findings to water-quality issues of regional and national concern. The information is primarily intended for those who are involved in water-resource management. Yet, the information contained here may also interest those who simply wish to know more about the quality of water in the rivers and aquifers in the area where they live.

C 1169. MINNESOTA, NORTH DAKTOA, SOUTH DAKOTA. Water quality in the Red River of the North, Minnesota, North Dakota, South Dakota, 1992-95, by J. D. Stoner, D. L. Lorenz, R. M. Goldstein, M. E. Brigham and T. K. Cowdery. 1998. 33 p. Available only on the web at
http://water.usgs.gov/pubs/circ1169/

This report is intended to summarize major findings that emerged between 1992 and 1995 from the water-quality assessment of the River River of the North Basin Study Unit and to relate these findings to water-quality issues of regional and national concern. The information in primarily intended for those who are involved in water-resource management. Yet the information contained here may also interest those who simply wish to know more about the quality of water in the rivers and aquifers in the area where they live.

C 1171. TEXAS. Water quality in the Trinity River basin, Texas, 1992-95, by L. F. Land, J. B. Moring, P. C. Van Metre, D. C. Reutter, B. J. Mahler, A. A. Shipp and R. L. Ulery. 1999. Available only on the web at
http://tx.usgs.gov/reports/circ/circ1171

Water quality in the Trinity River basin was studied during 1992-95 as part of the USGS National Water-Quality Assessment (NAWQA) Program. Studies included chemical sampling of streams, streambed sediments, biota, and ground water; measuring distributions of biological communities in streams; and measuring physical characteristics of streams that affect biological habitat. The sampling design, in general, relates water-quality conditions to causative human and natural environmental factors. The occurrence of pesticides, for example, is related to land use. Trends are mixed, with a substantial improvement in the diversity of fish species downstream from Dallas and large decreases in regulated contaminants such as DDT; but increases in unregulated contaminants such as polychlorinated biphenyls.

C 1179. Records and history of the United States Geological Survey, edited by C. M. Nelson. 2000. One CD-ROM.

Minimum system requirements: any computer capable of running Adobe Acrobat Reader 3.0 or higher or other comparable software that can translate PDF titles.

This publication contains two presentations in Portable Document Format (PDF). The first is Renée M. Jaussaud's inventory of the documents accessioned by the end of 1997 into Record Group 57 (Geological Survey) at the National Archives and Records Administration's (NARA) Archives II facility in College Park, Md., but not the materials in NARA's regional archives. The second is Mary C. Rabbitt's "The United States Geological Survey 1879-1989," which appeared in 1989 as USGS Circular 1050. Additionally, USGS Circular 1050 is also presented in Hyper Text Markup Language (HTML) format.

Inventory of the records of the United States Geological Survey Record Group 57; in the National Archives, compiled by R. M. Jaussaud. 673 p.

C 1182. Land subsidence in the United States, edited by D. L. Galloway, D. R. Jones and S. E. Ingebritsen. 1999. 177 p.

This report explores the role of science in defining and understanding subsidence problems, and shows that the optimal use of our land and water resources may depend on improved scientific understanding to minimize subsidence. More than 80 percent of the identified land subsidence in the Nation is a consequence of human impact on subsurface water, and is an often overlooked environmental consequence of our land- and water-use practices. Nine illustrative case studies demonstrate the role of subsurface water in human-induced land subsidence. These studies represent three distinct processes that account for most of the water-related subsidence—compaction of aquifer systems, drainage and subsequent oxidation of organic soils, and dissolution and collapse of susceptible rocks. The compaction of alluvial aquifer systems that can accompany excessive ground-water pumping and resulting ground-water level declines is, by far, the single largest cause of subsidence.

C 1191. The human factor in mining reclamation, by B. F. Arbogast, D. H. Knepper, Jr. and W. H. Langer. 2000. 28 p. Also available on the web at
http://greenwood.cr.usgs.gov/pub/circulars/c1191/

Rapid urbanization of the landscape results in less space available for wildlife habitat, agriculture, and recreation. Mineral resources (especially nonmetallic construction materials) become unrecoverable due to inaccessibility caused by development. This report both describes mine sites with serious problems and draws attention to thoughtful reclamation projects for better future management. It presents information from selected sites in terms of

their history, landform, design approach, and visual discernment. Examples from Colorado are included to introduce the broader issue of regions soundly developing mining sites, permitting the best utilization of natural resources, and respecting the landscape.

GENERAL INTEREST PUBLICATIONS

The mountain that moved. Prepared in cooperation with the U.S. Department of Agriculture, Forest Service, Southern Region. 2000. Also available on the web at http://pubs.usgs.gov/gip/mountain

Prehistoric, giant landslides in Montgomery and Craig counties, Virginia, in the Blacksburg/Wythe Ranger districts of Jefferson National Forest, are the largest known landslides in eastern North America and are among the largest in the world. One of the landslides is more than 3 miles long! The ancient, giant landslides extend for more than 20 miles along the eastern slope of Sinking Creek Mountain. Enormous slabs of rock ranging from about 0.2 to more than 1.5 square miles in size broke loose and slid downslope under the influence of gravity. The movement of some slides may have been slow, but the movement of others was probably sudden and catastrophic.

USGS GeoData. 2000. 12 p.

The primary series of standard digital data types created by the National Mapping Program is known as USGS GeoData. These data types are: Digital Elevation Model, National Elevation Dataset, Digital Raster Graphic, Digital Orthophoto Quadrangle, Digital Line Graph, National Hydrography Dataset, National Land Cover Dataset, and Geographic Names Information System. This booklet shows samples of the data with brief descriptions and applications.

MISCELLANEOUS AND SPECIAL BOOKS

Geographic Names Information System (GNIS)

GNIS, developed by the Geographic Names Office, Mapping Applications Center, National Mapping Division, is the basis for the Digital Gazetteer of the United States (CD-ROM) and includes all names in the data base as of July 1999, as well as the necessary software for searching, analyzing, and exporting the data. The software must be installed onto an IBM-compatible hard disk before the data can be used. The CD-ROM, which can be purchased for $57 plus $5.00 shipping, contains the National Geographic Names Data Base (NGNDB), Antarctica Geographic Names Data Base (AGNDB), Topographic Map Names Data Base (TMNDB), and Reference Data Base (RDB). Each record in the NGNDB, AGNDB, and TMNDB can contain a variety of location and description fields. All can be displayed, and most can be searched. Not all fields, however, contain data. The RDB contains one field—bibliography. The CD-ROM is no longer accompanied by a users manual. The installation procedures, readme file, and trouble shooting guide are provided in WordPerfect, HTML, and PDF formats. All necessary information regarding startup procedures are listed in the "Getting_Started" directory on the CD.

The GNIS CD-ROM may be ordered from: Information Services, U.S. Geological Survey, DFC, Building 810, MS 306, Denver, CO 80225, or by telephoning 1-888-ASK-USGS. Prepayment is required. Please make check or money order payable to: U.S. Department of the Interior—USGS. VISA, MasterCard, American Express, and Discover Card are accepted. Prices are subject to change.

Information and Technical Specifications may be requested from: U.S. Geological Survey, Manager GNIS, 523 National Center, Reston, VA 20192. 703-648-4544.

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Many Information Periodicals products are available through the systems or formats listed below:

Mines FaxBack: Return fax service.
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CD-ROM: This disc is updated three times a year and sold by the U.S. Government Printing Office's Superintendent of Documents. For information on the latest product, please contact Rodger Wedgeworth 703-648-4756.

Internet/World Wide Web: Text and graphics. Access via PC-based browsing software such as Netscape or Mosaic. The URL is http://minerals.usgs.gov/minerals/

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METAL INDUSTRY INDICATORS

The Metal Industry Indicators (MII) is a monthly newsletter (free) that analyzes and forecasts the economic health of five metal industries with composite leading and coincident indexes: primary metals, steel, copper, primary and secondary aluminum, and aluminum mill products. The MII was developed by the former U.S. Bureau of Mines in cooperation with the Center for International Business Cycle Research at Columbia University. In late 1996, the USGS assumed sole responsibility for producing the indexes and publishing the MII. Each month, these indexes are analyzed along with any economywide occurrences that would affect the metal industries. Order single copy from Publication Distribution, Pittsburgh Research Center, P.O. Box 18070, Pittsburgh, PA 15236 (send self-addressed label). Also available by Mines FaxBack (703-648-4999) and on the Internet (http://minerals.usgs.gov/minerals/pubs/). *Mailing list additions or changes*: USGS, Publication Services Section, 984 National Center, Reston, VA 20192.

MINERAL INDUSTRY SURVEYS

The Mineral Industry Surveys (MIS's) are periodic statistical and economic reports (free) designed to provide timely statistical data on production, distribution, stocks, and consumption of significant mineral commodities. The surveys are issued monthly, quarterly, annually, or at other regular intervals, depending on the need for current data. The MIS's are published by commodities as well as by States. Order single copy from Publication Distribution, Pittsburgh Research Center, P.O. Box 18070, Pittsburgh, PA 15236 (send self-addressed label). Also available by Mines FaxBack (703-648-4999) and on the Internet (http://minerals.usgs.gov/minerals/pubs/). *Mailing list additions or changes*: USGS, Publication Services Section, 984 National Center, Reston, VA 20192. A series of international MIS's is also available, by Mines FaxBack only.

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Published on an annual basis, the Mineral Commodity Summaries is the earliest Government publication to furnish estimates covering nonfuel mineral industry data. Data sheets contain information on the domestic industry structure, Government programs, tariffs, and 5-year salient statistics for over 90 individual minerals and materials. The 1999 edition is available from the Government Printing Office, stock number 024-004-02461-5, $17.00 domestic; $21.25 foreign. Data sheets are also available by Mines FaxBack (703-648-4999) and on the Internet (http://minerals.usgs.gov/minerals/pubs/).

MINERALS YEARBOOK

The Minerals Yearbook discusses the performance of the worldwide minerals and materials industry during a calendar year, and it provides background information to assist in interpreting that performance. Content of the individual Minerals Yearbook volumes follows:

Volume I, Metals and Minerals, contains chapters about virtually all metallic and industrial mineral commodities important to the U.S. economy. Chapters on survey methods, summary statistics for domestic nonfuel minerals, and trends in mining and quarrying in the metals and industrial minerals industries in the United States are also included.

Volume II, Area Reports: Domestic, contains a chapter on the minerals industry of each of the 50 States and Puerto Rico and the Administered Islands. This volume also has chapters on survey methods and summary statistics for domestic nonfuel minerals.

Volume III, Area Reports: International, is published as four separate reports. These reports collectively contain the latest available mineral data on more than 190 foreign countries and discuss the importance of minerals to the economies of these nations and the United States. Each report begins with an overview of the region's mineral industries during the year. It continues with individual country chapters that examine the mining, refining, processing, and utilization of minerals in each country of the region and how they relate to U.S. industry. Most chapters include production and industry structure tables, information about Government policies and programs affecting the country's minerals industry, and an outlook section.

For information on the latest products, please contact Linda Borden 703-648-4753. Information is also available on the Internet (http://minerals.usgs.gov/minerals/pubs/).

FACT SHEETS

Fact Sheets are used to disseminate timely information on scientific and technical programs of the U.S. Geological Survey and are available, at no cost, from USGS Information Services, Box 25286, Denver, CO 80225.

FS 0143-95. CRADA factsheet; digital geographic data collection and revision; Etak, Incorporated. 1995. Available only on the web at
http://www-nmd.usgs.gov/www/crada/etak.html

FS 0144-95. CRADA factsheet; automated feature extraction and classification from image sources; Unisys Corporation. 1995. Available only on the web at
http://www-nmd.usgs.gov/www/crada/unisys.html

FS 0179-95. NEVADA. Waste burial in arid environments; application of information from a field laboratory in the Mojave Desert, southern Nevada, by B. J. Andraski, D. E. Prudic and W. D. Nichols. 1995. Available only on the web at
http://water.usgs.gov/wid/FS_179-95/index.html

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WRI 99-4018-C. U. S. Geological Survey Toxic Substances Hydrology Program; proceedings of the technical meeting, edited by D. W. Morganwalp and H. T. Buxton. 1999. 845 p. (Volume 3 of 3; Subsurface contamination from point sources.) (NC, Da, M, Wb.) $4.

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Fate of MTBE relative to benzene in a gasoline-contaminated aquifer (1993-98), by J. E. Landmeyer, P. M. Bradley and F. H. Chapelle. p. 59-74.

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OF 99-0467. Inventory of selected freshwater-ecology studies from the New England coastal basins (Maine, New Hampshire, Massachusetts, Rhode Island), 1937-97, by Steven Tessler, J. F. Coles and K. M. Beaulieu. National Water-Quality Assessment Program. 30 p. (NC, Da, M, Wb.) Microfiche $5; paper copy $29.50.

OF 99-0470-G. Map showing geology, oil and gas fields, and geologic provinces of Iran, by R. M. Pollastro, F. M. Persits and D. W. Steinshouer. One CD-ROM. (NC, M, Da.) $32.

Minimum requirements to use the data on this disc depend on files that are to be used (see readme file for specifics). (1) Intel - x86 based personal computer (486, Pentium or Pentium II recommended). Microsoft Windows 95, Microsoft NT 3.51 or 4.0, 32 MB RAM minimum, 64 MB recommended, 30 MB hard disk space, (2) Macintosh computer with 678020 (Macintosh II series) or greater processor. MacOS 7.0 or later, 4MB application RAM, 30MB hard disk space, (3) Sun SPARCstation, Sun OS™ 4.1.3 or later, or Solaris 2.3, 2.4, 2.5 operating system. Openwindows™ (version 3.0 or later), MOTIF™ windows manager (1.2.3 or later), OpenLook version 3.0, or Common Desktop Environment (CDE) 1.0 or later, 12 MB of available hard disk space, 32 MB RAM, (4) HP workstation 9000 series 700 or 800, HP-UX™ 9.0.3 or later operating system, X Windows System™, x11R5 with HP-VUE or CDE 10.12 MB available hard disk space, 32 MB RAM, (5) Silicon Graphics workstation ALX 4.1 or later operating system, CDE 1.0 or Motif™ window manager, 12 MB available hard disk space, 32 MB RAM, (6) IBM RS/6000 workstation, AIX4.1 or later operating system, CDE 1.0 or Motif™ window manager, 12 MB available hard disk space, 32 MB RAM.

OF 99-0503. ALASKA. Alaska digital aeromagnetic database description, by G. G. Connard, R. W. Saltus, P. L. Hill, L. Carlson and B. Milicevic. Available only on the web at http://greenwood.cr.usgs.gov/pub/open-file-reports/ofr-99-0503/DBDESC.HTM

OF 99-0504. CALIFORNIA. Landslides in Alameda County, California; a digital database extracted from preliminary photointerpretation maps of surficial deposits by T.H. Nilsen in USGS Open-File Report 75-277, by Sebastian Roberts, M. A. Roberts, E. M. Brennan and R. J. Pike. Available only on the web at http://geopubs.wr.usgs.gov/open-file/of99-504/

OF 99-0518. VIRGINIA. Inventory of debris flows and floods in the Lovingston and Horseshoe Mountain, VA, 7.5' quadrangles from the August 19/20, 1969, storm in Nelson County, VA, by B. A. Morgan, G. Iovine, P. Chirico and G. F. Wieczorek. 9 p., 1 over-size sheet. (NC, Da, M; Virginia Div. of Mineral Resources, Natural Resources Bldg., Alderman and McCormick Rds., P.O. Box 3667, Charlottesville, VA 22903.) $14.50.

OF 99-0530-A. Geologic information and analytical results for samples of drill core from the Myszków porphyry copper-molybdenum deposit, southern Poland, by M. A. Chaffee, R. G. Eppinger, Krzysztof Lason and Jadwiga Slósarz. 118 p. (NC, M, Da.) Microfiche $5; paper copy $30.

OF 99-0530-B. Geologic information and analytical results for samples of drill core from the Myszków porphyry copper-molybdenum deposit, southern Poland, by M. A. Chaffee, R. G. Eppinger, Krzysztof Lason and Jadwiga Slósarz. Two 3 1/2 inch IBM-compatible computer diskettes. (NC, Da, M.) $20.

Disk 1 contains an ASCII README file and the report in MS Word 97 (DOC) and Corel WordPerfect version 7 (WPD) formats. Disk 2 contains analytical data in dBase IV (DBF) and Lotus 1-2-3 version 2 (WK1) formats.

OF 99-0531. NEVADA, CALIFORNIA. Elemental analyses of modern dust in southern Nevada and California, by M. C. Reheis, J. R. Budahn and P. J. Lamothe. (NC, M, Da; California Dep. of Conservation, Div. of Mines and Geol., Mail Stop 14-34, Library, 801 K St., Sacramento, CA 95814-3532; 185 Berry St., Suite 210, San Francisco, CA 94107-1728; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012; Nevada Bur. of Mines & Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.) Available only on the web at http://greenwood.cr.usgs.gov/pub/open-file-reports/ofr-99-0531/

OF 99-0533-A. NEVADA. Geologic evaluation of the Oasis Valley basin, Nye County, Nevada, by C. J. Fridrich, S. A. Minor and E. A. Mankinen. Prepared in cooperation with the U.S. Department of Energy. 55 p. (NC, M, Da; Nevada Bur. of Mines & Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.) Microfiche $5; paper copy $17.25.

OF 99-0534. pick_xwell; a program for interactive picking of crosswell seismic and radar data, by K. J. Ellefsen. (NC, Da, M.) Available only on the web at http://greenwood.cr.usgs.gov/pub/open-file-reports/ofr-99-0534/

Program "pick_xwell" is used to interactively pick travel times in crosswell seismic and radar data. In addition, the traces and the travel times can be plotted on the computer screen or printed to a file in postscript format. The program is written in the IDL file in programming language, and it is executed, in command-line mode, within the IDL program. The IDL program must be run from an X-window terminal that is connected to a computer with the Unix operating system. The data must be in the SU format. ("IDL" means interactive data language, and "SU" means seismic-unix.)

OF 99-0535. Middle Pliocene paleoenvironmental reconstruction; PRISM2, by H. J. Dowsett, J. A. Barron, R. Z. Poore, R. S. Thompson, T. M. Cronin, S. E. Ishman and D. A. Willard. (NC, Da, M.) Microfiche $5; paper copy $70.50. Also available on the web at http://pubs.usgs.gov/openfile/of99-535/

OF 99-0536. TENNESSEE, NORTH CAROLINA. Geologic maps of the Mount Guyot, Luftee Knob, and Cove Creek Gap 7.5-minute quadrangles, Great Smoky Mountains National Park, Tennessee and North Carolina, by Art Schultz. 9 p., 3 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC.) Microfiche $5.75; paper copy $11.50.

OF 99-0537. MONTANA. Analytical results for 35 mine-waste tailings cores and six bed-sediment samples, and an estimate of the volume of contaminated material at Buckeye Meadow on upper Basin Creek, northern Jefferson County, Montana, by D. L. Fey, S. E. Church and C. J. Finney. 59 p. (NC, M, Da, S; Montana Bur. of Mines & Geol., Montana Coll. of Mineral Sci. & Technol., Butte, MT 59701.) Microfiche $5; paper copy $15.25. Also available on the web at http://greenwood.cr.usgs.gov/pub/open-file-reports/ofr-99-0537/

OF 99-0540. NEVADA. Digital mining claim density map for federal lands in Nevada; 1996, by P. C. Hyndman and H. W. Campbell. 20 p. Available only on the web at http://geopubs.wr.usgs.gov/open-file/of99-540/

OF 99-0541. OREGON. Digital mining claim density map for federal lands in Oregon; 1996, by P. C. Hyndman and H. W. Campbell. 21 p. Available only on the web at http://geopubs.wr.usgs.gov/open-file/of99-541/

OF 99-0542. WYOMING. Digital mining claim density map for federal lands in Wyoming; 1996, by P. C. Hyndman and H. W. Campbell. 18 p. Available only on the web at http://geopubs.wr.usgs.gov/open-file/of99-542/

OF 99-0543. IDAHO. Digital mining claim density map for federal lands in Idaho; 1996, by P. C. Hyndman and H. W. Campbell. 21 p. Available only on the web at http://geopubs.wr.usgs.gov/open-file/of99-543/

OF 99-0545. Effect of baseline corrections on response spectra for two recordings of the 1999 Chi-Chi, Taiwan, earthquake, by D. M. Boore. 37 p. (NC, Da, M.) Microfiche $5; paper copy $9.50. Also available on the web at http://geopubs.wr.usgs.gov/open-file/of99-545/

OF 99-0546. WISCONSIN, MICHIGAN. Digital bedrock geologic map of the Ashland and northern part of the Ironwood 30'x 60' quadrangles, Wisconsin and Michigan, by W. F. Cannon, L. G. Woodruff, S. W. Nicholson, C. A. Hedgman and R. Barber-Delach. One CD-ROM. (NC, Da, M.) $32. Also available on the web at http://pubs.usgs.gov/openfile/of99-546/

This CD-ROM was produced in accordance with the ISO 9660 Standard. Data is intended for use on either UNIX platforms or Windows 95, 98, or NT.

OF 99-0547. MICHIGAN, WISCONSIN. Preliminary digital geologic map of the Penokean (early Proterozoic) continental margin in northern Michigan and Wisconsin, by W. F. Cannon and D. Ottke. One CD-ROM. (NC, Da, M.) $32. Also available on the web at http://pubs.usgs.gov/openfile/of99-547/

This CD-ROM was produced in accordance with the ISO 9660 standard. Data is intended for use on either UNIX platforms or Windows 95, 98, or NT.

OF 99-0552. VIRGINIA. $^{40}Ar/^{39}Ar$ age-spectrum data for amphibole, muscovite, biotite, and K-feldspar samples from metamorphic rocks in the Blue Ridge Anticlinorium, northern Virginia, by M. J. Kunk and W. C. Burton. 110 p. (NC, M, Da; Virginia Div. of Mineral Resources, P.O. Box 3667, Charlottesville, VA 22903.) Microfiche $5; paper copy $27.75.

OF 99-0553-A. COLORADO. Land and federal mineral ownership coverage for northwestern Colorado, by L. R. Biewick, T. J. Mercier, Pam Levitt, Doug Deikman and Bob Vlahos. (NC, M, Da; Vicki J. Cowart, Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203-2277; Chief, Geotechnical Services Branch, Office of the State Engineer, 1313 Sherman St., Room 818, Denver, CO 80203-2277.) Available only on the web at http://greenwood.cr.usgs.gov/pub/open-file-reports/ofr-99-0553-a/

OF 99-0553-B. UTAH. Land and mineral ownership coverage for the Uinta Basin, Wasatch Plateau and surrounding areas, northeastern Utah, by L. R. Biewick and G. A. Green. (NC, M, Da; Utah Geol. Surv., 1594 West North Temple, Suite 3110, P.O. Box 146100, Salt Lake City, UT 84114-6100.) Available only on the web at http://greenwood.cr.usgs.gov/pub/open-file-reports/ofr-99-0553-b/

OF 99-0553-C. WYOMING. Land and federal mineral ownership coverage for southern Wyoming, by L. R. Biewick, T. J. Mercier, Tom Taber, S. R. Urbanowski and Larry Neasloney. (NC, Da, M; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.) Available only on the web at http://greenwood.cr.usgs.gov/pub/open-file-reports/ofr-99-0553-c/

OF 99-0555. The Silent Canyon caldera complex; a three-dimensional model based on drill-hole stratigraphy and gravity inversion, by E. H. McKee, T. G. Hildenbrand, M. L. Anderson, P. D. Rowley and D. A. Sawyer. Prepared in cooperation with the U.S. Department of Energy, Nevada Operations Office. 79 p. Available only on the web at http://geopubs.wr.usgs.gov/open-file/of99-555/

OF 99-0556. Giant porphyry-related metal camps of the world; a database, by F. E. Mutschler, Steve Ludington and A. A. Bookstrom. Available only on the web at http://geopubs.wr.usgs.gov/open-file/of99-556/

OF 99-0557. HAWAII, PUERTO RICO. Digitized aeromagnetic datasets for the conterminous United States, Hawaii, and Puerto

Rico. Available only on the web at http://greenwood.cr.usgs.gov/pub/open-file-reports/ofr-99-0557/

OF 99-0560. CALIFORNIA. Cruise report for 01-99-SC; Southern California Earthquake Hazards Project, by W. R. Normark, J. A. Reid, R. W. Sliter, David Holton, C. E. Gutmacher, M. A. Fisher and J. R. Childs. 60 p. (NC, Da, M; California Dep. of Conservation, Div. of Mines and Geol., Mail Stop 14-34, Library, 801 K St., Sacramento, CA 95814-3532; 185 Berry St., Suite 210, San Francisco, CA 94107-1728; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.) Microfiche $5; paper copy $37.75. Also available on the web at http://geopubs.wr.usgs.gov/open-file/of99-560/

OF 99-0562-A. Aerial gamma-ray surveys of the conterminous United States and Alaska, by J. S. Duval. One CD-ROM. (NC, Da, M.) $32.

The system requirements to run the ProfileData program are: a personal computer with a Pentium or equivalent processor, a color monitor, Microsoft Windows 95, Windows NT 4.0 or later, 16 Mbytes of RAM, 3 Mbytes of free disk space on the C drive, and a Microsoft compatible mouse or equivalent pointing device.

OF 99-0562-B. Aerial gamma-ray surveys of the conterminous United States and Alaska, by J. S. Duval. One CD-ROM. (NC, Da, M.) $32.

The system requirements to run the ProfileData program are: a personal computer with a Pentium or equivalent processor, a color monitor, Microsoft Windows 95, Windows NT 4.0 or later, 16 Mbytes of RAM, 3 Mbytes of free disk space on the C drive, and a Microsoft compatible mouse or equivalent pointing device.

OF 99-0562-C. Aerial gamma-ray surveys of the conterminous United States and Alaska, by J. S. Duval. One CD-ROM. (NC, Da, M.) $32.

The system requirements to run the ProfileData program are: a personal computer with a Pentium or equivalent processor, a color monitor, Micrsoft Windows 95, Windows NT 4.0 or later, 16 Mbytes of RAM, 3 Mbytes of free disk space on the C drive, and a Microsoft compatible mouse or equivalent pointing device.

OF 99-0562-D. Aerial gamma-ray surveys of the conterminous United States and Alaska, by J. S. Duval. One CD-ROM. (NC, Da, M.) $32.

The system requirements to run the ProfileData program are: a personal computer with a Pentium or equivalent processor, a color monitor, Microsoft Windows 95, Windows NT 4.0 or later, 16 Mbytes of RAM, 3 Mbytes of free disk space on the C drive, and a Microsoft compatible mouse or equivalent pointing device.

OF 99-0562-E. Aerial gamma-ray surveys of the conterminous United States and Alaska, by J. S. Duval. One CD-ROM. (NC, Da, M.) $32.

The system requirements to run the ProfileData program are: a personal computer with a Pentium or equivalent processor, a color monitor, Microsoft Windows 95, Windows NT 4.0 or later, 16 Mbytes of RAM, 3 Mbytes of free disk space on the C drive, and a Microsoft compatible mouse or equivalent pointing device.

OF 99-0562-F. Aerial gamma-ray surveys of the conterminous United States and Alaska, by J. S. Duval. One CD-ROM. (NC, Da, M.) $32.

The system requirements to run the ProfileData program are: a personal computer with a Pentium or equivalent processor, a color monitor, Microsoft Windows 95, Windows NT 4.0 or later, 16 Mbytes of RAM, 3 Mbytes of free disk space on the C drive, and a Microsoft compatible mouse or equivalent pointing device.

OF 99-0562-G. Aerial gamma-ray surveys of the conterminous United States and Alaska, by J. S. Duval. One CD-ROM. (NC, Da, M.) $32.

The system requirements to run the ProfileData program are: a personal computer with a Pentium or equivalent processor, a color monitor, Microsoft Windows 95, Windows NT 4.0 or later, 16 Mbytes of RAM, 3 Mbytes of free disk space on the C drive, and a Microsoft compatible mouse of equivalent pointing device.

OF 99-0562-H. Aerial gamma-ray surveys of the conterminous United States and Alaska, by J. S. Duval. One CD-ROM. (NC, Da, M.) $32.

The system requirements to run the ProfileData program are: a personal computer with a Pentium or equivalent processor, a color monitor, Microsoft Windows 95, Windows NT 4.0 or later, 16 Mbytes of RAM, 3 Mbytes of free disk space on the C drive, and a Microsoft compatible mouse or equivalent pointing device.

OF 99-0562-I. Aerial gamma-ray surveys of the conterminous United States and Alaska, by J. S. Duval. One CD-ROM. (NC, Da, M.) $32.

The system requirements to run the ProfileData program are: a personal computer with a Pentium or equivalent processor, a color monitor, Microsoft Windows 95, Windows NT 4.0 or later, 16 Mbytes of RAM, 3 Mbytes of free disk space on the C drive, and a Microsoft compatible mouse or equivalent pointing device.

OF 99-0562-J. Aerial gamma-ray surveys of the conterminous United States and Alaska, by J. S. Duval. One CD-ROM. (NC, Da, M.) $32.

The system requirements to run the ProfileData program are: a personal computer with a Pentium or equivalent processor, a color monitor, MicrosoftWindows 95, Windows NT 4.0 or later, 16 Mbytes of RAM, 3 Mbytes of free disk space on the C drive, and a Microsoft compatible mouse or equivalent pointing device.

OF 99-0562-K. Aerial gamma-ray surveys of the conterminous United States and Alaska, by J. S. Duval. One CD-ROM. (NC, Da, M.) $32.

The system requirements to run the ProfileData program are: a personal computer with a Pentium or equivalent processor, a color monitor, Microsoft Windows 95, Windows NT 4.0 or later, 16 Mbytes of RAM, 3 Mbytes of free disk space on the C drive,

and a Microsoft compatible mouse or equivalent pointing device.

OF 99-0562-L. Aerial gamma-ray surveys of the conterminous United States and Alaska, by J. S. Duval. One CD-ROM. (NC, Da, M.) $32.

The system requirements to run the ProfileData program are: a personal computer with a Pentium or equivalent processor, a color monitor, MicrosoftWindows 95, Windows NT 4.0 or later, 16 Mbytes of RAM, 3 Mbytes of free disk space on the C drive, and Microsoft compatible mouse or equivalent pointing device.

OF 99-0562-M. ALASKA. Aerial gamma-ray surveys of the conterminous United States and Alaska, by J. S. Duval. One CD-ROM. (NC, Da, M.) $32.

The system requirements to run the ProfileData program are: a personal computer with a Pentium or equivalent processor, a color monitor, Microsoft Windows 95, Windows NT 4.0 or later, 16 Mbytes of RAM, 3 Mbytes of free disk space on the C drive, and a Microsoft compatible mouse or equivalent pointing device.

OF 99-0576. NEVADA. Geochemical data for environmental studies of mercury mines in Nevada, by J. E. Gray, M. G. Adams, J. G. Crock and P. M. Theodorakos. One CD-ROM. (NC, Da, M; Nevada Bur. of Mines & Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.) $32.

Compatible operating environments or systems are: Microsoft Windows 3.1, 95, 98, or NT; minimum hardware requirements: CD-ROM drive, color graphics monitor, mouse, 386 microprocessor, 1 MB RAM, and 7 MB available hard disk space.

OF 99-0587. Preliminary report on deposit models for sand and gravel in the Cache La Poudre River valley, by W. H. Langer and D. A. Lindsay. 27 p. Available only on the web at http://greenwood.cr.usgs.gov/pub/open-file-reports/ofr-99-0587/

OF 99-0589. FLORIDA. West Florida shelf; sidescan sonar and sediment data from shelf-edge habitats in the northeastern Gulf of Mexico, by P. R. Briere, K. M. Scanlon, C. T. Gledhill, C. C. Koenig and Gary Fitzhugh. Available only on the web at http://128.128.240.32/cdroms/ofr99-589/htm/index2.htm

OF 00-0006. PUERTO RICO. Puerto Rico; marine sediments, terrestrial and seafloor imagery, and tectonic interpretations, by K. M. Scanlon and P. R. Briere. Available only on the web at http://128.128.240.32/cdroms/ofr00-006/

OF 00-0079. MONTANA. Hydrologic and water-quality data for ground water along the Milk River valley, north-central to northeastern Montana, by S. M. Lawlor. Prepared in cooperation with the Montana Bureau of Mines and Geology. 24 p., 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, Wb; USGS, WRD, 3162 Bozeman Ave., Helena, MT 59601-6456; and Montana State Univ. Billings, 1500 North 30th, Billings, MT 59101.) $23.

OF 00-0108. Map and database of Quaternary faults and folds in Argentina, by Carlos Costa, M. N. Machette, R. L. Dart, H. E. Bastias, J. D. Paredes, L. P. Perucca, G. E. Tello and K. M. Haller. 76 p. $20. Also available on the web at http://greenwood.cr.usgs.gov/pub/open-file-reports/ofr-00-0108/

OF 00-0145. CALIFORNIA. Digital geologic map of the Butler Peak 7.5' quadrangle, San Bernardino County, California, by F. K. Miller, J. C. Matti, H. J. Brown and P. M. Cossette. Prepared in cooperation with U.S. Forest Service, San Bernardino National Forest; California Division of Mines and Geology. 16 p. Available only on the web at http://geopubs.wr.usgs.gov/open-file/of00-145/

OF 00-0167. WASHINGTON. Sidescan-sonar imagery, surface sediment samples, and surficial geologic interpretation of the southwestern Washington inner continental shelf based on data collected during Corliss cruises 97007 and 98014, by D. C. Twichell, V. A. Cross and K. F. Parolski. Available only on the web at http://128.128.240.32/cdroms/ofr00-167/

OF 00-0175. CALIFORNIA. Geologic map and digital database of the Cougar Buttes 7.5' quadrangle, San Bernardino County, California, by R. E. Powell, J. C. Matti and P. M. Cossette. Prepared in cooperation with Mojave Water Agency; California Division of Mines and Geology. 34 p. Available only on the web at http://geopubs.wr.usgs.gov/open-file/of00-175/

CALIFORNIA. Summary pamphlet; late Cenozoic deposits of the Cougar Buttes 7.5' quadrangle, San Bernardino County, California, by R. E. Powell and J. C. Matti. 19 p. Available only on the web at http://geopubs.wr.usgs.gov/open-file/of00-175/coug_pamph.pdf

OF 00-0176. NEVADA. Geologic surface effects of underground nuclear testing, Yucca Flat, Nevada Test Site, Nevada, by D. N. Grasso. Prepared in cooperation with the U.S. Department of Energy, Nevada Operations Center. 20 p. Available only on the web at http://greenwood.cr.usgs.gov/pub/open-file-reports/ofr-00-0176/

OF 00-0193. CALIFORNIA. Principal facts for gravity stations in the vicinity of San Bernardino, Southern California, by M. L. Anderson, C. W. Roberts and R. C. Jachens. Prepared in cooperation with the San Bernardino Valley Municipal Water District. 32 p. Available only on the web at http://geopubs.wr.usgs.gov/open-file/of00-193/

OF 00-0198. WYOMING. Wyoming aeromagnetic and gravity maps and data; a web site for distribution of data, by R. P. Kucks and P. L. Hill. Available only on the web at http://greenwood.cr.usgs.gov/pub/open-file-reports/ofr-00-0198/

THEMATIC MAPS AND CHARTS

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I-1420(NM-14). Quaternary geologic map of the Winnipeg 4° x 6° quadrangle, United States and Canada, compiled by D. S. Fullerton, S. M. Ringrose, Lee Clayton, B. T. Schreiner and J. E.

Goebel. Prepared in cooperation with the Manitoba Department of Energy and Mines; North Dakota Geological Survey; Saskatchewan Research Council; Minnesota Geology Survey. 2000. Lat 48° to 52°, long 96° to 102°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 58 by 40 inches (in color). (Accompanied by 16 page text.) $7. Also available on the web at http://greenwood.cr.usgs.gov/pub/i-maps/i-1420/nm-14/

GEOLOGIC INVESTIGATIONS SERIES

In August 1996, the I-map series name was changed from Miscellaneous Investigations Series Maps to Geologic Investigations Series. All geologic maps approved for publication after August 1996 will be published in the Geologic Investigations Series. The series definition remains the same.

I-2634. MONTANA. Geologic map of the Sedan Quadrangle, Gallatin and Park counties, Montana, by Betty Skipp, D. R. Lageson and W. J. McMannis. 1999. Lat 45°45' to 46°, long 110°45' to 111°. Scale 1:48,000 (1 inch = 4,000 feet). Sheet 58 by 41 1/2 inches (in color). Available only on the web at http://greenwood.cr.usgs.gov/pub/i-maps/i-2634/

This quadrangle lies 6.4 km (4 miles) northeast of Bozeman, Montana, in southwestern Montana. Metamorphic, sedimentary, and volcanic rock of Precambrian to Tertiary age are exposed in the Bridger Range and southwestern margin of the Crazy Mountains Basin in a crustal cross section and a structural triangle zone. Surface geology records Precambrian extension, late Paleocene east-vergent contraction, including backthrusts, and Holocene basin-range extension. Three cross sections interpret structures to depths of 29,000 feet below sea level.

I-2646. COLORADO. Geologic map of the Lazy Y Point Quadrangle, Moffat County, Colorado, by R. E. Van Loenen, Gary Selner and W. A. Bryant. 1999. Lat 40°15' to 40°22'30", long 108°45' to 108°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 36 by 32 inches (in color). (Map-on-demand.) $20. Also available on the web at http://greenwood.cr.usgs.gov/pub/i-maps/i-2646/

I-2647. COLORADO. Geologic map of the Skull Creek Quadrangle, Moffat County, Colorado, by R. E. Van Loenen, Gary Selner and W. A. Bryant. 1999. Lat 40°15' to 40°22'30", long 108°37'30" to 108°45'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 38 by 32 1/2 inches (in color). (Map-on-demand.) $20. Also available on the web at http://greenwood.cr.usgs.gov/pub/i-maps/i-2647/

I-2656. COLORADO. Geologic map of the Wolcott Quadrangle, Eagle County, Colorado, by D. J. Lidke. 1998. Lat 39°37'30" to 39°45', long 106°37'30" to 106°45'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 52 by 34 1/2 inches (in color). (Map-on-demand.) $20. Also available on the web at http://greenwood.cr.usgs.gov/pub/i-maps/i-2656/

I-2661. WYOMING. Geologic map of Precambrian rocks of the Hartville Uplift, southeastern Wyoming; with a section on mineral deposits in the Hartville Uplift, compiled by P. K. Sims, W. C. Day and Terry Klein. 1999. Lat 42°15' to 42°45', long 104°22'30" to 104°47'30". Scale 1:48,000 (1 inch = 4,000 feet). Sheet 31 by 49 inches (in color). (Accompanied by 30 page text.) (Map-on-demand.) $20. Also available on the web at http://greenwood.cr.usgs.gov/pub/i-maps/i-2661/

I-2667. UTAH, COLORADO. Correlation of Jurassic San Rafael Group and related rocks from Blanding, Utah, to Dove Creek, Colorado, by R. B. O'Sullivan. 1998. Sheet 33 by 29 inches (in color). (Map-on-demand.) $20. Also available on the web at http://greenwood.cr.usgs.gov/pub/i-maps/i-2667/

I-2670. NEVADA. Geologic map of the Jefferson Quadrangle, Nye County, Nevada, by D. R. Shawe. 1999. Lat 38°37'30" to 38°45', long 116°52'30" to 117°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 58 by 42 inches (in color.) (Accompanied by 33 page text.) (Map-on-demand.) $20. Also available on the web at http://greenwood.cr.usgs.gov/pub/i-maps/i-2670/

I-2679. ALASKA. Seismic-hazard maps for Alaska and the Aleutian Islands, by R. L. Wesson, A. D. Frankel, C. S. Mueller and S. C. Harmsen. 1998. 2 sheets. Lat 50° to 70°, long 130° to 170°. Scale 1:7,500,000 (1 inch = about 118 miles). Both sheets, 48 1/2 by 36 1/2 inches (in color). $14. Also available on the web at http://greenwood.cr.usgs.gov/pub/i-maps/i-2679/

I-2680. NEVADA. Geologic map of the Corcoran Canyon Quadrangle, Nye County, Nevada, by D. R. Shawe, R. F. Hardyman and F. M. Byers, Jr. 2000. 25 p. $20. Lat 38°37'30" to 38°45', long 116°45' to 116°52'30". Scale 1:24,000 (1 inch=2,000 feet). Sheet 51 by 35 inches (in color). (Accompanied by 28 page text.) Also available on the web at http://greenwood.cr.usgs.gov/pub/i-maps/i-2680/

I-2687. NEVADA. Isostatic gravity map of the Battle Mountain 30 x 60 minute quadrangle, north-central Nevada, by D. A. Ponce and R. L. Morin. 2000. Lat 40°30' to 41°, long 116° to 117°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 54 by 30 inches (in color). $7.

I-2702. MASSACHUSETTS. Sun-illuminated sea floor topography of Quadrangle 2 in the Stellwagen Bank National Marine Sanctuary off Boston, Massachusetts, by P. C. Valentine, T. S. Unger and J. L. Baker. Prepared in cooperation with the National Oceanic and Atmospheric Administration. 1999. Lat 42°05' to 40°12', long 70°14' to 70°24'. Scale 1:25,000 (1 inch = about 2,083 feet). Sheet 27 by 34 inches (in color). $7.

I-2703. MASSACHUSETTS. Sun-illuminated sea floor topography of Quadrangle 3 in the Stellwagen Bank National Marine Sanctuary off Boston, Massachusetts, by P. C. Valentine, J. L. Baker and T. S. Unger. Prepared in cooperation with the National Oceanic and Atmospheric Administration. 1999. Lat 42°05' to 42°12', long 70°03' to 70°13'. Scale 1:25,000 (1 inch = about 2,083 feet). Sheet 27 by 34 inches (in color). $7.

I-2705. MASSACHUSETTS. Sun-illuminated sea floor topography of Quadrangle 5 in the Stellwagen Bank National Marine Sanctuary off Boston, Massachusetts, by P. C. Valentine, J. L. Baker and T. S. Unger. Prepared in cooperation with the National Oceanic and Atmospheric Administration. 1999. Lat 42°12' to 42°19', long 70°14' to70°24'. Scale 1:25,000 (1 inch = about 2,083 feet). Sheet 27 by 35 inches (in color). $7.

I-2706. MASSACHUSETTS. Sun-illuminated sea floor topography of Quadrangle 6 in the Stellwagen Bank National Marine Sanctuary off Boston, Massachusetts, by P. C. Valentine, T. S. Unger and J. L. Baker. Prepared in cooperation with the National Oceanic and Atmospheric Administration. 1999. Lat 42°12' to 42°19', long 70°02' to 70°13'. Scale 1:25,000 (1 inch = about 2,083 feet). Sheet 27 by 35 inches (in color). $7.

I-2720. A tapestry of time and terrain, by J. F. Vigil, R. J. Pike and D. G. Howell. 2000. Lat 29°30' to 50°, long 70° to 120°30'. Scale 1:3,500,000 (1 inch = about 55 miles). Sheet 55 by 40 inches (in color). (Accompanied by 24 page text.) $7. Also available on the web at
http://tapestry.usgs.gov

MISCELLANEOUS FIELD STUDIES MAP

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-2329. Map showing inventory and regional susceptibility for Holocene debris flows, and related fast-moving landslides in the conterminous United States, by E. E. Brabb, J. P. Colgan, T. C. Best, Andrew Barron, Michael Sinor and Joanne Vinton. 1999. Two sheets. Scale 1:2,500,000 (1 inch = about 40 miles). Sheets 1 and 2, 48 by 58 inches (both in color). (Accompanied by 42 page text.) Available only on the web at
http://geopubs.wr.usgs.gov/map-mf/mf2329/

Shows locations of over 6000 debris flows in the conterminous United States, and areas that may be susceptible to future debris flows.

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-0730-N. Ground-water atlas of the United States; Segment 13; Alaska, Hawaii, Puerto Rico and the U.S. Virgin Islands, by J. A. Miller, R. L. Whitehead, S. B. Gingerich, D. S. Oki and P. G. Olcott. 1999. p. N1-N36. Lat 19° to 70°, long 60° to 170°. Varying scales. All sheets 18 by 23 inches (in color). $7.

Most ground water in Alaska is produced from unconsolidated Quaternary aquifers; these aquifers supplying Fairbanks, Juneau, and Anchorage are well understood, Elsewhere, hydrogeologic information is generally sparce. In Hawaii, aquifers are mostly in the complex intrusive and extrusive igneous rocks of the islands. The principal aquifers in Puerto Rico are in alluvium and limestone on the north coast and in alluvium on the south coast. Limestone on St. Croix is the only principal aquifer in the Virgin Islands.

HA-0743. SOUTH DAKOTA. Distribution of hydrogeologic units in the Black Hills area, South Dakota, by M. L. Strobel, U.S. Geological Survey; G. J. Jarrell, South Dakota School of Mines and Technology; J. F. Sawyer, South Dakota Department of Environment and Natural Resources; J. R. Schleicher, National Association of Geology Teachers; and M. D. Fahrenbach, South Dakota Department of Environment and Natural Resources. Prepared in cooperation with the South Dakota Department of Environment and Natural Resources and the West Dakota Water Development District. 1999. Three sheets. Lat 44° to 44°45', long 103° to 104°. Sheets 1 and 2, scale 1:100,000 (1 inch = about 1.6 miles). Sheets 37 by 48 inches (in color). $7.

Hydrogeologic units in the Black Hills area of western South Dakota are presented. The map is part of the Black Hills hydrology study, a 10-year project that examines the quality and quantity of water in this area. The map is on two sheets, divided into the northern and southern halves of the study area. In addition, a sheet with six cross sections is presented.

OUTSIDE PUBLICATIONS

ARTICLES AND REPORTS

Articles by USGS personnel in non-USGS publications recently cited in the GeoRef data base of the American Geological Institute are listed below. Non-USGS personnel who share authorship in articles with USGS personnel are indicated by an asterisk (*) immediately following the name. **These publications are not available from the U.S. Geological Survey.**

J. D. Abraham. Physical modeling of a prototype slim-hole time-domain dielectric logging tool, *in* Proceedings of the symposium on the Application of geophysics to engineering and environmental problems. (M. H. Powers, editor and others). Wheat Ridge, CO: Environmental and Engineering Geophysical Society, 2000. p. 503-512.

T. S. Ahlbrandt, R. R. Charpentier, T. R. Klett, J. W. Schmoker, C. J. Schenk and G. F. Ulmishek. Future oil and gas resources of the world. Geotimes. v. 45, no. 6, June 2000. p. 24-25.

M. A. Allison*, M. T. Lee*, A. S. Ogston and R. C. Aller*. Origin of Amazon mudbanks along the northeastern coast of South America. Marine Geology. v. 163, no. 1-4, February 15, 2000. p. 241-256.

M. G. Anderson*, N. E. Peters and Des Walling* (editors). Canadian Geophysical Union Hydrology Section special issue. Hydrological Processes. v. 13, no. 16, November 1999. p. 2483-2638.

E. D. Andrews. UTAH. Bed material transport in the Virgin River, Utah. Water Resources Research. v. 36, no. 2, February 2000. p. 585-596.

B. L. Askew and S. T. Algermissen (editors). Catalogo de terremotos para America del Sur; Volumen I, descripción del catalogo e informes nacionales—Catalog of earthquakes for South America; Volume I, Description of the catalog and national reports. 1, 1985. 191 p. *Available from:* Centro Regional de Sismología para América del Sur, Lima, Peru.

E. D. Attanasi and D. H. Root. Coal-fired power generation, new air quality regulations, and future U. S. coal production. Environmental Geosciences. v. 6, no. 3, 1999. p. 139-145.

C. R. Bacon, H. M. Persing, J. L. Wooden and T. R. Ireland*. OREGON. Late Pleistocene granodiorite beneath Crater Lake caldera, Oregon, dated by ion microprobe. Geology (Boulder). v. 28, no. 5, May 2000. p. 467-470.

A. M. Bailey*, A. D. Cohen*, W. H. Orem and J. H. Blackson*. Mobilization of major inorganic ions during experimental diagenesis of characterized peats. Chemical Geology. v. 166, no. 3-4, May 2000. p. 287-300.

W. H. Bakun. Seismicity activity of San Francisco Bay region. Bulletin of the Seismological Society of America. v. 89, no. 3, June 1999. p. 764-784.

J. W. Ball and R. L. Bassett*. Ion exchange separation of chromium from natural water matrix for stable isotope mass spectrometric analysis. Chemical Geology. v. 168, no. 1-2, July 1, 2000. p. 123-134.

E. H. Baltz and D. A. Myers. NEW MEXICO. Stratigraphic framework of upper Paleozoic rocks, southeastern Sangre de Cristo Mountains, New Mexico with a section on speculations and implications for regional interpretation of ancestral Rocky Mountains paleotectonics. Memoir - New Mexico, Bureau of Mines and Mineral Resources. 48, 1999. 269 p., 5 sheets.

C. E. Barker. A paleolatitude approach to assessing surface temperature history for use in burial heating models. International Journal of Coal Geology, *in* John R. Castaño memorial special issue; energy and environmental issues; geochemical and petrological perspectives. (P. K. Mukhopadhyay, editor and others). v. 43, no. 1-4, May 2000. p. 121-135.

P. M. Barlow, L. A. DeSimone and A. F. Moench. Aquifer response to stream-stage and recharge variations; II, Convolution method and applications. Journal of Hydrology. v. 230, no. 3-4, May 8, 2000. p. 211-229.

J. S. Baron, M. D. Hartman*, L. E. Band* and R. B. Lammers*. Sensitivity of a high-elevation Rocky Mountain watershed to altered climate and CO_2. Water Resources Research, *in* Recent Loch Vale Watershed research. (J. S. Baron, prefacer and others). v. 36, no. 1, January 2000. p. 89-99.

J. S. Baron, D. M. Theobald* and D. B. Fagre. Management of land use conflicts in the United States Rocky Mountains. Mountain Research and Development. v. 20, no. 1, February 2000. p. 24-27.

J. S. Baron and M. W. Williams* (prefacers). Recent Loch Vale Watershed research. Water Resources Research. v. 36, no. 1, January 2000. p. 11-99.

P. J. Bartlein*, Lars Bengtsson*, S. P. Harrison*, Steve Hostetler, Ken Hsu*, Boqian Qin* and Juri Vassiljev*. Modelling lake behaviour; how can we use mechanistic models to further our understanding of the response of lakes to climate change? Paläoklimaforschung = Paleoclimate Research, *in* Paleohydrology as reflected in lake-level changes as climatic evidence for Holocene times. (S. P. Harrison and others). 25, 1998. p. 169-177.

W. A. Bassett*, A. J. Anderson*, R. A. Mayanovic* and I. M. Chou. Hydrothermal diamond anvil cell for XAFS studies of first-row transition elements in aqueous solution up to supercritical conditions. Chemical Geology, *in* Direct observation and measurement of hydrothermal reactions; symposium held at the 8th V.M. Goldschmidt conference. (D. J. Wesolowski, editor and others). v. 167, no. 1-2, June 5, 2000. p. 3-10.

J. F. Bell, III*, H. Y. McSween, Jr.*, J. A. Crisp*, R. V. Morris*, S. L. Murchie*, N. T. Bridges*, J. R. Johnson, D. T. Britt*, M. P. Golombek*, H. J. Moore, A. Ghosh*, J. L. Bishop*, R. C. Anderson*, J. Brückner*, T. Economou*, J. P. Greenwood*, H. P. Gunnlaugsson*, R. M. Hargraves*, S. F. Hviid*, J. M. Knudsen*, M. B. Madsen*, R. N. Reid*, R. Reider* and L. Soderblom. Mineralogic and compositional properties of Martian soil and dust; results from Mars Pathfinder. Journal of Geophysical Research, E, Planets, *in* Results from Mars Pathfinder, Part 2. (M. P. Golombek, prefacer). v. 105, no. 1, January 25, 2000. p. 1721-1756.

S. T. Benedict and A. W. Caldwell. SOUTH CAROLINA. The collection of clear-water contraction and abutment scour data at selected bridge sites in the Coastal Plain and Piedmont of South Carolina, *in* Water resources engineering 98; proceedings of the International water resources engineering conference. (S. R. Abt, editor and others). Reston, VA: American Society of Civil Engineers, 1998. p. 216-221.

B. G. Bills, T. S. James* and J. G. Mengel*. Climatic impact of glacial cycle polar motion; coupled oscillations of ice sheet mass and rotation pole position. Journal of Geophysical Research, B, Solid Earth and Planets. v. 104, no. 1, January 10, 1999. p. 1059-1075.

L. E. Borg*, A. D. Brandon*, M. A. Clynne and R. J. Walker*. CALIFORNIA. Re-Os isotopic systematics of primitive lavas from the Lassen region of the Cascade Arc, California. Earth and Planetary Science Letters. v. 177, no. 3-4, April 30, 2000. p. 301-317.

P. F. Borne*, T. M. Cronin and J. E. Hazel*. Neogene-Quaternary Ostracoda and paleoenvironments of the Limon Basin, Costa Rica, and Bocas del Toro Basin, Panama. Bulletins of American Paleontology, *in* A paleobiotic survey of Caribbean faunas from the Neogene of the Isthmus of Panama. (L. S. Collins, editor and others). 357, December 31, 1999. p. 231-250.

P. M. Bradley, P. B. McMahon and F. H. Chapelle. Effects of carbon and nitrate on denitrification in bottom sediments of an effluent-dominated river. Water Resources Research. v. 31, no. 4, April 1995. p. 1063-1068.

D. L. Brant*, P. F. Ziemkiewicz* and E. I. Robbins. PENNSYLVANIA. Passive removal of manganese from acid mine drainage at the Shade mining site, Somerset County, PA (USA), *in* Sudbury '99; Mining and the environment II; Volume 3, Conference proceedings—Sudbury '99; L'exploitation minière et l'environnement II; Volume 3, Compte rendu. (D. E. Goldsack, editor and others). Publisher unknown, 1999. p. 1241-1249.

N. T. Bridges*, Ronald Greeley*, A. F. Haldemann*, K. E. Herkenhoff, M. Kraft*, T. J. Parker* and A. W. Ward. Ventifacts at the Pathfinder landing site. Journal of Geophysical Research, E, Planets, *in* Results from Mars Pathfinder. (M. P. Golombek, editor). v. 104, no. 4, April 25, 1999. p. 8595-8615.

T. J. Burbey. NEVADA. Pumpage and water-level change in the principal aquifer of Las Vegas Valley, Nevada, 1980-1990. Water Resources-Information Series Report. 34, 1995. 224 p.

Roland Burgmann* and William Prescott. Monitoring the spatially and temporally complex active deformation field in the southern Bay area, 1999. 32 p. *Available from:* U. S. Geological Survey, Library, Reston, VA, United States.

L. M. Bybell. Neogene calcareous nannofossil biostratigraphy of the Caribbean coast of Panama and Costa Rica. Bulletins of American Paleontology, *in* A paleobiotic survey of Caribbean faunas from the Neogene of the Isthmus of Panama. (L. S. Collins, editor and others). 357, December 31, 1999. p. 41-59.

T. C. Cambareri and E. M. Eichner*. Watershed delineation and ground water discharge to a coastal embayment. Ground Water. v. 36, no. 4, August 1998. p. 626-634.

D. H. Campbell, J. S. Baron, K. A. Tonnessen*, P. D. Brooks* and P. F. Schuster. COLORADO. Controls on nitrogen flux in alpine/subalpine watersheds of Colorado. Water Resources Research, *in*

Recent Loch Vale Watershed research. (J. S. Baron, prefacer and others). v. 36, no. 1, January 2000. p. 37-47.

D. L. Campbell, Shay Beanland, J. E. Lucius and M. H. Powers. Magnetic and GPR surveys of a former munitions foundry site at the Denver Federal Center, *in* Proceedings of the symposium on the Application of geophysics to engineering and environmental problems. (M. H. Powers, editor and others). Wheat Ridge, CO: Environmental and Engineering Geophysical Society, 2000. p. 453-458.

D. L. Campbell, V. F. Labson and V. J. Grauch. Some geophysical work in the U. S. Geological Survey, *in* Proceedings of the symposium on the Application of geophysics to engineering and environmental problems. (M. H. Powers, editor and others). Wheat Ridge, CO: Environmental and Engineering Geophysical Society, 2000. p. 155-161.

W. F. Cannon, S. W. Nicholson, C. A. Hedgman, L. G. Woodruff and K. J. Schulz. MICHIGAN. Geology of Keweenawan Supergroup rocks near the Porcupine Mountains, Ontonagon & Gogebic counties, Michigan. Proceedings and Abstracts - Institute on Lake Superior Geology, Annual Meeting, *in* Institute on Lake Superior geology; proceedings of the 38th annual meeting; field trip guidebook. (A. B. Dickas, compiler and others). 38, Part 2, May 1992. p. 75-102.

R. W. Carlson*, A. J. Irving* and B. C. Hearn, Jr. MONTANA. Chemical and isotopic systematics of peridotite xenoliths from the Williams Kimberlite, Montana; clues to processes of lithosphere formation, modification and destruction. Proceedings of the International Kimberlite Conference, *in* The J. B. Dawson volume; proceedings of the VIIth international kimberlite conference; Volume 1. (J. J. Gurney, editor and others). 7, Vol. 1, 1999. p. 90-98.

M. G. Chapman and J. S. Kargel. Observations at the Mars Pathfinder site; do they provide "unequivocal" evidence of catastrophic flooding? Journal of Geophysical Research, E, Planets, *in* Results from Mars Pathfinder. (M. P. Golombek, editor). v. 104, no. 4, April 25, 1999. p. 8671-8678.

I. M. Chou, E. Dachs* and A. Benisek*. Annite stability revised; 1, Hydrogen-sensor data for the reaction annite = sanidine + magnetite + H_2 . Contributions to Mineralogy and Petrology. v. 128, no. 2-3, July 1997. p. 302-305.

B. A. Chouet, P. B. Dawson*, S. Falsaperla* and E. Privitera*. A characterization of long-period events recorded during the eruptive activity of Mount Etna, Italy, in 1992. Acta Vulcanologica, *in* The 1991-1993 Etna eruption. (L. Villari, editor). 4, 1994. p. 81-86.

R. A. Christopher*, J. M. Self-Trail, D. C. Prowell and G. S. Gohn. The stratigraphic importance of the Late Cretaceous pollen genus Sohlipollis gen. nov. in the Coastal Plain province. South Carolina Geology. 41, 1999. p. 27-44.

J. C. Clark*, L. I. Rosenberg* and P. R. Yeatts (investigators). CALIFORNIA. Southern San Gregorio Fault displacement; stepover segmentation vs. through-going tectonics, March 1999. 50 p., 3 sheets. *Available from:* U. S. Geological Survey, Library, Reston, VA, United States.

D. W. Clow and J. K. Sueker. COLORADO. Relations between basin characteristics and stream water chemistry in alpine/subalpine basins in Rocky Mountain National Park, Colorado. Water Resources Research, *in* Recent Loch Vale Watershed research. (J. S. Baron, prefacer and others). v. 36, no. 1, January 2000. p. 49-61.

Philip Cohen and G. E. Mallard. Effects of agriculture on U.S. water quality; a national perspective, *in* Environmental impact of agricultural practices and agrichemicals; proceedings of industrial impacts on the hydrologic environment. (Yoram Eckstein, editor and others). Alexandria, VA: Water Environment Federation, 1993. p. 93-108.

T. A. Cohn and K. K. Gohn. A new look at natural disasters. Geotimes. v. 45, no. 4, April 2000. p. 18-21.

S. M. Colman, J. G. Rosenbaum, R. L. Reynolds and A. M. Sarna-Wojcicki. OREGON. Post-Mazama (7 KA) faulting beneath Upper Klamath Lake, Oregon. Bulletin of the Seismological Society of America. v. 90, no. 1, February 2000. p. 243-247.

R. L. Cooley. An analysis of the pilot point methodology for automated calibration of an ensemble of conditionally simulated transmissivity fields. Water Resources Research. v. 36, no. 4, April 2000. p. 1159-1163.

R. E. Criss*, M. J. Singleton* and D. E. Champion. NEVADA. Three-dimensional oxygen isotope imaging of convective fluid flow around the Big Bonanza, Comstock Lode mining district, Nevada. Economic Geology and the Bulletin of the Society of Economic Geologists. v. 95, no. 1, February 2000. p. 131-142.

M. L. Cummings*, J. G. Evans, M. L. Ferns* and K. R. Lees*. OREGON, IDAHO. Stratigraphic and structural evolution of the middle Miocene synvolcanic Oregon-Idaho Graben. Geological Society of America Bulletin. v. 112, no. 5, May 2000. p. 668-682.

J. A. Davis, D. B. Kent, J. A. Coston, K. M. Hess and J. L. Joye. Multispecies reactive tracer test in an aquifer with spatially variable chemical conditions. Water Resources Research. v. 36, no. 1, January 2000. p. 119-134.

K. Dean*, J. Dehn*, S. Izbekov*, S. Worley*, K. Engle* and D. Schneider. The use of satellite data to monitor volcanoes in the North Pacific region. Proceedings of the Thematic Conference on Geologic Remote Sensing, *in* Proceedings of the Thirteenth international conference on Applied geologic remote sensing. (ERIM International). v. 13, no. 2, 1999. p. II.84-II.87.

W. E. Dean. The carbon cycle and biogeochemical dynamics in lake sediments. Journal of Paleolimnology. v. 21, no. 4, May 1999. p. 375-393.

G. N. Delin. MINNESOTA. Aquifer test in a complex drift aquifer system, west-central Minnesota. Hydrological Science and Technology. v. 11, no. 1-4, 1995. p. 1-13.

Jishu Deng*, Kenneth Hudnut, Michael Gurnis* and Egill Hauksson*. CALIFORNIA. Stress loading from viscous flow in the lower crust and triggering of aftershocks following the 1994 Northridge, California, earthquake. Geophysical Research Letters. v. 26, no. 21, November 1, 1999. p. 3209-3212.

C. M. dePolo*, L. M. Jones, D. M. dePolo* and Susan Tingley*. NEVADA. Living with earthquakes in Nevada; a Nevadan's guide to preparing for, surviving, and recovering from an earthquake. Special Publication - Nevada Bureau of Mines and Geology, Report no. 27, 2000. 36 p.

A. Douglas*, Michael Weber*, C. W. Wicks, Jr., Frank Krüger*, Gunnar Jahnke*, Jörg Schlittenhardt* and Marlyse Baumann*. Asymmetric radiation of seismic waves from an atoll; nuclear tests in French Polynesia . Geophysical Research Letters. v. 27, no. 7, April 1, 2000. p. 1061-1064.

R. F. Dubiel, J. E. Huntoon*, S. M. Condon and J. D. Stanesco*. Permian deposystems, paleogeography, and paleoclimate of the Paradox Basin and vicinity, *in* Paleozoic systems of the Rocky Mountain region. (M. W. Longman, editor and others). Society for Sedimentary Geology, Rocky Mountain Section, 1996. p. 427-443.

W. B. Durham*, S. H. Kirby and L. A. Stern. Steady-state flow of solid CO_2; preliminary results. Geophysical Research Letters. v. 26, no. 23, December 1, 1999. p. 3493-3496.

R. L. Ethington*, Oliver Lehnert* and J. E. Repetski. Stiptognathus new genus (Conodonta; Ibexian, Lower Ordovician), and the apparatus of Stiptognathus borealis (Repetski, 1982). Journal of Paleontology. v. 74, no. 1, January 2000. p. 92-100.

J. D. Eusden, Jr.*, C. A. Guzofski*, A. C. Robinson and R. D. Tucker*. NEW HAMPSHIRE. Timing of the Acadian Orogeny in northern New Hampshire. Journal of Geology. v. 108, no. 2, March 2000. p. 219-232.

R. B. Finkelman. Abundance, source, and mode of occurrence of the inorganic constituents in coal, *in* Coal; resources, properties, utilization, pollution. (Orhan Kural, editor). Privately published: P, 1994. p. 115-125.

C. H. Fletcher*, R. A. Mullane* and B. M. Richmond. HAWAII. Beach loss along armored shorelines on Oahu, Hawaiian Islands. Journal of Coastal Research. v. 13, no. 1, 1997. p. 209-215.

O. F. Flores B.*, Nestor Jimenez C.*, L. A. Barrera I.*, J. L. Lizeca B.*, Orlando Sanjines V.*, F. L. Murillo S.*, Franz Tavera V.*, R. F. Hardyman, A. R. Wallace, A. H. Hofstra, R. M. Tosdal and B. A. Eiswerth. Mapa geológico del area de Berenguela; hojas Santiago de Machaca-Charaña-Thola Kkollu, escala 1:100,000; memoria explicativa [Geological map of the Berenguela area; Santiago de Machaca-Charana-Thola Kkollu map sheets, 1:100,000 scale; explanatory note]. Boletin del Servicio Geologico de Bolivia, Report no. 4, 1994. 37 p.

Marshall Flung and J. F. Scott*. Modeling management of water in the Klamath River basin; overcoming politics and conflicts, *in* Water resources engineering 98; proceedings of the International water resources engineering conference. (S. R. Abt, editor and others). Reston, VA: American Society of Civil Engineers, 1998. p. 938-943.

E. E. Foord, J. T. O'Connor, J. M. Hughes*, S. J. Sutley, A. U. Falster*, A. E. Soregaroli, F. E. Lichte and D. E. Kile. NEVADA. Simmonsite, Na_2LiAlF_6, a new mineral from the Zapot amazonite-topaz-zinnwaldite pegmatite, Hawthorne, Nevada, U.S.A. American Mineralogist, *in* Gene Foord issue. (David London, editor). v. 84, no. 5-6, June 1999. p. 769-772.

E. E. Foord and J. E. Taggart, Jr. A reexamination of the turquoise group; the mineral aheylite, planerite (redefined), turquoise and coeruleolactite. Mineralogical Magazine. v. 62, no. 1(410), February 1998. p. 93-111.

L. R. Gaddis, B. R. Hawke*, M. S. Robinson* and Cassandra Coombs*. Compositional analyses of small lunar pyroclastic deposits using Clementine multispectral data. Journal of Geophysical Research, E, Planets, *in* New views of the Moon; Part 1. (B. L. Jolliff, prefacer). v. 105, no. 2, February 25, 2000. p. 4245-4262.

J. V. Gardner, L. A. Mayer* and J. E. Hughes Clarke*. CALIFORNIA, NEVADA. Morphology and processes in Lake Tahoe (California-Nevada). Geological Society of America Bulletin. v. 112, no. 5, May 2000. p. 736-746.

J. F. Genise* and T. M. Bown. New Miocene scarabeid and hymenopterous nests and early Miocene (Santacrucian) paleoenvironments, Patagonian Argentina. Ichnos (Chur, Switzerland). v. 3, no. 2, 1994. p. 107-117.

T. M. Gerlach, M. P. Doukas, K. A. McGee and R. Kessler. CALIFORNIA. Airborne detection of diffuse carbon dioxide emissions at Mammoth Mountains, California. Geophysical Research Letters. v. 26, no. 24, December 15, 1999. p. 3661-3664.

T. M. Gerlach, M. P. Doukas, K. A. McGee and Richard Kessler. CALIFORNIA. Three-year decline of magmatic CO_2 emissions from soils of a Mammoth Mountain tree kill; Horseshoe Lake, California, 1995-1997. Geophysical Research Letters. v. 25, no. 11, June 1, 1998. p. 1947-1950.

Domenico Giardini*, Gottfried Grünthal*, K. M. Shedlock and Zhang Peizhen*. The GSHAP global seismic hazard map. Annali di Geofisica, *in* The Global Seismic Hazard Assessment Program (GSHAP) 1992-1999. (Domenico Giardini, editor). v. 42, no. 6, December 1999. p. 1225-1228.

J. J. Gilbert and P. A. Ensminger. LOUISIANA. Estimation of scour and channel stability for selected highway crossings of rivers in the Florida parishes, southeastern Louisiana. Water Resources Technical Report (Baton Rouge, La.), Report no. 67B, 1999. 86 p.

M. J. Gimeno Serrano*, L. F. Auqué Sanz* and D. K. Nordstrom. REE speciation in low-temperature acidic waters and the competitive effects of aluminum. Chemical Geology. v. 165, no. 3-4, April 24, 2000. p. 167-180.

Eberhard Gischler*, A. J. Lomando*, J. H. Hudson* and C. W. Holmes. Last interglacial reef growth beneath Belize barrier and isolated platform reefs. Geology (Boulder). v. 28, no. 5, May 2000. p. 387-390.

Pierre Glynn and James Brown. Reactive transport modeling of acidic metal-contaminated ground water at a site with sparse spatial information. Reviews in Mineralogy, *in* Reactive transport in porous media. (P. C. Lichtner, editor and others). 34, 1996. p. 377-438.

Fraser Goff* and C. J. Janik. Geothermal systems, *in* Encyclopedia of volcanoes. (Haraldur Sigurdsson, editor and others). San Diego, CA: Academic Press, 2000. p. 817-834.

Richard Goldfarb, Edward duBray, John Gray, Karen Kelley and G. S. Plumlee. Geoenvironmental mineral deposit models for the northern Cordillera. Open File - British Columbia. Geological Survey Branch, *in* Metallogeny of volcanic arcs; short course notes; Pathways '98 and 1998 Cordilleran roundup. (D. V. Lefebure). Report no. 1998-8, November 1998. p. C1-C49.

M. P. Golombek*, R. C. Anderson*, J. R. Barnes*, J. F. Bell, III*, N. T. Bridges*, D. T. Britt*, J. Brückner*, R. A. Cook*, D. Crisp*, J.

A. Crisp*, T. Economou*, W. M. Folkner*, Ronald Greeley*, R. M. Haberle*, R. B. Hargraves*, J. A. Harris*, A. F. Haldemann*, K. E. Herkenhoff*, S. F. Hviid*, R. Jaumann*, J. R. Johnson, P. H. Kallemeyn*, H. U. Keller*, R. L. Kirk, J. M. Knudsen*, S. Larsen*, M. T. Lemmon*, M. B. Madsen*, J. A. Magalhaes*, J. N. Maki*, M. C. Malin*, R. M. Manning*, J. R. Matijevic*, H. Y. McSween, Jr.*, H. J. Moore, S. L. Murchie*, J. R. Murphy*, T. J. Parker*, R. Rieder*, T. P. Rivellini*, J. T. Schofield*, A. Seiff*, R. B. Singer*, P. H. Smith*, L. A. Soderblom, D. A. Spencer*, C. R. Stoker*, Robert Sullivan*, N. Thomas*, S. W. Thurman*, M. G. Tomasko*, R. M. Vaughan*, H. Wänke*, A. W. Ward* and G. R. Wilson*. Overview of the Mars Pathfinder Mission; launch through landing, surface operations, data sets, and science results. Journal of Geophysical Research, E, Planets, *in* Results from Mars Pathfinder. (M. P. Golombek, editor). v. 104, no. 4, April 25, 1999. p. 8523-8553.

M. P. Golombek*, H. J. Moore, A. F. Haldemann*, T. J. Parker* and J. T. Schofield*. Assessment of Mars Pathfinder landing site predictions. Journal of Geophysical Research, E, Planets, *in* Results from Mars Pathfinder. (M. P. Golombek, editor). v. 104, no. 4, April 25, 1999. p. 8585-8594.

Ronald Greeley*, Michael Kraft*, Robert Sullivan*, G. R. Wilson*, N. T. Bridges*, K. E. Herkenhoff*, R. O. Kuzmin*, M. C. Malin* and A. W. Ward. Aeolian features and processes at the Mars Pathfinder landing site. Journal of Geophysical Research, E, Planets, *in* Results from Mars Pathfinder. (M. P. Golombek, editor). v. 104, no. 4, April 25, 1999. p. 8573-8584.

T. K. Gregg*, D. J. Fornari*, M. R. Perfit*, W. I. Ridley and M. D. Kurz*. Using submarine lava pillars to record mid-ocean ridge eruption dynamics. Earth and Planetary Science Letters. v. 178, no. 3-4, May 30, 2000. p. 195-214.

C. G. Groat. Integrating science at the USGS. Geotimes. v. 45, no. 6, June 2000. p. 5.

Mariagiovanna Guatteri* and Paul Spudich. What can strong-motion data tell us about slip-weakening fault-friction laws? Bulletin of the Seismological Society of America. v. 90, no. 1, February 2000. p. 98-116.

J. W. Haines and S. J. Williams. The coastal zone; a resource at risk. Geotimes. v. 45, no. 6, June 2000. p. 12-15.

P. A. Hamilton, J. D. Stoner and R. J. Gilliom. Water quality; why geology matters. Geotimes. v. 45, no. 6, June 2000. p. 20-23.

B. C. Hearn, Jr. MONTANA. Peridotite xenoliths from Porcupine Dome, Montana, USA; depleted subcontinental lithosphere samples in an olivine-phlogopite-carbonate magma. Proceedings of the International Kimberlite Conference, *in* The J. B. Dawson volume; proceedings of the VIIth international kimberlite conference; Volume 1. (J. J. Gurney, editor and others). 7, Vol. 1, 1999. p. 353-360.

J. R. Hein, Andrea Koschinsky*, Michael Bau*, F. T. Manheim, Jung-Keuk Kang* and Leanne Roberts. Cobalt-rich ferromanganese crusts in the Pacific, *in* Handbook of marine mineral deposits. (D. S. Cronan, editor). Boca Raton, FL: CRC Press, 2000. p. 239-279.

Margaret Hellweg and John Boatwright. Mapping the rupture process of moderate earthquakes by inverting accelerograms. Journal of Geophysical Research, B, Solid Earth and Planets. v. 104, no. 4, April 10, 1999. p. 7319-7328.

W. Hildreth and J. Fierstein. WASHINGTON. Recent eruptions of Mount Adams, Washington Cascades, USA. Bulletin of Volcanology. v. 58, no. 6, 1997. p. 472-490.

T. K. Hinkley. Compositions and origins of rock dust in high mountain glaciers and in ice sheets. Materialy Glyatsiologicheskikh Issledovaniy, *in* Trudy mezhdunarodnogo simposiuma "Sezonnyyy i mnogoletniye kolebaniya nival'nykh i glyatsial'nykh protsessov v gorakh" (Proceedings of international symposium "Seasonal and longterm fluctuations of nival and glacial processes in mountains"). 81, 1997. p. 13-20.

G. A. Hoch* and J. F. Cully, Jr. Effect of temporal variability in ground data collection on classification accuracy. Geocarto International. v. 14, no. 4, December 1999. p. 5-11.

C. W. Hoffman*, A. E. Grosz and J. G. Nickerson*. NORTH CAROLINA. Stratigraphic framework and heavy minerals of the continental shelf of Onslow and Long bays, North Carolina. Marine Georesources & Geotechnology, *in* Proceedings; Fourth symposium on Studies related to continental margins; a summary of year-nine and year-ten activities. (George Dellagiarino, editor and others). v. 17, no. 2-3, September 1999. p. 173-184.

S. R. Holnbeck. Rapid-estimation method for assessing scour at highway bridges, *in* Water resources engineering 98; proceedings of the International water resources engineering conference. (S. R. Abt, editor and others). Reston, VA: American Society of Civil Engineers, 1998. p. 222-227.

A. B. Hoos. Improving regional-model estimates of urban-runoff quality using local data. Journal of the American Water Resources Association. v. 32, no. 4, August 1996. p. 855-863.

K. A. Howard. NEVADA. Geologic map of the Lamoille Quadrangle, Elko County, Nevada. Map - Nevada Bureau of Mines and Geology, Report no. 125, 2000. p. 4.

M. R. Hudson. ARKANSAS. Coordinated strike-slip and normal faulting in the southern Ozark Dome of northern Arkansas; deformation in a late Paleozoic foreland. Geology (Boulder). v. 28, no. 6, June 2000. p. 511-514.

M. R. Hudson, D. A. John, J. E. Conrad and E. H. McKee. NEVADA. Style and age of late Oligocene-early Miocene deformation in the southern Stillwater Range, west central Nevada; paleomagnetism, geochronology, and field relations. Journal of Geophysical Research, B, Solid Earth and Planets. v. 105, no. 1, January 10, 2000. p. 929-954.

T. L. Hudson*, F. D. Fox* and G. S. Plumlee. Metal mining and the environment. AGI Environmental Awareness Series. 3, 1999. 64 p.

S. U. Janecke*, C. J. VanDenburg*, J. J. Blankenau* and J. W. M'Gonigle. MONTANA, IDAHO. Long-distance longitudinal transport of gravel across the Cordilleran thrust belt of Montana and Idaho. Geology (Boulder). v. 28, no. 5, May 2000. p. 439-442.

Jin Qiang* and P. J. McCabe. Genetic features of petroleum systems in rift basins of eastern China. Marine and Petroleum Geology. v. 15, no. 4, June 1998. p. 343-358.

R. C. Johnson. WYOMING, MONTANA. Coal in the deep subsurface of the Bighorn Basin, Wyoming and Montana. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 199-209.

R. C. Johnson and T. M. Finn. Is there a basin-centered gas accumulation in Upper Cretaceous rocks in the Bighorn Basin?. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 257-274.

R. C. Johnson and T. M. Finn. WYOMING, MONTANA. Structure contour map on the top of the Upper Cretaceous Mesaverde Formation, Bighorn Basin, Wyoming and Montana. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 197-198.

R. C. Johnson, W. R. Keefer, C. W. Keighin and T. M. Finn. WYOMING. Detailed outcrop studies of the upper part of the Upper Cretaceous Cody Shale and the Upper Cretaceous Mesaverde, Meeteetse, and Lance Formations, Bighorn Basin, Wyoming. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 59-78.

R. C. Johnson and C. W. Keighin. WYOMING, MONTANA. Origins of natural gases from Upper Cretaceous reservoirs, Bighorn Basin, Wyoming and Montana, and comparison with gases from the Wind River Basin, Wyoming. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 233-250.

J. S. Kargel. ARIZONA. Meteor Crater, Arizona; geology and cultural history, *in* Geologic excursions in northern and central Arizona. (E. M. Duebendorfer, editor). Flagstaff, AZ: Northern Arizona University, 1998. p. 175.

R. E. Kayen and J. K. Mitchell*. Assessment of liquefaction potential during earthquakes by Arias intensity. Journal of Geotechnical and Geoenvironmental Engineering. v. 123, no. 12, December 1997. p. 1162-1174.

W. R. Keefer. WYOMING. Silver Tip South and Elk Basin South fields; examples of stratigraphic traps in the Upper Cretaceous Frontier Formation, northern Bighorn Basin, Wyoming. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 275-278.

W. R. Keefer, T. M. Finn, R. C. Johnson and C. W. Keighin. WYOMING, MONTANA. Regional stratigraphy and correlation of Cretaceous and Paleocene rocks, Bighorn Basin, Wyoming and Montana. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 1-30.

W. R. Keefer and J. E. Goolsby* (editors). WYOMING, MONTANA. Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. Guidebook - Wyoming Geological Association. 49, 1998. 278 p.

C. W. Keighin. WYOMING. Petrography of selected Upper Cretaceous sandstones, Bighorn Basin, Wyoming. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 79-90.

M. P. Kennedy*, S. H. Clarke, H. G. Greene and M. R. Legg*. CALIFORNIA. Recency and character of faulting offshore from metropolitan San Diego, California; Point La Jolla to Baja California. Map Sheet - California Division of Mines and Geology, Report no. 42, 1980. 7 p., 1 sheet.

D. B. Kent, J. A. Davis, L. C. Anderson and B. A. Rea. Transport of chromium and selenium in a pristine sand and gravel aquifer; role of adsorption processes. Water Resources Research. v. 31, no. 4, April 1995. p. 1041-1050.

D. E. Kile and D. D. Eberl. COLORADO. Crystal growth mechanisms in miarolitic cavities in the Lake George ring complex and vicinity, Colorado. American Mineralogist, *in* Gene Foord issue. (David London, editor). v. 84, no. 5-6, June 1999. p. 718-724.

R. J. Kinzler*, N. J. Donnelly and T. L. Grove*. CALIFORNIA. Late Holocene hydrous mafic magmatism at the Paint Pot Crater and Callahan flows, Medicine Lake Volcano, N. California and the influence of H_2O in the generation of silicic magmas. Contributions to Mineralogy and Petrology. v. 138, no. 1, January 2000. p. 1-16.

D. W. Kirkland*, R. E. Denison* and W. E. Dean. TEXAS, NEW MEXICO. Parent brine of the Castile Evaporites (Upper Permian), Texas and New Mexico. Journal of Sedimentary Research. v. 70, no. 3, May 2000. p. 749-761.

W. D. Kleck* and E. E. Foord. The chemistry, mineralogy, and petrology of the George Ashley Block pegmatite body. American Mineralogist, *in* Gene Foord issue. (David London, editor). v. 84, no. 5-6, June 1999. p. 695-707.

I. Klich*, L. P. Wilding*, L. R. Drees* and E. R. Landa. Importance of microscopy in durability studies of solidified and stabilized contaminated soils. Soil Science Society of America Journal. v. 63, no. 5, October 1999. p. 1274-1283.

Unel Koklu*, Suleyman Akman* and L. F. Ruppert. Determination of inorganic elements in coal and coal combustion products, *in* Coal; resources, properties, utilization, pollution. (Orhan Kural, editor). Privately published: P, 1994. p. 97-113.

G. Komatsu*, H. Miyamoto*, K. Ito*, H. Tosaka*, T. Tokunaga*, John Shaw*, Mandy Munro-Stasiuk*, Brian Sawyer*, Claire Beaney*, Jerome-Etienne Lesemann*, Alberto Musacchio*, Bruce Rains*, R. R. Young*, B. F. Atwater, G. A. Smith* and R. B. Waitt. The Channeled Scabland; back to Bretz? Geology (Boulder). v. 28, no. 6, June 2000. p. 573-576.

K. M. Kuivila and C. G. Foe*. CALIFORNIA. Concentrations, transport and biological effects of dormant spray pesticides in the San Francisco Estuary, California. Environmental Toxicology and Chemistry. v. 14, no. 7, 1995. p. 1141-1150.

M. J. Kulow*, R. E. Hanson*, G. H. Girty*, M. S. Girty* and D. S. Harwood. CALIFORNIA. Cretaceous plutonic rocks in the Donner Lake-Cisco Grove Area, northern Sierra Nevada, California. The Compass. v. 74, no. 3, 1998. p. 69-76.

Jack Kume and J. P. Rousseau. NEVADA. Characterization of liquid-water percolation in tuffs in the unsaturated zone, Yucca Mountain, Nye County, Nevada. Miscellaneous Series - North Dakota Geological Survey, *in* Proceedings of the F. D. Holland, Jr.,

geological symposium. (J. M. Erickson, editor and others). Report no. 76, 1992. p. 297-301.

M. A. Lahvis and L. C. Rehmann. Simulation of methyl tert-butyl ether (MTBE) transport to ground water from immobile sources of gasoline in the vadose zone. Proceedings of the Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection and Remediation Conference, *in* Proceedings of the 2000 petroleum hydrocarbons and organic chemicals in ground water; prevention, detection, and remediation conference and exposition. (Anita Stanley, editor). 2000, 1999. p. 247-259.

Nicholas Lancaster*, G. G. Schaber and J. T. Teller*. Orbital radar studies of paleodrainages in the central Namib Desert. Remote Sensing of Environment. v. 71, no. 2, February 2000. p. 216-225.

A. M. Larin*, Y. V. Amelin*, L. A. Neymark and R. S. Krymsky*. The origin of the 1.73-1.70 Ga anorogenic Ulkan Volcano-plutonic complex, Siberian Platform, Russia; inferences from geochronological, geochemical and Nd-Sr-Pb isotopic data. Anais da Academia Brasileira de Ciencias, *in* Proceedings of the symposium on Rapakivi granites and related rocks. (Roberto Dall'Agnol, editor and others). v. 69, no. 3, September 1997. p. 295-312.

R. W. Lee and P. C. Bennett*. Reductive dissolution and reactive solute transport in a sewage-contaminated glacial outwash aquifer. Ground Water. v. 36, no. 4, August 1998. p. 583-595.

L. M. Liberty*, A. M. Trehu*, R. J. Blakely and M. E. Dougherty*. Neogene deformation of the Mount Angel/Gales Creek fault zone; constraints from high-resolution seismic reflection imaging, 1997. 28 p.

B. H. Lidz, E. A. Shinn, A. C. Hine* and S. D. Locker*. FLORIDA. Contrasts within an outlier-reef system; evidence for differential Quaternary evolution, South Florida windward margin, U.S.A. Journal of Coastal Research. v. 13, no. 3, 1997. p. 711-731.

P. K. Link, Ian Warren*, J. M. Preacher* and Betty Skipp. IDAHO. Stratigraphic analysis and interpretation of the Mississippian Copper Basin Group, McGowan Creek Formation, and White Knob Limestone, south-central Idaho, *in* Paleozoic systems of the Rocky Mountain region. (M. W. Longman, editor and others). Society for Sedimentary Geology, Rocky Mountain Section, 1996. p. 117-144.

P. W. Lipman. Calderas, *in* Encyclopedia of volcanoes. (Haraldur Sigurdsson, editor and others). San Diego, CA: Academic Press, 2000. p. 643-662.

P. W. Lipman. Subsidence of ash-flow calderas; relation to caldera size and magma-chamber geometry. Bulletin of Volcanology. v. 59, no. 3, 1997. p. 198-218.

J. H. List, B. E. Jaffe, A. H. Sallenger, Jr. and M. E. Hansen. LOUISIANA. Bathymetric comparisons adjacent to the Louisiana barrier islands; processes of large-scale change. Journal of Coastal Research, *in* Louisiana's barrier islands; an evaluation of their geological evolution, morphology and rapid deterioration. (G. W. Stone, editor and others). v. 13, no. 3, 1997. p. 670-678.

R. J. Litwin, J. P. Smoot, N. J. Durika and G. I. Smith. Calibrating late Quaternary terrestrial climate signals; radiometrically dated pollen evidence from the southern Sierra Nevada, USA. Quaternary Science Reviews. v. 18, no. 10-11, 1999. p. 1151-1171.

R. J. Litwin, R. E. Weems and T. J. Holtz, Jr. Dinosaurs; facts and fiction. California Geology. v. 52, no. 4, August 1999. p. 20-23.

K. R. Long, J. H. DeYoung, Jr. and Steve Ludington. Significant deposits of gold, silver, copper, lead, and zinc in the United States. Economic Geology and the Bulletin of the Society of Economic Geologists. v. 95, no. 3, May 2000. p. 629-644.

Rosaly Lopes-Gautier*, S. Douté*, W. D. Smythe*, L. W. Kamp*, R. W. Carlson*, A. G. Davies*, F. E. Leader*, A. S. McEwen*, P. E. Geissler*, S. W. Kieffer*, Laszlo Keszthelyi*, E. Barbinis*, R. Mehlman*, M. Segura*, J. Shirley* and L. A. Soderblom. A close-up look at Io from Galileo's near-infrared mapping spectrometer. Science. v. 288, no. 5469, May 19, 2000. p. 1201-1204.

M. M. Lorah and L. D. Olsen. Natural attenuation of chlorinated volatile organic compounds in a freshwater tidal wetland; field evidence of anaerobic biodegradation. Water Resources Research. v. 35, no. 12, December 1999. p. 3811-3827.

Zhong Lu, Dorte Mann*, J. T. Freymueller* and D. J. Meyer. ALASKA. Synthetic aperture radar interferometry of Okmok Volcano, Alaska; radar observations. Journal of Geophysical Research, B, Solid Earth and Planets. v. 105, no. 5, May 10, 2000. p. 10791-10806.

Ivo Lucchitta, G. H. Curtis*, M. E. Davis*, S. W. Davis* and Brent Turrin*. ARIZONA. Cyclic aggradation and downcutting, fluvial response to volcanic activity, and calibration of soil-carbonate stages in the western Grand Canyon, Arizona. Quaternary Research (New York). v. 53, no. 1, January 2000. p. 23-33.

J. E. Lucius. MINNESOTA. Detectability of crude oil in the subsurface near Bemidji, Minnesota, using ground penetrating radar, *in* Proceedings of the symposium on the Application of geophysics to engineering and environmental problems. (M. H. Powers, editor and others). Wheat Ridge, CO: Environmental and Engineering Geophysical Society, 2000. p. 311-319.

W. J. Lutter*, G. S. Fuis, C. H. Thurber* and Janice Murphy. CALIFORNIA. Tomographic images of the upper crust from the Los Angeles Basin to the Mojave Desert, California; results from the Los Angeles region seismic experiment. Journal of Geophysical Research, B, Solid Earth and Planets. v. 104, no. 11, November 10, 1999. p. 25,543-25,565.

P. A. Macfarlane*, D. O. Whittemore*, J. H. Doveton*, Tyan-Ming Chu*, Martin Smith*, Howard Feldman*, N. C. Myers and J. B. Gillespie. The Dakota Aquifer program; annual report, FY 93. Open-File Report - Kansas Geological Survey, Report no. 94-1, September 1993. 71 p.

M. N. Machette. Active, capable, and potentially active faults; a paleoseismic perspective. Journal of Geodynamics, *in* The resolution of geological analysis and models for earthquake faulting studies. (Giuseppe Cello, editor and others). v. 29, no. 3-5, July 2000. p. 387-392.

M. S. Majewski, M. M. McChesney*, J. E. Woodrow*, J. H. Prueger* and J. N. Seiber*. Aerodynamic measurements of methyl bromide volatilization from tarped and nontarped fields. Journal of Environmental Quality. v. 24, no. 4, August 1995. p. 742-752.

M. W. Manson*, D. K. Keefer, M. A. McKittrick*, A. G. Barrows*, T. L. Bedrossian*, K. Boyle*, R. Brumbaugh*, W. A. Bryant*, J. Bussman*, R. H. Campbell, M. C. Carey*, S. Carson*, K. H.

Custis*, G. Dunfield*, R. Gibson*, C. Giovannoni*, T. Goddard*, G. B. Griggs*, S. Guiney*, J. Hayes*, R. Haltenhoff*, E. L. Harp*, D. Hope*, J. K. Howard*, P. Irvine*, R. W. Jibson, D. Johnston*, M. Jordan*, P. Levine*, H. H. Majmundar*, D. Murray*, J. M. Nolan*, D. M. Peterson, N. G. Plant*, R. Powers*, J. Rigby*, J. P. Schlosser*, K. M. Schmidt, R. Schuster, J. E. Slosson*, R. Smith-Evernden*, J. A. Sowma*, T. E. Spittler*, J. G. Staude, L. R. Stevens, R. H. Sydnor*, S. Tan*, J. Thornberg*, J. C. Tinsley, J. Van Velsor*, B. V. Vassil*, D. L. Wagner*, G. E. Weber*, G. F. Wieczorek, C. J. Wills* and R. C. Wilson (compilers). CALIFORNIA. Landslides and other geologic features in the Santa Cruz Mountains, California, resulting from the Loma Prieta earthquake of October 17, 1989. Open File Report - California Division of Mines and Geology (DMG), Report no. 91-05, 1992. 45 p., 16 sheets.

Vera Markgraf*, T. R. Baumgartner*, J. P. Bradbury, H. F. Diaz*, R. B. Dunbar*, B. H. Luckman*, G. O. Seltzer*, T. W. Swetnam* and R. Villalba*. Paleoclimate reconstruction along the pole-equator-pole transect of the Americas (PEP 1). Quaternary Science Reviews, *in* Past global changes and their significance for the future. (K. D. Alverson, editor and others). v. 19, no. 1-5, January 2000. p. 125-140.

B. Martiny*, R. G. Martínez-Serrano*, D. J. Morán-Zenteno*, Consuelo Macías-Romo* and R. A. Ayuso. Stratigraphy, geochemistry and tectonic significance of the Oligocene magmatic rocks of western Oaxaca, southern Mexico. Tectonophysics, *in* The influence of plate interaction on post-Laramide magmatism and tectonics in Mexico. (Luca Ferrari, editor and others). v. 318, no. 1-4, March 2000. p. 71-98.

Kristin McDougall. Late Eocene neritic and bathyal foraminiferal assemblages of the Pacific Northwest. Thomas Burke Memorial Washington State Museum Research Report, *in* Contributions to the paleontology and geology of the West Coast; in honor of V. Standish Mallory. (J. E. Martin, editor). 6, 1998. p. 43-60.

Janice McIntosh*, J. J. McDonnell* and N. E. Peters. GEORGIA. Tracer and hydrometric study of preferential flow in large undisturbed soil cores from the Georgia Piedmont, USA. Hydrological Processes. v. 13, no. 2, February 15, 1999. p. 139-155.

S. R. McLean*, S. R. Wolfe* and J. M. Nelson. Predicting boundary shear stress and sediment transport over bed forms. Journal of Hydraulic Engineering. v. 125, no. 7, July 1999. p. 725-736.

G. M. McMurtry*, Emilio Herrero-Bervera*, M. D. Cremer*, J. R. Smith*, Johanna Resig*, Clark Sherman* and M. E. Torresan. HAWAII. Stratigraphic constraints on the timing and emplacement of the Alika 2 giant Hawaiian submarine landslide. Journal of Volcanology and Geothermal Research, *in* Deformation and flank instability of oceanic island volcanoes; a comparison of Hawaii and Atlantic island volcanoes. (Derek Elsworth, editor and others). v. 94, no. 1-4, December 1999. p. 35-58.

H. Y. McSween, Jr.*, S. L. Murchie*, J. A. Crisp*, N. T. Bridges*, R. C. Anderson*, J. F. Bell, III*, D. T. Britt*, J. Brückner*, G. Dreibus*, T. Economou*, A. Ghosh*, M. P. Golombek*, J. P. Greenwood*, J. R. Johnson, H. J. Moore*, R. V. Morris*, T. J. Parker*, R. Rieder*, R. B. Singer* and H. Wänke*. Chemical, multispectral, and textural constraints on the composition and origin of rocks at the Mars Pathfinder landing site. Journal of Geophysical Research, E, Planets, *in* Results from Mars Pathfinder. (M. P. Golombek, editor). v. 104, no. 4, April 25, 1999. p. 8679-8715.

Thomas Meixner*, R. C. Bales*, M. W. Williams*, D. H. Campbell and J. S. Baron. COLORADO. Stream chemistry modeling of two watersheds in the Front Range, Colorado. Water Resources Research, *in* Recent Loch Vale Watershed research. (J. S. Baron, prefacer and others). v. 36, no. 1, January 2000. p. 77-87.

E. A. Merewether, M. C. Huff*, W. A. Cobban and G. L. Skipp. WYOMING. Stratigraphy of a marine sandstone in the Upper Cretaceous Frontier Formation, Johnson and Natrona counties, Wyoming. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 43-58.

E. A. Merewether, R. W. Tillman*, W. A. Cobban and J. D. Obradovich. WYOMING. Outcrop-sections of the Upper Cretaceous Frontier Formation, southeastern Bighorn Basin, Wyoming. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 31-42.

R. L. Michel, D. H. Campbell, Dave Clow and J. T. Turk. COLORADO. Timescales for migration of atmospherically derived sulphate through an alpine/subalpine watershed, Loch Vale, Colorado. Water Resources Research, *in* Recent Loch Vale Watershed research. (J. S. Baron, prefacer and others). v. 36, no. 1, January 2000. p. 27-36.

R. T. Milhous. COLORADO. On sediment and habitat in the upper Animas River watershed, Colorado, *in* Water resources engineering 98; proceedings of the International water resources engineering conference. (S. R. Abt, editor and others). Reston, VA: American Society of Civil Engineers, 1998. p. 684-683.

T. P. Miller and T. J. Casadevall. Volcanic ash hazards to aviation, *in* Encyclopedia of volcanoes. (Haraldur Sigurdsson, editor and others). San Diego, CA: Academic Press, 2000. p. 915-930.

A. F. Moench and P. M. Barlow. Aquifer response to stream-stage and recharge variations; I, Analytical step-response functions. Journal of Hydrology. v. 230, no. 3-4, May 8, 2000. p. 192-210.

H. J. Moore, D. B. Bickler*, J. A. Crisp*, H. J. Eisen*, J. A. Gensler*, A. F. Haldemann*, J. R. Matijevic*, L. K. Reid* and Ferenc Pavlics*. Soil-like deposits observed by Sojourner, and Pathfinder rover. Journal of Geophysical Research, E, Planets, *in* Results from Mars Pathfinder. (M. P. Golombek, editor). v. 104, no. 4, April 25, 1999. p. 8729-8746.

J. G. Moore. Exploring the highest sierra. Stanford, CA: Stanford University Press, 2000. 427 p.

R. H. Morin, L. A. Senior and E. R. Decker*. PENNSYLVANIA. Fractured-aquifer hydrogeology from geophysical logs; Brunswick Group and Lockatong Formation, Pennsylvania. Ground Water. v. 38, no. 2, April 2000. p. 182-192.

M. M. Morrissey* and L. G. Mastin. Vulcanian eruptions, *in* Encyclopedia of volcanoes. (Haraldur Sigurdsson, editor and others). San Diego, CA: Academic Press, 2000. p. 463-475.

C. A. Morrow, D. E. Moore and D. A. Lockner. The effect of mineral bond strength and absorbed water on fault gouge frictional strength. Geophysical Research Letters. v. 27, no. 6, March 15, 2000. p. 815-818.

R. A. Morton, J. G. Paine* and M. D. Blum*. Responses of stable bay-margin and barrier-island systems to Holocene sea-level highstands, western Gulf of Mexico. Journal of Sedimentary Research. v. 70, no. 3, May 2000. p. 478-490.

D. S. Mueller and H. A. Hitchcock. MINNESOTA. Scour measurements at contracted highway crossings in Minnesota, 1997, *in* Water resources engineering 98; proceedings of the International water resources engineering conference. (S. R. Abt, editor and others). Reston, VA: American Society of Civil Engineers, 1998. p. 210-215.

D. S. Mueller and A. C. Parola*. Detail scour measurements around a debris accumulation, *in* Water resources engineering 98; proceedings of the International water resources engineering conference. (S. R. Abt, editor and others). Reston, VA: American Society of Civil Engineers, 1998. p. 234-239.

D. R. Muhs and E. A. Bettis, III*. IOWA. Geochemical variations in Peoria Loess of western Iowa indicate paleowinds of midcontinental North America during last glaciation. Quaternary Research (New York). v. 53, no. 1, January 2000. p. 49-61.

D. L. Naftz and M. E. Smith. WYOMING. Ice thickness, ablation, and other glaciological measurements on upper Fremont Glacier, Wyoming. Physical Geography. v. 14, no. 4, 1993. p. 404-414.

Manuel Nathenson. The dependence of permeability on effective stress for an injection test in the Higashi-Hachimantai geothermal field. Geophysical Research Letters. v. 27, no. 5, March 1, 2000. p. 589-592.

Manuel Nathenson. The dependence of permeability on effective stress for an injection test in the Higashi-Hachimantai geothermal field. Geophysical Research Letters. v. 27, no. 5, March 1, 2000. p. 589-592.

A. R. Nelson, S. F. Personius, R. E. Rimando*, R. S. Punongbayan*, Norman Tungol*, Hannah Mirabueno* and Ariel Rasdas*. Multiple large earthquakes in the past 1500 years on a fault in metropolitan Manila, the Philippines. Bulletin of the Seismological Society of America. v. 90, no. 1, February 2000. p. 73-85.

W. J. Nelson*, R. W. Harrison and David Hoffman*. Neotectonics of the northern Mississippi Embayment. Guidebook Series - Illinois State Geological Survey, Report no. 30, 1999. 34 p.

C. E. Neuzil. Osmotic generation of "anomalous" subsurface fluid pressures in geological environments. Nature (London). v. 403, no. 6766, January 13, 2000. p. 182-184.

C. G. Newhall. Volcano warnings, *in* Encyclopedia of volcanoes. (Haraldur Sigurdsson, editor and others). San Diego, CA: Academic Press, 2000. p. 1185-1197.

C. G. Newhall. Mount St. Helens, master teacher. Science. v. 288, no. 5469, May 19, 2000. p. 1181, 1183.

D. J. Nichols. MONTANA, WYOMING. Palynological age determinations of selected outcrop samples from the Lance and Fort Union formations in the Bighorn Basin, Montana and Wyoming. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 117-130.

R. S. Nicoll*, J. F. Miller*, G. S. Nowlan*, J. E. Repetski and R. L. Ethington*. Designation of holotypes for new species of Iapetonudus Nicoll, Miller, Nowlan, Repetski and Ethington and Iapetognathus Landing. Journal of Micropalaeontology. 18, Part 2, December 1999. p. 124.

L. H. Nowell, P. D. Capel and P. D. Dileanis. Pesticides in stream sediment and aquatic biota; distribution, trends, and governing factors. Pesticides in the Hydrologic Systems. 4, 1999. 1001 p.

V. F. Nuccio and T. M. Finn. WYOMING, MONTANA. Thermal maturity and petroleum generation history of Cretaceous and Tertiary source rocks, Bighorn Basin, Wyoming and Montana. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 211-232.

R. G. Orndorff, D. J. Weary, R. C. McDonald, R. W. Harrison, R. E. Weems and Stanka Sebela*. MISSOURI. A geologic framework in karst; US Geological Survey contributions to the hydrogeology of the Ozarks of Missouri. Proceedings - Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst, *in* Proceedings of the seventh multidisciplinary conference on sinkholes and the engineering and environmental impact of karst; hydrogeology and engineering geology of sinkholes and karst. (B. F. Beck, editor and others). 7, 1999. p. 57-62.

F. L. Paillet and Harry Hanscomb*. Borehole geophysical characterization of hydraulic stimulation of fractured bedrock aquifers, *in* Proceedings of the symposium on the Application of geophysics to engineering and environmental problems. (M. H. Powers, editor and others). Wheat Ridge, CO: Environmental and Engineering Geophysical Society, 2000. p. 567-576.

J. S. Pallister. New dimensions in geologic mapping. Geotimes. v. 45, no. 6, June 2000. p. 16-19.

G. W. Parker. Comparison of erosion and channel characteristics, *in* Water resources engineering 98; proceedings of the International water resources engineering conference. (S. R. Abt, editor and others). Reston, VA: American Society of Civil Engineers, 1998. p. 315-319.

Tom Parsons, Shinji Toda*, R. S. Stein, Aykut Barka* and J. H. Dieterich. Heightened odds of large earthquakes near Istanbul; an interaction-based probability calculation. Science. v. 288, no. 5466, April 28, 2000. p. 661-665.

S. F. Personius and S. A. Mahan. NEW MEXICO. Paleoearthquake recurrence on the East Paradise fault zone, metropolitan Albuquerque, New Mexico. Bulletin of the Seismological Society of America. v. 90, no. 2, April 2000. p. 357-369.

D. W. Peterson and R. I. Tilling. Lava flow hazards, *in* Encyclopedia of volcanoes. (Haraldur Sigurdsson, editor and others). San Diego, CA: Academic Press, 2000. p. 957-971.

G. S. Plumlee. Geoenvironmental characteristics of epithermal and porphyry deposits. Open File - British Columbia. Geological Survey Branch, *in* Metallogeny of volcanic arcs; short course notes; Pathways '98 and 1998 Cordilleran roundup. (D. V. Lefebure). Report no. 1998-8, November 1998. p. P1-P30.

L. N. Plummer, M. G. Rupert, Eurybiades Busenberg and P. Schlosser*. IDAHO. Age of irrigation water in ground water from the eastern Snake River Plain Aquifer, south-central Idaho. Ground Water. v. 38, no. 2, April 2000. p. 264-283.

C. W. Poag, D. R. Hutchinson, S. M. Colman and M. W. Lee. Seismic expression of the Chesapeake Bay impact crater; structural and morphologic refinements based on new seismic data. Special Paper - Geological Society of America, *in* Large meteorite impacts and planetary evolution; II. (B. O. Dressler, editor and others). 339, 1999. p. 149-164.

M. H. Powers. Consideration of automatic waveform interpretation of GPR data to detect void space beneath a concrete highway, *in* Proceedings of the symposium on the Application of geophysics to engineering and environmental problems. (M. H. Powers, editor and others). Wheat Ridge, CO: Environmental and Engineering Geophysical Society, 2000. p. 415-422.

M. H. Powers, Abou-Bakr Ibrahim* and Lynn Cramer* (editors). Proceedings of the symposium on the Application of geophysics to engineering and environmental problems. Wheat Ridge, CO: Environmental and Engineering Geophysical Society, 2000. 1254 p.

W. R. Premo, M. Tatsumoto, K. Misawa*, N. Nakamura* and N. I. Kita*. Pb-isotopic systematics of lunar highland rocks (>3.9 Ga); constraints on early lunar evolution, *in* Planetary petrology and geochemistry; the Lawrence A. Taylor 60th birthday volume. (G. A. Snyder, editor and others). Columbia, MD: Bellwether Publishing. 2, 1999. p. 207-240.

D. C. Prowell. SOUTH CAROLINA. Late Cretaceous stratigraphy in the central coastal plain of South Carolina; new evidence from drill holes near Lake Marion, Sumter County. South Carolina Geology. 36, 1993. p. 35-46.

M. E. Reid, S. B. Christian and D. L. Brien. Gravitational stability of three-dimensional stratovolcano edifices. Journal of Geophysical Research, B, Solid Earth and Planets. v. 105, no. 3, March 10, 2000. p. 6042-6056.

T. E. Reilly and D. R. LeBlanc. Experimental evaluation of factors affecting temporal variability of water samples obtained from long-screened wells. Ground Water. v. 36, no. 4, August 1998. p. 566-576.

S. B. Roberts. WYOMING. An overview of the stratigraphic and sedimentologic characteristics of the Paleocene Fort Union Formation, southern Bighorn Basin, Wyoming. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 91-116.

D. M. Robertson and E. D. Roerish. Influence of various water quality sampling strategies on load estimates for small streams. Water Resources Research. v. 35, no. 12, December 1999. p. 3747-3759.

Joseph Rosenbaum, Richard Reynolds, Joseph Smoot and Robert Meyer*. CALIFORNIA. Anisotropy of magnetic susceptibility as a tool for recognizing core deformation; reevaluation of the paleomagnetic record of Pleistocene sediments from drill hole OL-92, Owens Lake, California. Earth and Planetary Science Letters. v. 178, no. 3-4, May 30, 2000. p. 415-424.

D. O. Rosenberry, R. G. Striegl and D. C. Hudson. MINNESOTA. Plants as indicators of focused ground water discharge to a northern Minnesota lake. Ground Water. v. 38, no. 2, April 2000. p. 296-303.

S. A. Rounds. OREGON. Investigations of water quality in the Tualatin River basin, Oregon, and their role in the TMDL process. Water Resources Center Report - Centers for Water and Wildland Resources, *in* Western watersheds; science, sense, strategies; proceedings of the seventh biennial Watershed Management Council conference. (C. W. Slaughter, editor). Report no. 98, January 2000. p. 9-19.

L. C. Rowan, J. K. Crowley, R. G. Schmidt, C. M. Ager and J. C. Mars. Mapping hydrothermally altered rocks by analyzing hyperspectral image (AVIRIS) data of forested areas in the Southeastern United States. Journal of Geochemical Exploration. v. 68, no. 3, April 2000. p. 145-166.

R. L. Runkel, B. A. Kimball, D. M. McKnight* and K. E. Bencala. Reactive solute transport in streams; a surface complexation approach for trace metal sorption. Water Resources Research. v. 35, no. 12, December 1999. p. 3829-3840.

D. L. Rus and P. J. Soenksen. NEBRASKA. Channel stability of Turkey Creek, Nebraska, *in* Water resources engineering 98; proceedings of the International water resources engineering conference. (S. R. Abt, editor and others). Reston, VA: American Society of Civil Engineers, 1998. p. 423-428.

Takeshi Sagiya* and Wayne Thatcher. Coseismic slip resolution along a plate boundary megathrust; the Nankai Trough, Southwest Japan. Journal of Geophysical Research, B, Solid Earth and Planets. v. 104, no. 1, January 10, 1999. p. 1111-1129.

J. C. Savage, J. L. Svarc, W. H. Prescott and M. H. Murray. OREGON. Deformation across the forearc of the Cascadia subduction zone at Cape Blanco, Oregon. Journal of Geophysical Research, B, Solid Earth and Planets. v. 105, no. 2, February 10, 2000. p. 3095-3102.

L. E. Schemel, B. A. Kimball and K. E. Bencala. COLORADO. Colloid formation and metal transport through two mixing zones affected by acid mine drainage near Silverton, Colorado. Applied Geochemistry. v. 15, no. 7, August 2000. p. 1003-1018.

R. L. Schuster. Keynote paper; Landslide hazard management; experience in the United States, *in* Proceedings of the international conference on Slope stability organized by the Institution of Civil Engineers; slope stability engineering, developments and applications. (R. J. Chandler, editor). Thomas Telford, 1991. p. 253-262.

W. C. Schwab, M. A. Allison*, William Corso, L. L. Lotto*, B. Butman, M. Buchholtz-ten Brink, J. F. Denny, W. W. Danforth and D. S. Foster. NEW YORK, NEW JERSEY. Initial results of high-resolution sea-floor mapping offshore of the New York-New Jersey metropolitan area using sidescan sonar. Northeastern Geology and Environmental Sciences. v. 19, no. 4, 1997. p. 243-262.

David Seeland. WYOMING. Late Cretaceous, Paleocene, and Early Eocene paleogeography of the Bighorn Basin and northwestern Wyoming. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 137-166.

S. D. Shapiro*, D. LeBlanc, P. Schlosser* and A. Ludin*. Characterizing a sewage plume using the ^{3}H-^{3}He dating technique. Ground Water. v. 37, no. 6, December 1999. p. 861-878.

K. M. Shedlock. Seismic hazard map of North and Central America and the Caribbean. Annali di Geofisica, *in* The Global Seismic

Hazard Assessment Program (GSHAP) 1992-1999. (Domenico Giardini, editor). v. 42, no. 6, December 1999. p. 977-997.

K. M. Shedlock and J. G. Tanner*. Seismic hazard map of the Western Hemisphere. Annali di Geofisica, *in* The Global Seismic Hazard Assessment Program (GSHAP) 1992-1999. (Domenico Giardini, editor). v. 42, no. 6, December 1999. p. 1199-1214.

P. K. Sims and Z. E. Peterman. MICHIGAN. Geology of the Great Lakes tectonic zone in the Marquette area, Michigan; a late Archean paleosuture. Proceedings and Abstracts - Institute on Lake Superior Geology, Annual Meeting, *in* Institute on Lake Superior geology; proceedings of the 38th annual meeting; field trip guidebook. (A. B. Dickas, compiler and others). 38, Part 2, May 1992. p. 103-135.

S. A. Sipkin. The use of waveform shapes to automatically determine earthquake focal depth. Bulletin of the Seismological Society of America. v. 90, no. 1, February 2000. p. 248-254.

D. V. Smith, D. L. Wright and J. D. Abraham. Advances in very early time electromagnetic (VETEM) system data analysis and image processing, *in* Proceedings of the symposium on the Application of geophysics to engineering and environmental problems. (M. H. Powers, editor and others). Wheat Ridge, CO: Environmental and Engineering Geophysical Society, 2000. p. 469-475.

Kristen Sneddon*, G. R. Olhoeft* and M. H. Powers. Determining and mapping DNAPL saturation values from noninvasive GPR measurements, *in* Proceedings of the symposium on the Application of geophysics to engineering and environmental problems. (M. H. Powers, editor and others). Wheat Ridge, CO: Environmental and Engineering Geophysical Society, 2000. p. 293-302.

Mike Sorey, Dave Hill and V. S. McConnell*. CALIFORNIA. Scientific drilling in Long Valley Caldera, California; an update. California Geology. v. 53, no. 1, February 2000. p. 4-11.

A. E. Springer* and Donald Bills. Exploration for and ecological importance of shallow and deep ground-water around San Francisco Mountain, *in* Geologic excursions in northern and central Arizona. (E. M. Duebendorfer, editor). Flagstaff, AZ: Northern Arizona University, 1998. p. 27-33.

A. E. Springer*, J. M. Wright*, P. B. Shafroth, J. C. Stromberg* and D. T. Patten*. Coupling groundwater and riparian vegetation models to assess effects of reservoir releases. Water Resources Research. v. 35, no. 12, December 1999. p. 3621-3630.

G. W. Stone*, J. M. Grymes, III*, J. R. Dingler and D. A. Pepper*. LOUISIANA. Overview and significance of hurricanes on the Louisiana Coast, U.S.A. Journal of Coastal Research, *in* Louisiana's barrier islands; an evaluation of their geological evolution, morphology and rapid deterioration. (G. W. Stone, editor and others). v. 13, no. 3, 1997. p. 656-669.

G. W. Stone*, S. J. Williams and A. E. Burruss* (editors). LOUISIANA. Louisiana's barrier islands; an evaluation of their geological evolution, morphology and rapid deterioration. Journal of Coastal Research. v. 13, no. 3, 1997. p. 591-710.

J. K. Sueker, J. N. Ryan, Carol Kendall* and R. D. Jarrett. COLORADO. Determination of hydrologic pathways during snowmelt for alpine/subalpine basins, Rocky Mountain National Park, Colorado. Water Resources Research, *in* Recent Loch Vale Watershed research. (J. S. Baron, prefacer and others). v. 36, no. 1, January 2000. p. 63-75.

K. L. Tanaka. Debris-flow origin for the Simud/Tiu deposit on Mars. Journal of Geophysical Research, E, Planets, *in* Results from Mars Pathfinder. (M. P. Golombek, editor). v. 104, no. 4, April 25, 1999. p. 8637-8652.

D. J. Taylor. WYOMING. Processing and interpretation of 2-D seismic data from the Bighorn Basin, Wyoming. Guidebook - Wyoming Geological Association, *in* Cretaceous and lower Tertiary rocks of the Bighorn Basin, Wyoming and Montana. (W. R. Keefer, editor and others). 49, 1998. p. 179-196.

H. E. Taylor, J. R. Garbarino, D. M. Murphy* and Ronald Beckett*. Inductively coupled plasma-mass spectrometry as an element-specific detector for field-flow fractionation particle separation. Analytical Chemistry (Washington, DC). v. 64, no. 18, 1992. p. 2036-2041.

U. S. ten Brink, Jie Zhang*, T. M. Brocher, D. A. Okaya*, K. D. Klitgord and G. S. Fuis. CALIFORNIA. Geophysical evidence for the evolution of the California inner continental borderland as a metamorphic core complex. Journal of Geophysical Research, B, Solid Earth and Planets. v. 105, no. 3, March 10, 2000. p. 5835-5857.

P. C. Thomas*, M. C. Malin*, K. S. Edgett*, M. H. Carr, W. K. Hartmann*, A. P. Ingersoll*, P. B. James*, L. A. Soderblom, J. Veverka* and R. Sullivan*. North-south geological differences between the residual polar caps on Mars. Nature (London). v. 404, no. 6774, March 9, 2000. p. 161-164.

C. R. Tiedeman, D. J. Goode and P. A. Hsieh. Characterizing a ground water basin in a New England mountain and valley terrain. Ground Water. v. 36, no. 4, August 1998. p. 611-620.

R. I. Tilling. Mount St. Helens 20 years later; what we've learned. Geotimes. v. 45, no. 5, May 2000. p. 14-18.

J. C. Tinsley. New karst connection in Mineral King Valley. California Caver. v. 210, no. Winter, 1999. p. 22.

D. J. Topping, D. M. Rubin, J. M. Nelson, P. J. Kinzell, III and I. C. Corson*. Colorado River sediment transport; 2, Systematic bed-elevation and grain-size effects of sand supply limitation. Water Resources Research. v. 36, no. 2, February 2000. p. 543-570.

D. J. Topping, D. M. Rubin and L. E. Vierra, Jr.*. Colorado River sediment transport; 1, Natural sediment supply limitation and the influence of Glen Canyon Dam. Water Resources Research. v. 36, no. 2, February 2000. p. 515-542.

D. C. Trabant. Ice volume modeling for mountain glacier and paleoglacial reconstruction. Materialy Glyatsiologicheskikh Issledovaniy, *in* Trudy mezhdunarodnogo simposiuma "Sezonnyyy i mnogoletniye kolebaniya nival'nykh i glyatsial'nykh protsessov v gorakh" (Proceedings of international symposium "Seasonal and longterm fluctuations of nival and glacial processes in mountains"). 81, 1997. p. 66-69.

Susumu Umino*, P. W. Lipman and Sumie Obata*. HAWAII. Subaqueous lava flow lobes, observed on ROV Kaiko dives off Hawaii. Geology (Boulder). v. 28, no. 6, June 2000. p. 503-506.

A. R. Vasavada*, Jean-Pierre Williams*, D. A. Paige*, K. E. Herkenhoff, N. T. Bridges*, Ronald Greeley*, B. C. Murray*, D.

S. Bass* and K. S. McBride*. Surface properties of Mars' polar layered deposits and polar landing sites. Journal of Geophysical Research, E, Planets. v. 105, no. 3, March 25, 2000. p. 6961-6969.

S. Vergniolle* and M. Mangan. Hawaiian and strombolian eruptions, *in* Encyclopedia of volcanoes. (Haraldur Sigurdsson, editor and others). San Diego, CA: Academic Press, 2000. p. 447-461.

A. Villaseñor, H. M. Benz, L. Filippi*, G. De Luca*, R. Scarpa*, G. Patane* and S. Vinciguerra*. Three-dimensional P wave velocity structure of Mt. Etna, Italy. Geophysical Research Letters. v. 25, no. 11, June 1, 1998. p. 1975-1978.

L. A. Wald and D. J. Wald. CALIFORNIA. The 1998 Southern California seismic network bulletin. Seismological Research Letters. v. 70, no. 4, August 1999. p. 404-416.

Felix Waldhauser, W. L. Ellsworth and Alex Cole. CALIFORNIA. Slip-parallel seismic lineations on the northern Hayward Fault, California. Geophysical Research Letters. v. 26, no. 23, December 1, 1999. p. 3525-3528.

Chun-Yong Wang, Rong-Sheng Zeng, W. D. Mooney and B. R. Hacker*. A crustal model of the ultrahigh-pressure Dabie Shan orogenic belt, China, derived from deep seismic refraction profiling. Journal of Geophysical Research, B, Solid Earth and Planets. v. 105, no. 5, May 10, 2000. p. 10857-10869.

A. W. Ward, L. R. Gaddis, R. L. Kirk, L. A. Soderblom, K. L. Tanaka, M. P. Golombek*, T. J. Parker*, Ronald Greeley* and R. O. Kuzmin*. General geology and geomorphology of the Mars Pathfinder landing site. Journal of Geophysical Research, E, Planets, *in* Results from Mars Pathfinder. (M. P. Golombek, editor). v. 104, no. 4, April 25, 1999. p. 8555-8571.

L. W. Ward. VIRGINIA. Stratigraphy of outcropping Tertiary beds along the Pamunkey River central Virginia coastal plain. Field Trip Guidebook (American Association of Petroleum Geologists. Eastern Section). 5, November 1985. 110 p.

Debbie Warner. GEORGIA. Hydraulic properties of the karst upper Floridan Aquifer near Albany, Georgia, *in* Proceedings of the 1997 Georgia water resources conference. (K. J. Hatcher, editor). Athens, GA: University of Georgia, 1997. p. 401-406.

K. L. Webber*, W. B. Simmons*, A. U. Falster* and E. E. Foord. CALIFORNIA. Cooling rates and crystallization dynamics of shallow level pegmatite-aplite dikes, San Diego County, California. American Mineralogist, *in* Gene Foord issue. (David London, editor). v. 84, no. 5-6, June 1999. p. 708-717.

Michael Weber*, C. W. Wicks, Jr., Frank Krüger*, Gunnar Jahnke* and Jörg Schlittenhardt*. Asymmetric radiation of seismic waves from an atoll; nuclear tests in French Polynesia. Geophysical Research Letters. v. 25, no. 11, June 1, 1998. p. 1967-1971.

P. J. Wigington, Jr.*, D. R. DeWalle*, P. S. Murdoch, W. A. Kretster*, H. A. Simonin*, J. Van Sickle* and J. P. Baker*. Episodic acidification of small streams in the northeastern United States; ionic controls of episodes. Ecological Applications. v. 6, no. 2, May 1996. p. 389-407.

S. J. Williams, G. W. Stone* and A. E. Burruss*. A perspective on the Louisiana wetland loss and coastal erosion problem. Journal of Coastal Research, *in* Louisiana's barrier islands; an evaluation of their geological evolution, morphology and rapid deterioration. (G. W. Stone, editor and others). v. 13, no. 3, 1997. p. 593-594.

K. V. Wilson, Jr. Pier scour depths affected by clay in Mississippi, *in* Water resources engineering 98; proceedings of the International water resources engineering conference. (S. R. Abt, editor and others). Reston, VA: American Society of Civil Engineers, 1998. p. 286-291.

T. C. Winter, S. E. Mallory, T. R. Allen and D. O. Rosenberry. The use of principal component analysis for interpreting ground water hydrographs. Ground Water. v. 38, no. 2, April 2000. p. 234-246.

T. C. Winter, D. O. Rosenberry and A. M. Sturrock. Evaluation of 11 equations for determining evaporation for a small lake in the north central United States. Water Resources Research. v. 31, no. 4, April 1995. p. 983-993.

R. C. Witter*, H. M. Kelsey* and Eileen Hemphill-Haley. OREGON. A paleoseismic history of the south-central Cascadia subduction zone; assessing earthquake recurrence intervals and upper-plate deformation over the past 6600 years at the Coquille River estuary, southern Oregon, U.S.A. 1997. 54 p. *Available from:* U. S. Geological Survey, Library, Reston, VA, United States.

Ivan Wong*, Andrew Sparks*, Bob Metcalfe*, Douglas Wright*, Ken Stokoe* and James Yount (investigators). WASHINGTON. Probabilistic seismic hazard analysis and ground shaking microzonation maps for the Seattle, Washington, metropolitan area; characterization of the near-surface geology (year 1), June 29, 1999. variously paginated. *Available from:* U. S. Geological Survey, library, Reston, VA, United States.

D. L. Wright, D. V. Smith and J. D. Abraham. A VETEM survey of a former munitions foundry site at the Denver Federal Center, *in* Proceedings of the symposium on the Application of geophysics to engineering and environmental problems. (M. H. Powers, editor and others). Wheat Ridge, CO: Environmental and Engineering Geophysical Society, 2000. p. 459-468.

T. L. Wright and F. W. Klein. New earthquake catalog reexamines Hawaii's seismic history. Eos, Transactions, American Geophysical Union. v. 81, no. 10, March 7, 2000. p. 101, 106-107.

J. C. Wynn and E. M. Shoemaker. Secrets of the Wabar Craters. Sky and Telescope. v. 94, no. 5, November 1997. p. 44-48.

Jeff Wynn, Don Pool, Mark Bultman, Mark Gettings and Jean Lemieux*. Airborne EM as a 3-D aquifer-mapping tool, *in* Proceedings of the symposium on the Application of geophysics to engineering and environmental problems. (M. H. Powers, editor and others). Wheat Ridge, CO: Environmental and Engineering Geophysical Society, 2000. p. 93-99.

S. C. Zell* and S. K. Sorenson. Cyst acquisition rate for Giardia lamblia in backcountry travelers to Desolation Wilderness, Lake Tahoe. Journal of Wilderness Medicine. 4, 1993. p. 147-154.

Zhang Peizhen*, Yang Zhixian*, H. K. Gupta*, S. C. Bhatia* and K. M. Shedlock. Global Seismic Hazard Assessment Program (GSHAP) in continental Asia. Annali di Geofisica, *in* The Global Seismic Hazard Assessment Program (GSHAP) 1992-1999. (Domenico Giardini, editor). v. 42, no. 6, December 1999. p. 1167-1190.

M. L. Zoback, R. C. Jachens and J. A. Olson. Abrupt along-strike change in tectonic style; San Andreas fault zone, San Francisco

Peninsula. Journal of Geophysical Research, B, Solid Earth and Planets. v. 104, no. 5, May 10, 1999. p. 10,719-10,742.

G. G. Zuffa*, W. R. Normark, F. Serra* and C. A. Brunner*. Turbidite megabeds in an oceanic rift valley recording jokulhlaups of late Pleistocene glacial lakes of the Western United States. Journal of Geology. v. 108, no. 3, May 2000. p. 253-274.

ABSTRACTS

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

T. S. Ahlbrandt. USGS new millennium world oil and gas assessment [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 29.

C. N. Alpers and R. A. Zierenberg*. Geoenvironmental characteristics of volcanogenic massive sulphide deposits [abstr.] Open File - British Columbia. Geological Survey Branch, *in* Metallogeny of volcanic arcs; short course notes; Pathways '98 and 1998 Cordilleran roundup. (D. V. Lefebure). Report no. 1998-8, November 1998. p. O1-O23.

R. C. Anderson*, M. P. Golombek*, B. J. Franklin*, K. L. Tanaka, J. M. Dohm, J. H. Lias and B. Peer*. Centers of tectonic activity through time for the Western Hemisphere of Mars [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

F. C. Armstrong. 1984 memoirs; Fred Oscar Jones, member, ASCE 1912-1983 [abstr.] Transactions of the American Society of Civil Engineers. 149, 1985. p. 365-366.

F. Asfirane*, Pierre Nehlig*, P. Bernard*, J. M. Miehe* and A. Showail. An aeromagnetic synthesis of the Arabian Shield; geological implications [abstr.] Journal of Conference Abstracts, *in* European Union of Geosciences conference abstracts; EUG 10. v. 4, no. 1, March 1999. p. 154.

J. M. Bahr*, K. W. Potter*, S. K. Swanson*, M. T. Schwar*, S. E. Domber*, K. R. Bradbury* and J. T. Krohelski. A tale of two watersheds on the urban fringe [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 156.

E. A. Bailey, M. E. Hines* and J. E. Gray. ALASKA. Mercury methylation and demethylation in soils near abandoned mercury mines in Southwest Alaska, USA [abstr.] American Water Resources Association Technical Publication Series TPS, *in* Abstracts, annual water resources conference of the American Water Resources Association. (S. R. Durrans, editor and others). v. TPS, no. 98-3, 1998. p. 99.

P. B. Barton, Jr. Problems and opportunities for mineral deposit models [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A98-A99.

W. A. Battaglin and D. A. Goolsby. Nitrogen inputs in the Mississippi River basin; can their relative contributions to Gulf of Mexico hypoxia be estimated? [abstr.] American Water Resources Association Technical Publication Series TPS, *in* Abstracts, annual water resources conference of the American Water Resources Association. (S. R. Durrans, editor and others). v. TPS, no. 98-3, 1998. p. 36.

H. Becker*, R. J. Walker*, J. N. Grossman, L. Grossman*, G. J. MacPherson*, J. W. Morgan* and S. B. Simon*. Re-Os isotopic systematics of a CAI from the Allende Meteorite [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

T. L. Becker, T. Rosanova, Lisa Gaddis, A. S. McEwen*, C. B. Phillips*, M. E. Davies* and T. R. Colvin*. Cartographic processing of the Galileo SSI data; an update on the production of global mosaics of the Galilean satellites [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

K. Belitz. Impacts of urbanization on groundwater quantity and quality in the Santa Ana Basin, CA [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 156.

J. F. Bell, III*, R. C. Anderson*, J. L. Bishop*, N. T. Bridges*, D. T. Britt*, J. A. Crisp*, T. Economou*, A. Ghosh*, J. P. Greenwood*, H. P. Gunnlaugsson*, R. B. Hargraves*, K. Herkenhoff*, S. F. Hviid*, J. R. Johnson, J. M. Knudsen*, M. B. Madsen*, H. Y. McSween*, R. V. Morris*, S. L. Murchie* and R. J. Reid*. Mineralogy, composition, and origin of soil and dust at the Mars Pathfinder landing site [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

J. L. Bishop*, A. Scheinost*, J. F. Bell, III*, D. T. Britt*, J. R. Johnson and S. L. Murchie*. Ferrihydrite-schwertmannite-silicate mixtures as a model of Martian soils measured by Pathfinder [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

J. D. Bliss and D. W. Menzie. Mineral deposit spatial models [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A228-A229.

J. K. Bohlke, L. N. Plummer and E. Busenberg. Estimating recharge at annual to decadal time scales by use of environmental tracers in the saturated zone [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 151.

K. S. Bolm, D. G. Frank and J. L. Schneider. Three archives of the U. S. Geological Survey's Western Mineral Resources Team [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 163.

M. H. Bothner and J. F. Grassle*. Sewage contamination in sediments beneath a deep-ocean dumpsite [abstr.] Northeastern Geology and Environmental Sciences, *in* Waste management and dredged-material disposal in the nearshore environment; a symposium. (G. M. Friedman). v. 18, no. 4, 1996. p. 292.

J. M. Boyce*, D. J. Roddy and L. A. Soderblom. Distribution of onset diameters of rampart ejecta craters on Mars [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

K. R. Bradbury* and J. T. Krohelski. A regional groundwater model as a tool for evaluating the impacts of urbanization [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 156.

N. T. Bridges*, J. F. Bell, III*, J. A. Crisp*, T. Economou*, J. R. Johnson, S. L. Murchie* and R. J. Reid*. Comparison between APXS and IMP multispectral data at the Pathfinder landing site; evidence for dust coatings on rock surfaces [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

N. T. Bridges*, R. Greeley*, A. F. Haldemann*, K. E. Herkenhoff*, Michael Kraft*, T. J. Parker* and A. W. Ward. Orientation of aeolian flutes at the Mars Pathfinder landing site [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

D. T. Britt*, R. Anderson*, J. F. Bell, III*, J. A. Crisp*, T. Economou*, K. E. Herkenhoff*, M. B. Madsen*, H. Y. McSween*, S. L. Murchie*, R. J. Reid*, R. Rieder*, R. B. Singer* and L. Soderblom. The mineralogy of the Mars Pathfinder landing site [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

H. R. Burger*, J. B. Brady*, J. T. Cheney*, T. A. Harms*, P. Mueller*, A. Heatherington* and J. Wooden. MONTANA. Evidence for a major, early Proterozoic orogenic event in the Tobacco Root Mountains of southwestern Montana [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 177-178.

R. C. Burruss. Options for sequestration of carbon dioxide; an energy resource perspective [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 29-30.

Brad Butman, William Schwab and Marilyn Buchholtz-ten Brink. Predicting the fate of contaminants in the New York Bight [abstr.] Northeastern Geology and Environmental Sciences, *in* Dredging harbors; what to do with toxic waste; a symposium. (G. M. Friedman, editor). v. 21, no. 1-2, 1999. p. 129.

N. A. Cabrol*, Guillermo Chong Diaz*, J. M. Dohm, Mario Pereira Arredondo*, George Dunfield*, V. C. Gulick*, Arturo Jensen Iglesia*, Rendy Keaten, Cristian Herrera Lamelli*, Ragnhild Landheim*, Pascal Lee*, Liam Pedersen*, Ted Roush*, Kurt Schwehr*, C. R. Stoker* and Aaron Zent*. Atacama I; science results of the 1997 Nomad Rover field test in the Atacama Desert, Chile [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

N. A. Cabrol*, Guillermo Chong Diaz*, George Dunfield*, J. M. Dohm, Mario Pereira Arredondo*, V. C. Gulick*, Arturo Jensen Iglesia*, Rendy Keaten, Cristian Herrera Lamelli*, Ragnhild Landheim*, Pascal Lee*, Liam Pedersen*, Ted Roush*, Kurt Schwehr*, C. R. Stoker* and Aaron Zent*. Atacama II; Nomad Rover Sample 1-250697 and implications for fossil characterization during Mars exploration [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

N. A. Cabrol*, Pascal Lee*, Guillermo Chong Diaz*, Liam Pedersen*, J. M. Dohm, Mario Pereira Arredondo*, George Dunfield*, V. C. Gulick*, Arturo Jensen Iglesia*, Rendy Keaten, Cristian Herrera Lamelli*, Ragnhild Landheim*, Ted Roush*, Kurt Schwehr*, C. R. Stoker* and Aaron Zent*. Atacama III; meteorite search during the Nomad field tests; perspectives on automated field operations by teleoperated vehicles in extreme environments [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

W. M. Calvin. The potential for ferrous clays on Mars [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

W. F. Cannon, D. L. Daniels, S. W. Nicholson and K. J. Schulz. WISCONSIN. New aeromagnetic map of Wisconsin and some preliminary interpretations [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 178.

E. C. Chao. Multiple lines of evidence for establishing the mineral paragenetic sequence of the Bayan Obo rare earth ore deposit of Inner Mongolia, China [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A253.

M. G. Chapman and K. L. Tanaka. Young geomorphic processes on Mars involving ice on the northern plains; implications from MOC [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 132.

M. G. Chapman and J. R. Zimbelman*. Two age groups of coronae on Venus? [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

Karen Chin, D. A. Eberth* and W. J. Sloboda*. Exceptional soft-tissue preservation in a theropod coprolite from the Upper Cretaceous Dinosaur Park Formation of Alberta [abstr.] Journal of Vertebrate Paleontology, *in* Abstracts of papers; fifty-ninth annual meeting, Society of Vertebrate Paleontology. v. 19, no. 3, Suppl. September 14, 1999. p. 37-38.

P. R. Christensen*, J. Bandfield*, V. E. Hamilton*, M. Lane*, S. Ruff*, D. Anderson*, R. Clark and Ted Roush*. The composition of Martian surface materials as determined from the Mars Global Surveyor thermal emission spectrometer [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

Philip Christensen*, Joshua Bandfield*, Victoria Hamilton*, Steven Ruff*, Roger Clark, Michael Malin* and Keneth Edgett*. The mineralogy and surface properties of Mars [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 131.

F. C. Chuang*, P. H. Figueredo*, Ronald Greeley* and R. L. Kirk. The "Mitten"; a possible cryovolcanic feature on Europa [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 174.

Lindrith Cordell. MISSOURI. Basement geology in the Southeast Missouri lead district inferred from image-analysis of aeromagnetic and gravity data [abstr.], *in* Second symposium on Exploration geophysics; abstracts. (China, Geological Society, Commission on Exploration Geophysics). China Academic Publishers, 1986. p. 30-31.

Lindrith Cordell. Geophysical evidence for Precambrian structural control of the Rio Grande Rift [abstr.], *in* Second symposium on Exploration geophysics; abstracts. (China, Geological Society, Commission on Exploration Geophysics). China Academic Publishers, 1986. p. 28-29.

S. R. Corsi. Impacts of aircraft and runway deicers in the Kinnickinnic River watershed in Milwaukee [abstr.] American Water Resources Association Technical Publication Series TPS, *in* Abstracts, annual water resources conference of the American Water Resources Association. (S. R. Durrans, editor and others). v. TPS, no. 98-3, 1998. p. 48.

R. M. Coveney, Jr.*, J. B. Murowchick*, Chen Nansheng* and R. I. Grauch. Ores in Ni-Mo-PGE-Au-rich shales of southern China [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A111-A112.

D. P. Cox. Development and use of deposit models in the U. S. Geological Survey [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A99.

C. G. Cunningham, G. H. Allcott and T. A. Ovenshine. The IUGS/UNESCO deposit modeling program [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A98.

Teresa de Diego Forbis*, R. Douglas* and J. Barron. Microfábrica de sedimentos relacionada al oxigeno en "lutitas negras", Golfo de California, Mexico—Oxygen-related sediment microfabrics in modern "black shales", Gulf of California, Mexico [abstr.] Memorias - Reunión Internacional Sobre Geología de la Península de Baja California = International Meeting on Geology of the Baja California Peninsula, *in* V reunión internacional sobre Geología de la península de Baja California—V international meeting on the Geology of the Baja California Peninsula. (Luis Cupul Magaña, editor). 5, May 2000. p. 47-48.

J. M. Dohm and K. L. Tanaka. Geologic mapping of the Metis Regio (V6) Quadrangle of Venus at 1:5,000,000 scale [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

J. M. Dohm, K. L. Tanaka, J. H. Lias, T. M. Hare, R. C. Anderson* and V. C. Gulick*. Warrego Valles and other candidate sites of local hydrothermal activity within the Thaumasia region, Mars [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

L. J. Drew and D. A. Brew. ALASKA. Using mineral deposit models to assess the undiscovered mineral resources of the Tongass National Forest, Southeastern Alaska [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A229.

Patricia Dunham. Partnership-development activities of the U. S. Geological Survey, Eastern Region [abstr.] American Water Resources Association Technical Publication Series TPS, *in* Abstracts, annual water resources conference of the American Water Resources Association. (S. R. Durrans, editor and others). v. TPS, no. 98-3, 1998. p. 87.

L. E. Edwards, E. A. Mancini* and W. B. Harris*. Alloformations, synthems, and sequences [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 181.

E. Eliason, A. McEwen*, M. Robinson*, P. G. Lucey*, T. Duxbury*, E. Malaret*, C. M. Pieters*, T. Becker, C. Isbell and E. M. Lee. Multispectral mapping of the Moon by Clementine [abstr.] LPI Contribution, *in* Workshop on New views of the Moon; integrated remotely sensed, geophysical, and sample datasets. (B. L. Jolliff, editor and others). 958, 1998. p. 26-27.

G. E. Ericksen. Models for late Tertiary-Quaternary continental saline deposits in the Central Andean region [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A188-A189.

G. E. Ericksen and C. G. Cunningham. Models for volcanic-hosted epithermal precious-metal deposits of Neogene-Quaternary age in the central Andean Highlands [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A132-A133.

M. P. Foose, J. F. Slack, R. A. Ayuso, K. J. Schulz and C. J. Busby*. MAINE. Geologic setting and tectonic evolution of the Bald Mountain massive sulfide deposit, northern Maine; Early Ordovician mineralization in a primitive volcanic arc [abstr.] Abstracts

with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 161.

L. Gaddis, C. Rosanova, B. R. Hawke*, C. R. Coombs*, M. Robinson* and J. Sable*. Integrated multispectral and geophysical datasets; a global view of lunar pyroclastic deposits [abstr.] LPI Contribution, *in* Workshop on New views of the Moon; integrated remotely sensed, geophysical, and sample datasets. (B. L. Jolliff, editor and others). 958, 1998. p. 29-31.

Lisa Gaddis, Christine Rosanova, T. M. Hare, B. R. Hawke*, C. R. Coombs* and M. S. Robinson*. Small lunar pyroclastic deposits; a new global perspective [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

Lisa Gaddis, L. Soderblom, R. L. Kirk, J. R. Johnson, W. Ward, J. Anderson, J. Barrett, K. Becker, T. L. Becker, A. Bennett, J. Blue, D. Cook, E. M. Eliason, P. A. Garcia, M. Gordon, T. M. Hare, A. Howington-Kraus, C. Isbell, E. Lee, B. Redding, T. Rosanova, R. Sucharski, T. Sucharski, K. Thompson, J. Torson, E. Dorrer*, P. Smith* and D. T. Britt*. The Mars Pathfinder "Super Pan"; a U.S.G.S. cartographic product [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

P. A. Garcia, E. M. Eliason, D. R. Larsen and R. Waltz. Obtaining cartographic image maps from the PDS planetary image atlas [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

A. L. Geldon. NEVADA. An 18-month pumping test in Miocene tuffaceous rocks at Yucca Mountain, Nevada; methods and results [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 148.

C. N. Gerlitz, B. F. Leonard and A. J. Criddle*. Ore mineral identification by IBM PC search and match of reflectance curves [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A193-A194.

Hal Gluskoter. Coal; a necessary component of the future energy mix of the United States and the world [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 29.

M. P. Golombek*, A. F. Haldemann*, H. J. Moore, T. J. Parker* and J. T. Schofield*. Assessment of Mars Pathfinder landing site predictions [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

R. I. Grauch, G. P. Meeker, G. A. Desborough, R. G. Tysdal, J. R. Herring and P. R. Moyle. Selenium residence in the Phosphoria Formation [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 35.

V. J. Grauch. NEW MEXICO. Aeromagnetic mapping of faults and igneous rocks within basin sediments, Albuquerque and Espanola basins, New Mexico [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 143.

V. J. Grauch. Determination of nonvertical density or magnetic boundaries from horizontal gradient of gravity or pseudogravity data [abstr.], *in* Second symposium on Exploration geophysics; abstracts. (China, Geological Society, Commission on Exploration Geophysics). China Academic Publishers, 1986. p. 481-482.

J. N. Grossman. Radial pyroxene and cryptocrystalline chondrules as indicators of aqueous alteration and thermal metamorphism in ordinary chondrites [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

V. C. Gulick*, J. M. Dohm, Ken Tanaka and T. M. Hare. The origin of Warrego Valles; a case study for fluvial valley formation on early Mars [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

R. I. Hackney*, Stephen Bannister*, U. S. ten Brink, T. A. Stern*, Rafael Katzman* and Yizhaq Makovsky*. Geophysical investigation of sedimentary basins on the Precambrian East Antarctic Shield [abstr.] Abstracts - Geological Society of Australia, *in* Geoscience Australia; 1994 and beyond. (M. J. Freeman, editor). 37, September 1994. p. 156-157.

R. L. Hadden. The George F. Kunz collection at the U. S. Geological Survey library [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 163.

F. P. Haeni. Water-resource related geophysical activities of the U. S. Geological Survey; mission of the Branch of Geophysical Applications and Support [abstr.], *in* Proceedings of the symposium on the Application of geophysics to engineering and environmental problems. (M. H. Powers, editor and others). Wheat Ridge, CO: Environmental and Engineering Geophysical Society, 2000. p. 163.

F. P. Haeni, C. J. Powers, E. A. White and Roelof Versteeg*. Continuous seismic-reflection and ground-penetrating radar methods for subsurface mapping in water-covered glaciated areas [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 142.

J. W. Head, III*, R. T. Pappalardo*, J. Kay*, G. C. Collins*, L. M. Prockter*, Ronald Greeley*, C. R. Chapman*, M. Carr and M. J. Belton*. Cryovolcanism on Ganymede; evidence in bright terrain from Galileo solid state imaging data [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

J. W. Head, III*, R. T. Pappalardo*, L. M. Prockter*, G. C. Collins*, M. J. Belton*, M. Carr, C. R. Chapman*, Ronald Greeley*, Richard Greenberg*, A. McEwen*, G. Neukum*, C. Pilcher*, J. Veverka*, T. V. Johnson*, K. Klaasen*, D. Senske*, K. Magee*,

H. Breneman*, J. Kaufman*, T. Jones*, P. Helfenstein*, J. Oberst*, B. Giese*, T. Denk*, D. Morrison* and J. M. Moore*. Ganymede; overview of solid state imaging (SSI) findings from the nominal Galileo mission [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

R. W. Healy. An evaluation of the use of changes in ground-water levels to estimate recharge rates to water table aquifers [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 151.

R. M. Hirsch. Geoscience perspectives on water quality protection and management [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 23.

T. W. Holland. ARKANSAS, LOUISIANA, MISSISSIPPI. Updating a calibrated flow model of the Sparta Aquifer in Arkansas, Louisiana, and Mississippi using current water-use data [abstr.] American Water Resources Association Technical Publication Series TPS, *in* Abstracts, annual water resources conference of the American Water Resources Association. (S. R. Durrans, editor and others). v. TPS, no. 98-3, 1998. p. 93.

R. P. Hooper and D. A. Goolsby. The new NASQAN Program; monitoring the water quality of the nation's large rivers [abstr.] American Water Resources Association Technical Publication Series TPS, *in* Abstracts, annual water resources conference of the American Water Resources Association. (S. R. Durrans, editor and others). v. TPS, no. 98-3, 1998. p. 194.

O. B. James, C. Floss* and J. J. McGee*. Rare-earth distributions in pyroxenes from a lunar mafic-magnesian ferroan anorthosite [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

Jiang Shao-Yong *, J. F. Slack and M. R. Palmer*. Sm-Nd geochronology of tourmalinites and sulfide ores from the Sullivan Pb-Zn-Ag deposit, southeastern British Columbia [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 31.

S. Y. Jiang*, M. R. Palmer* and J. F. Slack. Chemical composition of tourmaline from the sedex-type Sullivan Pb-Zn-Ag deposit, British Columbia, Canada [abstr.] International Geological Congress, Abstracts = Congrés Géologique International, Résumés, *in* 30th international geological congress; abstracts. 30, VOL.2, 1996. p. 458.

J. R. Johnson, L. Soderblom, R. Kirk, L. Gaddis, R. Reid*, P. H. Smith*, M. Lemmon*, D. Britt*, N. Thomas*, J. Bell*, N. T. Bridges*, R. Anderson*, K. Herkenhoff*, S. M. Murchie*, A. Dummel*, G. Arnold*, P. Lampen* and F. Trauthan*. Photometric imaging sequences and analysis at the Mars Pathfinder landing site [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

E. C. Jowett*, L. M. Cathles, III*, R. O. Rye, Andrzej Rydzewski* and Slawomir Oszczepalski*. Rift-driven circulation of methane-bearing, ^{34}S-rich ore fluids within Rotliegendes rift basins and formation of Kupferschiefer Cu-Ag ores [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A158.

S. J. Kalkhoff, P. C. Van Metre and E. Callender. IOWA. Organochlorine pesticides in a sediment core from Coralville Reservoir, Iowa [abstr.] Abstracts with Programs - Geological Society of America, *in* 1997 abstracts with programs, The Geological Society of America, 31st annual North-Central Section. v. 29, no. 4, April 1997. p. 24.

J. S. Kargel. Composition of Europa's crust and ocean [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

G. R. Keller*, Kate Miller*, C. M. Snelson*, A. F. Sheehan*, Alan Levander* and V. J. Grauch. Crustal structure of the Rocky Mountain region; review and recent results [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 186.

H. H. Kieffer, T. N. Titus and K. F. Mullins. Early TES observations of the South Polar region [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

D. E. Kile, A. R. Hoch, M. M. Reddy and D. D. Eberl. Assessment of growth mechanisms for synthetic calcite and naturally occurring crystals from the shapes of their crystal size distributions [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 27.

R. Kirk, J. Anderson, J. Barrett, K. Becker, T. Becker, A. Bennett, J. Blue, D. Cook, E. Eliason, L. Gaddis, P. Garcia, M. Gordon, T. Hare, A. Howington-Kraus, C. Isbell, J. Johnson, E. M. Lee, H. Morgan, B. Redding, T. Rosanova, L. Soderblom, R. Sucharski, T. Sucharski, K Thompson, J. Torson, W. Ward, E. Dorrer*, P. Smith* and D. Britt*. Mapping the Sagan Memorial Station site with the IMP camera [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

D. R. Klassen*, J. F. Bell, III*, R. N. Clark, W. Golisch*, C. D. Kaminski* and D. Griep*. 3-4 m imaging spectroscopy of Mars [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

D. D. Lambert*, R. J. Walker*, J. W. Morgan, S. B. Shirey*, M. L. Zientek and M. S. Koski*. Mantle plume-continental lithosphere interactions and the genesis of magmatic ore deposits in Archaean cratons; Re-Os, Sm-Nd and Pb isotopic constraints from the Stillwater Complex, Montana [abstr.] Abstracts - Geological Society of Australia, *in* Geoscience Australia; 1994 and beyond. (M. J. Freeman, editor). 37, September 1994. p. 233-234.

R. Lopes-Gautier*, A. G. Davies*, W. Smythe*, R. Carlson*, L. Kamp*, F. Leader*, R. Nehlman* and L. Soderblom. Io's hot spots; results from the Near-Infrared Mapping Spectrometer (NIMS) on the Galileo spacecraft [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

N. C. Lopez. Federal coordination efforts to promote the National Spatial Data Infrastructure (NSDI) [abstr.] American Water Resources Association Technical Publication Series TPS, *in* Abstracts, annual water resources conference of the American Water Resources Association. (S. R. Durrans, editor and others). v. TPS, no. 98-3, 1998. p. 88.

B. K. Lucchitta. Pathfinder landing site; alternatives to catastrophic floods and an Antarctic ice-flow analog for outflow channels on Mars [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

P. G. Lucey*, J. L. Hinrichs*, C. Budney*, G. Smith*, C. Frost*, B. R. Hawke*, E. Malaret*, M. S. Robinson*, B. Bussey*, T. Duxbury*, D. Cook, P. Coffin*, E. Eliason*, T. Sucharski*, A. E. McEwen* and C. M. Pieters*. Calibration of the Clementine near infrared camera; ready for prime time [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

S. D. Ludington, D. P. Cox, M. G. Sherlock, D. A. Singer, B. R. Berger and J. V. Tingley*. NEVADA. Spatial and temporal analysis of precious-metal deposit models for a mineral resource assessment of Nevada [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A100-A101.

J. W. Lydon*, W. D. Goodfellow*, J. M. Franklin*, P. E. Belanger*, G. Gauthier* and R. Zierenberg. Chemistry of sediment pore waters, Middle Valley, Juan de Fuca Ridge [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A274.

F. L. Lynch*, B. J. Mahler and N. M. Hauwert*. Provenance of suspended sediment discharged from a karst aquifer determined by clay mineralogy [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 155.

M. Malin*, M. Caplinger*, J. Bell, III*, P. Thomas*, W. Calvin, T. Clancy*, R. Haberle*, P. James* and S. Lee*. The Mars Color Imager (MARCI) on the Mars Climate Orbiter [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 133.

M. S. Marlow, R. G. Bohannon, J. V. Gardner, W. R. Normark and R. W. Simpson, Jr. CALIFORNIA. Palos Verdes fault complex; an example of fault segmentation in offshore Southern California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 128.

P. J. McCabe. Energy mix of the 21st century; lessons from the 20th century [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 30.

R. B. McCammon. Prospector-age 15-an expert system for mineral deposit models [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A227-A228.

T. B. McCord*, G. B. Hansen*, F. P. Fanale*, R. W. Carlson*, D. L. Matson*, T. V. Johnson*, W. Smythe*, J. K. Crowley, P. D. Martin*, A. Ocampo*, C. A. Hibbitts* and J. C. Granahan*. Salts on Europa's surface from the Galileo NIMS investigation [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

A. McEwen*, E. Eliason, P. Lucey*, E. Malaret*, C. Pieters*, M. Robinson* and T. Sucharski. Summary of radiometric calibration and photometric normalization steps for the Clementine UVVIS images [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

A. S. McEwen*, L. Keszthelyi*, P. Geissler*, D. P. Simonelli*, M. H. Carr, T. V. Johnson*, K. P. Klaasen*, H. H. Breneman*, T. J. Jones*, J. M. Kaufman*, K. P. Magee*, D. A. Senske*, M. J. Belton* and G. Schubert*. Io; extreme volcanism [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

E. R. McFarland and D. L. Belval. VIRGINIA. Integration of water-use data and modeling to manage groundwater resources of the Virginia coastal plain [abstr.] American Water Resources Association Technical Publication Series TPS, *in* Abstracts, annual water resources conference of the American Water Resources Association. (S. R. Durrans, editor and others). v. TPS, no. 98-3, 1998. p. 94.

G. E. McKelvey. Economic applications of deposit models to exploration [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A116.

P. J. Modreski. Reminiscences on 20 years of the New Mexico mineral symposium [abstr.] New Mexico Geology, *in* Abstracts; New Mexico mineral symposium. v. 22, no. 1, February 2000. p. 10-11.

P. J. Modreski, E. E. Foord and C. P. Barbosa*. Crystal chemistry of uvite-dravite from the Brumado magnesite deposits, Bahia, Brazil [abstr.], *in* Tourmaline 1997; international symposium on Tourmaline; abstracts. (Moravian Museum Brno and others).. Czech Republic, Ministry of Education, 1997. p. 59-60.

H. J. Moore, T. J. Parker*, Joy Crisp*, M. P. Golombek*, Donald Bickler*, Howard Eisen*, Jeffrey Gensler*, Albert Haldemann*, J. R. Matijevic* and Lisa Reid*. Origin of soil-like deposits at the Mars Pathfinder landing site, Mars [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

Gemma Musacchio* and W. D. Mooney. Imaging an intraplate zone of seismicity; the Blytheville Arch in the New Madrid seismic zone [abstr.] Annales Geophysicae (1988), *in* 23rd general assembly of the European Geophysical Society; Part I, Society symposia, solid Earth, geophysics and geodesy. 16, Suppl. 1, 1998. p. 81.

J. R. Nimmo, A. M. Lewis, D. A. Stonestrom and J. A. Deason. The Darcian approach and practicality; determination of basin-scale recharge rates from sparse point measurements [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 150.

E. R. Padovani and J. F. Devine. New information bridges for disaster information delivery and hazard awareness [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 163.

S. C. Patel*, G. L. Snyder and B. R. Frost*. WYOMING. Orthoamphibole-cordierite bearing rocks from Laramie Mountains, Wyoming, USA [abstr.] International Geological Congress, Abstracts = Congrés Géologique International, Résumés, *in* 30th international geological congress; abstracts. 30, VOL.2, 1996. p. 468.

B. S. Penn*, D. M. Unruh, E. C. Simmons* and R. F. Wendlandt*. The petrogenesis of the Spanish Peaks intrusive rocks of south-central Colorado [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 166.

A. C. Riggs, W. J. Carr*, P. T. Kolesar* and R. J. Hoffman. NEVADA. Mammillary calcite preserves a continuous 0.5 million-year-long paleoclimate record in Devils Hole, a tectonic cave in southern Nevada [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 152-153.

D. J. Roddy, T. M. Hare, M. B. Wyatt*, N. R. Isbell*, C. L. Mardock*, L. M. Soderblom and J. M. Boyce*. II, Martian impact craters, ejecta blankets, and related morphologic features; preliminary results from computer digital inventory using ARC/INFO and ARCVIEW [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

D. J. Roddy, N. R. Isbell*, C. L. Mardock*, T. M. Hare, M. B. Wyatt*, L. M. Soderblom and J. M. Boyce*. I, Martian impact craters, ejecta blankets, and related morphologic features; computer digital inventory in ARC/INFO and ARCVIEW format [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

D. J. Roddy, E. M. Shoemaker and L. H. Wikberg, III*. Drill core and rock sample collections from terrestrial impact and explosion craters; building archival and research programs on the Internet [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

C. E. Rosanova, Lisa Gaddis, T. M. Hare, C. R. Coombs*, B. R. Hawke* and M. S. Robinson*. Characterization of "new" pyroclastic deposits on the Moon using Clementine data [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

T. Rosanova, T. L. Becker, Lisa Gaddis, D. McMacken, W. Christiansen, J. Blue, A. S. McEwen*, P. Woncik* and S. Lavoie*. The Galileo Navigator; a tool for cartographers and scientists [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

G. L. Running, IV*, J. L. Ripley and Ty Sabin. WISCONSIN. Late-Cenozoic landscape evolution and geoarchaeology of Fort McCoy, Wisconsin [abstr.] Abstracts with Programs - Geological Society of America, *in* 1997 abstracts with programs, The Geological Society of America, 31st annual North-Central Section. v. 29, no. 4, April 1997. p. 69.

M. G. Rupert. Use of a geographic information system in ground water quality studies [abstr.] Water Resources Center Report - Centers for Water and Wildland Resources, *in* Western watersheds; science, sense, strategies; proceedings of the seventh biennial Watershed Management Council conference. (C. W. Slaughter, editor). Report no. 98, January 2000. p. 129-130.

D. A. Saad. WISCONSIN. Effects of land use and geohydrology on the quality of shallow ground water in two agricultural areas in Wisconsin [abstr.] Abstracts with Programs - Geological Society of America, *in* 1997 abstracts with programs, The Geological Society of America, 31st annual North-Central Section. v. 29, no. 4, April 1997. p. 69.

I. D. Sasowsky*, J. B. Paces, A. I. Fyodorova*, Enriqueta Barrera* and R. W. Bain*. OHIO. A Pleistocene to present speleothem record from Northeast Ohio [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 154.

R. S. Saunders*, Geoffrey Briggs*, Michael Carr, David Crown*, Michael Duke*, C. P. McKay*, George McGill*, David Paige*, S. W. Squyres* and J. R. Zimbleman*. Mars landing site selection for sample return [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

G. G. Schaber, R. G. Strom* and D. D. Dawson*. The USGS/U. of Arizona database of impact craters on Venus; new crater names and modification classes for 1998 [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

L. S. Seigley*, T. F. Wilton*, Gaige Wunder*, J. E. May, M. D. Schueller*, M. W. Birmingham*, J. A. Tisl* and E. A. Palas*. IOWA. Monitoring the effects of nonpoint source pollution controls on Sny Magill Creek, Clayton County, Iowa [abstr.] Abstracts with Programs - Geological Society of America, *in* 1997 abstracts with programs, The Geological Society of America, 31st annual North-Central Section. v. 29, no. 4, April 1997. p. 71.

D. A. Senske*, Ronald Greeley*, J. W. Head, III*, R. T. Pappalardo*, R. J. Sullivan*, Michael Carr, P. E. Geissler* and J. M. Moore*. Geologic mapping of Europa; unit identification and stratigraphy at global and local scales [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

D. A. Singer. Development of grade and tonnage models for different deposit types [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A99-A100.

J. F. Slack. Geologic features of besshi-type massive sulphide deposits [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A191-A192.

J. F. Slack. Tourmaline in hydrothermal ore deposits [abstr.], *in* Tourmaline 1997; international symposium on Tourmaline; ab-

stracts. (Moravian Museum Brno and others). Czech Republic, Ministry of Education, 1997. p. 95-96.

J. F. Slack, J. J. McGee*, W. L. Griffin*, T. T. Win* and C. G. Ryan*. NORTH CAROLINA. Geochemistry and origin of complexly zoned tourmaline crystals in the ore knob massive sulphide deposit, North Carolina, USA [abstr.], *in* Tourmaline 1997; international symposium on Tourmaline; abstracts. (Moravian Museum Brno and others).. Czech Republic, Ministry of Education, 1997. p. 97-98.

W. D. Smythe*, R. W. Carlson*, A. Ocampo*, D. Matson*, T. V. Johnson*, T. B. McCord*, G. E. Hansen*, L. A. Soderblom and R. N. Clark*. Absorption bands in the spectrum of Europa detected by the Galileo NIMS instrument [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

P. J. Squillace, M. J. Moran, W. W. Lapham, C. V. Price, R. M. Clawges and J. S. Zogorski. Volatile organic compounds in untreated ambient groundwater of the United States, 1985-95 [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 157.

S. W. Squyres*, R. E. Arvidson*, J. F. Bell, III*, M. Carr, P. R. Christensen*, D. Des Marais*, T. Economou*, S. Gorevan*, G. Klingelhöfer*, L. A. Haskin*, K. E. Herkenhoff*, A. Knoll*, J. M. Knudsen*, Michael Malin*, H. Y. McSween*, R. V. Morris*, R. Rieder*, M. Sims*, L. Soderblom, H. Wänke* and T. Wdowiak*. The Athena Mars rover science payload [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

J. J. Steuer, N. J. Hornewer, W. R. Selbig and Jeffrey Prey*. MICHIGAN. Urban stormwater pollutants in Marquette, Michigan; identifying critical concentrations and major sources [abstr.] American Water Resources Association Technical Publication Series TPS, *in* Abstracts, annual water resources conference of the American Water Resources Association. (S. R. Durrans, editor and others). v. TPS, no. 98-3, 1998. p. 118.

A. R. Stevens. Stategic directions in partnerships with the National Mapping Division of the USGS [abstr.] American Water Resources Association Technical Publication Series TPS, *in* Abstracts, annual water resources conference of the American Water Resources Association. (S. R. Durrans, editor and others). v. TPS, no. 98-3, 1998. p. 89.

A. E. Stewart and J. E. Constantz. Measurement techniques to identify spatial and temporal patterns of streamflow in large ephemeral streams [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 150-151.

K. R. Stockstill*, T. A. Vogel*, L. C. Patino* and T. W. Sisson. WASHINGTON. Chemical variations in the Burroughs Mountain lava flow, Mount Rainier, Washington; evidence of a chemically layered magma body [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 167.

Stephen Stow*, David Abbott*, Vincent Cronin*, David Dunn*, Robert Hatcher*, Thomas Holzer and Tom Melrose*. Guidelines for ethical professional conduct issued by the American Geological Institute [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 136.

G. A. Swayze and R. F. Kokaly. Spectral detection of a 2.25-micron absorption band in impactites formed from siliceous sediments; a new way to locate shocked materials [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 122.

K. L. Tanaka. Mars Pathfinder landing site; regional geology and mass-flow interpretation [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

K. L. Tanaka, J. M. Dohm, J. H. Lias and T. M. Hare. Valley erosion in Thaumasia region of Mars caused by hydrothermal and seismic activity [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference, *in* Abstracts of papers submitted to the Twenty-ninth lunar and planetary science conference. 29, 1998.

S. F. Tebbens* and C. C. Barton. A fractal scaling law for tsunami runup [abstr.] Annales Geophysicae (1988), *in* 23rd general assembly of the European Geophysical Society; Part 1, Society symposia, solid Earth geophysics and geology. 16, suppl. 4, 1998. p. C 1082.

P. J. Terrio. ILLINOIS, IOWA, MINNESOTA. Concentrations of nutrients and pesticides in upper Midwest stream; results of a synoptic study in Illinois, Iowa, and Minnesota, August 1997 [abstr.] American Water Resources Association Technical Publication Series TPS, *in* Abstracts, annual water resources conference of the American Water Resources Association. (S. R. Durrans, editor and others). v. TPS, no. 98-3, 1998. p. 40.

J. M. White*, D. P. Adam, T. A. Ager, H. Jetté*, E. B. Leopold*, G. Liu* and C. E. Schweger*. ALASKA. Neogene and Quaternary palynostratigraphy of northern Yukon Territory and Alaska [abstr.] Palynology, *in* Abstracts of the proceedings of the Twenty-seventh annual meeting of the American Association of Stratigraphic Palynologists. 19, 1995. p. 251.

W. H. White, R. B. Carten, A. A. Bookstrom and H. J. Stein. A model for climax-type molybdenum deposits [abstr.] Proceedings of the Quadrennial IAGOD Symposium, *in* 8th IAGOD symposium in conjunction with international conference on Mineral deposit modeling; program with abstracts. (R. W. Boyle, chairperson). 8, 1990. p. A133-A134.

J. H. Williams and Frederick Stumm. Borehole geophysics for glacial-drift aquifer investigations [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1999 annual meeting. v. 31, no. 7, 1999. p. 143.

M. D. Woodside and J. B. Atkins. National Water-Quality Assessment Program in the in the Mobile River and lower Tennessee River basins [abstr.] American Water Resources Association Technical Publication Series TPS, *in* Abstracts, annual water resources conference of the American Water Resources Association. (S. R. Durrans, editor and others). v. TPS, no. 98-3, 1998. p. 55.

Michael Yurewicz. Recent findings and programmatic directions of the National Water-Quality Assessment Program of the U. S. Geological Survey [abstr.] American Water Resources Association Technical Publication Series TPS, *in* Abstracts, annual water resources conference of the American Water Resources Association. (S. R. Durrans, editor and others). v. TPS, no. 98-3, 1998. p. 195.

TOPOGRAPHIC MAPS

Standard topographic maps are usually published in 7.5-minute quadrangles. The map location is given by the latitude and longitude of the southeast (lower right) corner of the quadrangle. Location, scale, and contour interval are indicated for each map in the computer-generated list below. The date shown indicates the latest revision. Provisional maps are essentially standard topographic maps published with modified map finishing and field and compilation procedures. Photorevised maps have not been field checked. Series converted maps include 7.5-minute maps compiled from 7.5-minute source materials initially published as 15-minute maps (15-minute maps are no longer available from the U.S. Geological Survey). Orthophotomaps are multicolor photographic-image maps in standard quadrangle format with added topographic detail. Orthophotoquads are monocolor or multicolor photographic-image maps in standard quadrangle format without topographic detail. Most monocolor orthophotoquads are not being published but are available in the form of diazo or photographic prints. The Index to Orthophotoquad Mapping showing information about available published and unpublished orthophotoquads is free on request from the distribution centers listed at the back of the catalog. County maps are multicolor topographic maps at scales of 1:50,000 or 1:100,000. County maps are $7.00 per sheet. Level of content may vary between States, and State sales indexes should be consulted for a more detailed description of each map. Planimetric maps at intermediate scales of 1:50,000 or 1:100,000 are available in both quadrangle and county format for selected areas of the country. Most of these maps are not being published but are available in other forms. Copies of the drawings that compose these maps are available either as a composite of all features or separately by feature. An Index to Intermediate-Scale Series Mapping showing information about available published and unpublished intermediate-scale maps is free on request from the distribution centers listed at the back of the catalog.

Standard quadrangle maps and orthophotoquads are sold for $4.00 per copy. Discount rates and ordering instructions are given at the back of the catalog. State topographic indexes and catalogs are free on request. Each State index shows the areas mapped and the catalog contains ordering information and forms, along with a list of local dealers who sell topographic maps.

State	Map Name	Map Type	Revision Type	Currentness Year	SE Corner DDDMMSS Lat	SE Corner DDDMMSS Long	Scale	Contour Value	Contour Unit
AK	Bradfield Canal (A-1)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	560000N	1300000W	00063360	100	FT
AK	Cordova (A-2)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1997	600000N	1442230W	00063360	100	FT
AK	Cordova (B-2)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1997	601500N	1442230W	00063360	100	FT
AK	Cordova (B-7)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1997	601500N	1461500W	00063360	100	FT
AK	Craig (A-2)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	550000N	1322000W	00063360	100	FT
AK	Craig (A-4)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1994	550000N	1330000W	00063360	100	FT
AK	Craig (D-5)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	554500N	1332000W	00063360	100	FT
AK	Juneau (A-1)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	580000N	1340000W	00063360	100	FT
AK	Juneau (A-2)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	580000N	1342000W	00063360	100	FT
AK	Juneau (B-3)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	581500N	1344000W	00063360	100	FT
AK	Juneau (B-4)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	581500N	1350000W	00063360	100	FT
AK	Juneau (C-4)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	583000N	1350000W	00063360	100	FT
AK	Juneau (D-5)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	584500N	1352000W	00063360	100	FT
AK	Ketchikan (C-2)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	553000N	1302000W	00063360	100	FT
AK	Ketchikan (C-3)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	553000N	1304000W	00063360	100	FT

AK	Ketchikan (D-2)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	554500N	1302000W	00063360	100 FT
AK	Ketchikan (D-3)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	554500N	1304000W	00063360	100 FT
AK	Ketchikan (D-4)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	554500N	1310000W	00063360	100 FT
AK	Petersburg (D-3)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1995	564500N	1324000W	00063360	100 FT
AK	Seward (A-1)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1997	600000N	1470000W	00063360	100 FT
AK	Seward (A-6)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1995	600000N	1485230W	00063360	100 FT
AK	Seward (B-1)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1997	601500N	1470000W	00063360	100 FT
AK	Seward (C-6)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1997	603000N	1485230W	00063360	100 FT
AK	Seward (D-2)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1997	604500N	1472230W	00063360	100 FT
AK	Seward (D-5)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1995	604500N	1483000W	00063360	100 FT
AK	Sitka (A-3)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	570000N	1344000W	00063360	100 FT
AK	Sitka (A-5)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	570000N	1352000W	00063360	100 FT
AK	Sitka (B-5)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	571500N	1352000W	00063360	100 FT
AK	Sitka (B-6)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	571500N	1354000W	00063360	100 FT
AK	Sumdum (B-3)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1997	571500N	1324000W	00063360	100 FT
AK	Sumdum (B-4)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1997	571500N	1330000W	00063360	100 FT
AK	Sumdum (B-5)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1997	571500N	1332000W	00063360	100 FT
AK	Taku River (A-5)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	580000N	1332000W	00063360	100 FT
AK	Yakutat (C-5)	63K TOPO MAP (AK)	LIMITED UPDATE (ANALOG REVISION)	1996	593000N	1393000W	00063360	100 FT
AL FL	Lillian	24K TOPO MAP	MINOR REVISION REPRINT	1994	302230N	0872230W	00024000	5 FT
AR	Cabot	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1994	345230N	0920000W	00024000	10 FT
AR	De Valls Bluff	24K TOPO MAP	MINOR REVISION REPRINT	1996	344500N	0912230W	00024000	5 FT
AZ	Armenta Well	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1996	320730N	1124500W	00024000	10 FT
AZ	Bradshaw Mountains	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	2000	340000N	1120000W	00100000	40 MR

AZ	Littlefield	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	2000	363000N	1130000W	00100000	50	MR
AZ	Mount Trumbull	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	2000	360000N	1130000W	00100000	50	MR
AZ CA	Parker	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	1998	340000N	1140000W	00100000	50	MR
AZ	Peach Springs	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	2000	353000N	1130000W	00100000	50	MR
AZ	Pozo Nuevo Well	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1996	320000N	1130000W	00024000	20	FT
CA	Amboy	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	1999	343000N	1150000W	00100000	50	MR
CA	Blackburn Canyon	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	333730N	1164500W	00024000	40	FT
CA	Butterfly Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	333000N	1163000W	00024000	40	FT
CA	Camp Meeker	24K TOPO MAP	MINOR REVISION REPRINT	1995	382230N	1225230W	00024000	40	FT
CA	Cave Mountain	24K TOPO MAP, PROVISIONAL	MINOR REVISION REPRINT	1996	350000N	1161500W	00024000	40	FT
CA	Darwin Hills	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	1999	360000N	1170000W	00100000	50	MR
CA	Drakes Bay	24K TOPO MAP	MINOR REVISION REPRINT	1995	380000N	1225230W	00024000	40	FT
CA	Dunn	24K TOPO MAP, PROVISIONAL	MINOR REVISION REPRINT	1996	350000N	1162230W	00024000	40	FT
CA	Lake Fulmor	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	334500N	1164500W	00024000	40	FT
CA NV	Last Chance Range	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	2000	370000N	1170000W	00100000	50	MR
CA NV	Mesquite Lake	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	1999	353000N	1150000W	00100000	50	MR
CA AZ	Needles	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	1999	343000N	1140000W	00100000	50	MR
CA	North Chalone Peak	24K TOPO MAP	MINOR REVISION REPRINT	1995	362230N	1210730W	00024000	40	FT
CA	Old Ibex Pass	24K TOPO MAP, PROVISIONAL	MINOR REVISION REPRINT	1996	353730N	1162230W	00024000	10	MR
CA	Owlshead Mountains	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	1999	353000N	1160000W	00100000	50	MR
CA OR	Polar Bear Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	415230N	1233000W	00024000	80	FT

CA	Quail Spring	24K TOPO MAP, PROVISIONAL	MINOR REVISION REPRINT	1996	353730N	1164500W	00024000	10	MR
CA	Redondo Beach	24K TOPO MAP	MINOR REVISION REPRINT	1996	334400N	1182230W	00024000	20	FT
CA	Richmond	24K TOPO MAP	MINOR REVISION REPRINT	1995	375230N	1221500W	00024000	20	FT
CA NV	Saline Valley	BLM SURFACE MANAGEMENT SURFACE MAP	TOPOGRAPHIC EDITIONS	1999	363000N	1170000W	00100000	50	MR
CA	San Jacinto	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	334500N	1165230W	00024000	40	FT
CA	Shubrick Peak	24K TOPO MAP	MINOR REVISION REPRINT	1997	400730N	1240730W	00024000	40	FT
CA	Soda Mountains	BLM SURFACE MANAGEMENT STATUS MAPS	TOPOGRAPHIC EDITIONS	2000	350000N	1160000W	00100000	20	MR
CA	Triunfo Pass	24K TOPO MAP	MINOR REVISION REPRINT	1994	340000N	1185230W	00024000	25	FT
CO	Delta	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	2000	383000N	1080000W	00100000	50	MR
CO	Delta	BLM SURFACE MINERALS MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	2000	383000N	1080000W	00100000	50	MR
CO KS	Lamar	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	2000	380000N	1020000W	00100000	5	MR
CO KS	Lamar	BLM SURFACE MINERALS MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	2000	380000N	1020000W	00100000	5	MR
FL	Cantonment	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1994	303000N	0871500W	00024000	10	FT
FL	Choctaw Beach	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1994	302230N	0861500W	00024000	5	FT
FL	Harold	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1994	303730N	0865230W	00024000	10	FT
FL	Lakeland	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1994	280000N	0815230W	00024000	5	FT
FL	Orlando East	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1994	283000N	0811500W	00024000	5	FT
FL	Orlando West	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1995	283000N	0812230W	00024000	10	FT
FL	Plant City East	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1994	280000N	0820000W	00024000	5	FT
FL	Ward Basin	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1994	303000N	0865230W	00024000	10	FT
GA SC	Augusta East	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1995	332230N	0815230W	00024000	10	FT
GA	Ball Ground East	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1993	341500N	0841500W	00024000	20	FT

GA	Milstead	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1993	333730N	0835230W	00024000	20 FT
GA	Nimblewill	24K TOPO MAP	MINOR REVISION REPRINT	1997	343000N	0840730W	00024000	20 FT
GA	Northeast Atlanta	24K TOPO MAP	MINOR REVISION REPRINT	1997	334500N	0841500W	00024000	10 FT
HI	Kahuku Ranch	24K TOPO MAP	MINOR REVISION REPRINT	1995	190000N	1553730W	00024000	40 FT
HI	Naalehu	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1995	190000N	1553000W	00024000	20 FT
HI	Pahala	24K TOPO MAP	MINOR REVISION REPRINT	1995	190730N	1552230W	00024000	20 FT
HI	Papa	24K TOPO MAP	MINOR REVISION REPRINT	1995	190730N	1554500W	00024000	40 FT
HI	Pohue Bay	24K TOPO MAP	MINOR REVISION REPRINT	1995	190000N	1554500W	00024000	40 FT
HI	Puu O Keokeo	24K TOPO MAP	MINOR REVISION REPRINT	1995	190730N	1553730W	00024000	40 FT
ID	Copeland	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	485230N	1162230W	00024000	40 FT
ID	Derr Point	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	480000N	1160730W	00024000	40 FT
ID BC	Grass Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	485230N	1164500W	00024000	40 FT
ID	Mount Roothaan	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	483000N	1163730W	00024000	40 FT
ID	Moyie Springs	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	483730N	1160730W	00024000	40 FT
ID	Naples	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	483000N	1162230W	00024000	20 FT
ID	Outlet Bay	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	482230N	1165230W	00024000	40 FT
ID	Priest Lake NE	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	483730N	1164500W	00024000	40 FT
ID	Pyramid Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	484500N	1163000W	00024000	40 FT
ID	Quartz Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	481500N	1165230W	00024000	40 FT
ID	Riggins	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	452230N	1161500W	00024000	40 FT
ID	Ritz	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	484500N	1161500W	00024000	20 FT
ID	Roman Nose	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	483730N	1163000W	00024000	40 FT
ID BC	Shorty Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	485230N	1163730W	00024000	40 FT
ID BC	Smith Falls	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	485230N	1163000W	00024000	40 FT

IL	Rend Lake Dam	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1998	380000N	0885230W	00024000	10 FT
IL	Stonefort	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	373000N	0883730W	00024000	20 FT
IN	Rusk	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1993	383000N	0864500W	00024000	10 FT
KS	Graham County	100K COUNTY (TOPO)	STANDARD UPDATE (ANALOG REVISION)	1997	390755N	0993604W	00100000	10 MR
KS	Kiowa County	100K COUNTY (TOPO)	STANDARD UPDATE	1997	372254N	0990039W	00100000	10 MR
KY	Frankf ort East	24K TOPO MAP	MINOR REVISION REPRINT	1996	380730N	0844500W	00024000	10 FT
LA	Belle Rose	24K TOPO MAP	MINOR REVISION REPRINT	1999	300000N	0910000W	00024000	5 FT
LA	Bertrandville	24K TOPO MAP	MINOR REVISION REPRINT	1995	294500N	0900000W	00024000	5 FT
LA	Carville	24K TOPO MAP	MINOR REVISION REPRINT	1999	300730N	0910000W	00024000	5 FT
LA	Chef Menteur	24K TOPO MAP	MINOR REVISION REPRINT	1998	300000N	0894500W	00024000	5 FT
LA	Comite	24K TOPO MAP	MINOR REVISION REPRINT	1996	303000N	0910000W	00024000	5 FT
LA	Eastwood	24K TOPO MAP	MINOR REVISION REPRINT	1999	323000N	0933000W	00024000	10 FT
LA MS	Lower Sunk Lake	24K TOPO MAP	MINOR REVISION REPRINT	1996	310730N	0913730W	00024000	5 FT
LA	Westlake	24K TOPO MAP	MINOR REVISION REPRINT	1996	300730N	0931500W	00024000	5 FT
MA CT NY	Ashley Falls	25K TOPO MAP (7.5 X 15)	MINOR REVISION REPRINT	1997	420000N	0731500W	00025000	3 MR
MA	Chester	25K TOPO MAP (7.5 X 15)	MINOR REVISION REPRINT	1997	421500N	0724500W	00025000	6 MR
MA NY	Great Barrington	25K TOPO MAP (7.5 X 15)	MINOR REVISION REPRINT	1997	420730N	0731500W	00025000	3 MR
MA	Otis	25K TOPO MAP (7.5 X 15)	MINOR REVISION REPRINT	1997	420730N	0730000W	00025000	3 MR
MA	Pittsfield East	25K TOPO MAP (7.5 X 15)	MINOR REVISION REPRINT	1997	422230N	0730000W	00025000	6 MR
MA	Stockbridge	25K TOPO MAP (7.5 X 15)	MINOR REVISION REPRINT	1997	421500N	0731500W	00025000	3 MR
ME	Maine - Index	MAP SALES INDEX	NEW MAPPING	2000				
MI	Carp River	25K TOPO MAP (7.5 X 15)	MINOR REVISION REPRINT	1994	464500N	0894500W	00025000	5 MR
MI	Grand Rapids West	24K TOPO MAP	MINOR REVISION REPRINT	1996	425230N	0853730W	00024000	10 FT
MI	Lake Orion	24K TOPO MAP	MINOR REVISION REPRINT	1996	424500N	0830730W	00024000	10 FT

MI	Silver Lake Basin	24K TOPO MAP, PROVISIONAL	MINOR REVISION REPRINT	1996	463730N	0874500W	00024000	5	MR
MN	New Brighton	24K TOPO MAP	MINOR REVISION REPRINT	1997	450000N	0930730W	00024000	10	FT
MO	Galloway	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1996	370730N	0930730W	00024000	10	FT
MO	Grandin	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	364500N	0904500W	00024000	20	FT
MO	Low Wassie	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	365230N	0911500W	00024000	20	FT
MO	Many Springs	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	363730N	0911500W	00024000	20	FT
MO	Poynor	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	363000N	0905230W	00024000	20	FT
MO	Van Buren North	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	370000N	0910000W	00024000	20	FT
MO IL	Webster Groves	24K TOPO MAP	MINOR REVISION REPRINT	1998	383000N	0901500W	00024000	10	FT
MS	Dead Tiger Creek	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1996	302230N	0893000W	00024000	5	FT
MS	Pascagoula South	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1996	301500N	0883000W	00024000	5	FT
MT ID	Canuck Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	485230N	1160000W	00024000	40	FT
MT	Meyer Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	452230N	1095230W	00024000	40	FT
MT	Glacier National Park	NATL PARK THEMATIC SERIES	STANDARD UPDATE (ANALOG REVISION)	1998	481300N	1131000W	00100000	80	FT
MT	Glacier National Park	NATL PARK THEMATIC SERIES	STANDARD UPDATE (ANALOG REVISION)	1998	481300N	1131000W	00100000	80	FT
MT	Glacier National Park	NATL PARK THEMATIC SERIES	STANDARD UPDATE	1998	481300N	1131000W	00100000	80	FT
NC SC	Belmont	24K TOPO MAP	MINOR REVISION REPRINT	1997	350730N	0810000W	00024000	10	FT
NC	Castle Hayne	24K TOPO MAP	LIMITED UPDATE (DIGITAL REVISION)	1997	341500N	0775230W	00024000	5	FT
NC	Jacksonville NE	24K TOPO MAP	LIMITED UPDATE (DIGITAL REVISION)	1997	345230N	0771500W	00024000	5	FT
NC	Jacksonville South	24K TOPO MAP	LIMITED UPDATE (DIGITAL REVISION)	1997	343730N	0772230W	00024000	5	FT
NC SC	Kings Mountain	24K TOPO MAP	MINOR REVISION REPRINT	1997	350730N	0811500W	00024000	20	FT
NC	Mountain Island Lake	24K TOPO MAP	MINOR REVISION REPRINT	1997	351500N	0805230W	00024000	10	FT
NC	New Bern	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1994	350000N	0770000W	00024000	5	FT

NC	New River Inlet	24K TOPO MAP	MINOR REVISION REPRINT	1997	343000N	0771500W	00024000	5 FT
NC	Topsail	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1997	342230N	0773730W	00024000	5 FT
NH	Carter Dome	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	441500N	0710730W	00024000	20 FT
NH	Lisbon	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	440730N	0715230W	00024000	20 FT
NH	Mount Carrigain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	440000N	0712230W	00024000	40 FT
NH	Mount Moosilauke	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	440000N	0714500W	00024000	40 FT
NH ME	North Conway East	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	440000N	0710000W	00024000	20 FT
NH	North Conway West	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	440000N	0710730W	00024000	20 FT
NH	Plymouth	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	434500N	0713730W	00024000	20 FT
NH	Rumney	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	434500N	0714500W	00024000	40 FT
NH	Silver Lake	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	435230N	0710730W	00024000	20 FT
NH	South Twin Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	440730N	0713000W	00024000	40 FT
NH	Stairs Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	440730N	0711500W	00024000	40 FT
NH	Sugar Hill	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	440730N	0714500W	00024000	20 FT
NH	Wentworth	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1999	434500N	0715230W	00024000	20 FT
NH	Woodstock	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	435230N	0713730W	00024000	40 FT
NJ	Rio Grande	24K TOPO MAP	MINOR REVISION REPRINT	1994	390000N	0745230W	00024000	10 FT
NM TX	Crow Flats	BLM SURFACE MANAGEMENT SURFACE MAP	TOPOGRAPHIC EDITIONS	2000	320000N	1050000W	00100000	20 MR
NM TX	Crow Flats	BLM SURFACE MINERALS MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	2000	320000N	1050000W	00100000	20 MR
NM	Punta de Agua	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1995	343000N	1061500W	00024000	20 FT
NV CA	Beatty	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	2000	363000N	1160000W	00100000	50 MR
NV AZ	Lake Mead	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	2000	360000N	1140000W	00100000	50 MR

NV AZ	Overton	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	2000	363000N	1140000W	00100000	50	MR
NY	Bakers Mills	25K TOPO MAP (7.5 X 15), PROVISIONAL	MINOR REVISION REPRINT	1997	433000N	0740000W	00025000	6	MR
NY	Dutton Mountain	25K TOPO MAP (7.5 X 15), PROVISIONAL	MINOR REVISION REPRINT	1997	434500N	0740000W	00025000	6	MR
NY	Harrisburg	25K TOPO MAP (7.5 X 15), PROVISIONAL	MINOR REVISION REPRINT	1997	432230N	0740000W	00025000	6	MR
NY	Hyde Park	24K TOPO MAP	MINOR REVISION REPRINT	1997	414500N	0735230W	00024000	10	FT
NY	Kingston West	24K TOPO MAP	MINOR REVISION REPRINT	1997	415230N	0740000W	00024000	20	FT
NY ON	Niagara Falls	25K TOPO MAP (7.5 X 7.5)	MINOR REVISION REPRINT	1995	430000N	0790000W	00025000	5	FT
NY	Page Mountain	25K TOPO MAP (7.5 X 15), PROVISIONAL	MINOR REVISION REPRINT	1997	433000N	0741500W	00025000	6	MR
NY CT	Pawling	24K TOPO MAP	MINOR REVISION REPRINT	1998	413000N	0733000W	00024000	10	FT
NY	Willowemoc	24K TOPO MAP	MINOR REVISION REPRINT	1997	415230N	0743730W	00024000	20	FT
OH KY	Addyston	24K TOPO MAP	MINOR REVISION REPRINT	1996	390730N	0843730W	00024000	10	FT
OH	Galena	24K TOPO MAP	MINOR REVISION REPRINT	1995	400730N	0825230W	00024000	10	FT
OH IN	Harrison	24K TOPO MAP	MINOR REVISION REPRINT	1996	391500N	0844500W	00024000	10	FT
OH	Madeira	24K TOPO MAP	MINOR REVISION REPRINT	1996	390730N	0841500W	00024000	10	FT
OH	Oregonia	24K TOPO MAP	MINOR REVISION REPRINT	1996	392230N	0840000W	00024000	10	FT
OK	Midwest City	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1995	352230N	0972230W	00024000	10	FT
OK	Oklahoma City	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1995	352230N	0973000W	00024000	10	FT
OR	Aldrich Mountain North	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	442230N	1192230W	00024000	40	FT
OR	Aldrich Mountain South	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	441500N	1192230W	00024000	40	FT
OR	Aspen Lake	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	421500N	1220000W	00024000	20	FT
OR	Austin	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	443000N	1182230W	00024000	40	FT
OR	Big Butte Springs	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	423000N	1222230W	00024000	40	FT
OR	Big Canyon	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	440730N	1184500W	00024000	40	FT

OR	Big Weasel Springs	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	441500N	1191500W	00024000	40 FT
OR	Brown Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	421500N	1221500W	00024000	20 FT
OR	Bull Run	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	452230N	1220730W	00024000	40 FT
OR	Bullrun Rock	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	441500N	1181500W	00024000	40 FT
OR	Butte Falls	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	423000N	1223000W	00024000	40 FT
OR	Canyon Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	441500N	1185230W	00024000	40 FT
OR	Cascade Gorge	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	423730N	1223000W	00024000	40 FT
OR	Castle Creek	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	442230N	1184500W	00024000	40 FT
OR	Cave Junction	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	420730N	1233730W	00024000	40 FT
OR	Crater Lake West	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	425230N	1220730W	00024000	40 FT
OR	Crystal Spring	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	423000N	1220000W	00024000	20 FT
OR	Deardorff Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	442230N	1182230W	00024000	40 FT
OR	Devils Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	423730N	1220730W	00024000	40 FT
OR	Elwood	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	450730N	1221500W	00024000	20 FT
OR	Fairview Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	433000N	1223730W	00024000	40 FT
OR	Fall Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	441500N	1190000W	00024000	40 FT
OR	Fish Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	430000N	1222230W	00024000	40 FT
OR	Flagtail Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	440730N	1191500W	00024000	40 FT
OR	Graylock Butte	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	440730N	1192230W	00024000	40 FT
OR	Hamaker Butte	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	430000N	1221500W	00024000	40 FT
OR	Hickman Butte	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	452230N	1215230W	00024000	40 FT
OR	Imnaha Creek	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	423730N	1221500W	00024000	40 FT
OR	Izee	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	440000N	1192230W	00024000	40 FT
OR	John Day	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	442230N	1185230W	00024000	20 FT

OR	Lake of the Woods North	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	422230N	1220730W	00024000	20 FT
OR	Lake of the Woods South	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	421500N	1220730W	00024000	20 FT
OR	Lakecreek	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	422230N	1223000W	00024000	40 FT
OR	Lewis Creek	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	440000N	1191500W	00024000	40 FT
OR	Little Baldy Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	441500N	1182230W	00024000	40 FT
OR	Little Chinquapin Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	420730N	1221500W	00024000	20 FT
OR	Logdell	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	440730N	1190730W	00024000	40 FT
OR	Mace Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	431500N	1224500W	00024000	40 FT
OR	Maklaks Crater	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	424500N	1220000W	00024000	40 FT
OR	Mares Egg Spring	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	423730N	1220000W	00024000	20 FT
OR	Mc Clellan Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	441500N	1190730W	00024000	40 FT
OR	Mount Hood South	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	451500N	1213730W	00024000	40 FT
OR	Mount Lowe	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	445230N	1215230W	00024000	40 FT
OR	Mount Mc Loughlin	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	422230N	1221500W	00024000	40 FT
OR	Mount Vernon	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	442230N	1190000W	00024000	40 FT
OR	Olallie Butte	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	444500N	1214500W	00024000	40 FT
OR	Old Fairview	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	431500N	1225230W	00024000	40 FT
OR CA	Oregon Caves	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	420000N	1232230W	00024000	40 FT
OR	Pelican Bay	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	422230N	1220000W	00024000	20 FT
OR	Pelican Butte	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	423000N	1220730W	00024000	40 FT
OR	Pine Creek Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	441500N	1184500W	00024000	40 FT
OR	Pinhead Buttes	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	445230N	1214500W	00024000	40 FT
OR	Prospect North	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	424500N	1222230W	00024000	40 FT
OR	Prospect South	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	423730N	1222230W	00024000	40 FT

OR	Quartz Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	430730N	1223730W	00024000	40 FT
OR	Rail Creek Butte	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	440000N	1190000W	00024000	40 FT
OR	Red Blanket Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	424500N	1221500W	00024000	40 FT
OR	Red Butte	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	430730N	1225230W	00024000	40 FT
OR	Robinson Butte	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	421500N	1222230W	00024000	40 FT
OR	Rooster Rock	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	445230N	1221500W	00024000	40 FT
OR	Rustler Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	423000N	1221500W	00024000	40 FT
OR	Scotty Creek	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	440730N	1190000W	00024000	20 FT
OR	Seneca	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	440730N	1185230W	00024000	40 FT
OR	Shop Gulch	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	442230N	1191500W	00024000	40 FT
OR	Spencer Creek	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	420730N	1220000W	00024000	20 FT
OR	Steamboat	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	431500N	1223730W	00024000	40 FT
OR	Stinkingwater Mountains	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	1999	433000N	1180000W	00100000	50 MR
OR	Stinkingwater Mountains	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	1999	433000N	1180000W	00100000	50 MR
OR	Surveyor Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	420730N	1220730W	00024000	20 FT
OR	Taft Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	430730N	1224500W	00024000	40 FT
OR	Thousand Springs	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	425230N	1221500W	00024000	40 FT
OR	Toketee Falls	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	431500N	1222230W	00024000	40 FT
OR	Trail	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	423730N	1224500W	00024000	40 FT
OR	Union Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	424500N	1220730W	00024000	40 FT
OR ID	Vale	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	1999	433000N	1170000W	00100000	50 MR
OR ID	Vale	BLM SURFACE MINERALS MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	1999	433000N	1170000W	00100000	50 MR
OR WA	Warrenton	24K TOPO MAP	MINOR REVISION REPRINT	1996	460730N	1235230W	00024000	50 FT

OR	Whetstone Point	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	424500N	1223000W	00024000	40 FT
OR	Willow Lake	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	422230N	1222230W	00024000	40 FT
OR	Wolfinger Butte	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	442230N	1190730W	00024000	40 FT
PA	Barrville	24K TOPO MAP	MINOR REVISION REPRINT	1998	403730N	0773730W	00024000	20 FT
PA	Bear Knob	24K TOPO MAP	MINOR REVISION REPRINT	1998	405230N	0775230W	00024000	20 FT
PA	Bellefonte	24K TOPO MAP	MINOR REVISION REPRINT	1998	405230N	0774500W	00024000	20 FT
PA	Brush Valley	24K TOPO MAP	MINOR REVISION REPRINT	1998	403000N	0790000W	00024000	20 FT
PA	Centre Hall	24K TOPO MAP	MINOR REVISION REPRINT	1998	404500N	0773730W	00024000	20 FT
PA	Cherry Springs	24K TOPO MAP	MINOR REVISION REPRINT	1994	413730N	0774500W	00024000	20 FT
PA	Clinton	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1998	402230N	0801500W	00024000	20 FT
PA	Coburn	24K TOPO MAP	MINOR REVISION REPRINT	1998	404500N	0772230W	00024000	20 FT
PA	Columbia West	24K TOPO MAP	MINOR REVISION REPRINT	1997	400000N	0763000W	00024000	20 FT
PA	Conrad	24K TOPO MAP	MINOR REVISION REPRINT	1994	413000N	0775230W	00024000	20 FT
PA	Emporium	24K TOPO MAP	MINOR REVISION REPRINT	1994	413000N	0780730W	00024000	20 FT
PA	Enders	24K TOPO MAP	MINOR REVISION REPRINT	1995	402230N	0764500W	00024000	20 FT
PA	English Center	24K TOPO MAP	MINOR REVISION REPRINT	1994	412230N	0771500W	00024000	20 FT
PA	Hammersley Fork	24K TOPO MAP	MINOR REVISION REPRINT	1994	412230N	0775230W	00024000	20 FT
PA	Jersey Shore	24K TOPO MAP	MINOR REVISION REPRINT	1994	410730N	0771500W	00024000	20 FT
PA	Kutztown	24K TOPO MAP	MINOR REVISION REPRINT	1997	403000N	0754500W	00024000	20 FT
PA	Lee Fire Tower	24K TOPO MAP	MINOR REVISION REPRINT	1994	413000N	0773000W	00024000	20 FT
PA	Lykens	24K TOPO MAP	MINOR REVISION REPRINT	1997	403000N	0763730W	00024000	20 FT
PA DE NJ	Marcus Hook	24K TOPO MAP	MINOR REVISION REPRINT	1995	394500N	0752230W	00024000	10 FT
PA	Mc Alevys Fort	24K TOPO MAP	MINOR REVISION REPRINT	1998	403730N	0774500W	00024000	20 FT
PA	Meadville	24K TOPO MAP	MINOR REVISION REPRINT	1998	413730N	0800730W	00024000	10 FT

PA	Media	24K TOPO MAP	MINOR REVISION REPRINT	1995	395230N	0752230W	00024000	10 FT
PA NJ	Milford	24K TOPO MAP	MINOR REVISION REPRINT	1995	411500N	0744500W	00024000	20 FT
PA	Morris	24K TOPO MAP	MINOR REVISION REPRINT	1994	413000N	0771500W	00024000	20 FT
PA	Palmerton	24K TOPO MAP	MINOR REVISION REPRINT	1997	404500N	0753000W	00024000	20 FT
PA	Pecks Pond	24K TOPO MAP	MINOR REVISION REPRINT	1997	411500N	0750000W	00024000	20 FT
PA	Perkiomenville	24K TOPO MAP	MINOR REVISION REPRINT	1997	401500N	0752230W	00024000	20 FT
PA	Pine Grove Mills	24K TOPO MAP	MINOR REVISION REPRINT	1998	403730N	0775230W	00024000	20 FT
PA	Pleasant View Summit	24K TOPO MAP	MINOR REVISION REPRINT	1997	410730N	0753730W	00024000	20 FT
PA NJ	Portland	24K TOPO MAP	MINOR REVISION REPRINT	1997	405230N	0750000W	00024000	20 FT
PA	Slate Run	24K TOPO MAP	MINOR REVISION REPRINT	1994	412230N	0773000W	00024000	20 FT
PA	Spring Mills	24K TOPO MAP	MINOR REVISION REPRINT	1998	404500N	0773000W	00024000	20 FT
PA	Tamarack	24K TOPO MAP	MINOR REVISION REPRINT	1994	412230N	0774500W	00024000	20 FT
PA	Tower City	24K TOPO MAP	MINOR REVISION REPRINT	1997	403000N	0763000W	00024000	20 FT
PA	Waterville	24K TOPO MAP	MINOR REVISION REPRINT	1994	411500N	0771500W	00024000	20 FT
PA DE	West Grove	24K TOPO MAP	MINOR REVISION REPRINT	1997	394500N	0754500W	00024000	10 FT
PA	West York	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1998	395230N	0764500W	00024000	20 FT
PA	Wharton	24K TOPO MAP	MINOR REVISION REPRINT	1994	413000N	0780000W	00024000	20 FT
PA	Wind Ridge	24K TOPO MAP	MINOR REVISION REPRINT	1997	395230N	0802230W	00024000	20 FT
PA	Windber	24K TOPO MAP	MINOR REVISION REPRINT	1998	400730N	0784500W	00024000	20 FT
PA	Young Womans Creek	24K TOPO MAP	MINOR REVISION REPRINT	1994	412230N	0773730W	00024000	20 FT
PA	Commonwealth of Pennsylvania		NEW MAPPING	1993	394310N	0744123W	00500000	
RI	Block Island	24K TOPO MAP	MINOR REVISION REPRINT	1998	410730N	0713000W	00024000	10 FT
RI	East Greenwich	24K TOPO MAP	LIMITED UPDATE (DIGITAL REVISION)	1996	413730N	0712230W	00024000	10 FT
RI	Providence	24K TOPO MAP	LIMITED UPDATE (DIGITAL REVISION)	1996	414500N	0712230W	00024000	10 FT

RI	Slocum	24K TOPO MAP	MINOR REVISION REPRINT	1996	413000N	0713000W	00024000	10 FT
SC	Gadsden	24K TOPO MAP	MINOR REVISION REPRINT	1994	334500N	0804500W	00024000	10 FT
SC	Salem	24K TOPO MAP	MINOR REVISION REPRINT	1996	345230N	0825230W	00024000	20 FT
TN AR	Locke	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1997	351500N	0900000W	00024000	10 FT
TN	Southeast Memphis	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1997	350000N	0895230W	00024000	10 FT
TX	Aldine	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1995	295230N	0952230W	00024000	5 FT
TX	Bear Creek	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	302230N	0950730W	00024000	10 FT
TX	Cleveland	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	301500N	0950000W	00024000	5 FT
TX	Coldspring	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	303000N	0950730W	00024000	10 FT
TX	Conroe NE	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	302230N	0951500W	00024000	10 FT
TX	Fostoria	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	301500N	0950730W	00024000	5 FT
TX	Hedwig Village	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1995	294500N	0953000W	00024000	5 FT
TX	Huntsville	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	303730N	0953000W	00024000	10 FT
TX	Jacinto City	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1995	294500N	0950730W	00024000	5 FT
TX	La Porte	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1995	293730N	0950000W	00024000	5 FT
TX	Montgomery	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	302230N	0953730W	00024000	10 FT
TX	Moore Grove	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	303000N	0953000W	00024000	10 FT
TX	New Waverly	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	303000N	0952230W	00024000	10 FT
TX	Oakhurst	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	303730N	0951500W	00024000	10 FT
TX	Pasadena	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1995	293730N	0950730W	00024000	5 FT
TX	Pine Prairie	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	304500N	0953000W	00024000	10 FT
TX	Richards	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	303000N	0954500W	00024000	10 FT
TX	Riverside	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	304500N	0952230W	00024000	10 FT
TX	San Jacinto	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	303000N	0953730W	00024000	10 FT

TX	Satsuma	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1995	295230N	0953000W	00024000	5 FT
TX	Shepard Hill	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	302230N	0953000W	00024000	10 FT
TX	Spring	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1995	300000N	0952230W	00024000	5 FT
TX	Staley	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	304500N	0951500W	00024000	10 FT
TX	Stephen Creek	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	303730N	0950730W	00024000	10 FT
TX	Tomball	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1995	300000N	0953000W	00024000	5 FT
TX	Willis	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1997	302230N	0952230W	00024000	10 FT
UT	Anthro Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	395230N	1102230W	00024000	40 FT
UT	Anthro Mountain NE	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	395230N	1101500W	00024000	40 FT
UT	Avintaquin Canyon	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	400000N	1104500W	00024000	40 FT
UT	Blair Basin	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403730N	1091500W	00024000	20 FT
UT	Bollie Lake	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403730N	1100730W	00024000	40 FT
UT	Burnt Cabin Gorge	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403730N	1092230W	00024000	20 FT
UT	Burnt Mill Spring	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1999	403000N	1101500W	00024000	40 FT
UT	Chepeta Lake	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	404500N	1100000W	00024000	40 FT
UT	Clay Basin	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	405230N	1090730W	00024000	40 FT
UT	Currant Canyon	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	394500N	1101500W	00024000	40 FT
UT	Dark Canyon	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403000N	1100000W	00024000	40 FT
UT	Dry Fork	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403000N	1093730W	00024000	40 FT
UT	Dry Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	402230N	1103000W	00024000	40 FT
UT	Elk Park	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	404500N	1093730W	00024000	20 FT
UT	Explorer Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403730N	1103730W	00024000	40 FT
UT	Farm Creek Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	402230N	1103730W	00024000	40 FT
UT	Flat Ridge	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	395230N	1105230W	00024000	40 FT

UT	Garfield Basin	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403730N	1102230W	00024000	40 FT
UT	Gilsonite Draw	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	395230N	1100730W	00024000	20 FT
UT	Goslin Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	405230N	1091500W	00024000	40 FT
UT	Grandaddy Lake	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403000N	1104500W	00024000	40 FT
UT	Gray Head Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	395230N	1104500W	00024000	40 FT
UT	Hanna	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	402230N	1104500W	00024000	40 FT
UT	Hayden Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403730N	1104500W	00024000	40 FT
UT	Heller Lake	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403000N	1100730W	00024000	40 FT
UT WY	Hoop Lake	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	405230N	1100000W	00024000	20 FT
UT	Ice Cave Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403000N	1095230W	00024000	40 FT
UT	Jackson Draw	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	404500N	1091500W	00024000	40 FT
UT WY	Jessen Butte	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	405230N	1094500W	00024000	40 FT
UT	Jones Hollow	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	395230N	1103730W	00024000	40 FT
UT	Kidney Lake	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403000N	1103000W	00024000	40 FT
UT	Kyune	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	394500N	1105230W	00024000	40 FT
UT	Lake Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403000N	1094500W	00024000	40 FT
UT	Lance Canyon	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	395230N	1103000W	00024000	40 FT
UT	Leidy Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	404500N	1094500W	00024000	20 FT
UT	Manila	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	405230N	1093730W	00024000	40 FT
UT	Matts Summit	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	394500N	1104500W	00024000	40 FT
UT	Mount Emmons	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403730N	1101500W	00024000	40 FT
UT	Mount Lena	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	404500N	1092230W	00024000	40 FT
UT	Mount Lovenia	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	404500N	1103000W	00024000	40 FT
UT	Oweep Creek	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403730N	1103000W	00024000	40 FT

UT WY	Phil Pico Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	405230N	1095230W	00024000	40 FT
UT	Rasmussen Lakes	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403730N	1100000W	00024000	40 FT
UT	Red Knob	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	404500N	1103730W	00024000	40 FT
UT CO	Seep Ridge	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	1999	393000N	1090000W	00100000	50 MR
UT	Steinaker Reservoir	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403000N	1093000W	00024000	40 FT
UT	Strawberry Peak	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	400000N	1105230W	00024000	40 FT
UT	Strawberry Reservoir SE	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	400000N	1110000W	00024000	40 FT
UT	Taylor Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403730N	1093730W	00024000	40 FT
UT	Tworoose Pass	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	403000N	1103730W	00024000	40 FT
UT	Wolf Creek	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	402230N	1105230W	00024000	40 FT
UT	Wood Canyon	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	394500N	1102230W	00024000	40 FT
VA	Bowers Hill	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1994	364500N	0762230W	00024000	5 FT
VA	Eggleston	24K TOPO MAP	MINOR REVISION REPRINT	1998	371500N	0803000W	00024000	20 FT
VA	Guinea	24K TOPO MAP	MINOR CHANGE REPRINT	1981	380730N	0772230W	00024000	10 FT
VA	Joplin	24K TOPO MAP	MINOR REVISION REPRINT	1997	383000N	0772230W	00024000	10 FT
VA	Kempsville	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1994	364500N	0760730W	00024000	5 FT
VA	Middletown	24K TOPO MAP	MINOR REVISION REPRINT	1999	390000N	0781500W	00024000	10 FT
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VT NH	Hartland	24K TOPO MAP	MINOR REVISION REPRINT	1998	433000N 0722230W	00024000	20	FT
VT NH	North Hartland	24K TOPO MAP	MINOR REVISION REPRINT	1998	433000N 0721500W	00024000	20	FT
WA ID	Galena Point	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	482230N 1170000W	00024000	40	FT
WA ID	Gleason Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	483000N 1170000W	00024000	40	FT
WA ID	Helmer Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	484500N 1170000W	00024000	40	FT
WA ID	Orwig Hump	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1998	483730N 1170000W	00024000	40	FT
WA BC ID	Salmo Mountain	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	485230N 1170000W	00024000	40	FT
WV	Bancroft	24K TOPO MAP	MINOR REVISION REPRINT	1999	383000N 0814500W	00024000	20	FT
WV	Belle	24K TOPO MAP	STANDARD UPDATE (ANALOG REVISION)	1996	380730N 0813000W	00024000	40	FT
WV	Fairmont East	24K TOPO MAP	MINOR REVISION REPRINT	1999	392230N 0800000W	00024000	20	FT
WV	Hinton	24K TOPO MAP	MINOR REVISION REPRINT	1998	373730N 0805230W	00024000	40	FT
WV	Lewisburg	24K TOPO MAP	MINOR REVISION REPRINT	1998	374500N 0802230W	00024000	20	FT
WV	Pipestem	24K TOPO MAP	MINOR REVISION REPRINT	1998	373000N 0805230W	00024000	40	FT
WY	Blacks Fork Bridge	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	412230N 1093000W	00024000	20	FT
WY	Devils Playground	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	410730N 1093730W	00024000	20	FT
WY	Halfway Hollow East	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	411500N 1093000W	00024000	20	FT
WY	Halfway Hollow West	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	411500N 1093730W	00024000	20	FT
WY	Haystack Buttes North	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	410730N 1093000W	00024000	20	FT
WY	Haystack Buttes South	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	410000N 1093000W	00024000	20	FT
WY	Linwood Canyon	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	410000N 1093730W	00024000	20	FT
WY	Massacre Hill	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	412230N 1093730W	00024000	20	FT
WY SD	Newcastle	BLM SURFACE MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	1999	433000N 1040000W	00100000	20	MR

WY SD	Newcastle	BLM SURFACE MINERALS MANAGEMENT STATUS MAP	TOPOGRAPHIC EDITIONS	1999	433000N	1040000W	00100000	20	MR
WY	Sage Creek Basin	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	411500N	1092230W	00024000	40	FT
WY	Whalen Butte	24K TOPO MAP	LIMITED UPDATE (ANALOG REVISION)	1996	412230N	1092230W	00024000	40	FT
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