



New Jersey Geological Survey
Open-File Report OF-89-2

Reports of the New Jersey Geological Survey

and Special Reports and Water Resources Circulars of the
Division of Water Resources

STATE OF NEW JERSEY

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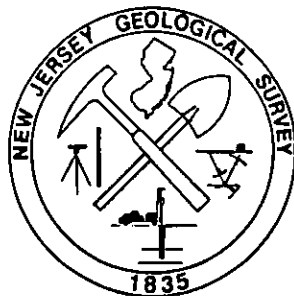
Haig F. Kasabach, *State Geologist*

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Division of Water Resources

by
Daniel R. Dombroski, Jr.



New Jersey Department of Environmental Protection
Division of Water Resources
Geological Survey
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Table 1. Name and title of Survey director

1835-1840	Henry D. Rogers, State Geologist
1854-1856	William Kitchell, State Geologist
1864-1889	George H. Cook, State Geologist
1889-1901	John C. Smock, State Geologist
1901-1937	Henry B. Kummel, State Geologist
1937-1958	Merideth E. Johnson, State Geologist (also Chief, Division of Geology and Topography, 1937-1947; Chief, Bureau of Geology and Topography, 1947-1958)
1958-1980	Kemble Widmer, State Geologist (also Chief, Bureau of Geology and Topography)
1981-1983	Frank Markewicz, Acting State Geologist (also Chief, Bureau of Geology and Topography 1981-1983; Assistant Director, Geological Survey Element, 1983-1984)
1984-present	Haig F. Kasabach, Acting State Geologist, 1984-1986; State Geologist 1986-present (also Assistant Director, Geological Survey Element)

Table 2. Organizational structure of Survey

1835-1840	State Geologist appointed by Governor to perform a "geological and mineralogical survey of the State of New Jersey." Survey under the general supervision of the Governor.
1854-1856	"
1864-1915	Geological Survey of New Jersey. Headed by State Geologist, overseen by Board of Managers.
1915-1925	Department of Conservation and Development Division of Geology and Waters
1925-1947	Department of Conservation and Development Division of Geology and Topography
1947-1961	Department of Conservation and Economic Development Division of Planning and Development Bureau of Geology and Topography
1961-1971	Department of Conservation and Economic Development Division of Resource Development Bureau of Geology and Topography
1971-1974	Department of Environmental Protection Division of Water Resources Bureau of Geology and Topography
1974-1979	Department of Environmental Protection Office of the Commissioner Bureau of Geology and Topography
1979-1983	Department of Environmental Protection Division of Water Resources Bureau of Geology and Topography
1983-present	Department of Environmental Protection Division of Water Resources Geological Survey Element

REPORTS OF THE NEW JERSEY GEOLOGICAL SURVEY

INTRODUCTION

The New Jersey Geological Survey, founded in 1835, is among the oldest state geological surveys in the nation. Through its history, the Survey has been a scientific organization concerned with geology, topographic mapping, mineral resources, water resources, and environmental hazards.

Many of the older reports of the Survey are out-of-print. A price list of materials available through the New Jersey Department of Environmental Protection, Maps and Publications Sales Office will be sent on request to:

Maps and Publications Sales Office
Bureau of Revenue
CN 402
Trenton, NJ 08625 (609) 530-5790

In addition to its own published reports, the Survey maintains non-circulating collections of maps, air photos, and geologic notes and serves as the National Cartographic Information Center (NCIC) State Affiliate. Offices are at:

29 Arctic Parkway
Trenton, NJ (609) 292-1185

Mail should be addressed to:

Haig F. Kasabach, State Geologist
New Jersey Geological Survey
CN 029
Trenton, NJ 08625

Out-of-print reports are also available through interlibrary loan (consult your local library). Library cataloging may reflect previous names, organizational structures, or directors of the Survey (see tables 1, 2).

Text portions of out-of-print reports are available in photocopy through Maps and Publications Sales. Plates are not reproducible. Contact Maps and Publications Sales for further information.

HENRY D. ROGERS SURVEY

Henry Darwin Rogers was appointed State Geologist in 1835. His office was, like most of the early State and Federal surveys, temporary. His task was to "provide a geological and mineralogical survey of the State of New Jersey." This task was completed with the publication of his 1840 report.

Report on the geological survey of the State of New Jersey - A progress report, by H. D. Rogers, 1836, 175 p.

Description of the geology of the State of New Jersey, being a final report, by H. D. Rogers, 1840, 301 p.

WILLIAM KITCHELL SURVEY

In 1854, the N.J. legislature authorized a second survey and William Kitchell was appointed director. Topography and geology were to be mapped county-by-county starting with Cape May. In 1856, appropriations were suspended. Work continued at Kitchell's expense under the auspices of the State Agricultural Society.

First annual report of the geological survey of the State of N.J. for 1854, published 1855, 100 p.

Plan of survey

- Trigonometrical and topographical department

- Geological department

- Paleontological department

- Chemical and mineralogical department

- Cabinet [collections of specimens]

- Northern division [by William Kitchell]

- Economic geology

 - Magnetic iron ore

 - Specular iron ... red hematite

 - Limonite ... bog ore, yellow clay, ironstone

 - Franklinite and red oxide of zinc

 - Shell marl, calcareous sinter, calcareous tufa, travertine

- Report of G. H. Cook [on southern division]

- Report of Henry Wurtz, chemist and mineralogist

- Report of E. L. Viele, topographical engineer

Second annual report on the geological survey of the State of N.J. for 1855, published 1856, 248 p.

- Report on organization of the survey and finances

- Report on the topographical department

 - General reconnaissance; geographical position and extent

 - Physical features

 - Artificial features, canals, railroads

 - Triangulation

- Report on geological department - Southern division

 - Last year's work

 - Further examinations of previous year's work

 - Other geological formations

 - Chemical examinations

 - Progress of survey in different counties

 - Cedar swamps, ... in Cape May

 - Gravel bricks

- Report on Geological department - Northern division

 - The Highlands

 - General description of physical features

 - General description of geology

 - Enumeration and local details of mines

 - Mining

Third annual report on the geological survey of the State of N.J. for 1856, published 1857, 79 p.

Introduction, progress report, regrets on closing of the survey

Geologic occurrence and properties of the iron ores

Magnetic properties

Metallurgy of the ores

Types and examples of forges and furnaces used for iron and for zinc

Relations to national and international iron market

Report of progress of the survey of the Southern division

Status of Cape May report

Status of other county report

Present condition of agriculture in N.J.

Fertilizers [including greensand marls]

Report on the topographical department, progress report

Geology of the County of Cape May, State of N.J., by G. H. Cook, 1857, 211 p.

CONTINUATION OF KITCHELL SURVEY BY GEORGE H. COOK

Following Kitchell's death in 1863, the legislature authorized George H. Cook to continue Kitchell's survey. Work was reorganized on a statewide rather than county basis. In 1864 funding was restored. The completed survey was published in 1868 as "The Geology of New Jersey."

Report of Professor George H. Cook upon the geological survey of N.J. and its progress during the year 1863, published 1864, 13 p.

Sketch of the surveys made previous to 1863

Progress of work during last year

Description of formations on line from Shark River Inlet to Delaware Water Gap extended to Scranton, Pa.

Plan of continued survey

Quick summary of state's geologic resources

Annual report of Professor George H. Cook, State Geologist, for the year 1864, published 1865, 24 p.

Boundaries of red sandstone [Newark] region

Descriptions and analyses of miscellaneous rocks, minerals, etc.

Small-scale (1:1,500,000) geologic map of N.J.

Cross section from Shark River to Scranton, Pa.

Formations of state by periods

Annual report of Professor George H. Cook, State Geologist, for the year 1865 (published 1866), 12 p.

Account of year's work

Third annual report on the geological survey of the State of New Jersey for the year 1866, published 1867, 27 p.

Outline for final report [1868]

Marl industry

Peat beds

Tide meadows, drainage, etc.

Report of the State Geologist, Professor George H. Cook, for the year 1867, published 1868), 28 p.

Outline for final report [1868]

Geology of New Jersey, by George H. Cook, 1868, 900 p.

ANNUAL REPORTS OF THE STATE GEOLOGIST

Following the publication of "Geology of New Jersey" in 1868, the Legislature authorized a more extensive program which has continued to the present. Annual reports which included summaries of progress and results of investigations were published through the year 1914. Beginning in 1915, annual reports of the State Geologist were administrative in nature. Annual reports for the years 1869 through 1909 were published in the "Annual Report of the State Geologist" series. Those from 1910 through 1914 were published in the "Bulletins of the New Jersey Geological Survey" series. Reports for subsequent years have been published as part of the annual report of the parent agency.

Year

- 1869 Annual report of the State Geologist of N.J. for 1869, published 1870, 57 p.**
Distribution [sales, etc.] of "Geology of New Jersey [1868]"
Continuation of the survey and plan of work
Fertilizers found in the state and means of making them more useful
Marshes, and tracts of land subject to protracted freshets
Soils
Iron ores
Fire and potter's clays
- 1870 Annual report of the State Geologist of N.J. for the year 1870, published 1871, 75 p.**
Fertilizers found in the state and means of making them more useful
Marshes and tracts of land subject to protracted freshets
Soils
Iron and zinc ores
Scientific and economic geology
Copper ores
Brickmaking
Drifting sands of sea beaches
Levels and soundings, Passaic River, Chatham to Millington Bridge, and Dead River, by E. A. Bowser
Levels and soundings, Pequest River, by E. A. Bowser
- 1871 Annual report of the State Geologist of N.J. for the year 1871, published 1872, 46 p.**
Drainage law
Drowned lands of the Walkill
Levels and surroundings, N.J. and N.Y., of Walkill River, Pochunk [sic] Creek and Wawayanda Creek, by E. A. Bowser
Agriculture and population [includes population table, by county, 1790 thru 1870]
Iron [and other] ores and mining [in general]
- 1872 Annual report of the State Geologist of N.J. for the year 1872 published 1872, 44 p.**
Act to provide for drainage of lands
Boundary line between N.J. and N.Y.
Iron [and other] ores [and mineral products]
Slate
Miscellaneous products
Fertilizers
Soils and their productiveness
Human bones [Indian, Salem County]
- 1873 Annual report of the State Geologist, published 1874, 128 p.**
Drainage works
Northern boundary
Azoic region, four belts, with map of northern N.J., and map of Jenny Jump Mountain and its iron mines
List of [about 235] iron mines, with notes
Searching for iron ore [includes magnetic surveying]

Zinc and other ores
Building stones
Clays and sands
Limestones
Greensand marl
Graphite
Infusorial earth
Roads and road materials
Soils and unimproved lands
Analysis of a hematite ore

1874 Annual report of the State Geologist, published 1874, 116 p.

Northern boundary lines
Drainage plans
Iron mines in northern N.J.
 Magnetic iron ore
 Tabulation of mines listed in 1873 Annual Report
 Notes on new magnetic ore localities [about 16]
 Hematite iron ore
 Tabulation of mines listed in 1873 Annual Report
 Notes on new hematite mines [about 5]
Copper ores
Zinc ores
Searching for new beds of magnetic iron ore
 Magnetic methods
 Diamond drilling
Searching for hematite iron ore
Clays for pottery and fire brick
Searching for clay, marl, etc., by boring
Infusorial earth
Native iron
Water supply
Mining statistics: iron ore, zinc ore, greensand marl, lime
Survey of northern boundary

1875 Annual report of the State Geologist, published 1875, 41 p.

Fire and potter's clay of Middlesex County
Collection of specimens for State Cabinet to be displayed at the U.S. Centennial Exposition
 [Philadelphia, 1876]
Topographical map of state, and aid by U.S. Coast Survey
Law protecting monuments and other survey marks
Drainage
Water supply for towns and cities

1876 Annual report of the State Geologist, published 1876, 56 p.

Exhibit at [U.S.] Centennial Exposition in Philadelphia
Geological exhibit
Agricultural exhibit
Exhibit to be permanently displayed as the Museum of the Geological Survey [This collection eventually became the initial acquisition of the N.J. State Museum]
Trigonometrical survey of state
Drainage
Water supply
Iron ore
Zinc ore
Copper ores
Clays for pottery and fire brick

- 1877 Annual report of the State Geologist for the year 1877, published 1877, 56 p.**
 Report [Clay report of 1878] of clay district of Middlesex County
 Exploration of portion of state covered by glacial drift
 Shell marl in Sussex and Warren Counties
 Continuation of U.S. Coast Survey triangulation work
 Topographical survey
 Drainage of Great Meadows and Oxford Meadows
 Analyses of iron ores, limestones, marls, etc.
 Centennial Map
 Museum of the geological survey [This collection eventually became the initial acquisition of the N.J. State Museum]
- 1878 Annual report of the State Geologist, published 1878, 131 p.**
 Glacial and modified drift
 Preliminary description and classification of soils of N.J.
 Miscellaneous clay deposits
 Glass sand
 U.S. Coast Survey triangulation in N.J.
 Topographical survey from Watchung Mountains and Hudson River
 Progress of drainage works
 Water Supply
 Statistics
 Indian and other prehistoric remains of man
- 1879 Annual report of the State Geologist, published 1879, 199 p.**
 U.S. Geodetic Survey of N.J.
 Topographical maps
 Map of N.J. economic geology
 Triassic or red sandstone formations
 List of iron mines, with notes
 Exploring for new beds of iron ore
 Soils
 Drainage
 Water Supply
 Artesian and driven wells
 Statistics
 Museum of the survey [This collection eventually became the initial acquisition of the N.J. State Museum]
- 1880 Annual report of the State Geologist for the year 1880, published 1880, 199 p.**
 U.S. Geodetic Survey
 Topographical survey
 Maps of progress
 Paleontology
 Surface geology
 Iron ores
 List of mines with notes
 Fire clays
 Soils
 Drainage
 Water supply and wells
 Statistics of iron ore, clay, and marl
 Climate
- 1880 (German edition) Jahrsicher Bericht des Staats-Geologen, fur das Jahr 1880, published 1881, 297 p. [contents same as English edition].**
- 1881 Annual report of the State Geologist, published 1881, 208 p.**
 U.S. Coast and Geodetic Survey of N.J.

Topographic surveys
 The encroachments of the sea
 Ores of iron and other metals
 Notes on iron mines and ores
 Quarry stones and statistics
 Clays, brick and pottery
 Drainage
 Water supply
 Statistics
 Climate and meteorology
 Climatic divisions
 Temperature
 Winds
 Relative humidity
 Atmospheric precipitation
 Barometric pressure
 Sanitary relations
 Permanency of climate
 Historical notes of climate and weather
 Chronological notes of the weather [1608-1881]

1882 Annual report of the State Geologist, published 1882, 191 p.

U.S. Coast and Geodetic Survey of N.J.
 Topographical survey
 Red sandstone district
 Eruptive rocks of Sussex County
 Iron mines and mining industries
 Plastic clays and their uses
 Shore changes
 Seaside developments
 Climatic peculiarities
 Agricultural development in southern N.J.
 Drainage
 Water supply
 Statistics of ores, clays, clay products and lime

1883 Annual report of the State Geologist, published 1883, 188 p.

Geodetic survey
 Topographical survey
 Tertiary and Cretaceous formations of southern N.J.
 Red sandstone and trap rocks
 Archean rocks and iron ore
 Iron mines [with extensive annotated list]
 Exploring for magnetic iron ore and locating mines
 Drainage
 Water supply
 Statistics

1884 Annual report of the State Geologist, published 1884, 168 p.

Geodetic survey
 Topographic survey
 Recent formations
 Glacial drift, and yellow sand and gravel
 Tertiary and Cretaceous formations
 Triassic rocks
 Devonian and Silurian rocks
 Archean rocks
 Iron mines and mining industry (including zinc) [with extensive annotated list of mines]
 Drainage

- Water supply [with creation of State Water-Supply Commission]
 Statistics of iron and zinc ores
- 1885 **Annual report of the State Geologist**, published 1885, 228 p.
 Geographic surveys
 Geological surveys
 Economic geology; Iron mining [with annotated list of mines]; Water supply; Drainage
 Forestry
 Historical notes on geological surveys of N.J.
- 1886 **Annual report of the State Geologist**, published 1887, 254 p.
 Geographic surveys
 Geological surveys
 Economic geology
 Mining [with annotated list of mines]
 Greensand marls
 Water supply
 Drainage
- 1887 **Annual report of the State Geologist**, published 1887, 45 p.
 Geodetic survey
 Topographic survey
 Geologic surveys
 Water supply
 Drainage
 Statistics of iron and zinc ores
- 1888 **Annual report of the State Geologist**, published 1889, 87 p.
 Triassic or red sandstone rocks
 Drainage
 Water supply [includes laws relating to drainage]
 Statistics of iron and zinc ores, etc.
- 1889 **Annual report of the State Geologist**, published 1889, 112 p.
 Geodetic survey
 Geological studies of Archean rocks [includes, "Historical review of survey in Archean high-lands from 1836 to present time"]
 Geological studies of Triassic or red sandstone and trap rocks
 Drainage of Great Meadows in Pequest Valley; Drainage of low lands on the Passaic, above Little Falls
 Water supply and artesian wells
 Statistics of iron and zinc ores
- 1890 **Annual report of the State Geologist**, published 1891, 305 p.
 Museum [N.J. State Museum]
 U.S. Coast and Geodetic Survey in N.J.
 Geologic work in northern part of state
 Post-Archean age of White Limestone of Sussex County
 Notes on the active iron mines
 Rocks associated with the iron ores
 Position of ore bodies in the rock
 Searching for magnetic iron ores with miner's compass
 List of iron mines
 Geological work in southern part of state
 Terrace formations of Atlantic Coast and along Delaware River
 Water supply and water power
 Artesian and other wells
 Drainage
 Statistics of iron and zinc ores

- 1891 **Annual report of the State Geologist**, published 1892, 270 p.
 Geodetic survey
 Preliminary paper on Pleistocene formations, by R. D. Salisbury
 Economic geology
 Oakland and pineland belts of southern N.J.
 Water supply and water power
 Artesian wells
 Passaic River drainage
 Iron mines
 Notes on the active iron mines
 Notes on the zinc mines
 Mineral statistics
- 1892 **Annual report of the State Geologist**, published 1893, 367 p.
 Surface geology [mainly glacial]
 Cretaceous and Tertiary formations (especially of Monmouth and Middlesex Counties)
 Water supply and water power
 Artesian wells in southern N.J.
 Notes on sea dikes of the Netherlands and reclamation of lowlands
 Mineral statistics
- 1893 **Annual report of the State Geologist**, published 1894, 457 p.
 Surface geology [mainly glacial]. Includes, "Lake Passaic - An extinct glacial lake"
 Cretaceous and Tertiary geology
 Archean geology
 Water supply and water power
 Artesian wells
 Minerals of N.J., and notes on mineral localities
 Mineral statistics
- 1894 **Annual report of the State Geologist**, published 1895, 304 p.
 Surface geology, progress report, by R. D. Salisbury
 Artesian wells of southern N.J., by Lewis Woolman
 Forestry, progress report
 Mineral statistics
- 1895 **Annual report of the State Geologist**, published 1896, 198 p.
 Surface geology [southern N.J.], progress report, by R. D. Salisbury
 Archean geology, by J. E. Wolff
 Artesian wells of southern N.J., by Lewis Woolman
 Forestry
- 1896 **Annual report of the State Geologist**, published 1897, 377 p.
 Surface geology [southern N.J.], progress report, by R. D. Salisbury
 The Newark System, progress report, by H. B. Kummel
 Archean geology, by J. E. Wolff
 Artesian wells
 Stratigraphy of the Fish House black clay and associated gravels, fossil horse, unio and plants,
 by Lewis Woolman. [Includes accounts of other fossil finds, such as dinosaur bones]
 Flood of February 6, 1896, in northern N.J., by C. C. Vermeule
 Drainage of Hackensack and Newark tide marshes
 Iron-mining industry, with notes on active [iron and zinc] mines, by G. E. Jenkins
 Notes on visit to [several] forests [in Europe], by John Gifford
 Mineral statistics
- 1897 **Annual report of the State Geologist**, published 1898, 368 p.
 Surface geology, progress report, by R. D. Salisbury
 The Newark System, progress report, by H. B. Kummel
 Upper Cretaceous formations, by W. B. Clark

- Artesian wells, by Lewis Woolman
 - Drainage of Hackensack and Newark tide marshes, by C. C. Vermeule
 - Supplemental notes on iron and zinc mining
 - Clay and brick industry
 - Mineral statistics
 - Statistics of clays, bricks, terra-cotta and other clay products
- 1898 Annual report of the State Geologist, published 1899, 244 p.**
- Surface geology [soils], by R. D. Salisbury
 - Extension of Newark rocks [into N.Y. & Pa.], by H. B. Kummel
 - Artesian wells in N.J., by Lewis Woolman
 - Water supply from wells, by C. E. Vermeule
 - Pine Belt of southern N.J. and water supply, by C.C. Vermeule
 - Fire brick and clay industry, by G. E. Jenkins
 - Iron mining industry, by G. E. Jenkins
 - Mineral statistics
 - Forest fires and wood production in southern N.J., by Gifford Pinchot
- 1899 Annual report of the State Geologist, published 1900, 292 p.**
- Paleozoic formations, by Stuart Weller
 - Artesian wells, by Lewis Woolman
 - Chlorine in natural waters, by W. S. Myers
 - Mining industry [with notes on iron, zinc and copper mines]
 - Mineral statistics
- 1899 (Forests) Annual Report of the State Geologist, Report on Forests, published 1900, 327 p.**
- Forests of N.J., by C. C. Vermeule
 - Relation between forestry and geology, by Arthur Hollick
 - Role of insects in the forest, by J. B. Smith
 - Forestal [sic] conditions and silvicultural prospects of Coastal Plain, by John Gifford
- 1900 Annual report of the State Geologist, published 1901, 231 p.**
- Paleozoic formations, preliminary report, by Stuart Weller
 - Portland cement industry, by H. B. Kummel
 - Artesian wells, by Lewis Woolman
 - Mineralogical notes and explorations, by A. H. Chester
 - Chlorine in natural waters of state, by W. S. Myers
 - Mining industry, by H. B. Kummel
 - Iron mines
 - Copper mines
 - Mineral statistics
- 1901 Annual report of the State Geologist, published 1902, 178 p.**
- Rocks of Green Pond Mountain region, by H. B. Kummel and Stuart Weller
 - Artesian wells, by Lewis Woolman
 - Chlorine in natural waters, by W. S. Myer
 - Mining industry, by H. B. Kummel
 - Iron mines
 - Zinc mines
 - Copper mines
 - Mineral statistics
- 1902 Annual report of the State Geologist, published 1903, 149 p.**
- Floods of February 28th to March 5th, 1902. Effect of proposed drainage works on Passaic floods, by C. C. Vermeule
 - Artesian wells, by Lewis Woolman
 - Forestry, by F. R. Meier
 - Mining industry
 - Iron and zinc mines, by H. B. Kummel

Copper deposits of N.J., by W. H. Weed
Mineral statistics

- 1903 **Annual report of the State Geologist, published 1904, 132 p.**
Proposed tide waterway between Bay Head and Manasquan Inlet, by C. C. Vermeule
Floods of October 1903 - Passaic floods and their control, by C. C. Vermeule
Forest fires in N.J. during 1903, by F. R. Meier
Underground waters in N.J. Wells drilled in 1903, by G. N. Knapp
Mineral industry. Cement industry, by S. H. Hamilton
 Iron mining
 Zinc mines
 Copper mining
 Portland cement industry
Mineral statistics
- 1904 **Annual report of the State Geologist, published 1905, 317 p.**
Brief account of fossil fishes, by C. R. Eastman
 Triassic fishes of N.J.
Fauna of the Cliffwood Clays, by Stuart Weller
 Upper Cretaceous formations and faunas of N.J.
Talc deposits of Phillipsburg, N.J. and Easton, Pa., by F. B. Peck
Some molding sands of N.J., by H. B. Kummel
Precambrian rocks, by A. C. Spencer
East Orange wells at White Oak Ridge, Essex County, by C. C. Vermeule
 Additional well records, by H. B. Kummel
Forest fires in N.J. during 1904, by F. R. Meier
Mining industry, by H. B. Kummel
 Iron mines
 Zinc mines
Mineral statistics
- 1905 **Annual report of the State Geologist, published 1906, 338 p.**
Changes along N.J. coast, by L. H. Haupt
Brief sketch of fossil plants, by E. W. Berry
 Flora of Cliffwood Clays
Chemical composition of white crystalline limestones of Sussex and Warren Counties, by H. B. Kummel
Lake Passaic considered as a storage reservoir, by C. C. Vermeule
Peat deposits of northern N.J., by W. E. McCourt and W. C. Parmelee
Mining industry, by H. B. Kummel
 Iron mines
 Zinc mines
 Copper mines
 Mineral statistics
- 1906 **Annual report of the State Geologist, published 1907, 192 p.**
Fire resisting qualities of N.J. building stones, by W. E. McCourt
Glass-sand industry of N.J., by H. B. Kummel
Origin and relations of the Newark rocks, by J. V. Lewis
Newark (Triassic) copper ores of N.J.
 Properties of trap rocks for road construction
Mining industry, by H. B. Kummel
- 1907 **Annual report of the State Geologist, published 1908, 192 p.**
Inland Waterway from Cape May to Bay Head., by H. B. Kummel
 Bay Head to Great Bay section, by C. C. Vermeule
 Bay Head to Cape May section (summary), by C. C. Vermeule
 Great Bay to Cape May section, by L. M. Haupt
Improvement of Manasquan Inlet, by L. M. Haupt

Supplementary reports:

Inland Waterway from Cape May to Bay Head, by C. C. Vermeule
Manasquan River, by L. M. Haupt

Petrography of Newark igneous rocks of N.J., by J. V. Lewis
Mineral industry, with mineral statistics, by H. B. Kummel

- 1908 Annual report of the State Geologist, published 1909, 159 p.**
Changes at Manasquan Inlet, by H. B. Kummel
Mine Hill and Sterling Hill zinc deposits of Sussex County, N.J., by A. C. Spencer
Building stones of N.J., by J. V. Lewis
Mineral industry, with mineral statistics, by H. B. Kummel
- 1909 Annual report of the State Geologist, published 1910, 123 p.**
Development of Passaic watershed by small storage reservoirs, by C. C. Vermeule
Records of wells in N.J., 1905-1909, by H. B. Kummel and H. M. Poland
Mineral industry, by H. B. Kummel

PALEONTOLOGY SERIES

A series of monographs on invertebrate fossils produced as a cooperative project with the U.S. Geological Survey. In addition to the publications listed, U.S. Geological Survey Monograph 24 (Mollusca and crustacea of the Miocene formations of N.J., by R. P. Whitfield, 1894, 195 p.) was completed as part of this project.

Volume

- I Brachiopoda and Lamellibranchiata [Pelecypoda] of the Raritan Clays and Greensand Marls of N.J., by R. P. Whitfield, 1886, 339 p.**
- II Gasteropoda and Cephalopoda of the Raritan Clays and Greensand Marls of N.J., by R. P. Whitfield, 1892, 402 p.**
- III The Paleozoic faunas, by Stuart Weller, 1903, 462 p.**
- IV Report on the Cretaceous paleontology of N.J., by Stuart Weller, 1007 p. (revised as N.J. Geol. Survey Bull. 61-I and Bull. 61-II.)**

FINAL REPORT SERIES

Final Reports of the State Geologist were intended as comprehensive summaries of geologic, geographic, and hydrologic conditions in New Jersey. Before their completion, however, continuing advance of geologic and topographic understanding had been recognized and the "Bulletin of the New Jersey Geological Survey" series begun as a means of disseminating new information.

Volume

- I Topography, magnetism, and climate, 1888, 439 p.**
- II (part 1) Mineralogy, and botany, 1899, 642 p.**
(part 2) Zoology, 1890, 824 p.
- III Water-supply, water-power, flow of streams and attendant phenomena, by C. C. Vermeule, 1894, 448 p.**
- IV The physical geography of N.J., by R. D. Salisbury, 1898, 370 p.**

- V **Glacial geology of N.J.**, by R. D. Salisbury, 1902, 802 p. o7 3
- VI **The clays and clay industry of N.J.**, by Heinrich Ries and H. B. Kummel, 1904, 548 p.
- VII **Iron mines and mining in N.J.**, by W. S. Bayley, 1910, 512 p.
- VIII **The Quaternary formations of southern N.J.**, by R. D. Salisbury and G. N. Knapp, 1917, 218 p.

GEOLOGIC ATLAS OF NEW JERSEY

The "Geologic Atlas of New Jersey" was produced as part of a cooperative geologic mapping program between the New Jersey and U.S. Geological Surveys. It consists of 5 folios, each including text and several maps. Folios listed without New Jersey Geological Survey publication numbers were not produced as part of the cooperative geologic mapping project, but include New Jersey areas. They complete the list of folios covering portions of New Jersey.

Folio Number

- 1 **Passaic Folio**, by N. H. Darton, W. S. Bayley, R. D. Salisbury, and H. B. Kummel, 1908, 27 p., 4 maps, scale 1:125,000, 30' quadrangle area. [Also published as U. S. Geological Survey Geologic Atlas of the United States, Folio 157]
- 2 **Franklin Furnace Folio**, by A. C. Spencer, H. B. Kummel, J. E. Wolff, R. D. Salisbury, and Charles Palache, 1908, 27 p., 6 maps, scale 1:62,500, 15' quadrangle area. [Also published as U. S. Geological Survey Geologic Atlas of the United States, Folio 161]
- 3 **Philadelphia Folio**, by Florence Bascom, W. B. Clark, N. H. Darton, H. B. Kummel, R. D. Salisbury, and G. N. Knapp, 1909, 23 p., 10 maps, scale 1:62,500, 30' quadrangle area. [Also published as U. S. Geological Survey Geologic Atlas of the United States, Folio 162]
- 4 **Trenton Folio**, by Florence Bascom, N. H. Darton, H. B. Kummel, W. B. Clark, B. L. Miller, and R. D. Salisbury, 1909, 24 p., 3 maps, scale 1:125,000, 30' quadrangle area. [Also published as U. S. Geological Survey Geologic Atlas of the United States, Folio 167]
- 5 **Raritan Folio**, by W. S. Bayley, R. D. Salisbury, and H. B. Kummel, 1914, 32 p., 5 maps, scale 1:125,000, 30' quadrangle area. [Also published as U. S. Geological Survey Geologic Atlas of the United States, Folio 191]

Geologic Atlas of the United States

- New York City (Folio 83)**, by F. J. H. Merrill, N. H. Darton, Arthur Hollick, R. D. Salisbury, R. E. Dodge, Bailey Willis, and H. A. Pressey, 1902, 19 p., 13 maps, 1:62,500 scale, 30' quadrangle area.
- Dover Folio (Del., Md., N.J.; Folio 137)**, by B. L. Miller, 1906, 10 p., 2 maps, scale 1:125,000, 30' quadrangle area.
- Elkton-Wilmington (Md., Del., N.J., Pa.; Folio 211)**, by Florence Bascom, and B. L. Miller, 1920, 22 p., 4 maps, scale 1:62500, two 15' quadrangle areas.

BULLETINS

The Bulletin series was begun for publication of findings subsequent to publication of the Final Reports of the State Geologist and the Paleontology Series. Most bulletins are comprehensive treatments of a single topic.

Bulletin

- 1 **Annual administrative report of the State Geologist for 1910**, by H. B. Kummel, 1911, 43 p.
 - Administration
 - Topographic work
 - Geologic work
 - Hydrographic work
 - Chemical work
 - Inland Waterway survey
 - Cooperation with the U.S. Geological Survey
 - Needs of the survey
 - Publications
- 2 **A report of the approximate cost of a canal between Bay Head and the Shrewsbury River**, by H. B. Kummel, 1911, 20 p.
- 3 **The flora of the Raritan Formation**, by E. W. Berry, 1911, 233 p., 29 pls.
 - Historical sketch
 - The Raritan Formation
 - Botanical character of the flora
 - Geographical distribution of the flora
 - Systematic paleobotany
- 4 **A description of the fossil fish remains of the Cretaceous, Eocene and Miocene formations of N.J.**, by H. W. Fowler, 1911, 192 p.
- 5 **The mineral industry of N.J. for 1910**, by H. B. Kummel, and S. P. Jones, 1911, 24 p.
- 6 **Annual administrative report of the State Geologist for the year 1911**, by H.B. Kummel, 1912, 82 p.
 - Administration
 - Topographic work
 - Geologic work
 - Soil investigations
 - Testing oil and bitumen for road making
 - Meetings and conversations: Association of State Geologists; American Mining Congress; Mine safety demonstration meeting
 - Improvement of Shark River Inlet, by C. C. Vermeule
- 7 **The mineral industry of N.J. for 1911**, by H. B. Kummel, 1912, 37 p.
- 8 **Annual administrative report of the State Geologist for the year 1912**, by H. B. Kummel, 1913, 103 p.
 - Administration: Note taking [explains the origin and use of the N.J. 7-digit Rectangular-Coordinate System, which is still in use (1988) by several state agencies to indicate map locations on official records]
 - Topographic and engineering work
 - Geologic work
 - Chemical laboratory
 - Soil survey
 - Archaeologic work
 - Meetings and conventions

Appendixes:

- Second report on Shark River Inlet, by C. C. Vermeule
List of bench marks - revision of 1912, by H. B. Kummel
Publications
- 9 **A preliminary report of the archaeological survey of the State of N.J.**, compiled by Alanson Skinner and Max Schrabisch, 1913, 94 p.
 - 10 **The mechanical and chemical composition of the soils in the Sussex area, N.J.**, by A. W. Blair and Henry Jennings, 1913, 110 p.
 - 11 **The mineral industry of N.J. for 1912**, by M. W. Twitchell, 1913, 43 p.
 - 12 **Annual administrative report of the State Geologist for the year 1913**, by H. B. Kummel, 1914, 51 p.
 - Administration
 - Topographic and engineering work
 - Geologic work
 - Laboratory work
 - Soil survey
 - Cooperative work
 - Recent storm effects on northern N.J. shoreline, and supposed relation to coastal subsidence, by D. W. Johnson and W. S. Smith
 - List of publications
 - 13 **Indian habitations in Sussex County, N.J.**, by Max Schrabisch. **Indian remains near Plainfield, Union County, and along the lower Delaware valley**, by Leslie Spier, 1915, 107 p.
 - 14 **The geology of N.J.**, by J. V. Lewis and H. B. Kummel, 1915, 146 p. (revised as N.J. Geological Survey Bulletin 50)
 - 15 **The mineral industry of N.J. for 1913**, by M. W. Twitchell, 1914, 46 p.
 - 16 **Annual administrative report of the State Geologist for the year 1914**, (and accompanying reports by J. V. Lewis), by H. B. Kummel, 1915, 58 p.
 - Administration
 - Topographic and engineering
 - Geology
 - Chemical laboratory
 - Soil survey
 - Archaeology
 - Publications
 - Origin of secondary minerals of Triassic trap rocks, by J. V. Lewis
 - Pillow lavas of Watchung Mts., by J. V. Lewis
 - 17 **Revision of primary levels and list of bench marks in northern N.J.**, by C.C. Vermeule, 1916, 76 p.
 - 18 **Archaeology of Warren and Hunterdon Counties**, by Max Schrabisch, 1917, 88 p.
 - 19 **Additional bench marks in Burlington, Camden, Mercer, Middlesex and Monmouth Counties**, by C. C. Vermeule, 1918, 32 p.
 - 20 **Soil survey of the Belvidere area N.J.**, by A. L. Patrick, H. C. Smith, J. M. Snyder, C. C. Engle, L. L. Lee, and H. A. Miller, 1920, 72 p.
 - 21 **List of bench marks in N.J.**, revised to 1920, by L. P. Plummer, Jr., 1921, 116 p.

- 22 Soil survey of the Millville area, N.J., by C. C. Engle, L. L. Lee, H. A. Miller, A. L. Patrick, J. M. Snyder, and H. C. Smith, 1921, 46 p.
- 23 Potash in the greensands of N.J., by G. R. Mansfield, 1923, 146 p. (Also published as U.S. Geological Survey Bulletin 727)
- 24 Soil survey of the Bernardsville area, N.J., by A. L. Patrick, E. B. Deeter, C. C. Engle, and L. L. Lee, 1923, 60 p.
- 25 Soil survey of the Chatsworth area, N.J., by L. L. Lee, C. C. Engle, William Seltzer, A. L. Patrick, and E. B. Deeter, 1924, 47 p.
- 26 The mineral industry of N.J. for 1923, by M. W. Twitchell, 1925, 15 p.
- 27 The mineral industry of N.J. for 1924, by M. W. Twitchell, 1925, 14 p.
- 28 Soil survey of the Trenton area, N.J., by L. L. Lee, William Seltzer, E. B. Deeter, C. B. Manifold, G. M. McVee, and James Thorp, 1926, 58 p.
- 29 The mineral industry of N.J. for 1925, by M. W. Twitchell, 1927, 16 p.
- 30 Ground water supplies of the Atlantic City region, by D. G. Thompson, 1928, 138 p.
- 31 The mineral industry of N.J. for 1926, by M. E. Johnson, 1928, 30 p.
- 32 The mineral industry of N.J. for 1927, by M. E. Johnson, 1929, 21 p.
- 33 Surface water supply of N.J. to September 30, 1928, by O. W. Hartwell, 1929, 301 p.
- 34 Mineral industry of N.J. for 1928, by M. E. Johnson, 1930, 29 p.
- 35 Ground water supplies in the vicinity of Asbury Park, by D. G. Thompson, 1930, 50 p.
- 36 Mineral industry of N.J. for 1929, by M. E. Johnson, 1931, 29 p.
- 37 Mineral industry of N.J. for 1930, preliminary estimates for 1931, by M. E. Johnson, 1932, 26 p.
- 38 Ground water supplies of the Passaic River Valley near Chatham, N.J., by D. G. Thompson, 1932, 51 p.
- 39 Ground water supplies of the Camden area, N.J., by D. G. Thompson, 1932, 80 p.
- 40 Mineral industry of N.J. for 1931, by M. E. Johnson, 1933, 18 p.
- 41 Mineral industry of N.J. for 1932, by M. E. Johnson, 1934, 21 p.
- 42 Mineral industry of N.J. for 1933, by M. E. Johnson, 1935, 20 p.
- 43 Mineral industry of N.J. for 1934, by M. E. Johnson, 1936, 24 p.
- 44 N.J. Geodetic Control Survey bench marks, by Arthur Noack, and Philip Kissam, 1936, 110 p. [bench marks in Mercer, Middlesex and Somerset Counties].
- 45 N.J. Geodetic Control Survey bench marks in Essex and Passaic Counties, by Arthur Noack, 1937, 108 p. [includes several in Bergen, Morris, and Union Counties]
- 46 Work of the N.J. Geodetic Control Survey, by Arthur Noack, 1938, 14 p., 13 tables, 68 maps

- 47 **Continuity of the Hardyston Formation in the vicinity of Phillipsburg, N.J.**, by J. C. Ludlum, 1940, 21 p.
- 48 **N.J. Geodetic Control Survey bench marks in Bergen and Hudson Counties**, by Arthur Noack, 1939, 179 p. [includes several in Essex, Passaic, and Union Counties]
- 49 **N.J. Geodetic Control Survey bench marks in Camden and Burlington Counties**, by Arthur Noack, 1939, 188 p.
- 50 **The geology of N.J.**, by H. B. Kummel, 1940, 203 p. [Revision of N.J. Geological Survey Bulletin 14]
- 51 **N.J. Geodetic Control Survey bench marks in Camden, Gloucester and Salem Counties**, by Arthur Noack, 1940, 214 p.
- 52 **The stratigraphy, fauna and correlation of the Vincentown Formation**, by K. F. Greacen, 1941, 83 p.
- 53 **N.J. Geodetic Control Survey bench marks in Burlington, Monmouth and Ocean Counties**, by Arthur Noack, 1941, 124 p.
- 54 **Geophysical methods of exploration and their application to geological problems in N.J.**, by G. P. Woollard, 1941, 89 p.
- 55 **Peats and their utilization. - Part A: Nature and origin of peat, composition and utilization**, by S. A. Waksman, 1942, 155 p.
- Peats and their utilization. - Part B: The peat resources of N.J.**, by S. A. Waksman, H. Schulhoff, C. A. Hickman, T. C. Cordon, and S. C. Stevens, 1943, 278 p.
- 56 **The mineral wool industry in N.J.**, by J. M. Van Voorhis, 74 p.
- 57 **Copper mines and mining in N.J.**, by H. P. Woodward, 1944, 156 p.
- 58 **N.J. Geodetic Control Survey bench marks in Cumberland and Salem Counties**, by Arthur Noack, 1944, 182 p.
- 59 **Bibliography and index of the geology of N.J.**, by A. B. Grametbauer, 1946, 142 p.
- 60 **Short Geologic papers**, by F. L. Cuthbert, G. L. Jepsen, Henry Herpers, W. R. Thurston, and H. G. Richards, 1951, 91 p.
- Differential thermal analysis of N.J. clays, by F. L. Cuthbert, 20 p.
- A Triassic armored reptile from N.J., by G. L. Jepsen, 20 p.
- A new Conularid from the Esopus Formation, Sussex County, N.J., by Henry Herpers, 7 p.
- The stratigraphy of the Roundout Limestone in N.J., by Henry Herpers, 14 p.
- Geology and mineralogy of the manganese deposit at Clinton Point, N.J., by W. R. Thurston, 22 p.
- Some recent discoveries of Pleistocene mammals from N.J., by H. G. Richards, 8 p.
- 61 **The Cretaceous fossils of N.J. - Part I: Porifera, Coelenterata, Annelida, Echinoidea, Brachiopoda and Pelecypoda**, by H. G. Richards and others, 1958, 266 p., 46 pls. [Revision of New Jersey Geological Survey Paleontology Series, volume IV. Part I was printed without a bulletin number and some libraries may be catalog it separate from the bulletin series.]
- The Cretaceous fossils of N.J. - Part II: Gastropoda, Scaphopoda, Nautiloidea, Ammonoidea, Belemnitidae, Crustacea, Vertebrata and miscellaneous fossils**, by H. G. Richards and others, 1962, 237 p., 94 pls. [Revision of New Jersey Geological Survey Paleontology Series, volume IV]

- 62 **Geology of the Andover mining district, Sussex County, N.J.**, by P. K. Sims, and B. F. Leonard, 1952, 46 p.
- 63 **Petrography and genesis of the N.J. beach sands**, by R. S. McMaster, 1954, 239 p.
- 64 **Trap rock minerals of N.J.**, by B. H. Mason, 1960, 51 p.
- 65 **The minerals of Franklin and Sterling Hill, N.J.**, by A. B. Wilkerson, 1962, 80 p.
- 66 **Mapping digest for N.J.**, by H. J. Barker, Jr., 1965, 65 p.
- 67 **The story of New Jersey's civil boundaries, 1606-1968**, by J. P. Snyder, 1969, 294 p. *Supplement to The story of New Jersey's civil boundaries*, by J. P. Snyder, 1988, 35 p.
- 68 not issued
- 69 not issued
- 70 **Caves of New Jersey**, by R. F. Dalton, 1976, 51 p. Includes: **Cave biology**, by G. Nicholas, and **History and legends of caves**, by A. R. Eckler
- 71 (see University Seminar, below)
- 72A-E (see University Seminar, below)
- 73 **Geology and ground water resources of Sussex County and the Warren County portion of the Tocks Island impact area**, by J. W. Miller, Jr., 1974, 143 p., 2 pls. (maps), 12 tables
- 74 **N.J. Land Oriented Reference Data System (LORDS)**, by Kemble Widmer and others, 1974, 151 p.
- 75A-F (see University Seminar, below)
- 76 **Hydrogeochemistry of the N.J. Pine Barrens**, by J. L. Means, R. F. Yuretich, D. A. Crerar, D. J. J. Kinsman and M. P. Borcsik, 1981, 107 p.

University Seminar on Pollution and Water Resources

Bulletins 71, 72A through 72E, and 75A through 75F contain selected papers presented at the University Seminar on Pollution and Water Resources, hosted by Columbia University in cooperation with the U.S. Geological Survey and N.J. Department of Environmental Protection. Dates of publication are unknown, but generally one or two years after the session covered. All titles begin: "Proceedings of the University Seminar on Pollution and Water Resources," followed by the volume number.

Bulletin

- 71 **Vol. I, 1967-1968**, edited by G. J. Halasi-Kun and Kemble Widmer, 91 p.
- The water-data base for water management decisions, by E. L. Hendricks, 5 p.
 - Weather modification and water resources, by B. A. Power, 7 p.
 - Managing forest lands for water production, by Byron Beattie, 6 p.
 - Desalination project in the Guantanamo Naval Base, Cuba, by Chaba Benedek, 6 p.
 - Water resources planning and hydrologic risk, by D. P. Loucks, 13 p.
 - A comprehensive approach to the problems of pollution and water resources, by Laszlo Czirjak, 4 p.
 - Analysis of spit-bar development at Sandy Hook, N.J., by W. E. Yasso, 31 p.
 - Correlation between precipitation, flood and windbreak phenomena of the mountains - a case study from central Europe, by G. J. Halasi-Kun, 11 p.

- 72A Vol. II, 1968-1969, edited by G. J. Halasi-Kun, 206 p.
 The integration of desalination into water and power problems - some unexplored economic problems, by Joseph Barnea, 9 p.
 Water resources development of southeast Lower-Saxony, F. R. Germany, by Ulrich Maniak, 32 p.
 Water condensation from the air, by J. L. Worzel, 7 p.
 Computation of peak discharge from smaller watersheds in East Czechoslovakia, by G. J. Halasi-Kun, 47 p.
 Ground-water problems on Long Island, N.Y., by J. J. Geraghty, 16 p.
 Instream aeration of small polluted rivers (Passaic River in N.J.), by William Whipple, Jr., 19 p.
 Mathematical programming, computers and large scale water resource systems, by A. M. O. Esogbue, 28 p.
 Some experiences with systems analysis and the use of mathematical models in river basin planning, by Robert Sadove, 13 p.
 Surface temperature profile of New York State waters, by S. K. Breslauer, and W. E. Wrobel, 19 p.
 Space station milieu, by Lawrence Slote, 10 p.
- 72B Vol. III, 1969-1970, edited by G. J. Halasi-Kun, Kemble Widmer and G. W. Whetstone, 155 p.
 Water resources research in the United States, by R. R. Renne, 15 p.
 Seasonal sediment yield patterns of United States rivers, by Lee Wilson, 18 p.
 A statistical based mathematical water quality model for a non-estuarine river system (Upper Passaic Valley in N.J.), by M. A. Tirabassi, 23 p.
 Some reflections on an engineering economic study of the industrial growth potential of the Upper Passaic River Basin, by Arthur Lesser, 6 p.
 The basic principles and practical consequences of a new concept in strength of materials, by George Redey, 22 p.
 What's happening to Lake Erie?, by J. A. Jones, 12 p.
 Urban air pollution, by Lawrence Slote, 9 p.
 Financing of water supply and sewerage projects in developing countries, by Juergen Krombach, 28 p.
 Federal pollution control litigation, by Walter Kiechel, Jr., 9 p.
 Determination of quality of sediment on the public beaches of Long Island, by Y. K. Purandare, 7 p.
- 72C Vol. IV, 1970-1971, edited by G. J. Halasi-Kun, 141 p.
 Water problems of the mining industry in the U.S., by E. T. Hayes, 9 p.
 Contrasts and convergence in engineering and economic approaches to water development and pollution control, J. H. Butler, 11p.
 Pollution of the Rhine River and environmental protection problems in the Ruhr area, by U. A. Maniak, 23 p.
 The role of economics in municipal water supply, by J. J. Warford, 16 p.
 Problems on pollution and water resources in the N.Y.C. area, by Martin Lang, 8 p.
 Water resources management in the Tisza Valley in Hungary, by Tabor Dora, and Miklos Merenyi, 40 p.
 Air pollution - Twentieth century plague, by L. A. Buck, 10 p.
 Some applications of systems analysis to water resources, by D. P. Loucks, 41 p.
 The effects of hydrostatic pressure on the growth of *Canida lbicans* in a simulated marine environment, by Peter Madri, 9 p.
 Hydrogeological aspects of pollution and water resources in urbanized and industrialized areas, by G. J. Halasi-Kun, 9 p.
- 72D Vol. V, 1971-1972, edited by G. J. Halasi-Kun and Kemble Widmer, 211 p.
 Low flow hydrology in Australian streams, by T. A. McHanon, 25 p.
 Computation of extreme flow and ground water capacity with inadequate hydrologic data in N.J., by G. J. Halasi-Kun, 35 p.
 Tropical hydrology, by Jaroslav Balek, 50 p.
 Asbestos pollution, by S. A. Hartman, 19 p.

- Fluorescence spectroscopy in the study of air and water pollution, by Akhar Yaseen, 9 p.
 The world plan of action for the application of science and technology to development, by B. H. Chatel, 12 p.
 Application of the production function in water management, by I. Degen, 27 p.
 The Karst artesian water system of the southeastern states, by V. T. Stringfield, and H. E. LaGrand, 11 p.
 Toxic water pollutants, by John Fabianek, and Vera Sajenko, 7 p.
 Some problems of the Papaloapan River Basin, by Gerardo Cruickshank, 8 p.
- 72E Vol. VI, 1972-1975**, edited by G. J. Halasi-Kun, and G. W. Whetstone, 224 p.
 Hydrological investigation of the unsaturated zone, by G. Kovacs, 46 p.
 Model ecosystem studies: models of what?, by George Claus, Karen Bolander, and P. P. Madri, 30 p.
 The utilization of information about concomitance of water resources and demands in water resources decision making, by Miklos Domokos, 35 p.
 A physical approach to hydrologic problems, by J. R. Philip, 12 p.
 Factor analysis of water quality data in N.J.: evaluation of alternative rotations, by Robert Hordon, 14 p.
 Pollution crunch in Japan, by H. B. Ripman, 10 p.
 Simulation modeling of streams for water quality studies, by A. S. Goodman, 16 p.
 Micropollution in organism, by E. S. Szebenyi, 30 p.
 Extreme runoffs in regions of volcanic rocks in central Europe and in northeastern U.S.A., by G. J. Halasi-Kun, 9 p.
 Hackensack River - Determination of tertiary sewage treatment requirements for waste water discharge, by R. W. Lo Pinto, C. D. Mattson, and J. D. Lo Pinto, 17 p.
- 75A Vol. VII, 1972-1973 (Selected papers on special problems in ocean engineering)**, edited by G. J. Halasi-Kun and Kemble Widmer, 147 p.
 Dispersion and depth of disturbance studies on foreshore beach sediments, Sandy Hook, N.J., by W. E. Yasso, 10 p.
 Data on the hydrology of Great South Bay, Long Island, N.Y., by George Claus, 20 p.
 Shellfish and public health, by William Jamieson, 13 p.
 Noise is pollution, by G. W. Robin, 17 p.
 Effect of water salinity on the incidence of symbionts of the Blue Crab, *Callinectes sapidus*, by V. M. Scrocca, 64 p.
 Coastal morphology of Brigantine Inlet, N.J., history and prediction 1877-1977, by W. F. Rittschof, 33 p.
 Currents and sediment migration in Brigantine Inlet, N.J., by M. A. Lynch-Blosse, 29 p.
 Parameters of marine pollution, by William Jamieson, 8 p.
- 75B Vol. VIII, 1974-1975 (Selected papers on special problems in ocean engineering)**, edited by G. J. Halasi-Kun and Kemble Widmer, 173 p.
 Understanding the impact of Outer Continental Shelf development; approaches to design of environmental studies, by Allan Hirsch, 15 p.
 Thermal plume field measurements in three dimensions, by J. R. Roney, 14 p.
 Recent progress in wave refraction studies and its application in the Mid-Atlantic Bight, by Yung-Yao Chao, 22 p.
 Beach dynamics and sediment mobility on Sandy Hook, N.J., by K. F. Nordstrom, J. R. Allen, and N. P. Psuty, 32 p.
 Phytoplankton bioassays for industrial pollutants in the Hackensack Meadowlands, by R. W. Lo Pinto, and C. P. Mattson, 15 p.
 Sedimentary dynamics of a disturbed estuary-entrance sand shoal: the Shrewsbury entrance area of Sandy Hook Bay, N.J., by D. P. Harper, 31 p.
 Future energy resources including outer continental shelf development, S. L. Meisel, 14 p.
 Recent developments in the Law of the Sea status after Geneva 1975, by P. R. Remec, 22 p.
- 75C Vol. IX, 1975-1978**, edited by G. J. Halasi-Kun and Kemble Widmer, 192 p.
 Federal saline water conversion program, by G. F. Mangan, 10 p.

- Salinity management and the development of the Colorado River Basin: A multidisciplinary problem with international implication, by W. S. Butcher, 18 p.
- Plan Nacional Hidraulico (Mexican national water plan - 1973), by Gerardo Cruickshank, 12 p.
- The unanswered challenge: Planning to meet the total water needs of an urbanized state, by R. D. Ricci, 6 p.
- Methods for estimating of water pollution load from particular land uses associated with storm runoff, by Ladislav Michna, 21 p.
- Headland-bay beaches along the western shoreline of Cape Cod Bay, Mass., by W. E. Yasso, 6 p.
- Land Oriented Reference Data System - LORDS, by G. J. Halasi-Kun, 36 p.
- Segregation and deposition of particle-size classes by hydrodynamic forces, by D. P. Harper, 14 p.
- Design optimization of a flue gas desulfurization sludge handling system, by R. W. Goodwin, 18 p.
- Sediment dynamics and textural facies in the Brigantine Inlet area, N.J., by R. F. Krauser, and N. K. Coch, 47 p.
- 75D Vol. X, 1975-1978 (Selected papers on surveying, mapping and geodesy), edited by G. J. Halasi-Kun, 213 p.**
- Geodetic control network - foundation of the cadastre, by J. E. Stem, and L. S. Baker, 14 p.
- The role of ERTS and Sky Lab information in the Mexican water plan, by F. G. Simo, 18 p.
- Geodetic survey activities in N.J., by G. J. Halasi-Kun, 25 p.
- The national mapping program and status of mapping, N.J. by R. B. Southard, Jr., 11 p.
- Surveying the tidal boundary, by J. P. Weidener, 15 p.
- Tidal dam and marine boundary surveys, by Carol Thurlow, 32 p.
- Geodetic deformation measurement on larger dams, by S. K. Nazalevicz, 21 p.
- Calibration base lines for electronic distance measuring instruments in N.J. and their use, by J. F. Dracup, C. J. Fronczek, and G. J. Halasi-Kun, 38 p.
- Settlement control survey report and method of measurement for the Verrazano Narrows Bridge, N.Y.C., by George de Benedicty, 21 p.
- Tide gauging for the 200 mile fisheries limit, by J. P. Weidener, 13 p.
- 75E Vol. XI, 1975-1978, edited by G. J. Halasi-Kun and Kemble Widmer, 224 p.**
- Future directions of the program of the Office of Water Research and Technology, by G. D. Cobb, 4 p.
- Water quality and pollution - issues involved in the development of a national water policy, by G. J. Halasi-Kun, 11 p.
- The applicability of ultraviolet spectrophotometry for water quality analyses: a review, by Michael Hermel, M. S. Tanzer, and George Claus, 58 p.
- Efficiency of slipforms in reinforced concrete construction of water towers, by George Redey, 19 p.
- Precipitation and snowfall over N.J., by D. V. Dunlop, 15 p.
- Regional geomorphology of the Inner N.J. Shelf (1975), by T. F. McKinney, 18 p.
- Simulation of unsteady flow in natural compound channels, by Milorad Miloradov, 23 p.
- Mountainous winter precipitation: a stochastic event based approach, by Lucien Duckstein, Martin Fogel, and Donald Davis, 18 p.
- Ground water monitoring at solid waste disposal sites - Two case studies, by P. H. Roux and D. W. Miller, 32 p.
- Some effects of noise pollution on bioacoustics in the sea, by G. W. Robin, 25 p.
- 75F Vol. XII, 1978-1979, edited by G. J. Halasi-Kun**
- Environmental health and technical cooperation among developing countries, by F. A. Butrico, 9 p.
- Improving water-quality monitoring data, by J. D. Buffington, J. F. Ficke, William Kirchoff, F. D. Leutner, and Richard Morse, 11 p.
- Potential environmental impacts of ocean thermal conversion, by R. P. Stringer, and H. S. Rahme, 14 p.

- On some concepts for solving multiobjective programming problems, by F. Szidarovszky, 15 p.
- Regional water supply planning - Ground water estimate based on hydrologic survey in N.J., by G. J. Halasi-Kun, 12 p.
- Alternative approaches to ground-water management, by Alexander Zaporozec, 14 p.
- Economic review of water and natural resources inventory based on land survey (multipurpose land records and systems, an assessment from an economic point of view), by G. H. Greulich, 11 p.
- Water-borne vectors of disease in tropical and subtropical areas; and a novel approach to mosquito control using annual fish, by Jules Markofsky, and J. R. Matias, 17 p.
- Lead-industrial monitoring and biological testing, by M. M. Plechaty, 36 p.
- New Jersey's tide lands mapping program, by Roland Yunghans, 4 p.
- The mean high water line: insight to law, science and technology, by A. A. Porro, Jr., 8 p.
- Status of tidal surveying and monuments in N.J., by G. J. Halasi-Kun, 5 p.
- Medium-term forecasting of hydro-electric energy inflows, by Luis Valadares Tavares, 52 p.

GEOLOGICAL SURVEY REPORTS

Overviews of current or anticipated problems, inventories, compilations, summary reports, manuals, guidebooks, and data bases. Initially this was known as the "Geologic Report" series. To allow a broader scope, this name will be changed beginning with Geological Survey Report 17.

Geological Survey Report

- 1 **Bedrock map of the Hackensack Meadows**, by D. G. Parillo, 1959, revised by H. F. Kasabach, 1962, 25 p., 1 map
- 2 **Thirty-one selected deep wells, logs and maps**, by M. E. Johnson, 1961, 110 p., 1 map
- 3 **Deep Wells of the N.J. Coastal Plain**, by H. F. Kasabach and R. J. Scudder, 1961, 62 p.
- 4 **Generalized structure contour maps of the N.J. Coastal Plain**, by H. G. Richards, F. H. Olmsted, and J. L. Ruhle, undated [ca.1962], 38 p.
- 5 **Site evaluation for nuclear industry**, by AMF Atomics Div. of American Machine and Foundry Co., 1961, 46 p.
- 6 **The Ogdensburg-Culvers Gap Moraine and glacial stagnation in New Jersey**, by Henry Herpers, 1961, 16 p.
- 7 **Geology of the ground water resources of Mercer County**, by Kemble Widmer, 1965, 115 p.
- 8 **Geology as a guide to regional estimates of the water resources**, by Kemble Widmer, 1968, 15 p.
- 9 **Bouguer gravity anomaly map of N.J.**, by W. E. Bonini, 1965, 10 p., 2 maps
- 10 **Water resources resume, State Atlas Sheet no. 23, parts of Bergen, Morris and Passaic Counties**, by Kemble Widmer, Haig Kasabach, and Phillip Nordstrom, 1966, 34 p.
- 11 **Geology of the Paleozoic rocks of the Green Pond outlier**, by S. G. Barnett, 1976, 9 p.
- 12 **Bibliography and index of New Jersey geology 1980**, compiled by American Geological Institute, 1982, 31 p.

- 13 **Bibliography and index of New Jersey geology 1981**, compiled by American Geological Institute, 1982, 26 p.
- 14 **Bibliography and index of New Jersey geology 1982**, compiled by American Geological Institute, 1983, 34 p.
- 15 **Asbestiform and non-asbestiform amphiboles, cadmium, and zinc in quarry samples from Franklin and Sparta, Sussex County, N.J.**, by Mark Germiné, 1986, 19 p.
- 16 **Geologic research in New Jersey, 1987**, edited by D. P. Harper, 1987, 16 p.

GROUND-WATER REPORTS

Reports concerned primarily with ground water and thus not appropriate for the "Geologic Report" series. Subsequent ground water reports will be published within the "Geological Survey Report" series.

Ground Water Report

- 1 **Two-part pump test for evaluating the water-supply capabilities of domestic wells**, by J. L. Hoffman and Robert Canace, 1986, 12 p.

OPEN-FILE REPORTS

Findings of brief investigations; materials which will soon be updated, revised or outdated; and reports intended to invite comment.

Open-File Report

- 1 **Mineralogy and amphibole fiber content in samples from the limestone products quarries in Franklin and Sparta**, by Mark Germiné, 1982, 51 p., 4 tables
- 83-1 **N.J. Ground water pollution index, Sept. 1974 - Jan. 1983**, compiled by Timothy Stone, 1983, 97 p., 3 maps
- 83-2 **Computer analysis of pump test data**, by J. L. Hoffman, 1983, 80 p., 1 table, 3 program listings.
- 83-3 **Results of the 1980-81 drought emergency ground water investigation in Morris and Passaic Counties, N.J.**, by Robert Canace, W. R. Hutchinson, W. R. Saunders, and Kari Gulbrandsen Andres, 1983, 132 p., 2 maps, 5 tables
- 83-4 **A ground water pollution priority system**, by W. R. Hutchinson and J. L. Hoffman, 1983, 32 p., 7 tables
- 83-5 **Radioactive mineral occurrences in N.J.**, compiled by Christy Bell, 1983, 21 p., 1 map
- 84-1 **N.J. Ground water pollution index, Sept. 1974 - Apr. 1984**, compiled by C. L. Britton, 1984, 143 p., 3 maps

- 86-1 **High resolution analysis of seismic data: HRASSD 2.0**, by J. L. Hoffman, and J. S. Waldner, 1986, 20 p., appendix, 54 p., two 5.25 in. computer diskettes (sample data and 8 program listings)
- 87-1 **Plan of study for the N.J. bond issue ground-water-supply investigations**, by P. P. Leahy, G. N. Paulachok, A. S. Navoy, and A. A. Pucci, Jr., 1987, 53 p.
- 88-1 **Microcomputer software for the processing and forward modeling of transient electromagnetic data taken in the central loop sounding configuration**, by S. K. Sandberg, 1988, 88 p., one 5.25 in. computer diskette (11 computer programs)
- 88-2 **Geologic research in New Jersey, 1988**, by D. P. Harper (ed.), 31 p.

TECHNICAL MEMORANDUMS

Brief reports prepared for limited distribution and permanent retention in the N.J. Geological Survey library. Since 1987, technical memorandums have been numbered for record-keeping purposes.

Unnumbered Technical Memorandums

Evaluation of aquifer quality in N.J. in terms of criteria established by the Underground Injection Control (UIC) Program, by Garry Morrison and Robert Canace, 1983, 40 p., 1 map, 3 tables.

Brief history of the New Jersey Geological Survey, by D. R. Dombroski, Jr., 1984, 6 p.

Review of the permeability characteristics of the Woodbury Clay, by D. R. Dombroski, Jr., 1985, 23 p. (revised as "Review of the permeability characteristics of the Woodbury-Merchantville confining layer in N.J." (Northeastern Geology, v.9, no.4, 1987, p. 191-200)).

TIP: A Theis, interactive program, by J. L. Hoffman, 1984, 16 p.

Landfill leachate flux equations: theoretical development and computer programs, by J. L. Hoffman, 1984, 41 p.

The Noordbergum effect, by J. L. Hoffman, 1984, 16 p.

A set of SAS programs for ground water pollution site management data, by J. L. Hoffman, 1985, 40 p.

Numbered Technical Memorandums

87-1 **Writing reports for the New Jersey Geological Survey**, by D. P. Harper, 1987, 17 p.

87-2 **Quality assurance guidelines for geophysical investigations conducted at hazardous waste sites and ground-water pollution sites**, by D. L. Pasicznyk, 1987, 2 p.

87-3 **Ground-water contamination and the delineation of a well restriction area in East Hanover Twp., Morris Co., N.J.**, by Gil Oudijk, 1987, 49 p.

87-4 **Water soluble phase of number 2 fuel oil: results of a laboratory mixing experiment**, by W. H. Kramer, and T. J. Hayes, 1987, 8 p.

- 87-5 **Water soluble phase of gasoline: results of a laboratory mixing experiment**, by W. H. Kramer, and T. J. Hayes, 1987, 13 p.
- 88-1 **Seismic refraction and gravity investigation of bedrock topography at Lakeland Regional High School, Wanaque, Passaic County, N.J.**, by T. C. Bambrick, and D. L. Jagel, 1988, 16 p.
- 88-2 **Hydrogeologic study of water-well failures in argillite bedrock of Sourland Mountain, Somerset County, N.J., in 1982**, by H. F. Houghton, 1988, 28 p.
- 88-3 **Computer software catalog of the New Jersey Geological Survey**, by Mark French, Gail Carter, and Mark Klitzke, 1988, 65 p.
- 88-4 **Field Data Management System (FMS); a computer software program for organization and analysis of geologic data**, by Margaret Kaeding and Gregory C. Herman, 48 p., one 5-1/4 inch disk.

COUNTY-IN-BRIEF SERIES

Educational pamphlets. Each title in this series has the form: "Geology of ... County in brief."

County	Author	Publication date	No. of pages.
Atlantic	B.M. H. Jogan	1978	21 p.
Bergen.	C. S. Lucey	1971	13 p.
Burlington	C. S. Lucey and Kemble Widmer	1977	20 p.
Cape May	C. S. Lucey	1976	13 p.
Essex and Union	C. S. Lucey	1976	13 p.
Hunterdon	C. S. Lucey	1979 (2nd. ed.)	14 p.
Mercer	Kemble Widmer	1977 (2nd. ed.)	15 p.
Middlesex	D. R. Dombroski, Jr.	1980	16 p.
Monmouth	P. B. Dahlgren	1977	23 p.
Morris	C. S. Lucey	1977 (2nd. ed.)	18 p.
Passaic	D. P. Harper	1977	13 p.
Somerset	Debra Tobiassen	1978	12 p.
Sussex	C. S. Lucey	1978 (2nd. ed.)	16 p.
Union (see Essex and Union)			
Warren	C. S. Lucey	1977 (2nd. ed.)	14

MISCELLANEOUS UNNUMBERED REPORTS

Report on the clay deposits of Woodbridge, South Amboy and other places in N.J., together with their uses for fire brick, pottery, etc., by J. C. Smock, 1878, 381 p.

A preliminary catalogue of the flora of N.J., compiled by N. L. Britton, 1881, 233 p.

Report on the survey of the boundary line between N.J. and N.Y., made in July and Aug. 1874., by G. H. Cook, 1874, 48 p.

Catalogue on the [U.S.] Centennial exhibit of the Geological Survey of N.J., by G. H. Cook, 1876, 84 p.
After the Centennial Exposition (Philadelphia, 1876) closed, the exhibit became the Museum of the Geological Survey of N.J. This collection eventually became the initial acquisition of the N.J. State Museum.

The problem of the Passaic Meadows, by H. B. Kummel, 1919, 18 p.

Prospecting for uranium and other related deposits in N.J., by Kemble Widmer and F. J. Markewicz, 1957, 13 p.

Titanium sands of southern N.J., by F. J. Markewicz, D. G. Parrillo, and M. E. Johnson, 1958, 16 p.

Unusual mineral deposits at Langban, Sweden with a comparison to those at Franklin, N.J., by J. H. Vreeland, 1963 or later, 24 p.

New Jersey rocks, by Kemble Widmer and J. S. Yolton, 1963, 19 p. [Accompanied a 20-specimen rock-and-sediment-sample set of the same name. Pamphlet also distributed separately.]

The origin of Roaring Brook, by G. M. Banino, 1969, 8 p.

New Jersey caves in brief, by R. F. Dalton, 1970, 23 p.

Geologic, hydrologic and well drilling characteristics of the rocks of northern and central N.J., by G. M. Banino, F. J. Markewicz, and J. P. Miller, Jr., 1970, 23 p.

Atlas of aerial photography and satellite imagery, by D. P. Harper, 1977, 42 p.

Earthquakes in New Jersey, by D. R. Dombroski, Jr., 1977 (2nd ed.), 30 p.

NEW JERSEY DIVISION OF WATER RESOURCES

Department of Environmental Protection information on geology and water resources has been published in the "Special Reports" and "Water Resources Circulars" series of the Division of Water Resources as well as in publications of the New Jersey Geological Survey. Publications in these series are listed here for completeness.

SPECIAL REPORTS

Special Report

- 1 **Water supply problems of the Northern Metropolitan District; Activities of the Commission July 1 to December 31, 1929**, by State Water Policy Commission, 1929, 53 p.
- 2 **Control of floods on the Passaic River, Part I [general] (46 p.), Part II, Technical details (117 p.)**, by State Water Policy Commission, 1931, 163 p.
- 3 **The South Branch Project, a high level water supply for the Northern Metropolitan District**, by State Water Policy Commission, 1931, 77 p.
- 4 **Control of floods on Green Brook in the Counties of Middlesex, Somerset and Union**, by State Water Policy Commission, 1932, 20 p.
- 5 **Surface water supply of N.J., stream flow records, Oct. 1, 1928 to Sept. 30, 1934**, by O. W. Hartwell, 1936, 253 p.
- 6 **Supplementary report on the ground-water supplies of the Atlantic City region**, by H. C. Barksdale, R. W. Sundstrom, and M. S. Brunstein, 1936, 139 p.
- 7 **Water supplies from the No. 1 Sand in the vicinity of Parlin, N.J.**, by H. C. Barksdale, 1937, 33 p.
- 8 **The ground-water supplies of Middlesex County, N.J.**, by H. C. Barksdale, M. E. Johnson, R. C. Baker, E. J. Schafer, and G. D. DeBuchananne, 1943, 160 p.
- 9 **Surface water supply of N.J., stream flow records, Oct. 1, 1934 to Sept. 30, 1940**, by O. W. Hartwell, 1944, 444 p.
- 10 **Geology and ground-water supply of the Newark, N.J., area**, by Henry Herpers and H. C. Barksdale, 1951, 52 p.
- 11 **Elizabeth River flood control in the Counties of Essex and Union**, by N.J. Division of Water Policy and Supply, 1951, 60 p.
- 12 **Surface water supply of N.J., stream-flow records, Oct. 1, 1940 to Sept. 30, 1945**, by O. W. Hartwell, and Otto Lauterhahn, 1952, 379 p.
- 13 **Ground-water resources in the tri-state region adjacent to the lower Delaware River**, by H. C. Barksdale, D. W. Greenman, S. M. Lang, G. S. Hilton, and D. E. Outlaw, 1958, 190 p.
- 14 **Surface water supply of N.J., streamflow records, Oct. 1, 1945 to Sept. 30, 1950**, by D. F. Dougherty, and A. C. Lendo, 1959, 362 p.

- 15 **Spruce Run - Round Valley Reservoir Project, Raritan River Basin water resources development, Part I, Division report (37 p.), Part II, Engineering report (86 p.); Part III, Progress report, land acquisition (8 p.), by N.J. Division of Water Policy and Supply, 1958, 131 p.**
- 16 **Surface water supply of N.J., streamflow records, Oct. 1, 1950 to Sept. 30, 1955, by J. E. McCall, and A. C. Lendo, 1960, 405 p.**
- 17 **Salt-water encroachment into aquifers of the Raritan Formation in the Sayreville area, Middlesex County, N.J., with a section on a proposed tidal dam on the South River, by C. A. Appel, 1962, 47 p.**
- 18 **Ground-water resources of Cape May County, N.J. - Salt-water invasion of principal aquifers, H. E. Gill, 1962, 171 p., 19 tables.**
- 19 **Ground-water resources of Mercer County, N.J., by John Vecchioli, and M.M.Palmer, 1962, 71 p.**
- 20 **Surface water supply of N.J., streamflow records, Oct. 1, 1955 to Sept. 30, 1960, by J. E. McCall, and A. C. Lendo, 1963, 425 p.**
- 21 **South River Tidal Dam project, Raritan River Basin water resources development, Sayreville area, Middlesex County, N.J., 1965, 127 p., Part I, Divisional report (52 p.), Part II, Engineering report (63 p.), Part III, Land acquisition report (6 p.), Part IV, Report on digital computer aquifer model analysis of the extent and character of benefits from South River Tidal Dam project (6 p.)**
- 22 **Chloride concentrations of water from wells in the Atlantic Coastal Plain of N.J., 1923-61, by P. R. Seaber, 1963, 250 p.**
- 23 **Ground-water resources of Monmouth County, N.J., by L. A. Jablonski, 1968, 79 p.**
- 24 **Geology and ground water resources of Hunterdon County, N.J., by H. F. Kasabach, 1966, 128 p.**
- 25 **Availability of ground water in Morris County, N.J., by H.E. Gill, and John Vecchioli, 1965, 56 p.**
- 26 **Geology and ground-water resources of Burlington County, N.J., by F. E. Rush, 1968, 65 p.**
- 27 **Geology and ground-water resources of the Rahway area, N.J., by H. R. Anderson, 1968, 72 p.**
- 28 **Ground-water resources of Essex County, N.J., by W. D. Nichols, 1968, 56 p.**
- 29 **Geology and ground-water resources of Ocean County, N.J., by H. R. Anderson, and C. A. Appel, 1969, 93 p.**
- 30 **Water resources and geology of Gloucester County, N.J., by W. F. Hardt, and G. S. Hilton, 1969, 130 p.**
- 31 **Surface water supply of N.J., streamflow records, Oct. 1, 1960 to Sept. 30, 1965, by A. A. Vickers and, J. E. McCall, 1968, 351 p.**
- 32 **not issued**
- 33 **Geology and ground-water resources of Salem County, N.J., by J. C. Rosenau, S. M. Lang, G. S. Hilton and J. G. Rooney, 1969, 142 p.**
- 34 **Ground Water resources, Cumberland County, N.J., by J. G. Rooney, 1971, 20 p.**

- 35 **Water resources of the upper Millstone River Basin, N.J.**, by Geraghty and Miller, consultants, 1972, 126 p.
- 36 **Geology and water resources of the Wharton Tract and the Mullica River Basin in southern N.J.**, by E. C. Rhodehamel, 1973, 58 p.
- 37 **Floods of Aug. and Sept. 1971 in N.J.**, by S. J. Stankowski, 1972, 329 p., 9 tables
38. **Magnitude and frequency of floods in N.J. with effects of urbanization**, by S. J. Stankowski, 1974, 46 p.
- 39 **New Jersey 1982 State water quality inventory report**, by Keith Robinson, 1983, 196 p.
 Appendixes, published separately:
 Delaware River Basin (232 p.)
 Atlantic Coastal Basin (103 p.)
 Raritan River Basin (94 p.)
 Northeast New Jersey Waters (151 p.)

WATER RESOURCES CIRCULARS

Circular

- 1 **Geology and ground-water resources of the Cape May peninsula, lower Cape May County, N.J.**, by H. E. Gill, 1959, 19 p.
- 2 **Records of wells and ground-water quality in Monmouth County, N.J.**, by L. A. Jablonski, 1959, 47 p.
- 3 **Flood damage alleviation in N.J.**, by Steven Dola, 1961, 20 p.
- 4 **Factual data for public-supply wells and selected irrigation wells in Monmouth County, N.J.**, by L. A. Jablonski, 1960, 28 p.
- 5 **Earthquake fluctuations in wells in N.J.**, by C. R. Austin, 1960, 13 p.
- 6 **N.J. streamflow records analyzed with electronic computer**, by E. G. Miller, and J. E. McCall, 1961, 91 p.
- 7 **Records of wells and ground-water quality in Burlington County, N.J.**, by F. E. Rush, 1962, 104 p.
- 8 **Records of wells, well logs, and summary of stratigraphy of Cape May County, N.J.**, by H. E. Gill, 1962, 54 p.
- 9 **Public water supplies in Gloucester County, N.J.**, by W. F. Hardt, 1963, 55 p.
- 10 **Records of wells and ground-water quality in Camden County, N.J. with special reference to public water supplies**, by Ellis Donsky, 1963, 10 p.
- 11 **Present and prospective use of water by the manufacturing industries of N.J.**, by Max Grossman and A. L. Sherman, 1963, 12 p.

- 12 **Evaluation of geologic and hydrologic data from the test-drilling program at Island Beach State Park, N.J.**, by H. E. Gill, P. R. Seaber, John Vecchioli, and H. R. Anderson, 1963, 25 p.
- 13 **Floods in N.J., magnitude and frequency**, by D. M. Thomas, 1964, 145 p.
- 14 **Flood-depth frequency in N.J.**, by D. M. Thomas, 1964, 14 p.
- 15 **Flow probability of N.J. streams**, by E. G. Miller, 1966, 61 p.
- 16 **Results of the drought-disaster test-drilling program near Morristown, N.J.**, by John Vecchioli, and W. D. Nichols, 1966, 48 p.
- 17 **Results of the second phase of the drought-disaster test-drilling program near Morristown, N.J.**, by John Vecchioli, W. D. Nichols, and Bronius Nemickas, 1967, 23 p.
- 18 **Summary of ground-water resources of Atlantic County, N.J. with special reference to public water supplies**, by G.A. Clark, Harold Meisler, E.C. Rhodehamel, and H.E. Gill, 1968, 53 p.
- 19 **Iron in ground waters of the Magothy and Raritan Formations in Camden and Burlington Counties, N.J.**, by Donald Langmuir, 1969, 49 p.
- 20 **Water resources of the Sayreville area, Middlesex County, N.J.**, by Asghar Hasan, H. F. Kasabach, and J. E. Malone, 1969, 32 p.
- 21 **Available water supply sources, water demand projections and proposed new water resources development for northeastern N.J., Region I**, anonymous, 1969, 39 p.
- 22 **A hydrologic analysis of the N.J. Pine Barrens region**, by E. C. Rhodehamel, 1970, 35 p.
- 23 **Statistical summaries of N.J. streamflow records**, by S. L. Laskowski, 1970, 264 p.
- 24 **Occurrence and distribution of trace elements in N.J. streams**, by P. W. Anderson, 1970, 24 p., 3 tables

