

**THE MINERAL INDUSTRY OF NORTH CAROLINA
IN 1988**

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NORTH CAROLINA GEOLOGICAL SURVEY

DIVISION OF LAND RESOURCES

RALEIGH

1989

**STATE of NORTH CAROLINA
JAMES G. MARTIN, GOVERNOR**

**DEPARTMENT of NATURAL RESOURCES
and
COMMUNITY DEVELOPMENT
WILLIAM W. COBEY, JR., SECRETARY**

GEOLOGICAL SURVEY SECTION

The Geological Survey section shall by law "...make such examination, survey and mapping of the geology, mineralogy and topography of the state, including their industrial and economic utilization as it may consider necessary."

In carrying out its duties under this law, the section promotes the wise conservation and use of mineral resources by industry, commerce, agriculture and governmental agencies for the general welfare of the citizens of North Carolina.

The section conducts basic and applied research projects in environmental geology, mineral resource exploration, mineral statistics and systematic geologic mapping. Services constitute a major portion of the section's activities and include identifying rock and mineral samples submitted by the citizens of the state and providing consulting services and specially prepared reports to agencies that require geological information.

The Geological Survey section publishes results of research in a series of Bulletins, Economic Papers, Information Circulars, Educational Series, Geologic Maps and Special Publications. For a complete list of publications or more information about the section please write: Geological Survey section, P.O. Box 27687, Raleigh, North Carolina 27611-7687. The telephone number is: (919) 733-2423.

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THE MINERAL INDUSTRY OF NORTH CAROLINA IN 1988

In 1988, the nonfuel mineral industry in North Carolina produced an estimated \$523 million of mineral commodities. This eclipsed the former mineral value record set in 1987 by \$46 million. The State ranked 19th in total nonfuel mineral production, and 12th in industrial mineral output. North Carolina continued to lead the Nation in the output of feldspar, lithium minerals, scrap mica, olivine, and pyrophyllite; ranked second in phosphate rock production; and ranked in the top five in clay and crushed granite output and sales.

In 1988, North Carolina's mineral production exceeded the \$500 million mark for the first time. During the year the sale of construction mineral commodities, clay, construction sand and gravel, and crushed stone, accounted for slightly over 60% of the State's mineral value. Sales of the three construction mineral commodities exceeded the 1987 level by \$36 million, reflecting strong activity in the construction sector.

During 1988, two companies were active in metals exploration, a titanium melting firm announced plans to increase capacity by 60%, and the State's two steel mills agreed to a joint effort to develop continuous steelmaking technology for basic oxygen furnaces.

Texasgulf Inc. announced plans to construct a \$20 million waste water treatment plant at its phosphate rock mining and processing complex in Beaufort County and began work on a phosphoric acid plant. The company began stripping overburden with bucket wheel excavators at its phosphate rock mine, the first such application in the Eastern United States. One clay company completed a major expansion to produce tile while a second began work on a tile plant.

Exploration. The Portis Gold Mine near the community of Wood in Franklin County ceased operation in 1936. The price of gold in 1988 made the reopening of the mine a distinct possibility, and Texasgulf Minerals and Metals Inc. of Golden, CO, conducted an exploration program at the mine site during the year.

Niagara Capital Corp. of Vancouver, British Columbia, completed its exploration program at the Silver Hill Mine in Davidson County and the company applied for a mining permit. The mine was a polymetallic producer in the early part of the century.

Environment. The community of Hillsboro was investigating a plan to pump the town's waste water through a textile plant and Piedmont Minerals Co.'s pyrophyllite processing plant prior to returning it to the

town's waste water treatment plant. If adopted, the plan would curtail water usage from the Eno River by 500,000 gallons per day, and the reprocessing could remove dyes from the textile waste water that were previously released into the river.

Texasgulf Inc., the State's only phosphate rock producer, announced plans to spend an estimated \$20 million to install a waste water recycling system at its 3,000-acre mine and fertilizer manufacturing complex near Aurora in Beaufort County. Water discharge from the complex is alleged to have caused fish kills as well as skin disorders on fish and crabs.

At yearend, Texasgulf applied for a permit from the U.S. Corps of Engineers to mine 234 acres of wetlands near its present operations. Opponents of the mining plan claimed that the permit would be preferential treatment for big business.

Legislation and Government Programs. Appalachian State University held a teachers' workshop on "mine reclamation and mining and mineral resources." The project was funded by a \$10,000 grant from the Mathematics and Science Education Network. Appalachian State was one of five network centers receiving monetary support for the workshops.

The front plaza of the \$12 million Natural Resources Research Center under construction at the North Carolina State University in Raleigh will contain a 62-foot long geologic map of the State. The map will contain 14 different rock types depicting the major geologic belts underlying the State. The project will cost \$82,000.

Review by Nonfuel Mineral Commodities. Crushed stone, phosphate rock, and lithium minerals were the three principal mineral commodities produced in North Carolina. The combined value of these three accounted for over three-fourths of the State's mineral value in 1988.

Although the crushed stone industry added \$227 million to the State's economy, citizens groups actively opposed all new quarry plans announced during the year. In 1988, approximately one dozen new or reactivated quarry plans were in some stage of litigation.

At yearend, Texasgulf Inc. was in the process of revising overburden removal methods at its phosphate mine on the State's east coast. Bucket wheel excavators (BWE) were replacing dredges used since the mine opened in the 1950's. The BWE's, obtained when Texasgulf purchased North Carolina Phosphate Corp., require less electricity to operate and are easier to maintain than dredges. Overburden removal with the BWE's requires less stripping ahead of mining than with the dredges; the BWE's and associated conveyer system are designed to move 18 million cubic yards of overburden annually.

Construction began on a high purity phosphoric acid plant to be completed in the fall of 1989. The facility is a joint venture with Albright & Wilson and the Olin Corp. Texasgulf will construct and operate the plant using Albright & Wilson technology, and Olin will use much of the acid at its Joliet, IL, plant for the production of feed supplements and cleaning compounds.

Foote Mineral Co.'s mine and lithium beneficiation complex at Kings Mountain was purchased by Cyprus Minerals Co. The new company, Cyprus Speciality Materials-Foote Minerals, produced a limited amount of lithium concentrate during 1988.

Mannington Ceramic Tile, a subsidiary of Mannington Mills Inc., began production of monocottura tile at its Mt. Gilead plant. The tile is made from local common clay and ball clay from other southeastern States. Monocottura, a single-fired, glazed ceramic tile, is used primarily for indoor floors in both residential and commercial application. The single kiln expansion, completed in November, has an annual capacity of 12 million square feet of monocottura.

Summitville Tiles Inc., an Ohio-based manufacturer of commercial and residential tile, broke ground in August for a 160,000-square-foot plant in western North Carolina near Glen Alpine, Burke County. Scheduled for operation by late 1989, the two continuous-roller-hearth-kiln facility is designed to produce

21,000 feet of glazed tile per day.

Applied Industrial Minerals Corp. (AIMCOR) closed its Addie olivine mine near Sylva, leaving the Dry Brook mine near Green Mountain as the State's only olivine operation. Three other olivine mines have closed since 1984, primarily because of foreign competition. During the year AIMCOR entered into an agreement with a Norwegian firm to market Norway-produced olivine in North America.

The Pressley gem mine north of Canton produced "the largest blue sapphire in the world," 1,024 carats. The gem, termed the Southern Star, has been valued at \$1 million. The two men who discovered the sapphire paid \$2.00 each to dig for gems at the Pressley mine.

Renewed activity at the closed Silver Hill gold, silver, lead, zinc, and copper mine in southern Davidson County kindled local residents concern. Development plans by Niarara Capital Corp. of Canada were discussed at a citizens meeting in June. A permit was pending at yearend.

Teledyn Alvac, a subsidiary of Teledyne Inc., announced plans to install a plasma cold-hearth melting system at its Monroe plant. The new system will boost titanium melting capacity by 60%, and is scheduled for operation by the third quarter of 1989. The company began operation of two vacuum-arc remelting furnaces at the Monroe facility during the year.

Florida Steel Corp. and Nucor Corp., the State's two steel producers, agreed to share information on technology designed to apply continuous steelmaking to basic oxygen furnaces. A savings of \$10 to \$15 per ton could result from a successful continuous steelmaking operation. A prototype of the process was retrofitted to Nucor's minimill at Darlington, but was deactivated after a year because of problems. Most problems were due to the retrofit. Florida Steel is constructing a "greenfields" facility at Charlotte, which is expected to remedy the retrofit problems experienced by Nucor.

International Garnet Abrasives Inc. (IGA) of New Bern began operating two garnet processing plants and started construction of a third.

Nonfuel Mineral Production in NORTH CAROLINA 1/

Mineral	1986		1987		1988 p/	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays	2,658	\$10,970	3,230	\$15,282	2,847	\$14,459
Feldspar	526,672	15,568	512,386	15,562	491,150	15,115
Gem stones	NA	551	NA	550	NA	550
Gold (recoverable content of ores, etc.)	12	4	--	--	--	--
Mica (scrap)	89	4,641	100	5,607	90	4,688
Peat	15	W	W	W	W	W
Sand and gravel:						
Construction	7,543	23,127	e/ 8,600	e/ 30,100	8,400	29,400
Industrial	1,464	16,656	1,184	15,329	1,140	15,000
Stone:						
Crushed	e/ 43,500	e/ 206,500	48,847	237,181	53,000	275,600
Dimension	e/ 41	e/ 6,633	33	5,128	32	5,026
Talc and pyrophyllite	83	1,552	W	W	W	W
Combined value of lithium minerals, olivine, phosphate rock, and values indicated by symbol W	XX	180,528	XX	152,178	XX	163,526
Total	XX	466,730	XX	476,917	XX	523,364

e/ Estimated. p/ preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data, value included with "Combined value" figure. XX Not applicable.

1/ Production as measured by mine shipments, sales, or marketable production (including consumption by producers).