THE MINERAL INDUSTRY OF NORTH DAKOTA

This chapter has been prepared under a Memorandum of Understanding between the U.S. Bureau of Mines, U.S. Department of the Interior, and the North Dakota Geological Survey for collecting information on all nonfuel minerals.

In 1995, North Dakota ranked 49th in the Nation in total nonfuel mineral production value,[1] according to the U.S. Geological Survey (USGS). The estimated value for 1995 was $25 million, a 3% decrease from that of 1994. This followed a slight decrease from 1993 to 1994. The State accounted for about one-tenth of 1% of the U.S. total nonfuel mineral production value.

North Dakota's mine pits produced significant quantities of construction sand and gravel, the State's leading nonfuel mineral by value. This high-volume, low-value mineral commodity accounted for nearly 82% of the State's nonfuel mineral production value. Lime was the second principal nonfuel mineral commodity produced in the State. Although not included in USGS statistics, recovered elemental sulfur, based on value, was an important part of North Dakota's mineral economy. Elemental sulfur and other by-products (krypton, xenon, anhydrous ammonia, and liquid nitrogen) were recovered at fuel mineral operations, including facilities for the processing of natural gas and the gasification of coal. Compared with 1994, construction and industrial sand and gravel increased in value in 1995, while all other nonfuel mineral commodities (see table 1) showed a decrease.

According to the North Dakota Geological Survey (NDGS),[2] while nonfuel mineral production in the State had a relatively quiet year, oil production in the State stabilized for the first time since the mid-1980's; total production was expected to increase in 1995. The increase is largely attributed to an expanding Lodgepole Formation play (area being explored or leased) in Stark County and an active Red River Formation play in Bowman County.

Two companies, Georesources Inc. of Williston, Williams County, and NL Baroid Co. of Belle Fouch, SD, are producing leonardite, a soft, brown, earthy material mined as a source of organic chemicals and for nonfuel uses. The material, formed by natural weathering or oxidation of lignite, is associated with nearly all lignite outcrops in the State. The material was named in honor of the North Dakota State Geologist who served from 1908-32, because of his early work with the material. Because of its higher oxygen content and powdery structure, leonardite is not used as a fuel. Mines in Bowman and Williams Counties process leonardite for use as a dispersant and viscosity control in oil well drilling fluids, a water soluble wood stain, a stabilizer for ion exchange resins in water treatment, and as a soil conditioner.

A "Symposium on North Dakota Geology" was held April 20 in recognition of the NDGS Centennial observance in conjunction with the North Dakota Academy of Science annual meeting. Topics included discussions of the State's mineral resources, highlighted by information regarding the building stones used in the State Capitol. The North Dakota State Historical Society recently published a *Visitor's Guide to the North Dakota Capitol Grounds: Building, Monuments, and Stones.*

The NDGS and the Saskatchewan Department of Energy and Mines cosponsored the Third International Williston Basin Horizontal Well Workshop from April 3 to May 2 in Regina, Saskatchewan. About 450 people attended the workshop, which was intended to facilitate

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NORTH DAKOTA[1 2]

Mineral		1993		1994		1995[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays	thousand metric tons	W	W	59	W	W	W
Lime	do.	W	$4,800	W	$6,590	W	W
Peat	metric tons	(3)	W	W	W	W	W
Sand and gravel (construction)	thousand metric tons	e7,700	e20,400	6,810	18,500	7,000	$20,000
Stone (crushed)	do.	W	W	—	—	—	—
Combine value of clays (common), gemstones, sand and gravel (industrial), stone [crushed volcanic cinder (1993)], and values indicated by symbol W		XX	131	XX	199	XX	4,530
Total		XX	25,300	XX	25,300	XX	24,500

[e]Estimated. [p]Preliminary. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.
[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Data are rounded to three significant digits; may not add to totals shown.
[3]Less than 1/2 unit.

communication and cooperation among companies and individuals interested in horizontal drilling to assess the basin's mineral content and potential for mineral production. The NDGS reported that information and ideas gained from the workshop were being translated fairly quickly into drilling and development activity in North Dakota. A fourth such workshop was scheduled for spring 1996 in Bismarck, ND.

An introduction to North Dakota's rocks and minerals, including rules for collecting on various Federal, State, and privately owned lands, appeared in the *NDGS Newsletter* (V. 22, No. 2, pp. 6-12). The article, written for the rockhound, noted that a wide variety of lapidary and collectible materials can be found in the State, including petrified wood, agates, jasper, flint, and a wide variety of concretions and nodules.

During the 1995 session of the State Legislature, the NDGS lost funding for one full-time equivalent position, and underwent a subsequent reduction-in-force that called for the elimination of the position of Assistant State Geologist.

[1]The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending on the minerals or mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All 1995 USGS mineral production data are estimates, as of Dec. 1995. Estimates for some nonfuel minerals, especially construction sand and gravel, are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. Call MINES FaxBack at (703) 648-4999 from a fax machine with a touch-tone handset and request Document No. 1000 for a telephone listing of all mineral commodity specialists or call USGS information at (703) 648-4000 for the specialist's name and number.

[2]This report includes information provided by the NDGS.

TABLE 2

NORTH DAKOTA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1994, BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Value per ton
Concrete aggregate (including concrete sand)	259	$1,680	$6.47
Plaster and gunite sands	2	16	8.00
Asphaltic concrete aggregates and other bituminous mixtures	484	1,240	2.56
Road base and coverings	1,770	4,130	2.34
Fill	151	250	1.66
Snow and ice control	21	74	3.52
Railroad ballast	7	56	8.00
Roofing granules	3	25	8.33
Other	15	96	6.40
Unspecified:[2] Estimated	4,100	10,900	2.66
Total or average	6,810	18,500	2.71

[1]Data are rounded to three significant digits; may not add to totals shown.
[2]Includes production reported without a breakdown by end use and estimates for nonrespondents.

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