



2008 Minerals Yearbook

NORTH DAKOTA

THE MINERAL INDUSTRY OF NORTH DAKOTA

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

In 2008, North Dakota's nonfuel raw mineral production¹ was valued at \$38.7 million, based upon annual U.S. Geological Survey (USGS) data. This was an \$11.6 million, or more than 23%, decrease from the State's total nonfuel mineral production value in 2007, which then had increased by nearly \$6 million, a more than 13% increase from that of 2006. (The State's actual total nonfuel mineral values for 2006–08 were significantly higher than those reported in table 1; data for common clays, lime, and industrial sand and gravel have been withheld so as to not disclose company proprietary data.)

North's Dakota leading nonfuel mineral by value of production continued to be construction sand and gravel, which the State continued to produce in significant quantities. Lime was the second mineral commodity produced in significant quantity, although for captive consumption only. Despite the decline in North Dakota's total nonfuel mineral production value, common clays and industrial sand and gravel increased in the production value. The most significant decrease in mineral commodity value took place in crushed stone, dropping \$1.1 million, or 90%. The State produced 26,000 metric tons (t) of crushed stone from volcanic cinder and scoria valued at \$133,000. Construction sand and gravel also decreased in the production value, by \$11 million, or more than 22%, with a 21% decline in quantity produced (table 1). The slowing of public and private construction activity in 2008 explained the decline in construction aggregates, both construction sand and gravel and crushed stone.

The following narrative information was provided by the North Dakota Geological Survey² (NDGS). Production data in the text that follows are those reported by the NDGS based upon that agency's own surveys and estimates.

Commodity Review

Industrial Minerals

During 2008, 14 surface mining operators in North Dakota reported information to the State Soil Conservation Committee (SSCC). The SSCC collects production data by volume, unlike the USGS, which collects data by mass or metric tons produced. Based on these reports, 89 hectares (ha) were affected. The quantity of minerals mined included 1,850,000 cubic meters

¹The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the 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 2008 USGS mineral production data published in this chapter are those available as of August 2010. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

²Edward C. Murphy, State Geologist, authored the text of State mineral industry information provided by the North Dakota Geological Survey.

(m³) of sand and gravel, 59,000 m³ of clay, 16,000 m³ of scoria—totaling 1,925,000 m³ of mineral material. A total of 275,000 m³ of overburden were disturbed from 51 pits ranging in size from more than 0.2 to 11 ha. Two-thirds of the clay mined in North Dakota during this period was mined by the Hebron Brick Company to produce brick. One-third to one-half of the clay mined for the manufacturer of brick was kaolinite. The volume of all the mined minerals reported for 2008 was down from those reported in 2007.

Leonardite.—Leonardite is an oxidized lignite. Currently, Leonardite Products LLC of Williston and American Colloid Company of Scranton are the only leonardite mining operations in North Dakota, although the companies mining lignite encounter leonardite on a routine basis. The two companies produced a combined total of approximately 110,000 t of leonardite in 2008, a 15% increase during the previous year's production total. Leonardite is processed and used as a dispersant and viscosity control in oil well drilling muds, as a stabilizer for ion-exchange resins in water treatment, and as a soil conditioner. In 2008, Leonardite Products purchased a processing plant and mine previously owned and operate by GeoResources, Inc.

Pumice and Pumicite.—Volcanic ash (pumicite) has been mined intermittently from the Linton area since 1970. In 2008, less than 100 tons was mined by NURTURE, Inc. (a Minneapolis-based company that produces and distributes a line of volcanic ash-based products). The North Dakota Geological Survey has determined this deposit contains one billion tons of pumicite.

Legislation and Government Programs

The SSCC, as designated by the State legislature, continues to administer the Surface Mining Report Law, which requires any person conducting surface mining operations for minerals other than coal to comply with the reporting requirements of North Dakota Century Code Chapter 38–16. Minerals included under the law are cement rock, clay, gravel, limestone, manganese, molybdenum, peat, potash, pumicite, salt, sand, scoria, sodium sulfate, stone, zeolite, or other minerals (except coal). The SSCC has the regulatory authority to administer the reporting requirement, while the actual regulatory authority for most of these mining activities rests with the North Dakota Department of Mineral Resources. The law requires that any person or company that removes 7,650 m³ (10,000 cubic yards) or more of earthen materials or products (including overburden) affecting 0.2 ha (one-half acre) or more in combined mining operation within one calendar year must report the particulars of their surface mining activities. Some small operators cooperate by voluntarily submitting summary reports to the SSCC, although not required to by law. Nevertheless, because not all operations report, the summary of surface mining statistics presented above

is a conservative estimate of the amount of nonfuel minerals mined in North Dakota in 2008. A mineral page is maintained on

the Web site of the North Dakota Geological Survey at <https://www.dmr.nd.gov/ndgs/Mineral/mineralnew.asp>.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NORTH DAKOTA^{1,2}

(Thousand metric tons and thousand dollars)

| Mineral | 2006 | | 2007 | | 2008 | |
|--------------------|----------|--------|----------|--------|----------|--------|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| Clays, common | W | W | W | W | 84 | 549 |
| Gemstones, natural | NA | 4 | NA | 4 | NA | 4 |
| Lime | W | W | W | W | W | W |
| Sand and gravel: | | | | | | |
| Construction | 14,000 | 43,700 | 14,900 | 49,100 | 11,800 | 38,000 |
| Industrial | W | W | W | W | W | W |
| Stone, crushed | 147 | 683 | 274 | 1,270 | 26 | 133 |
| Total | XX | 44,400 | XX | 50,300 | XX | 38,700 |

NA Not available. W Withheld to avoid disclosing company proprietary data; excluded from "Total." XX Not applicable.

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

²Data are rounded to no more than three significant digits; may not add to totals shown.

TABLE 2
NORTH DAKOTA: CRUSHED STONE SOLD OR USED, BY TYPE¹

| Type | 2007 | | | 2008 | | |
|----------------------------|--------------------|---------------------------------|-------------------|--------------------|---------------------------------|-------------------|
| | Number of quarries | Quantity (thousand metric tons) | Value (thousands) | Number of quarries | Quantity (thousand metric tons) | Value (thousands) |
| Volcanic cinder and scoria | 2 | 274 | \$1,270 | 1 | 26 | \$133 |

¹Data are rounded to no more than three significant digits; may not add to totals shown.