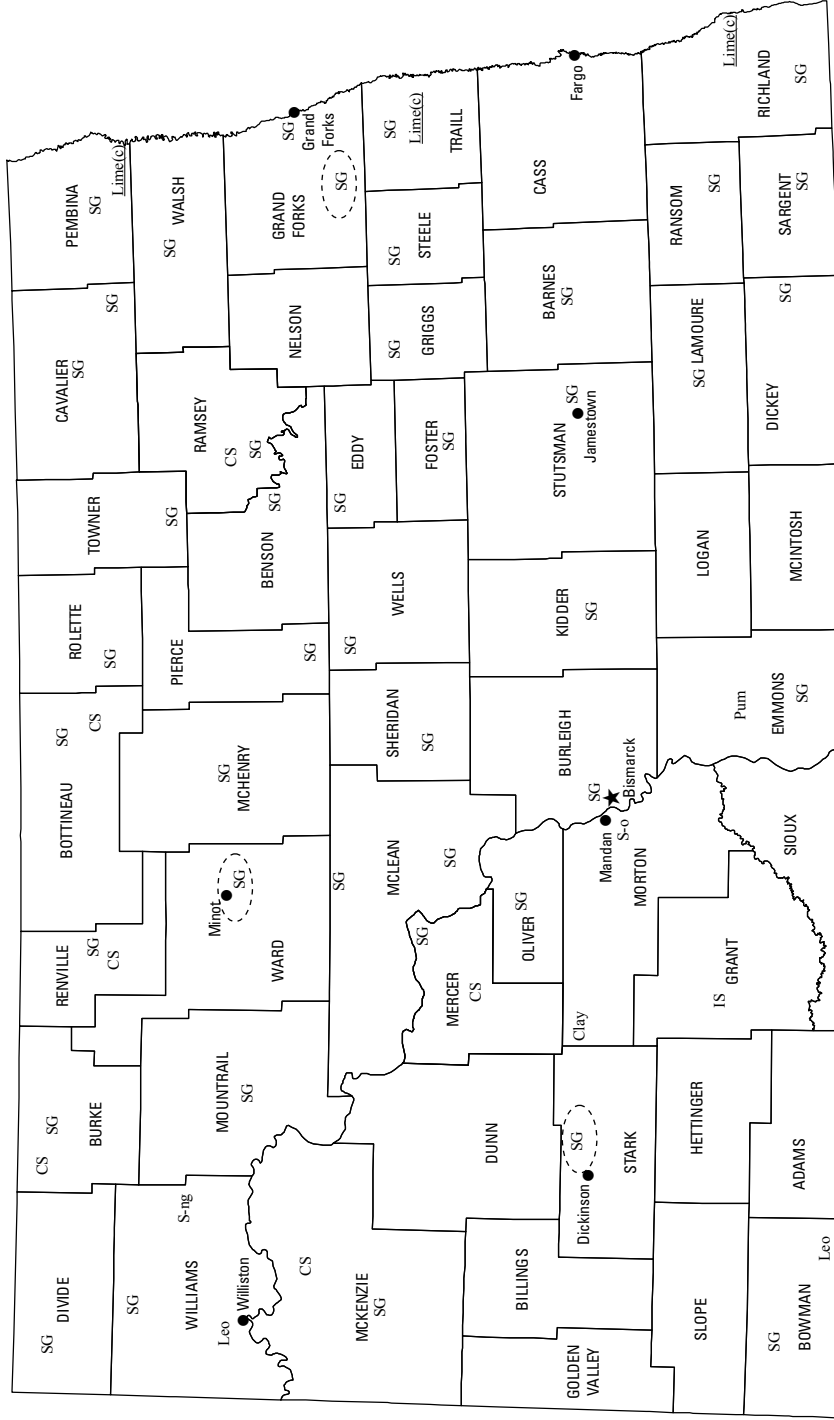




2009 Minerals Yearbook

NORTH DAKOTA

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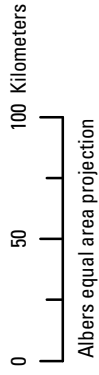
LEGEND

- County boundary
- ★ Capital
- City

MINERAL SYMBOLS
(Principal producing areas)

- Clay
- CS Crushed stone
- IS Industrial sand
- Leo Leonardite
- Lime(c) Lime (captive)
- Pum Pumicite
- S-ng Sulfur (natural gas)
- S-o Sulfur (oil)
- SG Construction sand and gravel

○ Concentration of mineral operations



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 2009, North Dakota's nonfuel raw mineral production¹ was valued at \$51 million, based upon annual U.S. Geological Survey (USGS) data. This was an \$11.2 million, or 28%, increase from the State's total nonfuel mineral production value in 2008, which had decreased by nearly \$11 million, or 21%, from a total of \$50.6 million in 2007. (The State's actual total nonfuel mineral values for 2007–09 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 Dakota's leading nonfuel mineral by value of production continued to be construction sand and gravel, accounting for 92% of the State's total disclosed nonfuel mineral production value. The State ranked 19th out of 50 construction-sand-and-gravel-producing States in 2009. Lime was the second ranked mineral commodity produced in significant quantity, although for captive consumption only (actual production figure withheld—company proprietary data). In North Dakota, all lime is produced by the sugar industry for refining sugar from sugar beets. The most significant increase in production value took place in construction sand and gravel, increasing \$7.8 million, or almost 20%. Production increased by 2.3 million metric tons (Mt), to 14.4 Mt in 2009 from 12.1 Mt in 2008, which had been down 2.9 Mt from a total of 15 Mt in 2007 (table 1). A significant increase took place in the production and production value of crushed stone, owing to, as reported by the North Dakota Geological Survey (NDGS), stockpiling by a local coal company. This mineral commodity saw a 959,000-metric-ton (t) increase in production from 2008 to 2009. The production value rose from \$133,000 in 2008 to almost \$4 million.

The following narrative information was provided by the NDGS.² 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 2009, 15 surface mining operators in North Dakota reported information to the State Soil Conservation Committee (SSCC). The SSCC collects production data by volume,

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 2009 USGS mineral production data published in this chapter are those available as of September 2011. 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.

unlike the USGS, which collects data by weight or metric tons produced. Based on these reports, 72 hectares (ha) was affected. The quantity of minerals mined included 1,250,000 cubic meters (m³) of sand and gravel, 46,000 m³ of clay, 176,000 m³ of scoria, and 23,000 m³ of rock—totaling to approximately 1,500,000 m³ of mineral material. Crushed scoria mining increased tenfold from 2008 to 2009 owing to stockpiling by a local coal mining company. A total of 250,000 m³ of overburden was disturbed from 50 pits ranging in size from more than 0.1 to 16 ha. One-half of the clay mined in North Dakota during 2009 was mined by the Hebron Brick Company to produce brick. One-half of the clay mined for the manufacture of brick was kaolinite.

Leonardite.—Leonardite is an oxidized lignite. Leonardite Products LLC of Williston and American Colloid Company of Scranton are the only leonardite mining operations in North Dakota, although companies mining lignite encounter leonardite on a routine basis. The two companies produced a combined total of approximately 23,000 t of leonardite in 2009, down almost 80% from 110,000 t in 2008. 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 operated by GeoResources, Inc.

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, zeolites, and other minerals. 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 1 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 2009. A mineral page is maintained on the Web site of the NDGS 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	2007		2008		2009	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays, common	W	W	84	549	W	W
Gemstones, natural	NA	4	NA	4	NA	4
Lime	W	W	W	W	W	W
Sand and gravel:						
Construction	15,000 ^r	49,400 ^r	12,100 ^r	39,200 ^r	14,400	47,000
Industrial	W	W	W	W	W	W
Stone, crushed	274	1,270	26	133	985	3,980
Total	XX	50,600 ^r	XX	39,800 ^r	XX	51,000

^rRevised. 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	2008			2009		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Sandstone and quartzite	--	--	--	1	655	\$2,310
Volcanic cinder and scoria	1	26	\$133	2	294	1,490
Miscellaneous stone	--	--	--	5	36	182
Total	XX	26	133	XX	985	3,980

XX Not applicable. -- Zero.

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

TABLE 3
NORTH DAKOTA: CRUSHED STONE SOLD OR USED BY
PRODUCERS IN 2009, BY USE¹

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Riprap and jetty stone	W	W
Filter stone	W	W
Coarse aggregate, graded, bituminous aggregate, coarse	W	W
Coarse and fine aggregates:		
Unpaved road surfacing	W	W
Crusher run or fill or waste	W	W
Other coarse and fine aggregates	118	360
Unspecified, reported ²	330	1,670
Total	985	3,980

W Withheld to avoid disclosing company proprietary data; included in "Total."

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

²Reported production without a breakdown by end use.

TABLE 4
NORTH DAKOTA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2009,
BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	77	\$559	\$7.26
Asphaltic concrete aggregates and road base materials	4,090	11,800	2.89
Fill	241	918	3.81
Other miscellaneous uses ²	26	198	7.62
Unspecified: ³			
Reported	3,320	11,600	3.49
Estimated	6,600	21,900	3.33
Total or average	14,400	47,000	3.28

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

²Includes railroad ballast and snow and ice control.

³Reported and estimated production without a breakdown by end use.