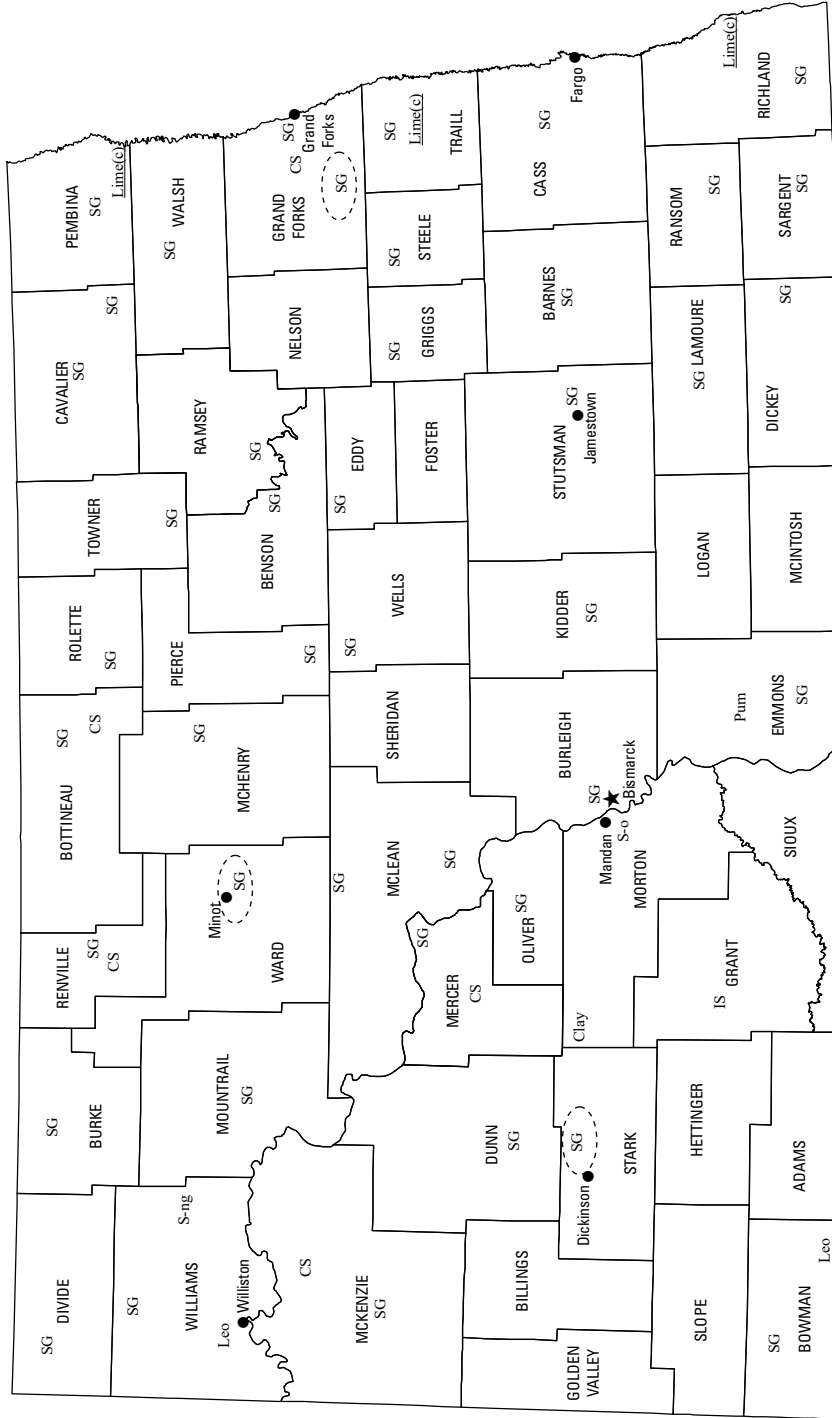




2010–2011 Minerals Yearbook

NORTH DAKOTA

NORTH DAKOTA

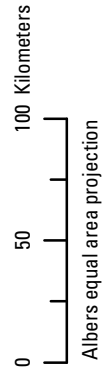


LEGEND

- County boundary
- ★ Capital
- City

**MINERAL SYMBOLS
(Principal producing areas)**

- Clay Common 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 2011, North Dakota's publishable nonfuel mineral production¹ was valued at \$125 million, based upon annual U.S. Geological Survey (USGS) data. This was a \$54.6 million (78%) increase from the State's total nonfuel mineral value of \$70.2 million in 2010, which had increased by \$19.7 million (39%) from 2009. The State's actual total nonfuel mineral values were higher than those reported in table 1. Sand and gravel, crushed stone, and gemstones composed the publishable total; data for common clays, lime, and industrial sand and gravel have been withheld so as to not disclose company proprietary data. The State ranked 44th in 2011 among the 50 States in total nonfuel mineral production value, up from 48th in 2010. On a per capita basis, however, North Dakota ranked 19th with a value of \$183; the national average was \$240.

Construction sand and gravel accounted for nearly 93% of the State's publishable nonfuel mineral production value in 2011, and 95% in 2010. Construction sand and gravel had significant increases in production quantity and production value, by 4.3 million metric tons (Mt) (25%) and \$49.3 million (74%), respectively, in 2011. In 2010, it had also increased significantly, by 2.7 Mt (19%) and \$19.9 million (42%). The State rose in rank to 12th in 2011 from 15th in the quantity of sand and gravel

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 USGS mineral production data published in this chapter are those available as of May 2013. Data in this report are rounded to three significant digits and percentages are calculated from unrounded data. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at <http://minerals.usgs.gov/minerals>.

produced in 2010 and 18th in 2009, out of 50 construction-sand-and-gravel-producing States; this was also the primary driver in the rise in overall State ranking.

North Dakota was one of a small number of States in which the construction-sand-and-gravel industry continued to grow despite the recession of 2008–09. The sand and gravel went towards the infrastructure needed to support the oil and gas industry and the population growth in the State. Tables 5 and 6 show construction sand and gravel sold or used by producers by end use; the largest category by far was asphaltic concrete aggregates and road base materials. This category showed a 29% increase from 2010 to 2011 while quantities for end uses such as concrete aggregates and fill actually decreased.

Lime was the second-ranked mineral commodity produced in significant quantity, although for captive consumption only, meaning that it was produced for consumption at the plant rather than for sale. Estimated production value of lime increased in 2010 and 2011, although the quantity produced decreased slightly in 2011 after increasing slightly in 2010 (actual production figure withheld—company proprietary data). In North Dakota, all lime is produced by the sugar industry for refining sugar from sugar beets.

Among the other nonfuel mineral commodities, crushed stone was the only one to increase in production quantity and production value in 2011, by 696,000 metric tons (t) (83%) and \$5.3 million (140%). This was more than enough to reverse the decrease of 142,000 t (14%) and 4% of value in 2010 from 2009. The production value decreases in 2011 for clay and industrial sand erased gains in 2010 such that production values and quantities in 2011 ended lower than 2009 levels (values withheld—company proprietary data). Estimated gemstone production quantity and value remained level.

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

(Thousand metric tons and thousand dollars)

Mineral	2009			2010			2011		
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
Clays, common	W		W		W		W		
Gemstones, natural	NA	4	NA	4	NA	4	NA	4	
Lime	W		W		W		W		
Sand and gravel:									
Construction	14,300 ^r	46,500 ^r	17,000	66,400	21,300	116,000			
Industrial	W		W		W		W		
Stone, crushed	985	3,980	843	3,810	1,540	9,130			
Total	XX	50,500 ^r	XX	70,200	XX	125,000			

^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 IN THE UNITED STATES, BY TYPE¹

Type	2009			2010			2011		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Sandstone and quartzite ²	1	655	\$2,310	1	693	\$2,440	1	897	\$4,050
Volcanic cinder and scoria	2	294	1,490	1	86	987	2	476	4,270
Miscellaneous stone	5	36	183 ^r	5	64	377	4	166	803
Total or average	XX	985	3,980	XX	843	3,810	XX	1,540	9,130
			4.05			4.52			5.93

^rRevised. XX Not applicable.

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

²Includes sandstone-quartzite reported with no distinction between the two kinds of stone.

TABLE 3
NORTH DAKOTA: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 2010, BY USE¹

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch), riprap and jetty stone	3	71
Coarse and fine aggregates:		
Graded road base or subbase	W	W
Other construction materials	W	W
Unspecified: ²		
Reported	39	198
Estimated	693	2,440
Total	843	3,810

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 and estimated production without a breakdown by end use.

TABLE 4
NORTH DAKOTA: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 2011, BY USE¹

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch), unspecified coarse aggregate	3	39
Fine aggregate (-¾ inch), stone sane, concrete	W	W
Coarse and fine aggregates:		
Graded road base or subbase	W	W
Crusher run or fill or waste	W	W
Unspecified: ²		
Reported	477	4,280
Estimated	989	4,500
Total	1,540	9,130

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 and estimated production without a breakdown by end use.

TABLE 5
NORTH DAKOTA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2010,
BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	379	\$3,350	\$8.84
Asphaltic concrete aggregates and road base materials ²	4,630	15,700	3.40
Fill	503	1,410	2.80
Other miscellaneous uses ³	107	590	5.51
Unspecified: ⁴			
Reported	5,260	21,000	3.98
Estimated	6,110	24,000	3.94
Total or average	17,000	66,400	3.91

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

²Includes road and other stabilization (lime).

³Includes railroad ballast and snow and ice control.

⁴Reported and estimated production without a breakdown by end use.

TABLE 6
 NORTH DAKOTA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2011,
 BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	362	\$3,400	\$9.39
Asphaltic concrete aggregates and road base materials ²	5,940	32,900	5.54
Fill	240	767	3.20
Other miscellaneous uses ³	144	798	5.54
Unspecified: ⁴			
Reported	5,830	29,800	5.11
Estimated	8,800	48,000	5.45
Total or average	21,300	116,000	5.45

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

²Includes road and other stabilization (cement and lime).

³Includes railroad ballast, and snow and ice control.

⁴Reported and estimated production without a breakdown by end use.