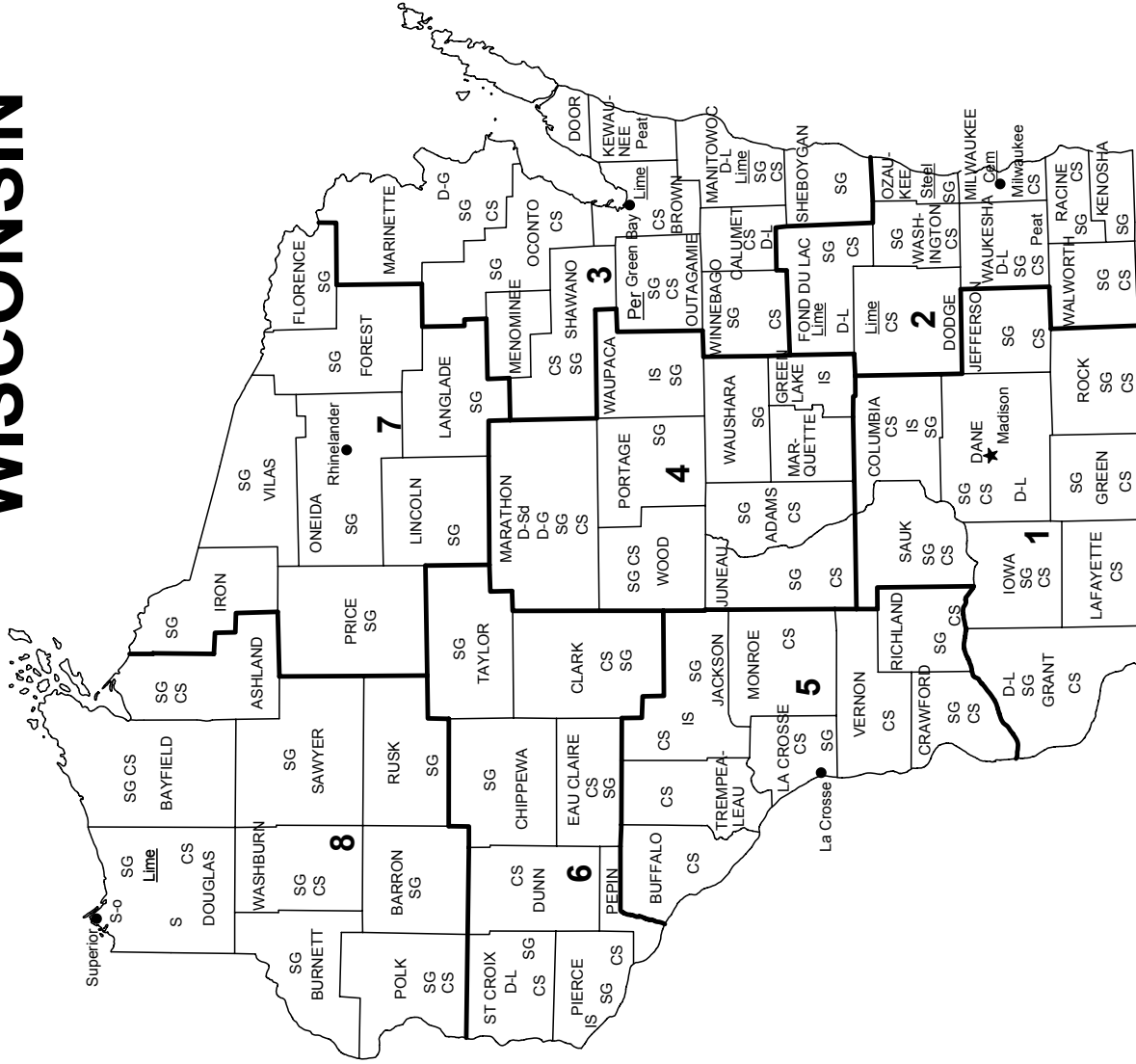


WISCONSIN

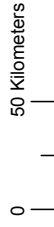


LEGEND

- County boundary
- ★ Capital
- City
- 1 Crushed stone/sand and gravel districts

MINERAL SYMBOLS (Major producing areas)

- Cem Cement plant
- CS Crushed stone
- D-G Dimension granite
- D-L Dimension limestone
- D-Sd Dimension sandstone
- IS Industrial sand
- Lime Lime plant
- Peat Peat
- Per Perlite plant
- S Sulfur (recovered)
- S-o Sulfur (oil)
- SG Construction sand and gravel
- Steel Steel plant



THE MINERAL INDUSTRY OF WISCONSIN

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

In 2002, the estimated value¹ of nonfuel mineral production for Wisconsin was \$340 million, based upon preliminary U.S. Geological Survey (USGS) data. This was about a 7% decrease from that of 2001² and followed a 3.4% decrease in 2001 from that of 2000. The State was 33d in rank (32d in 2001) among the 50 States in total nonfuel mineral production value, of which Wisconsin accounted for almost 1% of the U.S. total.

Construction sand and gravel and crushed stone were, by value, Wisconsin's leading nonfuel minerals in 2002, accounting for about 45% and 39%, respectively, of the State's total nonfuel raw mineral production value (table 1). These were followed by lime, being about 11% of the total value, industrial sand and gravel, and dimension stone, about 5% of the same value. Because data for industrial sand and gravel, peat, and silica stone have been withheld to protect company proprietary data, the actual total values for 2000 to 2002 are (significantly) higher than those reported in table 1.

In 2001, increases in the production and the values of construction sand and gravel (up \$9 million), dimension stone (up \$7.2 million), and crushed stone (up \$7 million) accounted for the State's increase. Although small in comparison to the production and value of Wisconsin's construction materials, peat production and value quadrupled between 2000 and 2002. No silica stone was produced in 2001 and 2002.

Based upon USGS estimates of the quantities of minerals produced in the 50 States during 2002, Wisconsin remained third in dimension stone and decreased to sixth from fifth in industrial sand and gravel and to ninth from sixth in construction sand and gravel. Additionally, the State was a significant producer of crushed stone, lime, and peat.

¹The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon 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 2002 USGS mineral production data published in this chapter are preliminary estimates as of July 2003 and are expected to change. Construction sand and gravel and crushed stone estimates are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. Specialist contact information may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>; alternatively, specialists' names and telephone numbers may be obtained by calling USGS information at (703) 648-4000 or by calling the USGS Earth Science Information Center at 1-888-ASK-USGS (275-8747). All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

²Values, percentage calculations, and rankings for 2001 may differ from the Minerals Yearbook, Area Reports: Domestic 2001, Volume II, owing to the revision of preliminary 2001 to final 2001 data. Data for 2002 are preliminary and are expected to change; related rankings may also change.

The following narrative information was provided by the Wisconsin Geological and Natural History Survey (WGNHS).³

Exploration and Development

In 2002, for the fourth consecutive year, no exploratory drill holes were initiated or completed in Wisconsin and no substantive mineral leasing activity occurred. The lack of interest in exploration drilling and mineral leasing was mainly attributed to industry concern with the prolonged ongoing review Nicolet Minerals Co.'s (currently owned by BHP Billiton) Nicolet Mine project and the length of time required for such review under Wisconsin mining regulations.

Nicolet Minerals had an (ongoing) proposed underground mining project to develop the 55-million-ton, zinc-copper massive-sulfide ore body known as the Crandon deposit. Nicolet Minerals continued to prepare information in response to the Wisconsin Department of Natural Resources' (WDNR) comments on selected parts of the company's completed Environmental Impact Report (EIR) for its proposed zinc-copper mine. Early in the year, the review of the EIR and the various permit applications and requests for license approvals centered on the continued evaluation of the output of complex computer models that described the projected impact of the proposed mine on ground-water resources in the immediate Crandon area. At issue were (1) the projection of the amount of ground-water inflow to the underground mine workings, (2) the resulting effect such water volumes may have on water-treatment strategies, and (3) the effects on the ground-water base flow into surrounding lakes and streams. In addition, the ground-water modeling effort addressed such issues as impacts on ground-water quality because of mine reflooding. The draft Environmental Impact Statement, under preparation by the WDNR, was expected to be ready for public review and comment during calendar year 2004.

But in September, BHP announced that it was abandoning plans to develop the Crandon deposit and closing its Nicolet Minerals office in preference to other larger projects around the world involving less complicated permitting and mine development issues. It did not, however, withdraw its permit application in the hope of selling the property and its mineral rights. Opponents of the proposed mine project sought State Government support for public purchase of the property. The Governor directed the State Department of Administration to seek appraisals for such a purchase; two appraisals between

³Thomas J. Evans, Geologist, authored the text of the State mineral industry information provided by the Wisconsin Geological and Natural History Survey.

\$51.2 million and \$94 million were prepared. Later in September, in advance of the State's gubernatorial election, the Governor announced that the State would not pursue purchase of the property owing to an extremely tight State budget and the high appraisal value of the land and mineral rights (Rebhahn, 2002⁴). Private sale of the property still remained possible at yearend.

Legislation and Government Actions

Legislative activity during the year was limited to two proposals that had initially been introduced in 2001. The first proposal called for a ban on the use of cyanide compounds in metallic mining in Wisconsin, and the second proposal addressed modifying regulatory requirements related to mining waste and associated ground-water management issues. Neither

⁴A reference that includes a section mark (§) is found in the Internet Reference Cited section.

proposal received formal floor action during the year and lapsed at the close of the legislative session.

The WDNR announced that insufficient information had been submitted to determine if the Sacaton copper mine in Pinal County, AZ, met the requirements of Wisconsin's "mining moratorium law." The Sacaton Mine was one of three mines proposed by Nicolet Minerals as having operated for 10 years without creating environmental pollution or having been closed for 10 years without subsequently creating environmental pollution. (The other two were the McLaughlin gold mine in Napa and Yolo Counties, CA, and the Cullaton Lake gold mine in Canada's Nunavut Province.) Nicolet Minerals sought to reverse the preliminary decision by submitting additional information, which was being prepared at yearend.

Internet Reference Cited

Rebhahn, Peter, 2002 (September 17), Crandon Mine project dropped, Green Bay (WI) Press-Gazette, accessed November 19, 2003, at URL http://www.greenbaypressgazette.com/news/archive/local_6100365.shtml.

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

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	2000		2001		2002 ^P	
	Quantity	Value	Quantity	Value	Quantity	Value
Gemstones	NA	6	NA	6	NA	6
Lime	619	37,000	617	36,900	601	38,500
Peat	W	(3)	W	(3)	W	(3)
Sand and gravel:						
Construction	39,600	150,000	41,600	159,000	38,900	152,000
Industrial	1,790	36,200	1,710	(3)	1,710	(3)
Silica stone ⁴	W	(3)	--	--	--	--
Stone:						
Crushed	35,100 ^r	143,000 ^r	36,600	150,000	32,000	134,000
Dimension metric tons	93,100	11,700	98,900	18,900	108,000	15,400
Total	XX	378,000 ^r	XX	365,000	XX	340,000

^PPreliminary. ^rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data. XX Not applicable. -- Zero.

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.

³Value excluded to avoid disclosing company proprietary data.

⁴Grindstones, pulpstones, and sharpening stones; excludes mill liners and grinding pebbles.

TABLE 2
WISCONSIN: CRUSHED STONE SOLD OR USED, BY KIND¹

Kind	2000				2001			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone ²	150 ^r	27,300 ^r	\$113,000 ^r	\$4.12 ^r	136	28,500	\$117,000	\$4.09
Dolomite	12 ^r	2,850 ^r	12,000 ^r	4.21 ^r	12	3,030	13,000	4.28
Granite	4	1,800	6,800	3.78	3	1,370	5,380	3.92
Sandstone and quartzite	5	1,590	6,000	3.79	5	2,430	9,860	4.05
Traprock	3 ^r	1,280 ^r	5,030 ^r	3.92 ^r	3	1,170	4,580	3.92
Miscellaneous stone	1	231	956	4.14	1	181	1,060	5.86
Total or average	XX	35,100 ^r	143,000 ^r	4.09 ^r	XX	36,600	150,000	4.10

^rRevised. XX Not applicable.

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

²Includes limestone-dolomite reported with no distinction between the two.

TABLE 3
WISCONSIN: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2001, BY USE¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	\$4.91
Riprap and jetty stone	71	\$350	4.93
Filter stone	1,050	3,900	3.72
Other coarse aggregates	993	4,710	4.75
Total or average	2,110	8,970	4.24
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,340	7,000	5.22
Bituminous aggregate, coarse	192	1,110	5.77
Bituminous surface-treatment aggregate	273	1,310	4.81
Other graded coarse aggregates	3	13	4.33
Total or average	1,810	9,440	5.22
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	3.58
Stone sand, bituminous mix or seal	W	W	5.06
Screening, undesignated	632	2,910	4.61
Other fine aggregates	28	143	5.11
Total or average	660	3,050	4.63
Coarse and fine aggregate:			
Graded road base or subbase	5,060	21,300	4.21
Unpaved road surfacing	167	749	4.49
Crusher run or fill or waste	486	1,860	3.83
Roofing granules	210	1,480	7.04
Other coarse and fine aggregates	652	2,650	4.06
Total or average	6,570	28,000	4.27
Other construction materials	105	455	4.33
Agricultural:			
Agricultural limestone	208	2,110	10.15
Other agricultural uses	(2)	(2)	3.73
Chemical and metallurgical, lime manufacture	(2)	(2)	3.59
Unspecified: ³			
Reported	10,400	41,100	3.97
Estimated	15,000	56,000	3.86
Total or average	25,000	97,500	3.91
Grand total or average	36,600	150,000	4.10

W Withheld to avoid disclosing company proprietary data; included with "Other."

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

²Withheld to avoid disclosing company proprietary data, included in "Grand total."

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

TABLE 4
WISCONSIN: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2001, BY USE AND DISTRICT^{1, 2}

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
Coarse aggregate (+1 1/2 inch) ³	W	W	W	W	271	1,130	--	--
Coarse aggregate, graded ⁴	W	W	W	W	W	W	--	--
Fine aggregate (-3/8 inch) ⁵	72	269	W	W	W	W	--	--
Coarse and fine aggregate ⁶	1,670	6,540	1,940	8,180	1,790	7,750	453	1,840
Other construction materials	15	70	--	--	91	385	--	--
Agricultural ⁷	W	W	124	1,520	W	W	--	--
Chemical and metallurgical ⁸	--	--	--	--	W	W	--	--
Unspecified: ⁹								
Reported	628	2,600	--	--	--	--	2,100	8,230
Estimated	3,700	14,000	3,500	13,000	4,000	16,000	660	2,600
Total	7,570	29,700	7,520	33,200	7,140	29,300	3,220	12,700
Use	District 5		District 6		District 8		Unspecified districts	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
Coarse aggregate (+1 1/2 inch) ³	W	W	--	--	--	--	62	275
Coarse aggregate, graded ⁴	W	W	--	--	--	--	--	--
Fine aggregate (-3/8 inch) ⁵	W	W	--	--	--	--	109	564
Coarse and fine aggregate ⁶	337	1,730	35	122	59	630	288	1,270
Other construction materials	--	--	--	--	--	--	--	--
Agricultural ⁷	--	--	--	--	--	--	--	--
Chemical and metallurgical ⁸	W	W	--	--	--	--	--	--
Unspecified: ⁹								
Reported	5,960	23,600	1,660	6,590	--	--	--	--
Estimated	1,400	5,400	97	380	1,200	4,600	--	--
Total	7,700	30,900	1,790	7,090	1,250	5,430	458	2,110

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

¹No production in District 7.

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

³Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregates.

⁴Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), and other graded coarse aggregate.

⁵Includes screening (undesignated), stone sand bituminous mix or seal, stone sand (concrete), and other fine aggregates.

⁶Includes crusher run (select material or fill), graded road base or subbase, roofing granules, unpaved road surfacing, and other coarse and fine aggregate.

⁷Includes agricultural limestone and other agricultural uses.

⁸Includes lime manufacture.

⁹Reported and estimated production without a breakdown by end use.

TABLE 5
 WISCONSIN: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2001, BY MAJOR USE CATEGORY¹

Use	Quantity		
	(thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	8,230	\$35,100	\$4.27
Concrete products (blocks, bricks, pipe, decorative, etc.) ²	530	2,880	5.42
Asphaltic concrete aggregates and other bituminous mixtures	2,080	7,420	3.56
Road base and coverings ³	6,150	22,200	3.62
Road stabilization (lime)	445	2,430	5.47
Fill	2,440	6,160	2.53
Snow and ice control	135	411	3.04
Roofing granules	10	59	5.90
Other miscellaneous uses ⁴	47	374	7.96
Unspecified: ⁵			
Reported	8,350	31,600	3.78
Estimated	13,000	50,000	3.81
Total or average	41,600	159,000	3.82

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

²Includes plaster and gunite sands.

³Includes road and other stabilization (cement).

⁴Includes filtration.

⁵Reported and estimated production without a breakdown by end use.

TABLE 6
WISCONSIN: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2001, BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates (including concrete sand)	1,490	6,070	2,130	8,570	1,900	7,250
Concrete products (blocks, bricks, pipe, decorative, etc.) ²	46	217	313	1,510	10	22
Asphaltic concrete aggregates and other bituminous mixtures	W	W	586	2,680	248	602
Road base and coverings ³	313	1,120	2,130	9,660	1,590	5,470
Fill	131	476	1,370	3,920	331	813
Snow and ice control	--	--	W	W	36	134
Roofing granules	10	59	--	--	W	W
Other miscellaneous uses ⁴	355	1,300	14	191	18	69
Unspecified: ⁵						
Reported	1,210	5,220	6,400	24,500	12	73
Estimated	540	1,800	2,700	10,000	900	3,300
Total	4,100	16,300	15,700	61,000	5,020	17,700
Use	District 4		Districts 5 and 6		District 7	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates (including concrete sand)	814	3,170	439	2,040	W	W
Concrete products (blocks, bricks, pipe, decorative, etc.) ²	W	W	--	--	--	--
Asphaltic concrete aggregates and other bituminous mixtures	269	737	45	110	W	W
Road base and coverings ³	143	424	230	781	121	311
Fill	135	331	57	84	105	185
Snow and ice control	--	--	W	W	W	W
Roofing granules	--	--	--	--	--	--
Other miscellaneous uses ⁴	21	136	33	118	246	1,140
Unspecified: ⁵						
Reported	675	1,710	8	13	29	62
Estimated	3,600	13,000	3,800	16,000	940	3,300
Total	5,650	19,600	4,560	19,600	1,440	4,980
Use	District 8		Unspecified districts			
	Quantity	Value	Quantity	Value		
Concrete aggregates (including concrete sand)	W	W	647	3,290		
Concrete products (blocks, bricks, pipe, decorative, etc.) ²	--	--	160	1,120		
Asphaltic concrete aggregates and other bituminous mixtures	W	W	256	1,140		
Road base and coverings ³	1,030	2,230	1,050	4,690		
Fill	65	81	242	267		
Snow and ice control	41	68	--	--		
Roofing granules	--	--	--	--		
Other miscellaneous uses ⁴	922	4,540	--	--		
Unspecified: ⁵						
Reported	14	23	--	--		
Estimated	700	2,300	--	--		
Total	2,770	9,210	2,360	10,500		

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses." -- Zero.

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

²Includes plaster and gunite sands.

³Includes road and other stabilization (cement and lime).

⁴Includes filtration.

⁵Reported and estimated production without a breakdown by end use.