THE MINERAL INDUSTRY OF MINNESOTA

Minnesota climbed in rank from ninth to seventh among the 50 States in total nonfuel mineral production value[1] in 1995, according to the U.S. Geological Survey (USGS). The State's change in rank was primarily the result of the increased sales of iron ore. The estimated value for 1995 was almost $1.5 billion, nearly a 4% increase from that of 1994. This followed a 3.3% increase from 1993 to 1994 (based on final data). The State accounted for nearly 4% of the U.S. total nonfuel mineral production value.

The changes in Minnesota's total nonfuel mineral value that occurred during 1992-95 resulted mostly from the combined effects of increased iron ore shipments, and less so, the production of construction sand and gravel and crushed stone. In 1995, iron ore accounted for nearly 86% of the State's nonfuel mineral value, while construction sand and gravel and crushed stone accounted for more than 7% and 3%, respectively. Throughout most of the years 1980-90, Minnesota ranked between second and sixth nationally in nonfuel mineral production value when iron ore prices and related sales were stronger than in the early 1990's. Other nonfuel mineral values that increased in 1995 were construction sand and gravel, crushed stone, dimension stone, and lime. Small decreases occurred in the values of industrial sand and gravel, peat, and kaolin clays.

Compared to USGS estimates of quantities produced in the other 49 States in 1995, Minnesota remained 1st in the Nation in iron ore, 8th in construction sand and gravel, and 10th in industrial sand and gravel. The State ranked fifth in the production of peat; in 1994, when ranking for peat was based on sales rather than quantity produced, Minnesota ranked third. Additionally, the State's quarries produced significant quantities of crushed stone and dimension stone.

According to the Minnesota Department of Natural Resources' Minerals Division (MDNR),[2] a cooperative environmental minewaste management resource study involving the mining industry and the MDNR was initiated on the in-pit disposal of taconite tailings and its potential impacts on ground water. Another cooperative environmental study on the hydrology of the Mesabi Iron Range will examine the rates at which abandoned pits fill with water and assess the ultimate water elevation in the pits. The latter study involves the mining industry, MDNR, and the Iron Range Resources and Rehabilitation Board, with initial funding provided by the U.S. Bureau of Mines.

In other State regulatory developments, nonferrous metal mine leasing rules were amended to establish a new preference rights leasing system. Under new rules that took effect on December 1, selected lands previously offered, but not bid upon, at a public lease sale may again be available for leasing upon approval of a new application. Separately, the State adopted new industrial mineral leasing rules covering such minerals as dimension stone, gemstones, kaolin, and silica sand. Industrial mineral leases primarily will be available through a negotiation process. The first industrial mineral lease issued under the new rules was granted to Cominco American Resources Inc. for diamond exploration at a 64-hectare (160-acre) site in Wilkin County.

The State held its 20th nonferrous metals lease sale on

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN MINNESOTA[1 2]

Mineral		1993		1994		1995[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Gemstones		NA	$65	NA	$26	NA	$26
Iron ore (usable)	thousand metric tons	42,500	1,130,000	43,300	1,160,000	46,600	1,280,000
Peat	metric tons	33,000	1,930	37,000	3,010	W	W
Sand and gravel (construction)	thousand metric tons	[e]30,500	[e]85,400	29,500	90,000	34,000	109,000
Stone:							
Crushed	do.	9,420	37,700	10,900	47,100	11,200	49,300
Dimension	metric tons	33,500	11,800	16,900	W	W	W
Combined value of clays (common, kaolin), lime, sand and gravel (industrial), and values indicated by symbol W		XX	35,500	XX	44,900	XX	51,000
Total		XX	1,300,000	XX	1,340,000	XX	1,490,000

[e]Estimated. [p]Preliminary. NA Not available. 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.

October 10. Leases were awarded to American Shield Co., By-Products Industries, Cominco American Inc., Milestone Joint Venture, North Bay Exploration, and Phelps Dodge Exploration East. These leases, comprising almost 4,400 hectares (11,000 acres), were in Aitkin, Beltrami, Carlton, Crow Wing, Itasca, Lake of the Woods, and St. Louis Counties. In other industry news, USX Corp. announced plans to extend its Minntac West Pit adjacent to the Midway Mine, near Kinney on the Mesabi Iron Range.

[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 published in this chapter are estimated as of Dec. 1995. Estimates for some commodities, e.g., construction sand and gravel, crushed stone, and portland cement, are periodically updated. 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]The remaining narrative portion of this report was based on information provided by MDNR.

TABLE 2

MINNESOTA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1994, BY USE[2]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch): Riprap and jetty stone[3]	251	$1,090	$4.34
Coarse aggregate, graded:			
Concrete aggregate, coarse	530	2,530	4.77
Bituminous aggregate, coarse	183	939	5.13
Bituminous surface-treatment aggregate	W	W	5.97
Railroad ballast	778	4,370	5.62
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	4.42
Stone sand, bituminous mix seal	204	1,070	5.25
Screening, undesignated	118	533	4.52
Coarse and fine aggregates:			
Graded road base or subbase	2,380	9,270	3.89
Unpaved road surfacing	274	935	3.41
Terrazzo and exposed aggregate	121	605	5.00
Crusher run or fill or waste	W	W	3.90
Other coarse and fine aggregates	W	W	5.80
Other construction materials	386	2,060	5.34
Agricultural limestone[4]	176	747	4.24
Special:			
Asphalt fillers or extenders	([5])	([5])	2.48
Other fillers or extenders	([5])	([5])	5.51
Unspecified:[6]			
Actual	([5])	([5])	4.35
Estimated	2,910	11,700	4.02
Total	10,900	47,100	4.32

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes dolomite, granite, limestone, sandstone and quartzite, and traprock.
[2]Data are rounded to three significant digits; may not add to totals shown.
[3]Includes filter stone.
[4]Includes poultry grit and mineral food.
[5]Withheld to avoid disclosing company proprietary data; included in "Total."
[6]Includes production reported without a breakdown by end use and estimates for nonrespondents.

TABLE 3

MINNESOTA: CRUSHED STONE SOLD OR USED BY PRODUCERS BY KIND[1]

Kind	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	r35	r7,150	r$26,900	r$3.77	49	7,670	$32,700	$4.26
Granite	3	W	W	4.00	4	W	W	4.64
Dolomite	5	W	W	3.50	4	W	W	3.02
Sandstone and quartzite	2	W	W	7.77	5	W	W	5.75
Traprock	2	W	W	4.29	2	W	W	4.29
Total	XX	9,420	37,700	4.00	XX	10,900	47,100	4.32

rRevised. W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.
[1]Data are rounded to three significant digits.

TABLE 4

MINNESOTA: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1994, BY DISTRICT[2] AND USE

(Thousand metric tons and thousand dollars)

Use	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[3]	57	400	([4])	([4])	([4])	([4])
Coarse aggregate, graded[5]	W	W	([4])	([4])	([4])	([4])
Fine aggregate (-3/8 inch)[6]	W	W	([4])	([4])	70	225
Coarse and fine aggregate[7]	W	W	([4])	([4])	331	1,200
Other construction materials	1,880	9,820	—	—	47	261
Agricultural[8]	([4])	([4])	([4])	([4])	24	111
Special[9]	—	—	([4])	([4])	—	—
Unspecified:[10]						
Actual	([4])	([4])	([4])	([4])	1,640	7,240
Estimated	1,140	4,500	974	$3,700	803	3,550
Total	3,510	16,900	4,260	16,600	3,120	13,600

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Production reported in District 2 and 3 was included with "District 4" to avoid disclosing company proprietary data; no crushed stone was produced in District 1.
[2]Data are rounded to three significant digits; may not add to totals shown.
[3]Includes filter stone and riprap and jetty stone.
[4]Withheld to avoid disclosing company proprietary data; included in "Total."
[5]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate and railroad ballast.
[6]Includes stone sand (concrete), stone sand (bituminous mix or seal), and screening (undesignated).
[7]Includes graded road base or subbase, unpaved road surfacing, terrazzo and exposed aggregate, crusher run (select material or fill), and other coarse and fine aggregates.
[8]Includes agricultural limestone, and poultry grit and mineral food.
[9]Includes asphalt fillers or extenders, and other fillers or extenders.
[10]Includes production reported without a breakdown by end use and estimates for nonrespondents.

TABLE 5

MINNESOTA: 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)	6,020	$22,300	$3.71
Plaster and gunite sands	164	966	5.89
Concrete products (blocks, brick, pipe, decorative, etc.)	666	2,680	4.02
Asphaltic concrete aggregates and other bituminous mixtures	3,410	13,400	3.92
Road base and coverings[2]	9,010	23,500	2.61
Fill	2,700	5,700	2.11
Snow and ice control	263	732	2.78
Roofing granules	39	356	9.13
Filtration	72	505	7.01
Other[3]	30	164	5.47
Unspecified:[4]			
Actual	3,010	8,560	2.84
Estimated	4,070	11,200	2.74
Total or average	29,500	90,000	3.06

[1]Data are rounded to three significant digits; may not add to totals shown.
[2]Includes road and other stabilization (cement and lime).
[3]Includes railroad ballast.
[4]Includes production reported without a breakdown by end use and estimates for nonrespondents.

TABLE 6

MINNESOTA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1994, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	693	3,470	637	2,730	1,260	4,880
Asphaltic—bituminous mixtures	618	2,180	W	W	1,630	4,870
Road base and coverings[3]	1,570	4,320	757	2,410	3,610	7,610
Fill	68	126	531	1,810	233	487
Snow and ice control	42	125	W	W	44	114
Other miscellaneous uses[4]	35	305	170	743	65	478
Unspecified:[5]						
Actual	188	377	268	612	181	501
Estimated	1,260	3,100	214	518	579	1,930
Total	4,470	14,000	2,580	8,830	7,600	20,900
	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	854	3,630	2,650	7,810	760	3,460
Asphaltic—bituminous mixtures	364	1,280	W	W	257	853
Road base and coverings[3]	1,770	5,490	739	1,890	575	1,780
Fill	254	545	1,390	2,330	229	395
Snow and ice control	13	47	W	W	92	245
Other miscellaneous uses[4]	25	119	462	3,780	—	—
Unspecified:[5]						
Actual	142	436	1,870	5,860	368	772
Estimated	544	1,510	1,240	3,320	234	810
Total	3,960	13,100	8,350	25,000	2,520	8,310

W Withheld to avoid disclosing company proprietary data; included with "Other miscellaneous uses."
[1]Data are rounded to three significant digits; may not add to totals shown.
[2]Includes plaster and gunite sands.
[3]Include road and other stabilization (cement and lime).
[4]Includes railroad ballast.

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