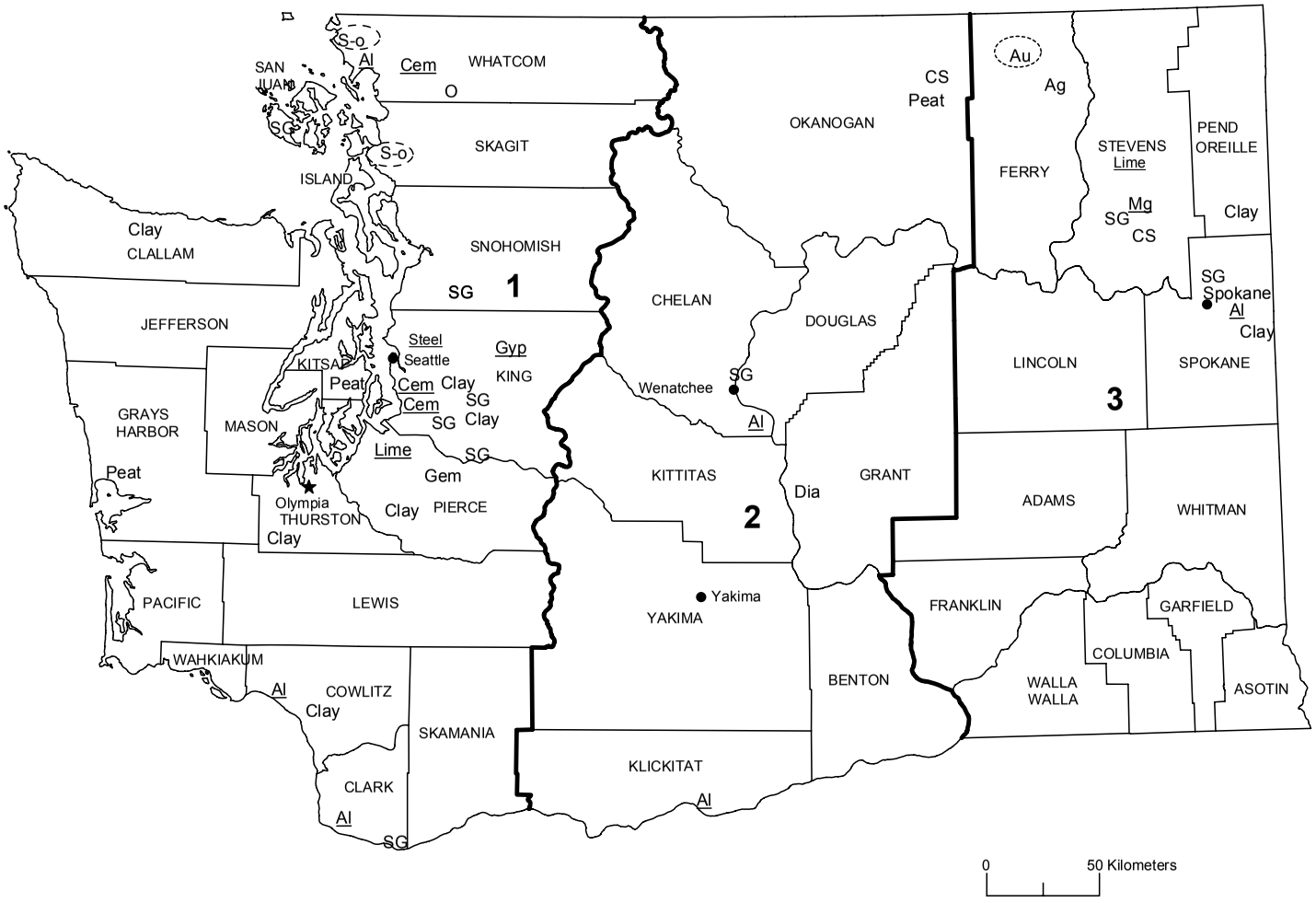
WASHINGTON



LEGEND

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

MINERAL SYMBOLS
(Major producing areas)

Ag	Silver
Al	Aluminum plant
Au	Gold
Cem	Cement plant
Clay	Common clay
CS	Crushed stone
Dia	Diatomite
Gem	Gemstones
Gyp	Gypsum plant
Lime	Lime plant
Mg	Magnesium metal plant
O	Olivine
Peat	Peat
S-o	Sulfur (oil)
SG	Construction sand and gravel
Steel	Steel plant
⬭	Concentration of mineral operations

Source: Washington State Division of Geology and Earth Resources/U.S. Geological Survey (2002)

THE MINERAL INDUSTRY OF WASHINGTON

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Washington State Department of Natural Resources, Division of Geology and Earth Resources, for collecting information on all nonfuel minerals.

In 2002, the estimated value[1] of nonfuel mineral production for Washington was $450 million, based upon preliminary U.S. Geological Survey (USGS) data. This was about a 10% decrease from that of 2001[2] and followed a 16.8% decrease from 2000 to 2001. The State ranked 30th (27th in 2001) among the 50 States in total nonfuel raw mineral production value, of which Washington accounted for more than 1% of the U.S. total.

In 2002, based on value, Washington's leading nonfuel mineral commodities were construction sand and gravel, crushed stone, and portland cement, the former two accounting for 70% of the State's total nonfuel mineral value. Diatomite was next, the total value for the four mineral commodities being 92% of the State's total value, followed by gold, lime, and industrial sand and gravel (table 1).

In 2001, the decrease in value was mostly the result of a more than $40 million drop in the value of magnesium metal, a nearly $30 million drop in the value of crushed stone, and a decrease in gold of about $11 million. Additionally, portland cement was down about $7 million, and gypsum also had a sizable drop in value (no production). Most increases were small relative to the decreases; a $1.5 million increase in the value of diatomite was the largest increase. All other changes in both years were small and inconsequential to the net result.

Based upon USGS estimates of the quantities produced in the 50 States in 2002, Washington increased to first from second of 2 States that produce olivine and continued to be fourth in diatomite, seventh in construction sand and gravel, and eighth in gold. Additionally, the State was a significant producer of crushed stone and portland cement. The primary aluminum and raw steel produced in Washington were processed from materials obtained from other domestic and foreign sources. The State remained 11th in rank in the production of primary aluminum in 2002. In 2001, owing to highly escalated energy costs, the production of primary aluminum in Washington precipitously dropped; the significant decrease resulted from the closing of most of the State's primary aluminum plants. For many years prior to 2001, Washington had been (by far) first in the Nation in the production of primary aluminum; in 2000, the State accounted for nearly 30% of the U.S. total primary production of the metal.

On December 9, 2002, Nucor Corp. completed the acquisition of substantially all the assets of Birmingham Steel Corp. for a cash purchase price of about $615 million. Primary assets purchased were four operating steel mills, one of which was in Seattle, WA. The others were in Birmingham, AL; Kankakee, IL; and Jackson, MS (Nucor Corp., 2002§[3]).

[1]The terms "nofuel mineral production" and related "values" encompass variations in meaning, depending upon the minerals or mineral products. Produciton 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. For some mineral commodities, such as construction sand and gravel, crushed stone, and portland cement, 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.

[2]Values, 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.

Internet Reference Cited

Nucor Corp., 2002 (December 9), Nucor acquires Birmingham Steel assets, Nucor Corp. news release, accessed December 23, 2003, at URL http: //www.nucor.com/financials.asp?finpage=newsreleases.

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

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN WASHINGTON[1, 2]

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral		2000		2001		2002[p]	
		Quantity	Value	Quantity	Value	Quantity	Value
Clays, common		116	425	89	258	87	148
Gemstones		NA	37	NA	25	NA	31
Gold[3]	kilograms	2,930	26,400	1,700	14,900	1,240	12,200
Sand and gravel, construction		41,800	221,000	41,400	220,000	42,400	230,000
Silver[3]	metric tons	2	250	--	--	W	W
Stone, crushed		16,800 [r]	114,000 [r]	14,100	84,300	13,900	85,100
Combined values of cement (portland), diatomite, gypsum [crude (2000)], lime, magnesium metal (2000-01), olivine, peat, sand and gravel (industrial), stone (dimension miscellaneous), and values indicated by symbol W		XX	237,000	XX	178,000	XX	122,000
Total		XX	599,000 [r]	XX	498,000	XX	450,000

[p]Preliminary. [r]Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined values" data.
XX Not applicable. --Zero.

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

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

[3]Recoverable content of ores, etc.

TABLE 2
WASHINGTON: CRUSHED STONE SOLD OR USED, BY KIND[1]

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]	11	2,040	$29,300	$14.37	11	2,020	$11,500	$5.68
Dolomite	15	687	3,430	4.99	17	561	2,620	4.67
Granite	11	2,000	10,900	5.46	11	1,490	8,300	5.59
Sandstone	3	W	W	13.51	3	W	W	14.91
Slate	5	W	W	6.56	3	W	W	6.61
Traprock	105 [r]	11,100 [r]	63,600 [r]	5.72 [r]	70	8,910	53,800	6.04
Volcanic cinder and scoria	1	W	W	5.94	1	W	W	6.47
Miscellaneous stone	11	544	2,310	4.24	9	580	2,470	4.26
Total or average	XX	16,800 [r]	114,000 [r]	6.79 [r]	XX	14,100	84,300	6.00

[r]Revised. W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.

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

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

TABLE 3

WASHINGTON: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2001, BY USE[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	$3.50
Riprap and jetty stone	110	$797	7.25
Filter stone	10	95	9.50
Other coarse aggregates	235	1,310	5.57
Total or average	355	2,200	6.20
Coarse aggregate, graded:			
Concrete aggregate, coarse	40	252	6.30
Bituminous aggregate, coarse	189	1,010	5.32
Bituminous surface-treatment aggregate	29	148	5.10
Railroad ballast	39	208	5.33
Other graded coarse aggregates	19	68	3.58
Total or average	316	1,680	5.32
Fine aggregate (-3/8 inch):			
Stone sand, bituminous mix or seal	W	W	3.53
Screening, undesignated	74	337	4.55
Other fine aggregates	23	122	5.30
Total or average	97	459	4.73
Coarse and fine aggregate:			
Graded road base or subbase	1,280	5,170	4.03
Unpaved road surfacing	377	2,310	6.13
Terrazzo and exposed aggregate	138	996	7.22
Crusher run or fill or waste	187	755	4.04
Other coarse and fine aggregates	226	1,350	5.96
Total or average	2,210	10,600	4.79
Other construction materials	33	487	14.76
Agricultural, limestone	(2)	(2)	3.49
Chemical and metallurgical:			
Cement manufacture	(2)	(2)	5.95
Lime manufacture	(2)	(2)	3.53
Flux stone	(2)	(2)	14.18
Sulfur oxide removal	(2)	(2)	5.95
Special:			
Asphalt fillers or extenders	(2)	(2)	8.97
Other fillers or extenders	(2)	(2)	1.58
Other miscellaneous uses:			
Chemicals	(2)	(2)	8.82
Glass manufacture	(2)	(2)	17.50
Paper manufacture	(2)	(2)	4.08
Other uses not listed	(2)	(2)	4.63
Unspecified:[3]			
Reported	4,210	29,700	7.06
Estimated	5,500	29,000	5.26
Total or average	9,670	58,400	6.04
Grand total or average	14,100	84,300	6.00

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

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

[2]Withheld to avoid disclosing company proprietary data; included in "Grand total."

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

TABLE 4

WASHINGTON: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2001, BY USE AND DISTRICT[1]

Use	District 1		District 2		District 3		Unspecified districts	
	Quantity (thousand metric tons)	Value (thousands)	Quantity (thousand metric tons)	Value (thousands)	Quantity (thousand metric tons)	Value (thousands)	Quantity (thousand metric tons)	Value (thousands)
Construction:								
Coarse aggregate (+1 1/2 inch)[2]	319	$1,990	W	W	W	W	18	$120
Coarse aggregate, graded[3]	145	987	43	$167	28	$115	100	413
Fine aggregate (-3/8 inch)[4]	29	156	67	293	2	8	--	--
Coarse and fine aggregate[5]	1,580	7,720	179	1,130	94	428	363	1,300
Other construction materials	--	--	6	22	27	465	--	--
Agricultural[6]	W	W	--	--	W	W	--	--
Chemical and metallurgical[7]	W	W	--	--	W	W	--	--
Special[8]	W	W	--	--	W	W	--	--
Other miscellaneous uses[9]	W	W	W	W	--	--	--	--
Unspecified:[10]								
Reported	1,060	6,680	1,660	12,500	1,230	9,250	249	1,320
Estimated	3,900	21,000	320	1,800	1,300	5,800	--	--
Total	7,990	43,900	2,420	17,100	2,920	20,100	730	3,150

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

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

[2]Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregates.

[3]Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), railroad ballast, and other graded coarse aggregates.

[4]Includes screening (undesignated), stone sand bituminous mix or seal, and other fine aggregates.

[5]Includes crusher run (select material or fill), graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, and other coarse and fine aggregates.

[6]Includes agricultural limestone.

[7]Includes cement manufacture, flux stone, lime manufacture, and sulfur oxide removal.

[8]Includes chemicals, glass manufacture, paper manufacture, and other uses not listed.

[9]Includes other specified uses not listed.

[10]Reported and estimated production without a breakdown by end use.

TABLE 5

WASHINGTON: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2001, BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregates (including concrete sand)	8,030	$54,900	$6.83
Plaster and gunite sands	18	156	8.67
Concrete products (blocks, bricks, pipe, decorative, etc.)	54	757	14.02
Asphaltic concrete aggregates and other bituminous mixtures	2,020	12,400	6.15
Road base and coverings	5,940	31,900	5.37
Fill	4,770	14,300	2.99
Snow and ice control	139	666	4.79
Railroad ballast	104	690	6.63
Other miscellaneous uses[2]	777	4,890	6.29
Unspecified:[3]			
Reported	7,920	33,800	4.26
Estimated	12,000	66,000	5.65
Total or average	41,400	220,000	5.32

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

[2]Includes filtration.

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

TABLE 6

WASHINGTON: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2001, BY USE AND DISTRICT[1]

Use	District 1		District 2		District 3	
	Quantity (thousand metric tons)	Value (thousands)	Quantity (thousand metric tons)	Value (thousands)	Quantity (thousand metric tons)	Value (thousands)
Concrete aggregates and concrete products	7,120	$49,500	781	$4,700	182	$1,450
Plaster and gunite sands	13	119	5	38	--	--
Asphaltic concrete aggregates and other bituminous mixtures	1,270	8,080	276	1,970	477	2,360
Road base and coverings	4,060	23,300	688	4,470	1,190	4,150
Fill	4,670	13,900	68	265	33	141
Snow and ice control	21	127	W	W	W	W
Railroad ballast	90	583	W	W	W	W
Other miscellaneous uses[2]	545	4,200	274	964	90	373
Unspecified:[3]						
Reported	1,780	9,180	52	217	6,090	24,400
Estimated	11,000	61,000	680	3,100	400	1,900
Total	30,200	170,000	2,820	15,700	8,460	34,700

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

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

[2]Includes filtration.

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