



2012–2013 Minerals Yearbook

WASHINGTON

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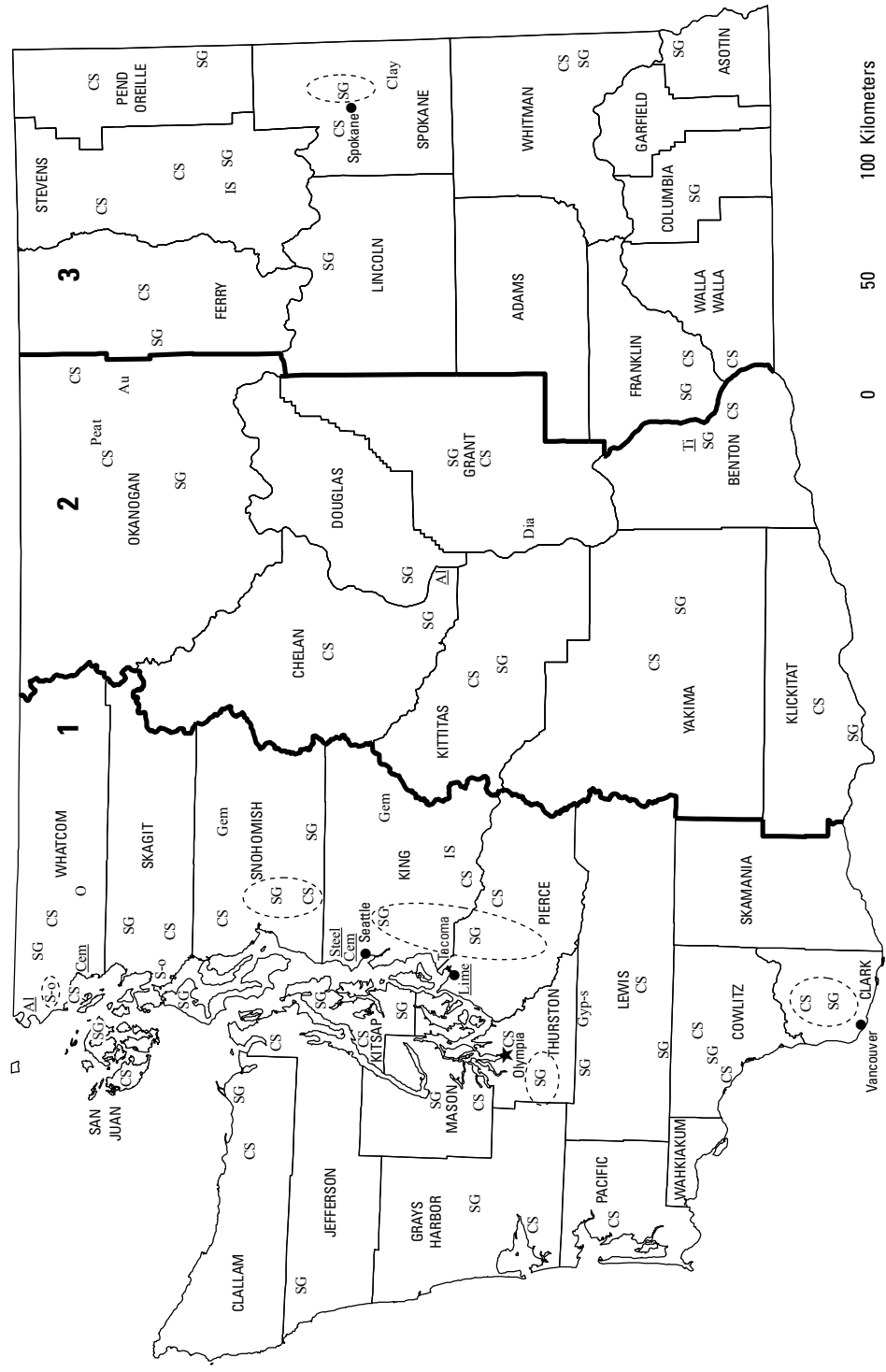
LEGEND

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

**MINERAL SYMBOLS
(Principal producing areas)**

- Al Aluminum plant
- Au Gold
- Cem Cement plant
- Clay Common clay
- CS Crushed stone
- Dia Diatomite
- Gem Gemstones
- Gyp-s Synthetic gypsum
- IS Industrial sand
- Lime Lime plant
- O Olivine
- Peat Peat
- SG Construction sand and gravel
- S-o Sulfur (oil)
- Steel Steel plant
- Ti Titanium metal plant

○ Concentration of mineral operations



Source: Washington Department of Natural Resources, Division of Geology and Earth Resources/U.S. Geological Survey (2012–13).

THE MINERAL INDUSTRY OF WASHINGTON

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

In 2013, the value of the nonfuel mineral production¹ in the State of Washington decreased to \$739 million, 0.98% of the total U.S. nonfuel mineral production, ranking it 29th in the Nation. In 2012, the corresponding value was \$756 million, 0.97% of the U.S. total nonfuel mineral production, ranking it 31st among the 50 States. In 2013, on a per capita basis, nonfuel mineral production in Washington had a value of \$106 compared with the national average of \$238. In 2012, the per capita value was \$107 compared with the national average of \$241.

The value of nonfuel mineral production in Washington for the years 2006 through 2013 was as follows (in millions of dollars): \$759 (2006), \$749 (2007), \$722 (2008), \$663 (2009), \$723 (2010), \$757 (2011), \$756 (2012), and \$739 (2013).

In 2013, there were 1,491 employees in nonfuel mineral mines in Washington and 367 in mills and preparation plants. In 2012, the corresponding numbers were 1,461 in nonfuel mineral mines and 364 in mills and preparation plants (U.S. Mine Safety and Health Administration, 2013, p. 16; 2014, p. 16). In 2013, the average annual wage in Washington for all mining was \$61,104 compared with \$52,869 for all industries. In 2012, the corresponding figures were \$58,439 and \$51,770, respectively (National Mining Association, unpub. data, February 4, 2016).

In 2012–13, on the basis of production quantity, twice as much construction sand and gravel was produced as crushed stone (table 1). On the basis of value, both construction sand and gravel and crushed stone increased 5% in 2013 from 2012. Portland cement, common clay, diatomite, gold, lime, olivine, peat, and industrial sand and gravel were also produced in the State. The total value of production for all these commodities combined decreased by 8% from 2011 to 2012 and decreased by 9% from 2012 to 2013. The decreased value of production was partly owing to no clay production, mainly for brick manufacture, being reported from intermittent producers in 2013, and no olivine production being reported in 2013, although olivine was being shipped from a stockpile. Another factor during this time period, which contributed to the decrease in production value, was the decreasing production of gold from 2011 to 2013.

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 February 2016. 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>.

Regional statistics for portland cement, lime, and industrial sand were tabulated by combining production with other States to avoid disclosing company proprietary data. Washington cement production, combined with Oregon’s, increased by 27% in 2013 from 2012; nationally, the increase was about 3.5%. High-calcium quicklime and hydrated lime were produced in Pierce County from purchased raw materials. Production combined with that of other Western States increased 6% by quantity and 12% by value in 2013 from 2012; nationally, these figures were 2% and 4%, respectively. Industrial sand production in California, Oregon, and Washington decreased 10%, although the production value increased 12% in 2013 from 2012. Across the country, production had increased 23% with a corresponding 30% increase in production value.

In 2013, one major gold mine operated in Washington, Kinross’s Kettle River-Buckhorn Mine in Okanogan County, from which about 1,700 tons per day of ore were hauled to a mill in Ferry County (Office of Lt. Governor Brad Owen, 2014). The mine was ranked 12th out of 27 major gold operations in the country in 2013 (George, 2015, p. 31.11) and produced 4,670 kilograms (kg) of gold, down from 4,860 kg in 2012 and 5,452 kg in 2011 (Kinross Gold Corp., 2012, p. 32; 2013, p. 29). There were several metal-processing facilities in the State, including two operating aluminum smelters in Chelan and Whatcom Counties, a steel plant in King County, and a titanium sponge plant in Benton County.

References Cited

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- U.S. Mine Safety and Health Administration, [2013], Mine injury and worktime, quarterly, January–December 2012: U.S. Mine Safety and Health Administration, Final, closeout edition, 33 p. (Accessed February 8, 2016, at http://arlweb.msha.gov/Stats/Part50/WQ/MasterFiles/MIWQ%20Master_20125.pdf.)
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TABLE 1
NONFUEL MINERAL PRODUCTION IN WASHINGTON^{1,2}

(Thousand metric tons and thousand dollars)

Mineral	2011		2012		2013	
	Quantity	Value	Quantity	Value	Quantity	Value
Gemstones, natural	NA	57	NA	57	NA	58
Sand and gravel, construction	29,600 [†]	211,000 [†]	28,100	214,000	29,500	224,000
Stone, crushed	14,800	152,000 [†]	14,800	179,000	14,400	188,000
Combined values of cement (portland), clays [common (2011–12)], diatomite, gold, lime, olivine (2011–12), peat, sand and gravel (industrial), stone [dimension (2011)]	XX	394,000	XX	362,000	XX	328,000
Total	XX	757,000 [†]	XX	756,000	XX	739,000

[†]Revised. NA Not available. 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
WASHINGTON: CRUSHED STONE SOLD OR USED IN THE UNITED STATES, BY TYPE¹

Type	2012				2013			
	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	1,230	\$18,400	\$14.93	11	974	\$18,200	\$18.72
Dolomite	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Marble	1	126	10,700	85.03	1	164	13,900	85.03
Granite	4	611	6,890	11.27	5	710	8,890	12.51
Traprock	62	7,870	85,500	10.87	60	6,250	70,600	11.28
Sandstone and quartzite ⁵	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Slate	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Volcanic cinder and scoria	1	71	764	10.69	1	54	699	12.91
Miscellaneous stone	33	4,910	56,700	11.56	30	6,290	75,500	12.00
Total or average	XX	14,800	179,000	12.08	XX	14,400	188,000	13.00

XX Not applicable.

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

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

³Withheld to avoid disclosing company proprietary data; included with "Limestone."

⁴Withheld to avoid disclosing company proprietary data; included with "Miscellaneous stone."

⁵Includes sandstone-quartzite reported with no distinction between the two kinds of stone.

TABLE 3
WASHINGTON: CRUSHED STONE SOLD OR USED BY PRODUCERS, BY USE¹

Use	2012			2013		
	Quantity (thousand metric tons)	Value (thousands)	Unit value	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:						
Coarse aggregate (+1½ inch):						
Macadam	171	\$1,360	\$7.94	158	\$687	\$4.34
Riprap and jetty stone	77	1,300	16.92	150	1,600	10.69
Filter stone	108	1,180	10.92	164	1,210	7.40
Unspecified coarse aggregate	116	887	7.65	352	3,920	11.13
Coarse aggregate, graded:						
Concrete aggregate, coarse	6	69	11.56	W	W	W
Bituminous aggregate, coarse	--	--	--	209	867	4.14
Bituminous surface-treatment aggregate	3	23	7.58	43	883	20.77
Railroad ballast	308	1,880	6.09	345	2,320	6.73
Unspecified graded coarse aggregate	51	333	6.53	W	W	W
Fine aggregate (-¾ inch):						
Stone sand, concrete	36	385	10.69	87	379	4.34
Stone sand, bituminous mix or seal	16	66	4.10	290	1,280	4.41
Screening, undesignated	--	--	--	W	W	W
Unspecified fine aggregate	4	24	6.08	202	6,640	32.88
Coarse and fine aggregates:						
Graded road base or subbase	1,260	7,540	5.97	1,270	6,780	5.33
Unpaved road surface	4	42	10.52	68	638	9.34
Terrazzo and exposed aggregate	--	--	--	W	W	W
Crusher run or fill or waste	471	3,580	7.61	187	982	5.25
Roofing granules	W	W	W	W	W	W
Unspecified coarse and fine aggregates	W	W	W	269	1,920	7.13
Unspecified and other construction materials	122	2,470	20.21	183	3,390	18.58
Agricultural:						
Agricultural Limestone	W	W	W	W	W	W
Poultry grit and mineral food	W	W	W	W	W	W
Unspecified and other agricultural uses	W	W	W	2	22	11.02
Chemical and metallurgical:						
Cement manufacture	W	W	W	--	--	--
Flux stone	W	W	W	W	W	W
Chemical Stone	--	--	--	W	W	W
Special:						
Mining dusting or acid water treatment	--	--	--	W	W	W
Asphalt fillers or extenders	1	3	3.44	1	14	14.89
Whiting or whiting substitute	--	--	--	W	W	W
Other fillers or extenders	--	--	--	W	W	W
Other miscellaneous uses and specified uses not listed	274	10,400	38.13	271	10,400	38.48
Unspecified:²						
Reported	3,460	37,400	10.81	5,210	61,300	11.77
Estimated	8,100	105,000	13.02	4,480	66,300	14.78
Total or average	14,800	179,000	12.08	14,400	188,000	13.00

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

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

²Reported and estimated production without a breakdown by end use.

TABLE 4
WASHINGTON: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2012, BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch) ²	W	W	W	W	5	70
Coarse aggregate, graded ³	25	176	3	23	340	2,100
Fine aggregate (-¾ inch) ⁴	W	W	W	W	16	66
Coarse and fine aggregates ⁶	1,090	8,960	14	64	284	1,960
Other construction materials	W	W	--	--	W	W
Agricultural ⁷	W	W	W	W	--	--
Chemical and metallurgical ⁸	W	W	--	--	W	W
Special ⁹	--	--	--	--	(5)	3
Other miscellaneous uses and specified uses not listed ¹⁰	--	--	--	--	273	10,400
Unspecified:¹¹						
Reported	325	3,880	266	2,840	173	1,850
Estimated	6,470	78,500	1,280	22,600	353	4,380
Total	8,460	97,400	1,580	28,300	1,540	22,700
Unspecified districts						
Use	Quantity	Value				
Construction:						
Coarse aggregate (+1½ inch) ²	--	--				
Coarse aggregate, graded ³	--	--				
Fine aggregate (-¾ inch) ⁴	--	--				
Coarse and fine aggregates ⁶	546	1,800				
Other construction materials	--	--				
Agricultural ⁷	--	--				
Chemical and metallurgical ⁸	--	--				
Special ⁹	--	--				
Other miscellaneous uses and specified uses not listed ¹⁰	--	--				
Unspecified:¹¹						
Reported	2,700	28,800				
Estimated	--	--				
Total	3,240	30,600				

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

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

²Includes macadam, riprap and jetty stone, filter stone, and unspecified coarse aggregate.

³Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and unspecified graded coarse aggregate.

⁴Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesigned), and unspecified fine aggregate.

⁵Less than ½ unit.

⁶Includes graded road base or subbase, unpaved road surface, terrazzo and exposed aggregate, crusher run, and unspecified coarse and fine aggregates.

⁷Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.

⁸Includes cement manufacture and flux stone.

⁹Includes asphalt fillers or extenders and roofing granules.

¹⁰Includes drain fields, waste material, lightweight aggregate (slate), pipe bedding, refractory stone (including ganister), and other miscellaneous uses.

¹¹Reported and estimated production without a breakdown by end use.

TABLE 5
WASHINGTON: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2013, BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch) ²	818	7,390	W	W	W	W
Coarse aggregate, graded ³	265	1,620	W	W	W	W
Fine aggregate (-¾ inch) ⁴	278	6,540	2	6	391	1,960
Coarse and fine aggregates ⁵	1,150	16,500	26	163	401	2,890
Other construction materials	22	309	--	--	162	3,090
Agricultural ⁶	W	W	W	W	W	W
Chemical and metallurgical ⁷	--	--	W	W	W	W
Special ⁸	--	--	W	W	W	W
Other miscellaneous uses and specified uses not listed ⁹	W	W	--	--	W	W
Unspecified:¹⁰						
Reported	328	4,080	516	7,750	144	1,640
Estimated	3,660	44,500	691	20,800	129	999
Total	6,560	81,100	1,250	31,300	2,050	26,000
Unspecified districts						
Use	Quantity	Value				
Construction:						
Coarse aggregate (+1½ inch) ²	--	--				
Coarse aggregate, graded ³	--	--				
Fine aggregate (-¾ inch) ⁴	--	--				
Coarse and fine aggregates ⁵	357	1,560				
Other construction materials	--	--				
Agricultural ⁶	--	--				
Chemical and metallurgical ⁷	--	--				
Special ⁸	--	--				
Other miscellaneous uses and specified uses not listed ⁹	--	--				
Unspecified:¹⁰						
Reported	4,220	47,900				
Estimated	--	--				
Total	4,580	49,400				

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

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

²Includes macadam, riprap and jetty stone, filter stone, and unspecified coarse aggregate.

³Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and unspecified graded coarse aggregate.

⁴Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and unspecified fine aggregate.

⁵Includes graded road base or subbase, unpaved road surface, terrazzo and exposed aggregate, crusher run, and unspecified coarse and fine aggregates.

⁶Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.

⁷Includes cement manufacture and flux stone.

⁸Includes asphalt fillers or extenders and roofing granules.

⁹Includes drain fields, waste material, lightweight aggregate (slate), pipe bedding, refractory stone (including ganister), and other miscellaneous uses.

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

TABLE 6
WASHINGTON: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2012,
BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	5,300	\$42,200	\$7.96
Plaster and gunite sands	28	455	16.25
Concrete products (blocks, bricks, pipe, decorative, and so forth)	3	33	11.00
Asphaltic concrete aggregates and other bituminous mixtures	501	2,570	5.14
Road base and coverings	3,260	23,500	7.23
Fill	1,280	7,680	5.99
Snow and ice control	55	232	4.22
Railroad ballast	140	996	7.11
Other miscellaneous uses ²	65	610	9.38
Unspecified: ³			
Reported	5,430	44,300	8.17
Estimated	12,000	91,800	7.65
Total or average	28,100	214,000	7.64

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

²Includes filtration and golf course.

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

TABLE 7
WASHINGTON: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2013,
BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	3,490	\$30,000	\$8.60
Plaster and gunite sands	34	248	7.29
Concrete products (blocks, bricks, pipe, decorative, and so forth)	5	75	15.00
Asphaltic concrete aggregates and other bituminous mixtures	212	1,290	6.08
Road base and coverings ²	2,460	18,400	7.49
Fill	871	3,770	4.33
Snow and ice control	205	1,180	5.75
Railroad ballast	12	188	15.67
Other miscellaneous uses ³	179	1,270	7.08
Unspecified: ⁴			
Reported	5,900	46,900	7.95
Estimated	16,100	121,000	7.50
Total or average	29,500	224,000	7.60

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).

³Includes filtration and golf course.

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

TABLE 8
WASHINGTON: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2012, 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 and concrete products ²	4,470	35,700	W	W	129	1,100
Asphaltic concrete aggregates and road base materials	1,740	13,000	W	W	551	3,380
Fill	756	4,650	45	238	481	2,790
Snow and ice control	12	47	W	W	W	W
Railroad ballast	110	805	W	W	W	W
Other miscellaneous uses ³	21	203	26	307	18	100
Unspecified: ⁴						
Reported	2,480	20,400	1,550	12,400	1,400	11,500
Estimated	11,100	85,000	449	3,440	439	3,360
Total	20,700	160,000	4,300	32,100	3,060	22,400

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.

²Includes plaster and gunite sands.

³Includes filtration and golf course.

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

TABLE 9
WASHINGTON: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2013, 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 and concrete products ²	2,200	19,000	W	W	W	W
Asphaltic concrete aggregates and road base materials ³	1,480	10,900	W	W	W	W
Fill	753	3,270	108	442	10	59
Snow and ice control	W	W	W	W	W	W
Railroad ballast	W	W	W	W	W	W
Other miscellaneous uses ⁴	105	740	59	362	4	36
Unspecified: ⁵						
Reported	2,580	20,400	1,960	15,200	1,370	11,300
Estimated	13,900	105,000	1,280	9,100	890	6,490
Total	21,100	160,000	5,230	39,400	3,170	24,900

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.

²Includes plaster and gunite sands.

³Includes road and other stabilization (cement).

⁴Includes filtration and golf course.

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