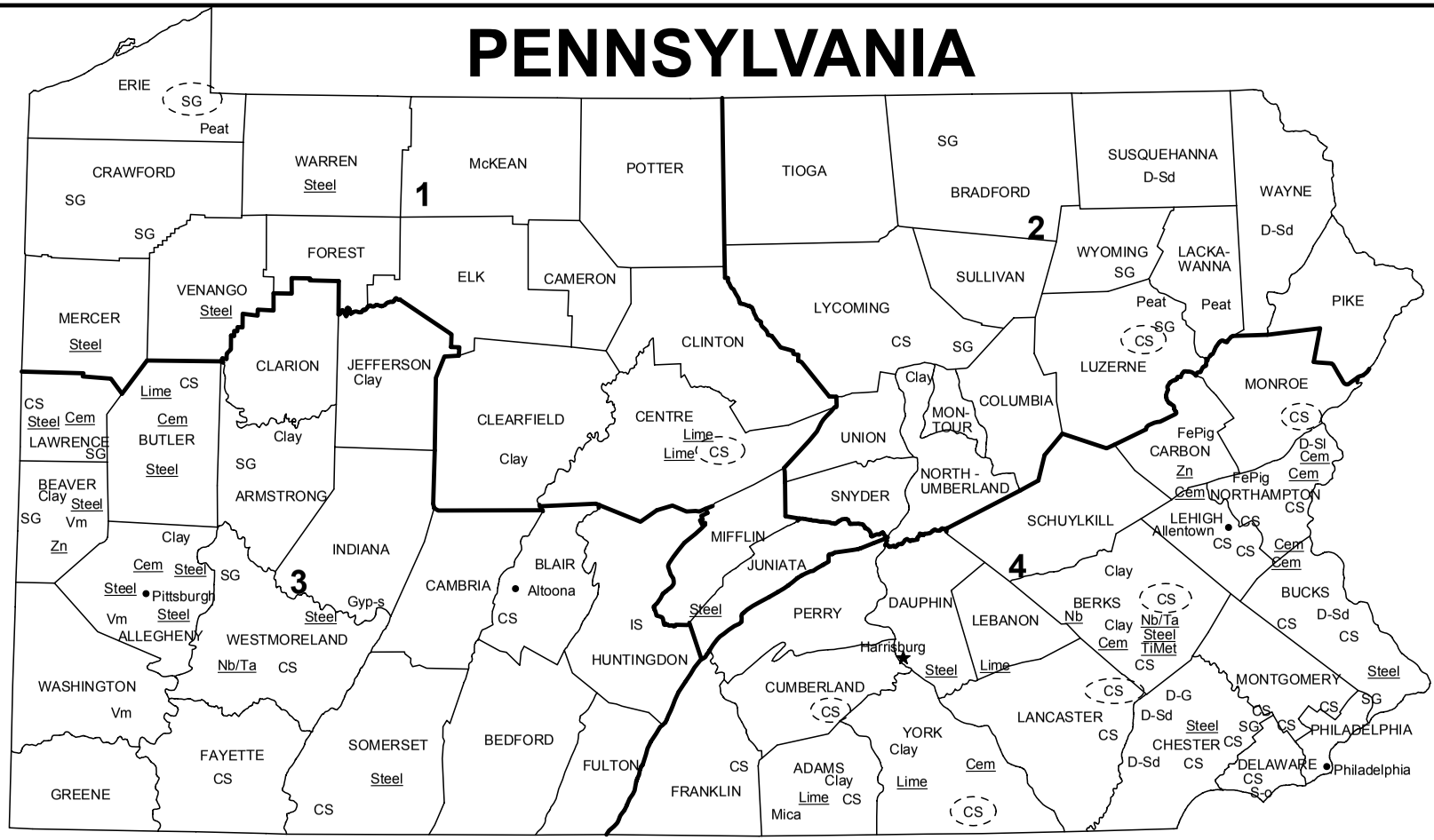
PENNSYLVANIA



LEGEND

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

MINERAL SYMBOLS

(Major producing areas)

Cem	Cement plant
Clay	Common clay
CS	Crushed stone
D-G	Dimension granite
D-Sd	Dimension sandstone
D-Sl	Dimension slate
FePig	Iron oxide pigments
Gyp-s	Synthetic gypsum
IS	Industrial sand
Lime	Lime plant
Mica	Mica
Nb	Columbium (niobium) plant
Nb/Ta	Columbium (niobium) and tantalum plant
Peat	Peat
S-o	Sulfur (oil)
SG	Construction sand and gravel
Steel	Steel plant
TiMet	Titanium metal plant
Vm	Vermiculite
Zn	Zinc plant
⬭	Concentration of mineral operations

0 50 Kilometers

Source: Pennsylvania Bureau of Topographic and Geologic Survey/U.S. Geological Survey (2004)

THE MINERAL INDUSTRY OF PENNSYLVANIA

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Pennsylvania Bureau of Topographic and Geologic Survey for collecting information on all nonfuel minerals.

In 2004, Pennsylvania's nonfuel raw mineral production was valued[1] at $1.4 billion, based upon annual U.S. Geological Survey (USGS) data. This was a more than 10%, or $130 million, increase from the $1.27 billion total value for 2003[2], which was down 1.6% from 2002. Pennsylvania remained 11th in rank in the Nation in total nonfuel mineral production value and accounted for more than 3% of the U.S. total value. [The actual totals for 2002-03 are higher than those shown in table 1; industrial sand and gravel and tripoli data have been withheld (company proprietary data).]

In 2004, Pennsylvania continued to be among the Nation's leading States in the production of crushed stone, portland cement, and construction sand and gravel (descending order of value). These mineral commodities accounted for more than 88% of the Pennsylvania's total nonfuel raw mineral production value. Lime accounted for 7% of the value (table 1) followed by masonry cement and industrial sand and gravel. In 2004, led especially by portland cement and crushed stone, nearly all the State's mineral commodities increased in value. With production increases of nearly 9% in portland cement and 7.7% in crushed stone, the commodities' values rose $52 million and $38 million, respectively (table 1). Other mineral commodities with significant increases in value were construction sand and gravel, up $12 million, lime, up about $10 million, and masonry cement (company proprietary data). Only the value of dimension stone was down, slightly.

In 2003, the largest changes in value were in crushed stone and cement (portland and masonry). Crushed stone's value rose by $19 million and cement's value decreased by $37 million, resulting in the State's net decrease in value for the year. Other changes in value of $1 million or more included lime, up $2.5 million, and dimension stone, down $1.5 million (table 1).

In 2004, Pennsylvania continued to be ranked second in the Nation in the quantity of crushed stone produced, third in portland cement, fourth of 4 States that produce tripoli, and sixth in lime and masonry cement. The State rose to fifth from eighth in the production of peat, and substantial quantities of construction sand and gravel, industrial sand and gravel, dimension stone, and common clays were produced in the State.

Pennsylvania is exclusively an industrial mineral- and coal-producing State; metals that were produced in the State were processed from materials acquired from foreign and other domestic sources. The State rose to third from fifth in the Nation in the production of raw steel in 2004, with a 13% increase in raw steel output to 6.26 million metric tons (American Iron and Steel Institute, 2005, p. 76).

Reference Cited

American Iron and Steel Institute, 2005, Pig iron and raw steel production-Final 2004, AIS-7, subsection of Annual statistical report 2004: Washington, DC, American Iron and Steel Institute, 130 p.

[1]The 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 2004 USGS mineral production data published in this chapter are those available as of December 2005. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—also can be retrieved over the Internet at URL http://minerals.usgs.gov/minerals.

[2]Values, percentage calculations, and rankings for 2003 may differ from the Minerals Yearbook, Area Reports: Domestic 2003, Volume II, owing to the revision of preliminary 2003 to final 2003 data. Data and rankings for 2004 are considered to be final and are not likely to change significantly.

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

(Thousand metric tons and thousand dollars)

Mineral	2002		2003		2004	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement:						
Masonry	341	38,000 [e]	342	35,900 [e]	W	W
Portland	6,130	456,000 [e]	5,720	421,000 [e]	6,230	473,000 [e]
Clays, common	779	2,560	750	2,240	822	3,270
Gemstones	NA	1	NA	1	NA	1
Lime	1,230	87,600	1,190	90,100	1,220	100,000
Peat	3	132	8	219	11	307
Sand and gravel, construction	18,100	115,000	18,400	115,000	20,000	127,000
Stone:						
Crushed	102,000	578,000 [r]	104,000	597,000	112,000	635,000
Dimension	37	11,900	32	10,400	33	10,100
Combined values of sand and gravel (industrial), tripoli, and value indicated by symbol W	XX	(3)	XX	(3)	XX	55,800
Total	XX	1,290,000	XX	1,270,000	XX	1,400,000

[e]Estimated. [r]Revised. NA Not available. W Withheld to avoid disclosing company proprietary data. Withheld values included in "Combined values" data.
XX Not applicable.

[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]Value withheld to avoid disclosing company proprietary data.

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

Kind	2002				2003				2004			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone[2]	105 r	60,800 r	$357,000 r	$5.87 r	104	61,600	$352,000	$5.71	102	65,500	$368,000	$5.61
Dolomite	15	13,000	68,400	5.25	14	14,300	79,100	5.55	14	16,000	89,800	5.60
Marble	1	W	W	8.12	1	W	W	6.24	1	W	W	6.11
Granite	7	4,450	25,300	5.68	7	4,680	26,700	5.70	7	5,120	29,300	5.73
Traprock	9	5,150	25,600	4.97	9	4,690	28,200	6.01	8	5,710	34,000	5.96
Sandstone and quartzite	43	10,800	60,500	5.58	37	11,100	65,600	5.89	35	10,600	63,000	5.92
Slate	1	W	W	4.91	1	W	W	5.51	1	W	W	5.51
Miscellaneous stone	13	6,240	34,700	5.57	12	6,860	40,100	5.84	13	8,160	46,800	5.73
Total or average	XX	102,000	578,000 r	5.69 r	XX	104,000	597,000	5.73	XX	112,000	635,000	5.67

[r]Revised. W Withheld to avoid disclosing company proprietary data; included in "Total or average." XX Not applicable.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes "limestone-dolomite" reported with no distinction between the two.

TABLE 3a

PENNSYLVANIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2003, BY USE[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1½ inch):			
Macadam	188	$1,480	$7.88
Riprap and jetty stone	1,020	6,700	6.58
Filter stone	324	2,380	7.35
Other coarse aggregates	2,090	10,100	4.83
Total or average	3,630	20,700	5.70
Coarse aggregate, graded:			
Concrete aggregate, coarse	2,980	19,000	6.38
Bituminous aggregate, coarse	4,560	29,300	6.41
Bituminous surface-treatment aggregate	2,040	14,400	7.05
Railroad ballast	824	7,000	8.50
Other graded coarse aggregates	5,410	31,700	5.86
Total or average	15,800	101,000	6.41
Fine aggregate (-⅜ inch):			
Stone sand, concrete	545	4,560	8.37
Stone sand, bituminous mix or seal	2,230	15,800	7.07
Screening, undesignated	1,520	8,710	5.73
Other fine aggregates	1,790	12,000	6.72
Total or average	6,080	41,100	6.75
Coarse and fine aggregates:			
Graded road base or subbase	9,440	55,900	5.92
Unpaved road surfacing	425	3,160	7.44
Crusher run or fill or waste	1,490	6,250	4.20
Other coarse and fine aggregates	5,240	27,100	5.16
Total or average	16,600	92,300	5.56
Other construction materials	1,190	6,810	5.72
Agricultural, limestone	379	4,220	11.12
Chemical and metallurgical:			
Cement manufacture	6,220	23,000	3.69
Lime manufacture	1,360	9,910	7.28
Flux stone	W	W	6.55
Chemical stone	W	W	4.63
Sulfur oxide removal	401	3,200	7.97
Total or average	8,150	37,100	4.55
Special:			
Mine dusting or acid water treatment	W	W	19.84
Whiting or whiting substitute	W	W	33.92
Other fillers or extenders	528	6,690	12.67
Total or average	689	12,000	17.39
Other miscellaneous uses and specified uses not listed	662	4,520	6.83
Unspecified:[2]			
Reported	30,000	168,000	5.62
Estimated	21,000	110,000	5.14
Total or average	51,000	277,000	5.42
Grand total or average	104,000	597,000	5.73

W Withheld to avoid disclosing company proprietary data; included in "Total or average."

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

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

TABLE 3b

PENNSYLVANIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2004, BY USE[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1½ inch):			
Macadam	W	W	$7.32
Riprap and jetty stone	970	$7,240	7.46
Filter stone	513	3,340	6.51
Other coarse aggregates	1,130	7,860	6.98
Total or average	2,610	18,400	7.07
Coarse aggregate, graded:			
Concrete aggregate, coarse	2,250	14,400	6.40
Bituminous aggregate, coarse	4,550	29,500	6.47
Bituminous surface-treatment aggregate	1,740	11,500	6.58
Railroad ballast	921	7,700	8.36
Other graded coarse aggregates	3,710	22,900	6.15
Total or average	13,200	85,800	6.51
Fine aggregate (-⅜ inch):			
Stone sand, concrete	560	3,640	6.51
Stone sand, bituminous mix or seal	2,340	14,800	6.32
Screening, undesignated	836	5,200	6.22
Other fine aggregates	2,220	15,200	6.85
Total or average	5,960	38,800	6.52
Coarse and fine aggregates:			
Graded road base or subbase	4,660	24,900	5.35
Unpaved road surfacing	403	3,070	7.61
Crusher run or fill or waste	1,490	6,210	4.18
Roofing granules	(2)	(2)	3.78
Other coarse and fine aggregates	5,610	29,900	5.34
Total or average	12,100	64,100	5.28
Other construction materials	1,150	6,060	5.29
Agricultural:			
Agricultural limestone	783	8,810	11.25
Poultry grit and mineral food	(3)	(3)	5.47
Chemical and metallurgical:			
Cement manufacture	7,270	26,900	3.71
Lime manufacture	618	2,580	4.17
Flux stone	(3)	(3)	6.72
Sulfur oxide removal	279	2,180	7.83
Total or average	8,160	31,700	3.88
Special:			
Whiting or whiting substitute	(3)	(3)	15.17
Other fillers or extenders	102	1,280	12.51
Other miscellaneous uses and specified uses not listed	580	3,980	6.87
Unspecified:[4]			
Reported	38,100	215,000	5.64
Estimated	29,000	160,000	5.49
Total or average	67,100	374,000	5.58
Grand total or average	112,000	635,000	5.67

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

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

[2]Withheld to avoid disclosing company proprietary data; included with "Other coarse and fine aggregates."

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

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

TABLE 4a

PENNSYLVANIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2003, BY USE AND DISTRICT[1]

(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	W	W
Coarse aggregate, graded[3]	W	W	W	W	4,090	27,500
Fine aggregate (-⅜ inch)[4]	482	2,730	W	W	W	W
Coarse and fine aggregates[5]	W	W	W	W	3,510	19,500
Other construction materials	--	--	--	--	82	514
Agricultural[6]	--	--	W	W	W	W
Chemical and metallurgical[7]	W	W	W	W	1,810	8,870
Special[8]	--	--	W	W	102	1,880
Other miscellaneous uses and specified uses not listed	--	--	--	--	507	3,160
Unspecified:[9]						
Reported	1,770	10,000	3,160	17,900	1,710	9,790
Estimated	680	3,600	2,900	14,000	6,600	37,000
Total	4,470	27,400	8,920	49,300	22,000	131,000

	District 4	
	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch)[2]	1,380	9,230
Coarse aggregate, graded[3]	10,600	67,300
Fine aggregate (-⅜ inch)[4]	3,730	24,500
Coarse and fine aggregates[5]	11,400	63,200
Other construction materials	1,110	6,290
Agricultural[6]	W	W
Chemical and metallurgical[7]	5,240	19,500
Special[8]	W	W
Other miscellaneous uses and specified uses not listed	155	1,370
Unspecified:[9]		
Reported	23,300	131,000
Estimated	11,000	54,000
Total	68,800	389,000

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, stone sand (concrete), and other fine aggregates.

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

[6]Includes agricultural limestone.

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

[8]Includes mine dusting or acid water treatment, whiting or whiting substitute, and other fillers or extenders.

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

TABLE 4b

PENNSYLVANIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2004, BY USE AND DISTRICT[1]

(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	968	6,940
Coarse aggregate, graded[3]	W	W	W	W	3,340	21,400
Fine aggregate (-⅜ inch)[4]	W	W	W	W	1,640	9,590
Coarse and fine aggregates[5]	W	W	W	W	3,480	18,500
Other construction materials	--	--	--	--	172	542
Agricultural[6]	--	--	W	W	W	W
Chemical and metallurgical[7]	--	--	W	W	W	W
Special[8]	--	--	W	W	--	--
Other miscellaneous uses and specified uses not listed	--	--	--	--	580	3,980
Unspecified:[9]						
Reported	2,140	12,100	4,230	24,000	1,360	9,390
Estimated	2,400	13,000	2,500	12,000	7,900	44,000
Total	4,950	27,500	9,760	54,300	21,300	127,000

Use	District 4	
	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch)[2]	1,360	9,950
Coarse aggregate, graded[3]	8,560	56,300
Fine aggregate (-⅜ inch)[4]	3,680	25,300
Coarse and fine aggregates[5]	7,480	39,500
Other construction materials	973	5,520
Agricultural[6]	W	W
Chemical and metallurgical[7]	W	W
Special[8]	W	W
Other miscellaneous uses and specified uses not listed	--	--
Unspecified:[9]		
Reported	30,400	170,000
Estimated	16,000	91,000
Total	76,100	426,000

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, stone sand (concrete), and other fine aggregates.

[5]Includes crusher run or fill or waste, graded road base or subbase, roofing granules, unpaved road surfacing, and other coarse and fine aggregates.

[6]Includes agricultural limestone and poultry grit and mineral food.

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

[8]Includes whiting or whiting substitute and other fillers or extenders.

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

TABLE 5a
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2003, BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	3,440	$24,600	$7.14
Plaster and gunite sands	32	245	7.66
Concrete products (blocks, bricks, pipe, decorative, etc.)	277	1,790	6.47
Asphaltic concrete aggregates and other bituminous mixtures	1,040	5,750	5.55
Road base and coverings	1,030	5,390	5.23
Fill	2,520	12,400	4.93
Snow and ice control	213	1,030	4.82
Railroad ballast	25	143	5.72
Other miscellaneous uses	748	5,560	7.44
Unspecified:[2]			
Reported	6,360	41,700	6.56
Estimated	2,700	17,000	6.11
Total or average	18,400	115,000	6.25

[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Reported and estimated production without a breakdown by end use.

TABLE 5b
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2004,
BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)[2]	2,030	$15,900	$7.85
Asphaltic concrete aggregates and other bituminous mixtures	1,110	8,330	7.53
Road base and coverings	1,140	6,880	6.01
Fill	2,900	14,500	5.02
Snow and ice control	421	1,650	3.91
Other miscellaneous uses[3]	311	2,790	8.98
Unspecified:[4]			
Reported	5,070	33,000	6.52
Estimated	7,100	43,000	6.14
Total or average	20,000	127,000	6.32

[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes plaster and gunite sands.
[3]Includes railroad ballast.
[4]Reported and estimated production without a breakdown by end use.

TABLE 6a
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2003,
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]	609	3,990	687	5,110	W	W
Asphaltic concrete aggregates and other bituminous mixtures	527	2,830	214	1,270	294	1,650
Road base and coverings	487	2,490	131	754	323	1,640
Fill	280	1,160	32	178	824	4,280
Snow and ice control	148	615	W	W	50	299
Other miscellaneous uses[3]	287	1,720	218	1,240	1,880	12,300
Unspecified:[4]						
Reported	673	4,520	622	4,290	3,760	25,200
Estimated	900	5,200	1,100	6,400	400	2,500
Total	3,920	22,500	2,970	19,200	7,560	47,800

	District 4		Unspecified districts	
	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	W	W	--	--
Asphaltic concrete aggregates and other bituminous mixtures	--	--	--	--
Road base and coverings	86	486	--	--
Fill	1,380	6,780	--	--
Snow and ice control	W	W	--	--
Other miscellaneous uses[3]	851	8,080	--	--
Unspecified:[4]				
Reported	1,140	7,420	160	264
Estimated	300	2,400	--	--
Total	3,790	25,100	160	264

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses." -- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes plaster and gunite sands.
[3]Includes railroad ballast.
[4]Reported and estimated production without a breakdown by end use.

TABLE 6b
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2004,
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 aggregates (including concrete sand)[2]	744	5,780	W	W	W	W
Asphaltic concrete aggregates and other bituminous mixtures	W	W	49	282	W	W
Road base and coverings	680	4,190	94	551	270	1,310
Fill	306	1,300	96	391	418	1,850
Snow and ice control	262	936	W	W	W	W
Other miscellaneous uses[3]	983	8,400	275	2,370	845	3,870
Unspecified:[4]						
Reported	540	3,300	1,160	7,540	2,510	17,100
Estimated	1,600	10,000	1,500	9,400	3,400	21,000
Total	5,140	34,200	3,180	20,600	7,410	45,000

Use	District 4		Unspecified districts	
	Quantity	Value	Quantity	Value
Concrete aggregates (including concrete sand)[2]	586	5,610	--	--
Asphaltic concrete aggregates and other bituminous mixtures	--	--	--	--
Road base and coverings	100	817	--	--
Fill	2,080	11,000	--	--
Snow and ice control	5	33	--	--
Other miscellaneous uses[3]	118	1,420	--	--
Unspecified:[4]				
Reported	856	5,070	--	--
Estimated	400	2,600	160	260
Total	4,150	26,600	160	260

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses." -- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes plaster and gunite sands.
[3]Includes railroad ballast.
[4]Reported and estimated production without a breakdown by end use.