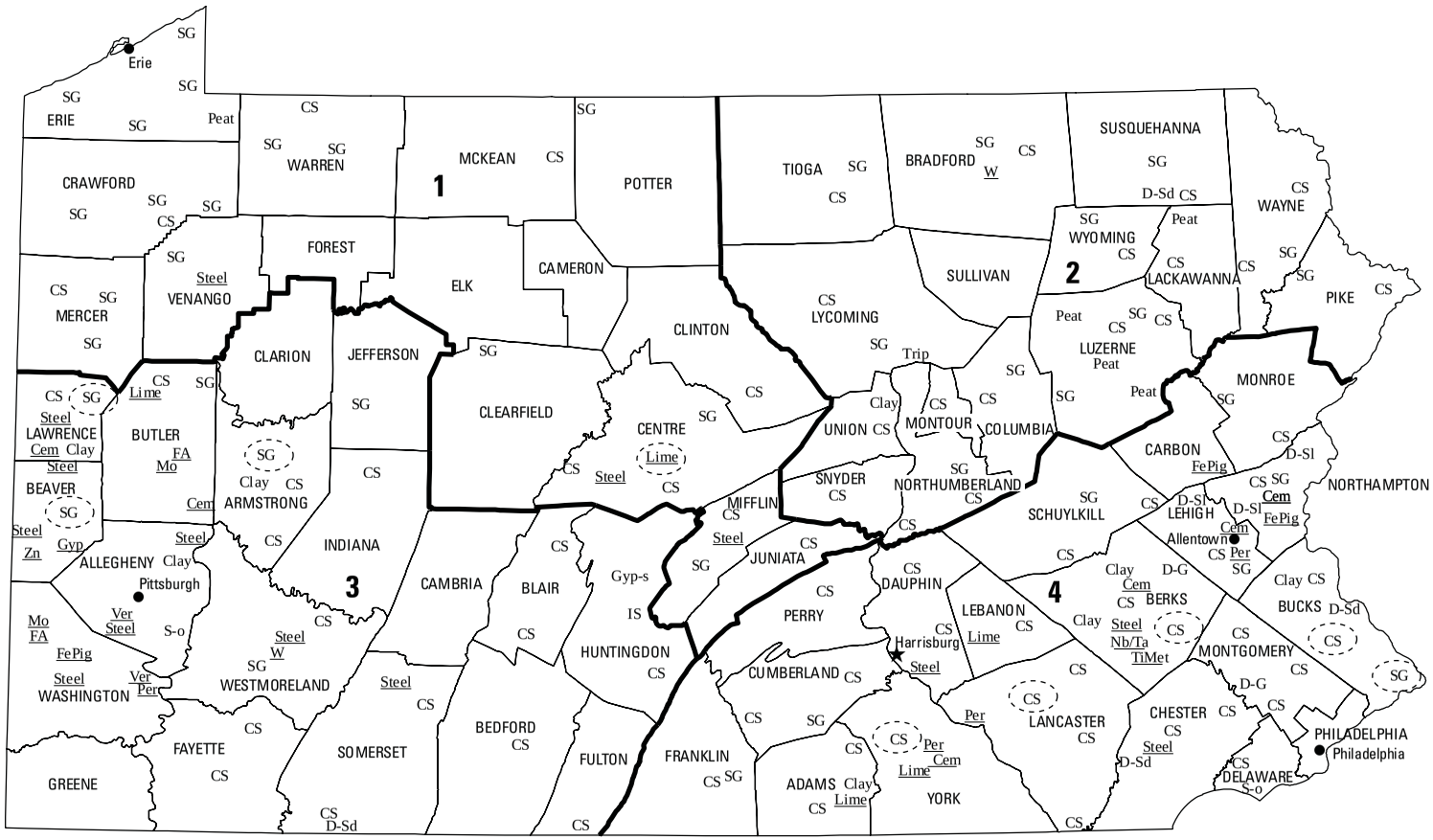
2007 Minerals Yearbook

PENNSYLVANIA [ADVANCE RELEASE]

U.S. Department of the Interior
U.S. Geological Survey

August 2010

PENNSYLVANIA



LEGEND

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

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 plant
FA	Ferroalloys plant
Gyp	Gypsum plant
Gyp-s	Synthetic gypsum
IS	Industrial sand
Lime	Lime plant
Mo	Molybdenum plant
Nb/Ta	Niobium and tantalum plant
Peat	Peat
Per	Perlite plant
S-o	Sulfur (oil)
SG	Construction sand and gravel
Steel	Steel plant
TiMet	Titanium metal plant
Trip	Tripoli
W	Tungsten plant
Ver	Vermiculite plant
Zn	Zinc plant
⬭	Concentration of mineral operations

Source: Pennsylvania Bureau of Topographic and Geological Survey/U.S. Geological Survey (2007).

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 2007, Pennsylvania's nonfuel raw mineral production[1] was valued at $1.84 billion, based upon annual U.S. Geological Survey (USGS) data. This was an $110 million, or 6.4%, increase from the $1.73 billion total value for 2006, which had increased by $170 million, or by nearly 11%, from 2005 to 2006. Pennsylvania ranked 13th in the Nation (12th in 2006) in total nonfuel mineral production value and accounted for more than 2.6% of the U.S. total value. [The actual totals for 2005–07 are higher than those shown in table 1; tripoli data have been withheld (company proprietary data).]

In 2007, Pennsylvania continued to be among the Nation's leading States in the production of crushed stone and cement (portland and masonry) (descending order of value). These two mineral commodities accounted for more than 84% of Pennsylvania's total nonfuel raw mineral production value. Construction sand and gravel was the next highest accounting for nearly 8% of the total, followed by lime with slightly more than 6% and industrial sand and gravel and dimension stone, with slightly less than 1% each (table 1).

Crushed stone and construction sand and gravel led the State's increase in nonfuel mineral production value in 2007. Despite relatively small decreases in the production of each mineral commodity, the production value of crushed stone rose by $139 million, or by more than 17%, and construction sand and gravel was up by $17 million, or by 13%. These increases were offset somewhat by decreases in the values of portland and masonry cement, down by a combined total of nearly $43 million, owing mostly to decreases in production. Smaller decreases of $3 million and $1 million, respectively took place in lime, and common clays (table 1).

In 2007, Pennsylvania continued to rank third in the Nation in the quantity of portland cement produced, fourth of four tripoli-producing States, and seventh in the production of lime. The State rose in rank to second from third in the production of crushed stone, and it decreased to seventh from sixth in masonry cement production. Additionally, substantial quantities of construction sand and gravel, industrial sand and gravel, dimension stone, and common clays were produced in the State.

With regard to raw minerals and mineral materials, Pennsylvania was exclusively an industrial mineral- and coal-producing State, producing no primary metals from ores mined within the State. Metals that were produced in the State, principally steel, as well as ferroalloys, molybdenum, niobium, tantalum, titanium, tungsten, and zinc, were processed from materials acquired from other domestic and foreign sources. Pennsylvania continued to rank third in the Nation in the production of raw steel in 2007, with an output of 6.16 million metric tons (Mt), slightly down from the 6.18 Mt produced in 2006 (American Iron and Steel Institute, 2008, p. 74).

The Pennsylvania Bureau of Topographic and Geologic Survey, within the Pennsylvania Geological Survey[2] (PGS), provided the following narrative information. The PGS continued geologic operations conducting surveys and research of the geology, mineral resources, and topography of the State and was an active participant in the STATEMAP program. STATEMAP is a component of the congressionally mandated National Cooperative Geologic Mapping Program (NCGMP), through which the USGS distributes Federal funds to support geologic mapping efforts through a competitive funding process. The NCGMP has three primary components: (1) FEDMAP, which funds Federal geologic mapping projects, (2) STATEMAP, which is a matching-funds grant program with State geological surveys, and (3) EDMAP, a matching-funds grant program with universities that has a goal to train the next generation of geologic mappers.

The PGS produced 21 new publications during 2007, including 5 bedrock geologic maps and 14 surficial geologic maps that were funded by the STATEMAP program.

The PGS bedrock geologic map projects included digital maps covering the following areas of Pennsylvania: the Allensville quadrangle, Huntingdon and Mifflin Counties; the Conestoga and Quarryville quadrangles, Lancaster County; the southern portion of the Gap quadrangle, Lancaster County; the northern portion of the Holtwood and Wakefield quadrangles, Lancaster and York Counties; coal-resource maps and digital datasets of part of the Windber quadrangle, Somerset County; and a preliminary bedrock geologic map was produced of the middle portion of the Susquehanna River valley, Cumberland, Dauphin, and Perry Counties.

Digital maps of surficial geology were produced covering the following areas: the Avoca 7.5-minute quadrangle, Lackawanna and Luzerne Counties; the Carbondale 7.5-minute quadrangle, Lackawanna County; the Dalton 7.5-minute quadrangle, Lackawanna and Wyoming Counties; the Dutch Mountain 7.5-minute quadrangle, Luzerne, Sullivan, and Wyoming Counties; the Elk Grove 7.5-minute quadrangle, Columbia, Lycoming, and Sullivan Counties; the Harveys Lake 7.5-minute quadrangle, Luzerne County; the Laporte 7.5-minute quadrangle, Sullivan County; the Lenoxville 7.5-minute quadrangle, Lackawanna, Susquehanna, and Wyoming Counties; the Lopez 7.5-minute quadrangle, Luzerne, Sullivan, and Wyoming Counties; the Moscow 7.5-minute quadrangle, Lackawanna County; the Noxen 7.5-minute quadrangle, Luzerne

[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 2007 USGS mineral production data published in this chapter are those available as of June 2009. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at URL http://minerals.usgs.gov/minerals.

[2]John H. Barnes, P.G., Supervisory Geologist with the Pennsylvania Geological Survey, authored the text of the State mineral industry information provided by that State agency.

and Wyoming Counties; the Red Rock 7.5-minute quadrangle, Columbia, Luzerne, and Sullivan Counties; the Sweet Valley 7.5-minute quadrangle, Luzerne County; and the Trout Run 7.5-minute quadrangle, Lycoming County.

In addition, the PGS continued its program of making older publications available on the Internet in a digital format that can be read or downloaded at no charge. These included geology and mineral resource atlases of two areas, an information circular on flagstones, and a geologic map of the Commonwealth (Glaeser, 1969; Geyer, 1970; Root, 1977; and Pennsylvania Geological Survey, 2007).

More information regarding the geology, hydrology, mineral resources, and mining history of Pennsylvania, as well as a variety of PGS publications is available from the Pennsylvania Geological Survey. Much of this information, PGS contact information, and several educational series publications regarding both nonfuel and fuel minerals are available over the Internet at http://www.dcnr.state.pa.us/topogeo/. Complete information on obtaining all Pennsylvania Geological Survey publications can be found in the PGS listing of publications, which is online at http://www.dcnr.state.pa.us/topogeo/pub/lop.pdf.

References Cited

American Iron and Steel Institute, 2008, Table 24—Raw steel production by States, *in* American Iron and Steel Institute—AISI 2007 ASR: Washington, DC, American Iron and Steel Institute, 126 p.

Geyer, A.R., 1970, Geology, mineral resources and environmental geology of the Palmyra quadrangle, Lebanon and Dauphin Counties: Middletown, PA, Pennsylvania Geological Survey, 4th ser., Atlas 157d, 46 p. (Accessed August 12, 2010, at http://www.dcnr.state.pa.us/topogeo/pub/atlas/a157d.aspx.)

Glaeser, J.D., 1969, Geology of flagstones in the Endless Mountains region, northern Pennsylvania: Middletown, PA, Pennsylvania Geological Survey, 4th ser., Information Circular 66, 14 p. (Accessed August 12, 2010, at http://www.dcnr.state.pa.us/topogeo/pub/information/ic066.aspx.)

Pennsylvania Geological Survey, 2007, Geologic map of Pennsylvania (4th printing, slightly revised from the 3d ed. of 1990): Middletown, PA, Pennsylvania Geological Survey Map 7, scale 1:2,000,000, 1 page, 8.5 x 11 inches. (Accessed August 12, 2010, at http://www.dcnr.state.pa.us/topogeo/maps/map7.pdf.)

Root, S.I., 1977, Geology and mineral resources of the Harrisburg West area, Cumberland and York Counties, Pennsylvania: Middletown, PA, Pennsylvania Geological Survey, 4th ser., Atlas 148ab, 106 p. (Accessed August 12, 2010, at http://www.dcnr.state.pa.us/topogeo/pub/atlas/a148ab.aspx.)

TABLE 1

NONFUEL RAW MINERAL PRODUCTION IN PENNSYLVANIA[1, 2]

(Thousand metric tons and thousand dollars)

Mineral	2005		2006		2007	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement:						
Masonry	399	49,700 [e]	384	52,200 [e]	304	40,500 [e]
Portland	6,290	554,000 [e]	6,020	599,000 [e]	5,660	568,000 [e]
Clays, common	705	3,460	742	5,630	683	4,700
Gemstones, natural	NA	1	NA	1	NA	1
Lime	1,100	104,000	1,160	115,000	1,100	112,000
Peat	7	210	1	52	2	79
Sand and gravel:						
Construction	17,000	111,000	18,400	126,000	18,300	143,000
Industrial	711	15,400	696	15,500	685	15,800
Stone:						
Crushed	107,000	713,000	113,000 [r]	805,000 [r]	109,000	944,000
Dimension	35	11,800	38	12,800	31	12,600
Tripoli	W	W	W	W	W	W
Total	XX	1,560,000	XX	1,730,000 [r]	XX	1,840,000

[e]Estimated. [r]Revised. NA Not available. W Withheld to avoid disclosing company proprietary 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.

TABLE 2

PENNSYLVANIA: CRUSHED STONE SOLD OR USED, BY TYPE[1]

Type	2006 Number of quarries	2006 Quantity (thousand metric tons)	2006 Value (thousands)	2007 Number of quarries	2007 Quantity (thousand metric tons)	2007 Value (thousands)
Limestone[2]	105 r	64,700 r	$461,000 r	107	60,500	$556,000
Dolomite	11	11,800	82,200	16	11,800	93,100
Marble	1	169	1,040	1	171	1,460
Granite	6	4,280	30,600	7	4,500	38,100
Traprock	8 r	6,740 r	49,000 r	9	7,210	56,900
Sandstone and quartzite	48 r	13,700 r	100,000 r	57	15,100	121,000
Slate	21 r	1,900	15,200	21	1,580	13,400
Miscellaneous stone	18 r	9,370 r	65,700 r	13	8,060	64,000
Total	XX	113,000 r	805,000 r	XX	109,000	944,000

[r]Revised. 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 3

PENNSYLVANIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2007, BY USE[1]

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Macadam	434	6,060
Riprap and jetty stone	784	8,440
Filter stone	414	3,700
Other coarse aggregate	2,140	18,300
Coarse aggregate, graded:		
Concrete aggregate, coarse	3,400	28,800
Bituminous aggregate, coarse	5,940	51,500
Bituminous surface-treatment aggregate	1,370	13,100
Railroad ballast	196	1,890
Other graded coarse aggregate	5,010	38,800
Fine aggregate (-⅜ inch):		
Stone sand, concrete	832	7,950
Stone sand, bituminous mix or seal	3,150	23,700
Screening, undesignated	679	4,760
Other fine aggregate	2,730	25,100
Coarse and fine aggregates:		
Graded road base or subbase	8,080	53,400
Unpaved road surfacing	403	3,920
Terrazzo and exposed aggregate	W	W
Crusher run or fill or waste	1,420	7,640
Roofing granules	W	W
Other coarse and fine aggregates	16,300	112,000
Other construction materials	555	3,960
Agricultural:		
Limestone	836	8,690
Poultry grit and mineral food	W	W
Other agricultural uses	139	7,920
Chemical and metallurgical:		
Cement manufacture	5,690	79,000
Lime manufacture	W	W
Flux stone	W	W
Chemical stone	W	W
Sulfur oxide removal	536	4,440
Special:		
Mine dusting or acid water treatment	W	W
Asphalt fillers or extenders	W	W
Whiting or whiting substitute	W	W
Other fillers or extenders	105	1,950
Other miscellaneous uses and specified uses not listed	530	6,950
Unspecified:[2]		
Reported	21,500	178,000
Estimated	23,000	197,000
Total	109,000	944,000

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

[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 4

PENNSYLVANIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2007, 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]	90	836	270	2,490	1,050	10,800
Coarse aggregate, graded[3]	W	W	W	W	4,550	39,300
Fine aggregate (-⅜ inch)[4]	W	W	727	5,460	W	W
Coarse and fine aggregates[5]	266	1,630	2,560	16,800	4,850	36,300
Other construction materials	--	--	12	87	427	3,050
Agricultural[6]	W	W	29	159	W	W
Chemical and metallurgical[7]	W	W	W	W	2,200	27,200
Special[8]	--	--	W	W	W	W
Other miscellaneous uses and specified uses not listed	--	--	10	139	519	6,810
Unspecified:[9]						
Reported	659	5,680	2,540	21,900	5,770	49,900
Estimated	2,200	19,000	5,200	45,000	2,800	24,000
Total	5,190	57,600	13,000	105,000	24,100	220,000

	District 4	
	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch)[2]	2,360	22,400
Coarse aggregate, graded[3]	9,500	80,800
Fine aggregate (-⅜ inch)[4]	4,880	41,900
Coarse and fine aggregates[5]	19,900	135,000
Other construction materials	116	824
Agricultural[6]	544	8,670
Chemical and metallurgical[7]	4,060	56,700
Special[8]	145	4,760
Other miscellaneous uses and specified uses not listed	--	--
Unspecified:[9]		
Reported	12,500	101,000
Estimated	13,000	109,000
Total	66,700	561,000

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, terrazzo and exposed aggregate, unpaved road surfacing, and other coarse and fine aggregates.

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

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

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

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

TABLE 5
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2007,
BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate and concrete products[2]	2,850	$27,900	$9.80
Asphaltic concrete aggregates and other bituminous mixtures	1,370	13,100	9.58
Road base and coverings	1,620	14,000	8.63
Fill	1,570	8,120	5.16
Snow and ice control	98	556	5.67
Roofing granules	4	59	14.75
Other miscellaneous uses[3]	291	4,260	14.63
Unspecified:[4]			
Reported	3,310	20,900	6.31
Estimated	7,200	54,000	7.49
Total or average	18,300	143,000	7.80

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

[2]Includes plaster and gunite sand.

[3]Includes railroad ballast.

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

TABLE 6
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2007,
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 and concrete products[2]	846	6,680	455	4520	W	W
Asphaltic concrete aggregates and road base materials	1,420	14,800	917	6,970	W	W
Fill	45	188	105	547	2	15
Snow and ice control	W	W	1	9	W	W
Roofing granules	--	--	4	59	--	--
Other miscellaneous uses[4]	256	3,670	--	--	1,280	12,200
Unspecified:[5]						
Reported	112	882	436	4,190	1,040	8,330
Estimated	1,900	15,000	1,400	9,800	3,000	24,000
Total	4,620	41,500	3,300	26,100	5,330	44,100

	District 4		Unspecified districts	
	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products[2]	W	W	24	189
Asphaltic concrete aggregates and road base materials	W	W	(3)	2
Fill	1,420	7,370	--	--
Snow and ice control	W	W	2	10
Roofing granules	--	--	--	--
Other miscellaneous uses[4]	1,020	10,800	--	--
Unspecified:[5]				
Reported	539	4,660	1,090	2,800
Estimated	500	4,300	400	800
Total	3,530	27,100	1,520	3,800

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]Less than ½ unit.

[4]Includes railroad ballast.

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