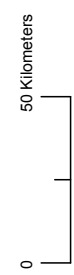
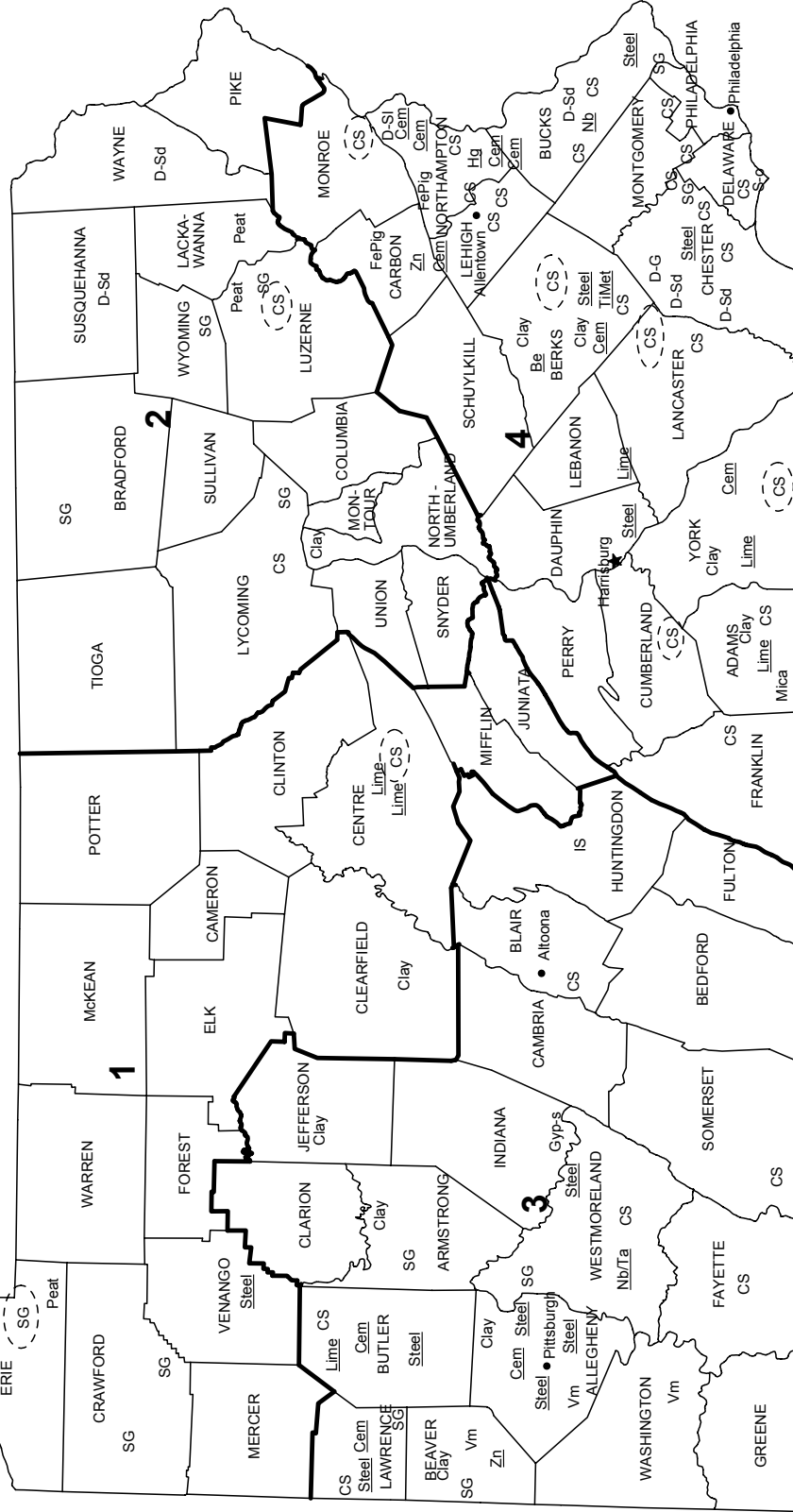


# PENNSYLVANIA



| LEGEND |   | MINERAL SYMBOLS |                                     | (Major producing areas) |  |
|--------|---|-----------------|-------------------------------------|-------------------------|--|
| —      | County boundary                         | Be              | Beryllium plant                     | Gyp-s                   | Synthetic gypsum                       |
| ★      | Capital                                 | Cem             | Cement plant                        | Hg                      | Mercury plant                          |
| •      | City                                    | Clay            | Common clay                         | IS                      | Industrial sand                        |
| —      | Crushed stone/sand and gravel districts | CS              | Crushed stone                       | Lime                    | Lime plant                             |
|        |   | D-G             | Dimension granite                   | Mica                    | Mica                                   |
|        |   | D-Sd            | Dimension sandstone                 | Nb                      | Columbium (niobium) plant              |
|        |   | D-Sl            | Dimension slate                     | Nb/Ta                   | Columbium (niobium) and tantalum plant |
|        |   | FePig           | Iron oxide pigments                 | Peat                    | Peat                                   |
|        |   | S-o             | Sulfur (oil)                        | SG                      | Construction sand and gravel           |
|        |   | Steel           | Steel plant                         | Steel                   | Steel plant                            |
|        |   | TiMet           | Titanium metal plant                | Vm                      | Vermiculite                            |
|        |   | Zn              | Zinc plant                          | Zn                      | Zinc plant                             |
|        |   | (Dashed circle) | Concentration of mineral operations | (Dashed circle)         | Concentration of mineral operations    |

Source: Pennsylvania Bureau of Topographic and Geologic Survey/U.S. Geological Survey (2002)

# 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 2002, the estimated value<sup>1</sup> of nonfuel mineral production for Pennsylvania was \$1.27 billion, based upon preliminary U.S. Geological Survey (USGS) data. This was about a 1.5% decrease from that of 2001.<sup>2</sup> In each of the 2 previous years, the State's mineral production increased in value by 2.5% in 2000 from that of 1999 and by more than 3% in 2001 from 2000. Pennsylvania rose to 9th from 10th in the Nation in total nonfuel raw mineral production value. Pennsylvania accounted for more than 3% of the U.S. total. (The actual totals for 2000-02 are higher than those shown in table 1; industrial sand and gravel and tripoli data have been withheld in order to protect company proprietary data.)

In 2002, Pennsylvania continued to be among the Nation's leading States in the production of crushed stone, cement (portland and masonry), and lime (descending order of value),

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<sup>1</sup>The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon 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 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>.

<sup>2</sup>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.

by value the state's leading nonfuel minerals. These mineral commodities accounted for about 89% of the State's total nonfuel raw mineral production value. Construction sand and gravel followed, accounting for most of the remaining 11% (table 1). In 2001, increases in the production and value of crushed stone, up \$44 million, construction sand and gravel, up \$18 million, accounted for nearly all of the increase in the State's nonfuel minerals economy. Smaller increases occurred in common clays and peat. The largest decreases were those of lime, down about \$7 million, and cement (masonry and portland), down a combined \$6.2 million (estimated). Industrial sand and gravel, dimension stone, and tripoli values were down slightly (table 1).

Based upon USGS estimates of the quantities produced in the 50 States in 2002, Pennsylvania remained third in portland cement, fourth of 4 States that produce tripoli, and sixth in lime and masonry cement. While the State rose to 10th from 13th in common clays, it dropped to 3d from 2d in the production of crushed stone and to 11th from 8th in dimension stone. Additionally, significant quantities of construction sand and gravel and industrial sand and gravel were produced in the State.

Pennsylvania is exclusively an industrial-mineral- and coal-producing State; metals that were produced in the State in 2002 were processed from materials acquired from foreign and other domestic sources. Pennsylvania ranked fifth in the Nation (fourth in 2001) in the production of raw steel, with an output of 5.78 million metric tons of raw steel (American Iron and Steel Institute, 2002, p. 76).

## Reference Cited

American Iron and Steel Institute, 2002, Annual report 2002: Washington, DC, American Iron and Steel Institute, 130 p.

TABLE 1  
NONFUEL RAW MINERAL PRODUCTION IN PENNSYLVANIA<sup>1,2</sup>

(Thousand metric tons and thousand dollars unless otherwise specified)

| Mineral                 | 2000        |                      | 2001     |                      | 2002 <sup>p</sup>  |                      |
|-------------------------|-------------|----------------------|----------|----------------------|--------------------|----------------------|
|                         | Quantity    | Value                | Quantity | Value                | Quantity           | Value                |
| <b>Cement:</b>          |             |                      |          |                      |                    |                      |
| Masonry                 | 324         | 33,700 <sup>e</sup>  | 329      | 38,500 <sup>e</sup>  | 340 <sup>e</sup>   | 40,000 <sup>e</sup>  |
| Portland                | 6,640       | 475,000 <sup>e</sup> | 6,540    | 464,000 <sup>e</sup> | 6,060 <sup>e</sup> | 430,000 <sup>e</sup> |
| Clays, common           | 840         | 1,870                | 758      | 2,320                | 1,020              | 4,420                |
| Gemstones               | NA          | 1                    | NA       | 1                    | NA                 | 1                    |
| Lime                    | 1,350       | 93,900               | 1,280    | 86,500               | 1,250              | 79,800               |
| Peat                    | 6           | 183                  | 9        | 206                  | 11                 | 200                  |
| <b>Sand and gravel:</b> |             |                      |          |                      |                    |                      |
| Construction            | 17,900      | 110,000              | 20,200   | 128,000              | 19,500             | 126,000              |
| Industrial              | W           | (3)                  | W        | (3)                  | W                  | (3)                  |
| <b>Stone:</b>           |             |                      |          |                      |                    |                      |
| Crushed                 | 97,900      | 520,000              | 101,000  | 564,000              | 100,000            | 580,000              |
| Dimension               | metric tons | 49,500               | 12,100   | 50,400               | 11,600             | 56,200               |
| Tripoli                 | W           | (3)                  | W        | (3)                  | W                  | (3)                  |
| Total                   | XX          | 1,250,000            | XX       | 1,290,000            | XX                 | 1,270,000            |

<sup>e</sup>Estimated. <sup>p</sup>Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data. XX Not applicable.

<sup>1</sup>Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>Value withheld to avoid disclosing company proprietary data.

TABLE 2  
PENNSYLVANIA: CRUSHED STONE SOLD OR USED, BY KIND<sup>1</sup>

| 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 <sup>2</sup>  | 119                | 60,300                          | \$319,000           | \$5.30            | 111                | 57,900                          | \$329,000         | \$5.69     |
| Dolomite                | 12                 | 11,800                          | 63,800              | 5.39              | 12                 | 14,100                          | 76,800            | 5.44       |
| Marble                  | 1 <sup>r</sup>     | W                               | W                   | 7.40 <sup>r</sup> | 1                  | W                               | W                 | 6.63       |
| Granite                 | 8                  | 4,700                           | 24,300              | 5.17              | 7                  | 4,630                           | 26,100            | 5.62       |
| Traprock                | 10                 | 4,630                           | 23,400              | 5.06              | 9                  | 5,220                           | 27,400            | 5.26       |
| Sandstone and quartzite | 45 <sup>r</sup>    | 9,330 <sup>r</sup>              | 50,500 <sup>r</sup> | 5.41 <sup>r</sup> | 45                 | 11,300                          | 62,000            | 5.48       |
| Slate                   | 1                  | W                               | W                   | 4.79              | 1                  | W                               | W                 | 4.91       |
| Miscellaneous stone     | 14                 | 6,680 <sup>r</sup>              | 36,600 <sup>r</sup> | 5.48 <sup>r</sup> | 15                 | 6,860                           | 38,500            | 5.62       |
| Total or average        | XX                 | 97,900                          | 520,000             | 5.32              | XX                 | 101,000                         | 564,000           | 5.60       |

<sup>r</sup>Revised. W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.

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

<sup>2</sup>Includes "limestone-dolomite" reported with no distinction between the two.

TABLE 3  
PENNSYLVANIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2001, BY USE<sup>1</sup>

| Use  | Quantity<br>(thousand<br>metric tons) | Value<br>(thousands) | Unit<br>value |
|--|---------------------------------------|----------------------|---------------|
| <b>Construction:</b>                                   |                                       |                      |               |
| <b>Coarse aggregate (+1 1/2 inch):</b>                 |                                       |                      |               |
| Macadam  | 599                                   | \$3,410              | \$5.69        |
| Riprap and jetty stone                                 | 728                                   | 5,490                | 7.54          |
| Filter stone   | 213                                   | 1,340                | 6.30          |
| Other coarse aggregates                                | 1,020                                 | 6,760                | 6.66          |
| Total or average                                       | 2,560                                 | 17,000               | 6.66          |
| <b>Coarse aggregate, graded:</b>                       |                                       |                      |               |
| Concrete aggregate, coarse                             | 2,500                                 | 14,900               | 5.99          |
| Bituminous aggregate, coarse                           | 6,140                                 | 37,300               | 6.08          |
| Bituminous surface-treatment aggregate                 | 1,810                                 | 12,100               | 6.66          |
| Other graded coarse aggregates                         | 2,970                                 | 17,400               | 5.87          |
| Total or average                                       | 14,300                                | 86,100               | 6.04          |
| <b>Fine aggregate (-3/8 inch):</b>                     |                                       |                      |               |
| Stone sand, concrete                                   | 148                                   | 680                  | 4.59          |
| Stone sand, bituminous mix or seal                     | 2,090                                 | 12,800               | 6.15          |
| Screening, undesignated                                | 1,000                                 | 6,400                | 6.38          |
| Other fine aggregates                                  | 2,100                                 | 12,600               | 5.98          |
| Total or average                                       | 5,340                                 | 32,500               | 6.09          |
| <b>Coarse and fine aggregates:</b>                     |                                       |                      |               |
| Graded road base or subbase                            | 5,760                                 | 29,700               | 5.16          |
| Unpaved road surfacing                                 | 1,330                                 | 8,530                | 6.42          |
| Terrazzo and exposed aggregate                         | W                                     | W                    | 5.80          |
| Crusher run or fill or waste                           | 1,330                                 | 5,780                | 4.33          |
| Other coarse and fine aggregates                       | 7,360                                 | 37,500               | 5.10          |
| Total or average                                       | 15,800                                | 81,600               | 5.17          |
| Other construction materials                           | 765                                   | 3,260                | 4.26          |
| <b>Agricultural:</b>                                   |                                       |                      |               |
| Agricultural limestone                                 | 701                                   | 8,330                | 11.89         |
| Poultry grit and mineral food                          | (2)                                   | (2)                  | 3.53          |
| <b>Chemical and metallurgical:</b>                     |                                       |                      |               |
| Cement manufacture                                     | 4,720                                 | 22,200               | 4.71          |
| Lime manufacture                                       | 1,640                                 | 6,180                | 3.77          |
| Flux stone   | 135                                   | 842                  | 6.24          |
| Sulfur oxide removal                                   | 268                                   | 3,470                | 12.96         |
| <b>Special:</b>  |                                       |                      |               |
| Mine dusting or acid water treatment                   | (2)                                   | (2)                  | 15.68         |
| Asphalt fillers or extenders                           | (2)                                   | (2)                  | 5.64          |
| Whiting or whiting substitute                          | 117                                   | 1,450                | 12.40         |
| Other fillers or extenders                             | 315                                   | 3,420                | 10.86         |
| Other miscellaneous uses and specified uses not listed | 594                                   | 4,960                | 8.35          |
| <b>Unspecified:<sup>3</sup></b>                        |                                       |                      |               |
| Reported   | 40,800                                | 232,000              | 5.68          |
| Estimated  | 12,000                                | 59,000               | 4.74          |
| Total or average                                       | 53,200                                | 290,000              | 5.46          |
| Grand total or average                                 | 101,000                               | 564,000              | 5.60          |

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

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

<sup>2</sup>Withheld to avoid disclosing company proprietary data; included in "Grand total."

<sup>3</sup>Reported and estimated production without a breakdown by end use.

TABLE 4  
PENNSYLVANIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2001, BY USE AND DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

| Use  | District 1 |         | District 2 |        | District 3 |         |
|--|------------|---------|------------|--------|------------|---------|
|  | Quantity   | Value   | Quantity   | Value  | Quantity   | Value   |
| <b>Construction:</b>                                   |            |         |            |        |            |         |
| Coarse aggregate (+1 1/2 inch) <sup>2</sup>            | --         | --      | 340        | 1,850  | 599        | 4,090   |
| Coarse aggregate, graded <sup>3</sup>                  | --         | --      | 1,130      | 5,140  | 3,660      | 23,500  |
| Fine aggregate (-3/8 inch) <sup>4</sup>                | --         | --      | 498        | 2,160  | 1,020      | 6,230   |
| Coarse and fine aggregates <sup>5</sup>                | --         | --      | W          | W      | W          | W       |
| Other construction materials                           | --         | --      | 58         | 321    | 89         | 363     |
| Agricultural <sup>6</sup>                              | --         | --      | W          | W      | W          | W       |
| Chemical and metallurgical <sup>7</sup>                | 1,490      | 5,350   | 217        | 2,860  | 1,270      | 5,940   |
| Special <sup>8</sup>                                   | --         | --      | W          | W      | W          | W       |
| Other miscellaneous uses and specified uses not listed | --         | --      | 4          | 30     | 382        | 2,740   |
| <b>Unspecified:<sup>9</sup></b>                        |            |         |            |        |            |         |
| Reported   | 2,000      | 10,900  | 4,930      | 27,000 | 8,390      | 47,400  |
| Estimated  | 1,900      | 8,800   | 1,700      | 8,000  | 1,700      | 7,500   |
| Total  | 5,390      | 25,100  | 10,200     | 53,600 | 20,200     | 118,000 |
| <b>District 4</b>                                      |            |         |            |        |            |         |
|  | Quantity   | Value   |            |        |            |         |
| <b>Construction:</b>                                   |            |         |            |        |            |         |
| Coarse aggregate (+1 1/2 inch) <sup>2</sup>            | 1,620      | 11,100  |            |        |            |         |
| Coarse aggregate, graded <sup>3</sup>                  | 9,470      | 57,400  |            |        |            |         |
| Fine aggregate (-3/8 inch) <sup>4</sup>                | 3,830      | 24,100  |            |        |            |         |
| Coarse and fine aggregates <sup>5</sup>                | 11,500     | 58,100  |            |        |            |         |
| Other construction materials                           | 617        | 2,580   |            |        |            |         |
| Agricultural <sup>6</sup>                              | 666        | 7,440   |            |        |            |         |
| Chemical and metallurgical <sup>7</sup>                | 3,780      | 18,600  |            |        |            |         |
| Special <sup>8</sup>                                   | 647        | 5,100   |            |        |            |         |
| Other miscellaneous uses and specified uses not listed | 207        | 2,190   |            |        |            |         |
| <b>Unspecified:<sup>9</sup></b>                        |            |         |            |        |            |         |
| Reported   | 25,500     | 146,000 |            |        |            |         |
| Estimated  | 7,100      | 34,000  |            |        |            |         |
| Total  | 64,900     | 367,000 |            |        |            |         |

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

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

<sup>2</sup>Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregates.

<sup>3</sup>Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), railroad ballast, and other graded coarse aggregates.

<sup>4</sup>Includes screening (undesignated), stone sand bituminous mix or seal, stone sand (concrete), and other fine aggregates.

<sup>5</sup>Includes crusher run (select material or fill), graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, and other fine aggregates.

<sup>6</sup>Includes agricultural limestone and poultry and mineral food.

<sup>7</sup>Includes cement manufacture, flux stone, lime manufacture, and sulfur oxide removal.

<sup>8</sup>Includes asphalt fillers or extenders, mine dusting or acid water treatment, whiting or whiting substitute, and other fillers or extenders.

<sup>9</sup>Reported and estimated production without a breakdown by end use.

TABLE 5  
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2001, BY MAJOR USE CATEGORY<sup>1</sup>

| Use  | Quantity               |             | Unit value |
|--|------------------------|-------------|------------|
|  | (thousand metric tons) | (thousands) |            |
| Concrete aggregates (including concrete sand)              | 3,110                  | \$21,400    | \$6.87     |
| Plaster and gunite sands                                   | 26                     | 225         | 8.65       |
| Concrete products (blocks, bricks, pipe, decorative, etc.) | 44                     | 332         | 7.55       |
| Asphalt concrete aggregates and other bituminous mixtures  | 1,500                  | 8,520       | 5.69       |
| Road base and coverings <sup>2</sup>                       | 1,540                  | 8,310       | 5.39       |
| Fill   | 2,850                  | 14,600      | 5.14       |
| Snow and ice control                                       | 166                    | 957         | 5.77       |
| Other miscellaneous uses <sup>3</sup>                      | 425                    | 2,600       | 6.13       |
| Unspecified: <sup>4</sup>                                  |                        |             |            |
| Reported   | 7,080                  | 50,400      | 7.12       |
| Estimated  | 3,400                  | 20,000      | 5.89       |
| Total or average   | 20,200                 | 128,000     | 6.33       |

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

<sup>2</sup>Includes road and other stabilization (cement and lime).

<sup>3</sup>Includes railroad ballast.

<sup>4</sup>Reported and estimated production without a breakdown by end use.

TABLE 6  
PENNSYLVANIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2001, BY USE AND DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

| Use   | District 1 |        | District 2 |        | District 3            |        |
|---|------------|--------|------------|--------|-----------------------|--------|
|   | Quantity   | Value  | Quantity   | Value  | Quantity              | Value  |
| Concrete aggregates and concrete products <sup>2</sup>      | W          | W      | 1,070      | 7,130  | W                     | W      |
| Asphaltic concrete aggregates and other bituminous mixtures | 507        | 2,410  | 672        | 4,120  | W                     | W      |
| Road base and coverings <sup>3</sup>                        | 803        | 4,000  | 352        | 1,920  | W                     | W      |
| Fill  | 255        | 1,190  | 52         | 264    | 46                    | 223    |
| Snow and ice control  | W          | W      | 45         | 365    | W                     | W      |
| Other miscellaneous uses <sup>4</sup>                       | 745        | 3,890  | 103        | 497    | 1,270                 | 7,280  |
| Unspecified: <sup>5</sup>                                   |            |        |            |        |                       |        |
| Reported  | 2,140      | 18,700 | 532        | 3,210  | 3,200                 | 20,900 |
| Estimated   | 910        | 5,300  | 400        | 2,500  | 2,100                 | 12,000 |
| Total   | 5,360      | 35,500 | 3,230      | 20,000 | 6,590                 | 44,600 |
|   |            |        | District 4 |        | Unspecified districts |        |
|   | Quantity   | Value  | Quantity   | Value  | Quantity              | Value  |
| Concrete aggregates and concrete products <sup>2</sup>      | 1,020      | 8,940  |            |        |                       |        |
| Asphaltic concrete aggregates and other bituminous mixtures | W          | W      | --         | --     |                       |        |
| Road base and coverings <sup>3</sup>                        | W          | W      | --         | --     |                       |        |
| Fill  | 2,380      | 12,800 | --         | --     |                       |        |
| Snow and ice control  | 6          | 45     | 118        | 130    |                       |        |
| Other miscellaneous uses <sup>4</sup>                       | 203        | 1,720  | --         | --     |                       |        |
| Unspecified: <sup>5</sup>                                   |            |        |            |        |                       |        |
| Reported  | 1,210      | 7,590  | --         | --     |                       |        |
| Estimated   | 47         | 280    | --         | --     |                       |        |
| Total   | 4,870      | 31,400 | 118        | 130    |                       |        |

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

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

<sup>2</sup>Includes plaster and gunite sands.

<sup>3</sup>Includes road and other stabilization (cement and lime).

<sup>4</sup>Includes railroad ballast.

<sup>5</sup>Reported and estimated production without a breakdown by end use.