USGS
science for a changing world

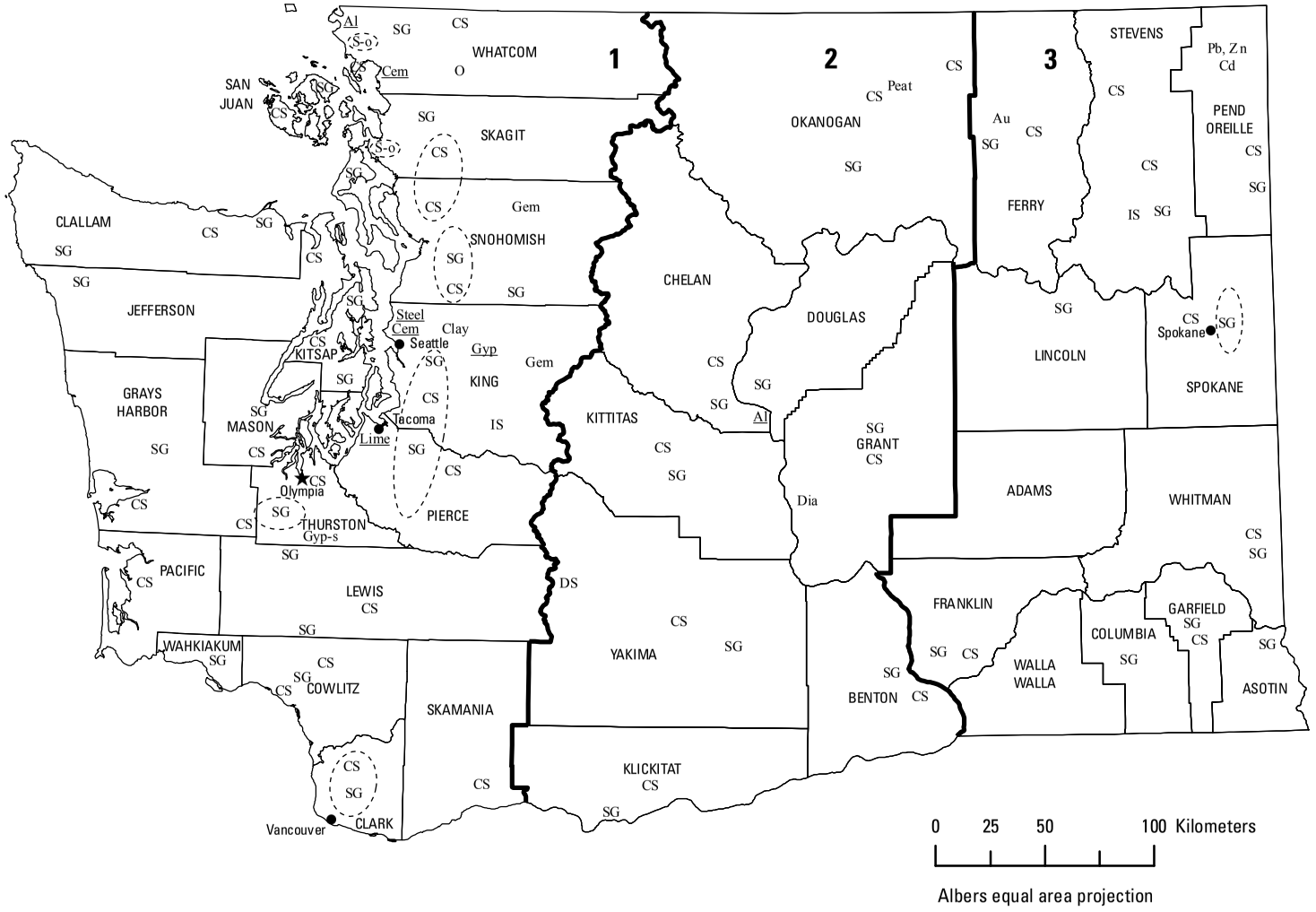
# 2008 Minerals Yearbook

## WASHINGTON

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

July 2012

# WASHINGTON




## LEGEND

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

### MINERAL SYMBOLS (Principal producing areas)

| | |
|---|---|
| Al | Aluminum plant |
| Au | Gold |
| Cd | Cadmium (byproduct) |
| Cem | Cement plant and quarry |
| Clay | Common clay |
| CS | Crushed stone |
| Dia | Diatomite |
| DS | Dimension stone |
| Gem | Gemstones |
| Gyp | Gypsum plant |
| Gyp-s | Synthetic gypsum |
| IS | Industrial sand |
| Lime | Lime plant and quarry |
| O | Olivine |
| Pb | Lead |
| Peat | Peat |
| SG | Construction sand and gravel |
| S-o | Sulfur (oil) |
| Steel | Steel plant |
| Zn | Zinc |

Concentration of mineral operations

**Source: Washington State Division of Geology and Earth Resources/U.S. Geological Survey (2008).**

# 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 2008, Washington's nonfuel raw mineral production[1] was valued at $718 million, based upon annual U.S. Geological Survey (USGS) data. This was a nearly 4% decrease, or $29 million, from that of 2007, which was down by 1.6%, or by $12 million, from that of 2006. In spite of the decreases in total value, the State rose from 30th to 29th in rank among the 50 States in total nonfuel raw mineral production value, accounting for slightly more than 1% of the U.S. total nonfuel mineral production value in 2008.

In 2008, Washington's leading nonfuel mineral commodities by production value were, in descending order of value, construction sand and gravel, crushed stone, portland cement, zinc, and gold (production of gold resumed in 2008). Construction sand and gravel and crushed stone accounted for 68% of the State's total nonfuel mineral value. The largest increase in production value took place in lead, which increased by 18% from the 2007 production value. This was followed by construction sand and gravel, with a $275,000 increase in value, despite a 13% decrease in production. Common clays, olivine, and peat all saw increases in production value and the quantities produced compared with those in 2007. The largest decrease in production value took place with portland cement, followed by zinc and diatomite. Diatomite production remained significantly reduced compared to production levels prior to 2006. Smaller decreases were seen with lime, crushed stone, industrial sand and gravel, and cadmium (as a byproduct of zinc concentrates). The Washington crushed stone industry, which in 2007 declined by almost $10 million, or 5.3%, only experienced a $284,000 decrease from 2007 levels in 2008, or 0.2% (table 1).

In 2008, Washington continued to be first in the quantities of olivine produced of the two producing States, and third in the production of zinc. The State rose from sixth to fifth in the production of construction sand and gravel but decreased to fifth from fourth in lead production. Primary aluminum and raw steel also were produced in Washington, but both metals were processed from materials acquired from foreign and other domestic sources. In 2008, with an estimated increase in production of more than 11%, the State rose to third from fourth in rank of the 11 States that produced primary aluminum.

[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 2008 USGS mineral production data published in this chapter are those available as of July 2010. 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.

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

(Thousand metric tons and thousand dollars)

| Mineral | 2006 | | 2007 | | 2008 | |
|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| Clays: | | | | | | |
| Common | 53 | 149 | 84 | 170 | 88 | 360 |
| Fire | 25 | 41 | -- | -- | -- | -- |
| Gemstones, natural | NA | 49 | NA | 49 | NA | 50 |
| Gypsum, crude | -- | -- | -- | -- | 14 | 150 |
| Peat | W | W | W | 66 | W | 75 |
| Sand and gravel, construction | 48,400 | 315,000 | 45,500 | 324,000 | 39,400 | 324,000 |
| Stone, crushed | 16,800 | 175,000 r | 18,000 r | 166,000 r | 17,200 | 165,000 |
| Combined values of cadmium (byproduct from zinc concentrates), cement (portland), diatomite, gold (2008), lead, lime, olivine, sand and gravel (industrial), stone (dimension miscellaneaous), zinc, and values indicated by symbol W | XX | 270,000 | XX | 258,000 | XX | 228,000 |
| Total | XX | 759,000 | XX | 747,000 r | XX | 718,000 |

rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data. Withheld values included in "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.

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

| Type | 2007 | | | 2008 | | |
|---|---|---|---|---|---|---|
| | Number of quarries | Quantity (thousand metric tons) | Value (thousands) | Number of quarries | Quantity (thousand metric tons) | Value (thousands) |
| Limestone[2] | 28 r | 2,000 r | $21,800 r | 25 | 1,350 | $14,800 |
| Dolomite | -- r | -- r | -- r | -- | -- | -- |
| Marble | -- r | -- r | -- r | -- | -- | -- |
| Granite | 11 r | 1,780 r | 18,000 r | 11 | 1,420 | 14,900 |
| Traprock | 64 r | 7,750 r | 67,600 r | 72 | 8,010 | 69,800 |
| Sandstone & quartzite | 3 | 411 | 9,600 | 4 | 779 | 12,900 |
| Volcanic cinder and scoria | 1 | 62 | 581 | 1 | 60 | 578 |
| Miscellaneous stone | 39 r | 5,980 r | 48,000 r | 31 | 5,570 | 52,200 |
| Total | XX | 18,000 r | 166,000 r | XX | 17,200 | 165,000 |

rRevised. XX Not applicable. -- Zero.
[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
WASHINGTON: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2008, BY USE[1]

(Thousand metric tons and thousand dollars)

| Use | Quantity | Value |
|---|---|---|
| Construction: | | |
| Coarse aggregate (+1½ inch): | | |
| Macadam | W | W |
| Riprap and jetty stone | 210 | 3,510 |
| Filter stone | 104 | 1,130 |
| Other coarse aggregate | 103 | 721 |
| Coarse aggregate, graded: | | |
| Concrete aggregate, coarse | W | W |
| Bituminous aggregate, coarse | 270 | 2,330 |
| Bituminous surface-treatment aggregate | 52 | 471 |
| Railroad ballast | 984 | 6,930 |
| Fine aggregate (-⅜ inch): | | |
| Stone sand, concrete | W | W |
| Stone sand, bituminous mix or seal | W | W |
| Screening, undesignated | 242 | 3,660 |
| Other fine aggregate | 297 | 7,780 |
| Coarse and fine aggregate: | | |
| Graded road base or subbase | 1,550 | 10,400 |
| Unpaved road surfacing | 335 | 1,830 |
| Terrazzo and exposed aggregate | 141 | 1,800 |
| Crusher run or fill or waste | 956 | 7,210 |
| Other coarse and fine aggregates | 127 | 895 |
| Other construction materials | 143 | 1,190 |
| Agricultural: | | |
| Limestone | W | W |
| Poultry grit and mineral food | W | W |
| Chemical and metallurgical: | | |
| Lime manufacture | W | W |
| Flux stone | W | W |
| Special: | | |
| Whiting or whiting substitute | W | W |
| Other fillers or extenders | W | W |
| Unspecified:[2] | | |
| Reported | 5,160 | 50,400 |
| Estimated | 5,700 | 55,000 |
| Total | 17,200 | 165,000 |

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
WASHINGTON: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2008, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

| Use | District 1 | | District 2 | | District 3 | | Unspecified districts | |
|---|---|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value |
| Construction: | | | | | | | | |
| Coarse aggregate (+1½ inch)[2] | 571 | 6,620 | W | W | W | W | -- | -- |
| Coarse aggregate, graded[3] | 1,200 | 8,900 | W | W | W | W | -- | -- |
| Fine aggregate (-⅜ inch)[4] | W | W | W | W | W | W | -- | -- |
| Coarse and fine aggregate[5] | 2,660 | 19,700 | 236 | 1,280 | 157 | 843 | 59 | 276 |
| Other construction materials | 26 | 440 | 7 | 123 | 110 | 627 | -- | -- |
| Agricultural[6] | -- | -- | W | W | -- | -- | -- | -- |
| Chemical and metallurgical[7] | W | W | -- | -- | W | W | -- | -- |
| Special[8] | -- | -- | W | W | -- | -- | -- | -- |
| Unspecified:[9] | | | | | | | | |
| Reported | 1,320 | 13,400 | 575 | 5,520 | 20 | 184 | 3,240 | 31,400 |
| Estimated | 4,400 | 43,000 | 645 | 6,200 | 600 | 5,700 | -- | -- |
| Total | 10,700 | 98,100 | 1,710 | 16,300 | 1,460 | 19,200 | 3,300 | 31,700 |

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 aggregate.

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

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

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

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

[7]Includes lime manufacture and flux stone.

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

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

TABLE 5
WASHINGTON: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2008,
BY MAJOR USE CATEGORY[1]

| Use | Quantity (thousand metric tons) | Value (thousands) | Unit value |
|---|---|---|---|
| Concrete aggregate (including concrete sand) | 8,220 | $79,300 | $9.64 |
| Concrete products (blocks, bricks, pipe, decorative, etc.)[2] | 10 | 90 | 9.00 |
| Asphaltic concrete aggregates and other bituminous mixtures | 764 | 10,100 | 13.20 |
| Road base and coverings[3] | 5,600 | 39,500 | 7.05 |
| Fill | 3,310 | 16,500 | 4.98 |
| Snow and ice control | 125 | 711 | 5.69 |
| Railroad ballast | 153 | 1,050 | 6.86 |
| Other miscellaneous uses[4] | 325 | 3,380 | 10.39 |
| Unspecified:[5] | | | |
| Reported | 8,090 | 61,400 | 7.60 |
| Estimated | 12,800 | 112,000 | 8.76 |
| Total or average | 39,400 | 324,000 | 8.23 |

[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 sands.

[3]Includes road and other stabilization (cement).

[4]Includes filtration and golf course.

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

TABLE 6
WASHINGTON: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2008, 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] | 7,460 | 73,200 | 461 | 3,750 | 307 | 2,480 |
| Asphaltic concrete aggregates and road base materials[3] | 4,250 | 34,400 | 1,520 | 11,400 | 602 | 3,770 |
| Fill | 3,090 | 15,500 | 87 | 360 | 139 | 669 |
| Snow and ice control | 73 | 437 | W | W | W | W |
| Railroad ballast | 112 | 808 | W | W | W | W |
| Other miscellaneous uses[4] | 254 | 2,650 | 53 | 406 | 112 | 839 |
| Unspecified:[5] | | | | | | |
| Reported | 2,810 | 21,700 | 2,040 | 15,800 | 3,000 | 22,300 |
| Estimated | 11,400 | 101,000 | 885 | 7,170 | 501 | 4,060 |
| Total | 29,400 | 249,000 | 5,040 | 38,900 | 4,660 | 34,100 |

| Use | Unspecified districts | |
|---|---|---|
| | Quantity | Value |
| Concrete aggregates and concrete products[2] | -- | -- |
| Asphaltic concrete aggregates and road base materials[3] | -- | -- |
| Fill | -- | -- |
| Snow and ice control | -- | -- |
| Railroad ballast | -- | -- |
| Other miscellaneous uses[4] | -- | -- |
| Unspecified:[5] | | |
| Reported | 231 | 1,660 |
| Estimated | -- | -- |
| Total | 231 | 1,660 |

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 road and other stabilization (cement).

[4]Includes filtration and golf course.

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