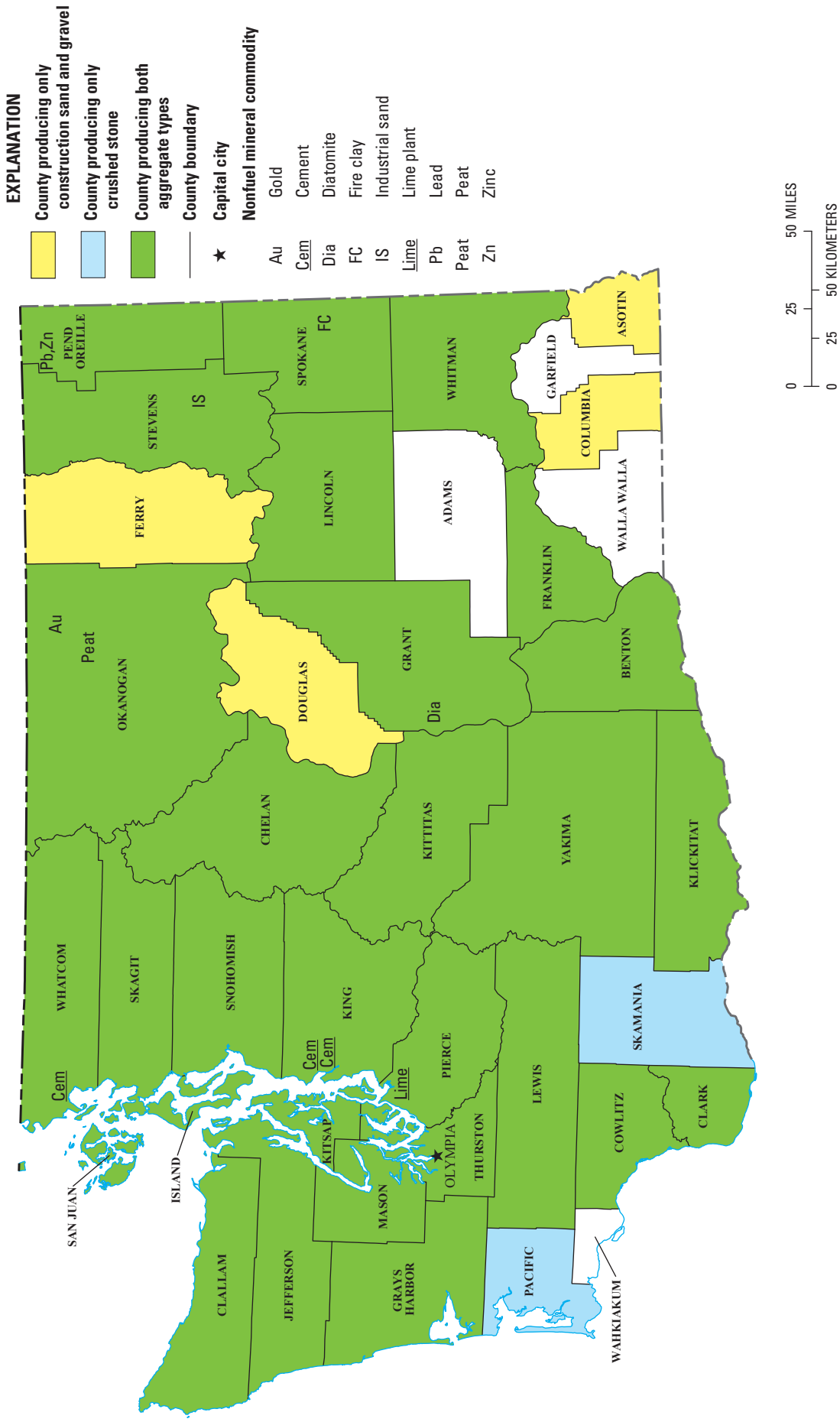




2014 Minerals Yearbook

WASHINGTON [ADVANCE RELEASE]



Base from U.S. Geological Survey digital data
Albers Equal-Area Conic projection

Figure 1. Map showing major nonfuel-mineral-producing areas in Washington in 2014. Sources: Washington Department of Natural Resources, Division of Geology and Earth Resources, and U.S. Geological Survey.

THE MINERAL INDUSTRY OF WASHINGTON

By Robert M. Callaghan

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 2014, the value of the nonfuel mineral production¹ in the State of Washington (fig. 1) was \$711 million, a 5% decrease from the revised value of \$750 million in 2013 (table 1). Leading nonfuel mineral commodities included construction sand and gravel, crushed stone, and gold. Washington was the second-leading producer of fire clay of four producing States. Companies operating in the State also produced cement, diatomite, industrial sand and gravel, lime, peat, and zinc (table 3). Gemstones mined in Washington consisted chiefly of opal and various quartz varieties. The State ranked 33d in nonfuel mineral production on the basis of total value and, on a per capita basis, had a value of \$101 compared to a national average of \$252. In 2014, total mine employment increased, while mill and plant employment decreased (table 2).

Events, Trends, and Issues

Though most of Washington's mines produced industrial minerals, Washington had two active metal mining operations in 2014 (table 3). Teck Resource Ltd.'s Pend Oreille Mine produced lead and zinc for the first time since 2009 when it was idled owing to low zinc prices. It was expected to reach full production capacity rate of 44,000 metric tons per year of zinc in concentrate in the second quarter of 2015 and to have a mine life of about 5 years (Teck Resources Ltd., 2015, p. 27). Kinross Gold Corp.'s Kettle River-Buckhorn gold mine, however, was nearing the end of its mine life. Ore grades in 2014 were 23% lower than in 2013, and there was a 5% decrease in the quantity of ore mined, leading to an 18% decrease in gold-equivalent ounces produced. Lower gold prices in 2014 contributed to a 27% decrease in metal sales value from the mine (Kinross Gold Corp., 2015, p. 19). The mine began operation in 2008 and was an important factor in increasing the State's total nonfuel

mineral value after the recession of 2007–09 (fig. 2), especially with record-high gold prices in 2012.

Aggregates, with relatively low unit values but high volume, were important in the State's mineral industry, and production and unit values increased on average after the recession, with crushed stone reaching an average of \$13.39 per metric ton and construction sand and gravel reaching \$7.44 per metric ton in 2014 in Washington, compared with \$9.02 and \$6.89 per metric ton in 2010, respectively. Washington was also a leading aggregates recycler, ranked fifth in the Nation for recycled asphalt concrete and fifth for recycled portland cement concrete (Willett, 2016, p. 71.4).

Aggregates by State and End Use

A companion dataset, "Aggregates by State and End Use," replaces the discrete aggregate tables that were included in the individual State chapters prior to 2014 and is available on the State Minerals Statistics and Information web page at <https://minerals.usgs.gov/minerals/pubs/state/>. This dataset is updated annually.

References Cited

- Kinross Gold Corp., 2015, 2014 annual report—Delivering results: Toronto, Ontario, Canada, Kinross Gold Corp., 148 p. (Accessed December 5, 2017, at http://s2.q4cdn.com/496390694/files/doc_financials/annual/2014/kinross-2014-annual-report.pdf.)
- Teck Resources Ltd., 2015, 2014 annual report—Adaptability: Vancouver, British Columbia, Canada, Teck Resources Ltd., 120 p. (Accessed December 5, 2017, at https://www.teck.com/media/Investors-teck_2014annualreport_T5.1.1.pdf.)
- Willett, J.C., 2016, Stone, crushed [advance release], *in* Metals and minerals: U.S. Geological Survey Minerals Yearbook 2014, v. I, p. 71.1–71.24. (Accessed December 5, 2017, at https://minerals.usgs.gov/minerals/pubs/commodity/stone_crushed/myb1-2014-stonc.pdf.)

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 June 2017. 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>.

TABLE 1
NONFUEL MINERAL PRODUCTION IN WASHINGTON^{1,2,3}

(Thousand metric tons and thousand dollars)

Mineral	2012		2013		2014	
	Quantity	Value	Quantity	Value	Quantity	Value
Gemstones, natural ⁶	NA	57	NA	58	NA	59
Sand and gravel, construction	28,500 ^r	217,000 ^r	31,000 ^r	234,000 ^r	31,700	236,000
Stone, crushed	15,700 ^r	190,000 ^r	14,600 ^r	189,000 ^r	14,300	191,000
Combined values of cement, clays [common clay (2012) and fire clay (2013–14)], diatomite, gold, lead (2014), lime, olivine (2012), peat, sand and gravel (industrial), zinc (2014)	XX	362,000	XX	328,000	XX	284,000
Total	XX	770,000 ^r	XX	750,000 ^r	XX	711,000

⁶Estimated. ^rRevised. NA Not available. XX Not applicable.

¹Includes data available through June 2017.

²Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

³Data are rounded to no more than three significant digits; may not add to totals shown.

TABLE 2
MINING ACTIVITY IN WASHINGTON

Mining activity	2012	2013	2014	
State rank ¹	30	29	33	
Employment, number: ²				
Nonfuel mineral mines	1,461	1,491	1,526	
Mills and plants	364	367	351	
Number of nonfuel mineral mines ²	302	291	294	
Number of mills and plants ²	20	20	18	
Average annual wage, all mining ³	dollars per year	58,439	61,104	62,321
Average annual wage, all industries ³	do.	51,770	52,869	54,956
Per capita value ¹	dollars per person	112	108	101
National per capita value ¹	do.	241	236	252

do. Ditto.

¹Based on unadjusted State total value.

²Source: U.S. Mine Safety and Health Administration.

³Source: National Mining Association.

TABLE 3
STRUCTURE OF THE NONFUEL MINERAL INDUSTRY IN WASHINGTON

(Nonfuel-mineral-producing companies, not including aggregate producers)

Commodity	Company	County
Cement	Ash Grove Cement Co.	King
Do.	Lafarge North America Inc.	Do.
Do.	Lehigh Cement Co.	Whatcom
Diatomite	Imerys USA Inc.	Grant
Clays, fire clay	Mutual Materials Co.	Spokane
Gemstones ¹	Various	Various
Gold	Kinross Gold Corp. (Kettle River-Buckhorn Mine)	Okanogan
Lime	Graymont Western US Inc.	Pierce
Peat	North Country Distributors	Okanogan
Sand and gravel, industrial	Lane Mountain Co.	Stevens
Zinc and lead	Teck Resources Ltd. (Pend Oreille Mine)	Pend Oreille

Do. Ditto.

¹Most natural gemstone producers in the United States are small businesses that are widely dispersed and operate independently.

EXPLANATION

- Other
- Sand and gravel (construction)
- Stone (crushed)

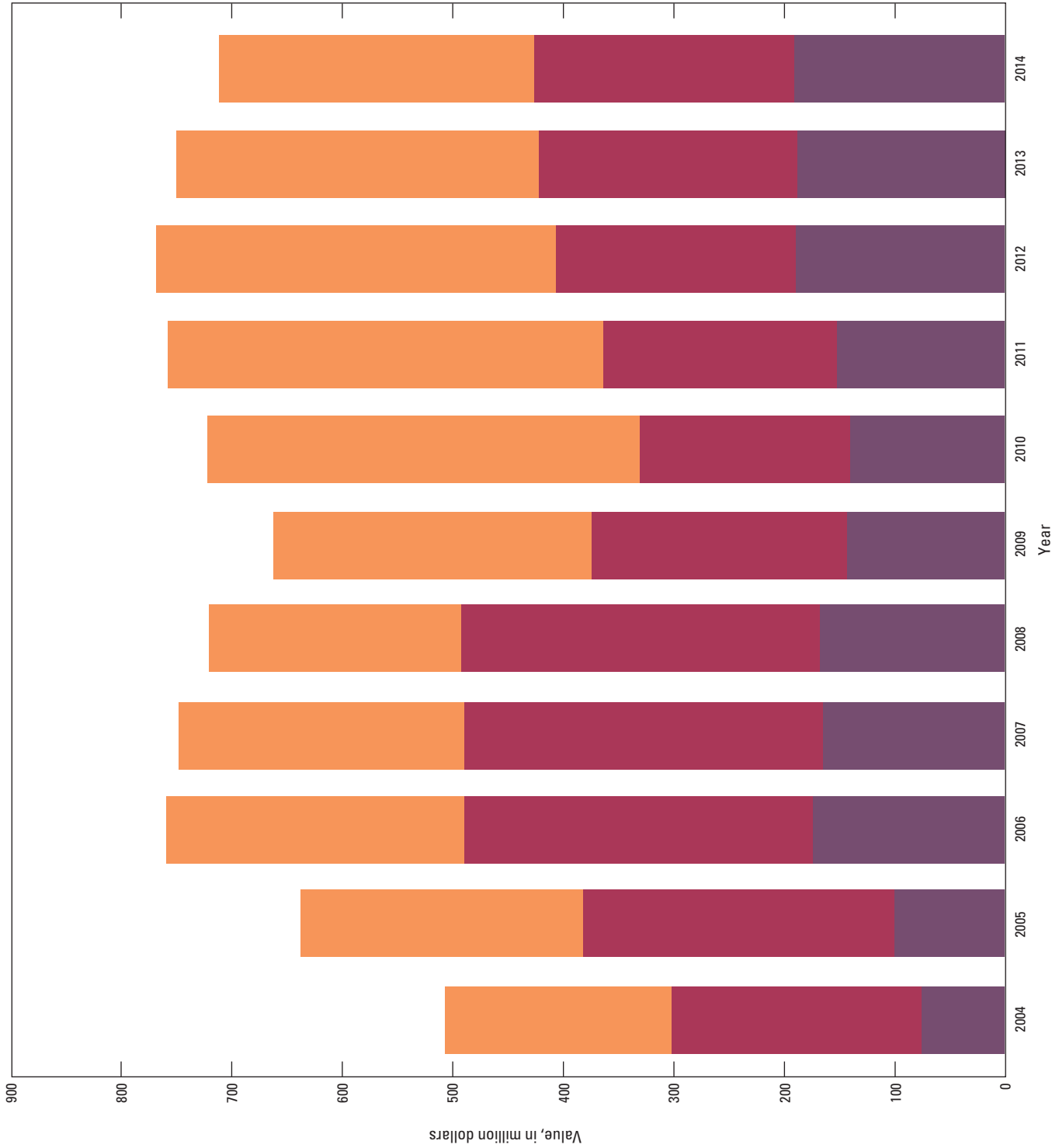


Figure 2. The production value of nonfuel mineral commodities from 2004 through 2014 in Washington. "Other" includes the "Combined values" data listed in table 1 in this and (or) previous years. Values less than \$5 million are not shown. For a complete list of nonfuel mineral commodities and production values for all States, please refer to the Statistical Summary chapter (tables 5, 6).