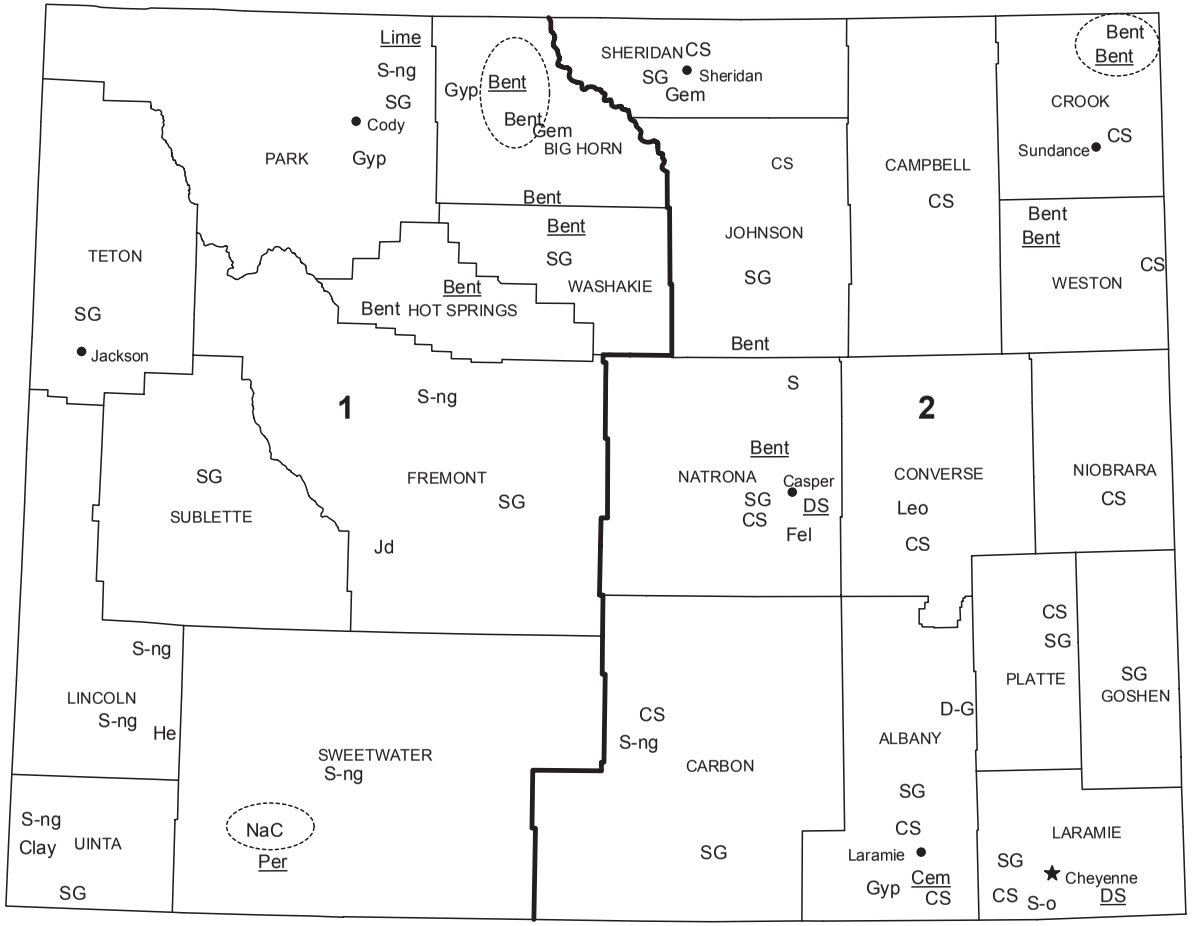
WYOMING



MINERAL SYMBOLS
(Major producing areas)

Bent	Bentonite
Bent	Bentonite plant
Cem	Cement plant
Clay	Common clay
CS	Crushed stone
D-G	Dimension granite
DS	Dimension stone plant
Fel	Feldspar
Gem	Gemstones
Gyp	Gypsum
He	Helium
Jd	Jade
Leo	Leonardite
Lime	Lime plant
NaC	Sodium carbonate
Per	Perlite plant
S	Sulfur
S-ng	Sulfur (natural gas)
S-o	Sulfur (oil)
SG	Construction sand and gravel
	Concentration of mineral operations

LEGEND

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

0 100 Kilometers

Source: Wyoming State Geological Survey/U.S. Geological Survey (2004)

THE MINERAL INDUSTRY OF WYOMING

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Wyoming State Geological Survey, for collecting information on all nonfuel minerals.

In 2004, Wyoming's nonfuel raw mineral production was valued[1] at $1.04 billion, based upon annual U.S. Geological Survey (USGS) data. This was a nearly 4% increase from the State's total nonfuel mineral value for 2003[2], which was down marginally from 2002. The State was 16th in rank (15th in 2003) among the 50 States in total nonfuel raw mineral production value and accounted for about 2.3% of the U.S. total value.

Soda ash was Wyoming's leading nonfuel mineral, by value, followed by bentonite, Grade-A helium, and portland cement. Together, the four accounted for nearly 93% of the State's total nonfuel raw mineral production value. In 2004, with increases in the production of each commodity, increases in the values of soda ash, crushed stone (up $11.9 million), Grade-A helium, portland cement, construction sand and gravel (up $3.7 million), and bentonite (up $3 million) (in descending order of change), offset somewhat by decreases in the values of gypsum and lime, led to the State's increase in total nonfuel mineral value.

In 2003, increases in the values of bentonite, construction sand and gravel, crushed stone, Grade-A helium, and gypsum were slightly less than decreases in the values of soda ash, portland cement, and common clays (decreases in descending order of change), resulting in the slight net decrease in total nonfuel raw mineral production value from 2002.

In 2004, Wyoming continued to be first in rank in the quantities of soda ash and bentonite clay produced, and second in Grade-A helium production. With the resumption of production, the State was sixth in zeolite among seven producing States. Wyoming also continued to be a producer of significant quantities of construction sand and gravel. Gypsum production showed a significant decrease, the State dropping in rank to 12th from 9th. Soda ash (sodium carbonate), which is produced mainly from trona ore, is an inorganic chemical that is used extensively in the manufacture of glass, paper, soap and detergents, and textiles, and, in the form of sodium bicarbonate, in food products. The United States is the world's second largest producer of soda ash. Wyoming was one of only three soda ash-producing States and is home to the world's largest known deposit of trona. California and Colorado produce significantly smaller quantities of natural soda ash.

The Wyoming State Geological Survey (WSGS) provided the following narrative information.[3] Production data in the text that follows are those reported by the WSGS and are based on the agency's own surveys and estimates. They may differ from production figures reported to the USGS.

Exploration and Development Activities

Industrial Minerals

Diamond.—Several companies expressed interest in diamond exploration in Wyoming during 2004, but exploration activity remained limited. One company recovered diamonds from two separate bulk samples of a Tertiary breccia pipe southwest of Green River.

The potential for diamonds is great in the part of the western United States underlain by Archean rocks (older than approximately 2.7 billion years), collectively known as the Wyoming Province. These rocks exist beneath much of Wyoming, Montana, eastern Idaho, northern Utah, the northern edge of Colorado, and the western edges of South Dakota and North Dakota. Within this region, and extending south into Colorado beyond the Wyoming Province boundary, diamonds have been found in many kimberlites and related host rocks. A Colorado diamond mine along the Wyoming-Colorado border (State Line District) operated between 1996 and 2003. Since the discovery of diamonds in the State Line District in 1975, more than 130,000 diamonds have been produced there, including several very large gemstones. Lack of access to diamondiferous and potentially diamondiferous kimberlites coupled with individual company policies has limited development in the area.

Every kimberlite in the State Line District has yielded diamonds, and approximately one-half of the diamonds recovered in Wyoming have been gem quality. One kimberlite produced gemstones weighing up to 28.3 carats (including a diamond fragment from an estimated 90-carat diamond), and another kimberlite yielded diamond ore grades as high as 135 carats per 100 metric tons (t) of rock. There are at least two commercial diamond deposits in Australia that yield grades of only 15 carats per 1,000 t of rock and diamonds not much larger than those found in the State Line District. Nearly a dozen kimberlites in this district have not been tested; a group of geophysical anomalies (interpreted to be buried diamond pipes) lies within the middle of the diamond pipes in Wyoming. These anomalies have never been drilled.

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[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.

[3]Wayne M. Sutherland, Assistant Staff Geologist; Bob Gregory, Geological Analyst; and W. Dan Hausel, Senior Economic Geologist; Natural Resources Division, Wyoming State Geological Survey, coauthored the text of the State mineral industry information.

Diamond-bearing intrusives also occur in the Laramie Range in the Iron Mountain District, northwest of Cheyenne, and in the Cedar Mountain area southwest of Rock Springs. The potential for other in-place diamond discoveries in Wyoming is very great.

Gemstones.—The collection and marketing of small quantities of precious gemstones, semiprecious gemstones, and unique geologic materials from Wyoming is not tracked. The sale of these materials during 2004 by amateur collectors, prospectors, semiprofessionals, and professional dealers took place primarily at gem and mineral shows, in local jewelry and rock shops, and over the Internet. These mineral commodities include various agates, iolite, jade, jasper, Kimberlite, kyanite, labradorite. lamproite, nephrite, opal, quartz, ruby, sapphire, and satin spar, and other types of rock specimens are also sold.

Eagle-Hawk Mining (a Colorado company) continued to work on the Palmer Canyon gem-quality iolite (cordierite)-sapphire-ruby-kyanite occurrence in the Laramie Range west of Wheatland. Recent trenching in this deposit exposed an estimated 100,000+ carats of potential gem-quality cordierite in approximately 1 cubic yard of material.

In 2004, the WSGS identified a similar significant gemstone deposit at Grizzly Creek, south of Palmer Canyon in the central Laramie Range. The Grizzly Creek discovery hosts extraordinary sky-blue transparent to translucent kyanite specimens up to about 10 centimeters (4 inches) long that are associated with quartzofeldspathic gneiss and pelitic schist. Ruby and sapphire are less common here than at Palmer Canyon. However, iolite was found in masses estimated to weigh 5,000 carats or more. Although fracturing is common, much of the material appears suitable for gemstones. The Grizzly Creek deposit is described in WSGS Open File Report 04-14.

Following a tip from a local prospector, the WSGS investigated an opal deposit in the Cedar Rim area of central Wyoming. As much as 30 meters thick in some areas, the deposit includes occurrences spread over parts of 11 sections. The White River Formation is the primary host rock unit, but mineralization occurs locally in the underlying Wagon Bed Formation. Individual specimens weighing more than 11 kilograms (kg) were recovered. Collected opal included milky-white, transparent, yellow, green, brown, gray, mottled, black, and opal breccia. Several specimens exhibited traces of play-of-color that suggest possible precious opal occurrence.

Metals

Since 2001, rising metal prices have led to increased metals exploration in Wyoming. In 2004, metals exploration activity included searches for gold and platinum-group metals. However, no significant metals production has taken place since iron ore mining ended at South Pass in 1984.

Gold.—The Dickie Springs-Oregon Gulch paleoplacer is possibly the largest undeveloped gold occurrence in North America. Here, the Cathedral Bluffs Tongue of the Eocene Wasatch Formation may host more than 886,000 kg of placer gold worth more than $12 billion in 2005. Fremont Gold Corp. (a Canadian company) planned to explore this massive paleoplacer, and proposed up to 200 exploration pits or trenches over an area of approximately 2,070 hectares (ha) with a total surface disturbance of less than 0.4 ha. In addition, a small locally owned mine operating in the same area during the summer and fall produced enough gold to justify continued operations. Gold exploration by Bald Mountain Mining Company continued in the Rattlesnake Hills during 2004. Minor gold activity also took place in the Sierra Madre and the Black Hills.

Platinum-Group Metals.—Minor exploration activity for platinum-group metals continued in the Medicine Bow Mountains and the Sierra Madre. Layered mafic-ultramafic intrusives, ultramafic massifs, and fragments host chromium, copper, gold, palladium, platinum, silver, titanium, and vanadium anomalies within the Proterozoic terrain. The Mullen Creek, Lake Owen, and Puzzler Hill complexes are most notable. The New Rambler Mine, one of the only known historical platinum-palladium mines in North America, is located in the Mullen Creek mafic-ultramafic complex in the Medicine Bow Mountains.

Titanium.—Wyomex Resources Inc. investigated the titanium-bearing sandstone in the Cretaceous Mesaverde Formation in the Bighorn Basin and recovered samples consisting of 11% TiO_2 and 1% ZrO_2. Minerals of interest included ilmenite, leucoxene, magnetite, rutile, and zircon, as well as, a small amount of native gold.

Commodity Review

Industrial Minerals

Overall production of nonfuel minerals in Wyoming was greater in 2004 than in 2003. Production of bentonite, gypsum, limestone, sand and gravel, and trona all increased slightly to moderately, while production of decorative stone, granite ballast, and siliceous shale decreased. Interest in developing silica sand deposits in the Cassa and Plumbago Canyon areas of southeast Wyoming has remained steady, as has interest in further development of gypsum deposits in north-central Wyoming and bentonite deposits in south-central Wyoming.

Bentonite.—According to the Office of the State Inspector of Mines, Wyoming produced 39% more bentonite in 2004 than in 2003. In Big Horn, Crook, Johnson, Washakie, and Natrona Counties (listed in order of decreasing total production) 10 mines supplied 13 mills with bentonite.

Dimension Stone.—The dimension stone quarry currently operating near Rawlins produces sandstone marketed under the name Wyoming Gray Sandstone. This product is processed in Cheyenne along with rock types from sources including Platte County quarries no longer in operation.

Gypsum.—Three quarries produced gypsum in 2004: two in the Bighorn Basin (Big Horn and Park Counties) produced gypsum for wallboard, and one smaller quarry in Albany County produced gypsum for use as a setting retardant in cement.

Limestone.—Limestone is quarried in Wyoming primarily for use in highway construction (as crushed stone for aggregate and as surface material). Chemical-grade Wyoming limestone (limestone consisting of more than 95% $CaCO_3$) is used to produce lime, a substance necessary for cement manufacturing, sugar beet refining, and other industrial processes (Harris, 2004, p. 29-32).

Silica.—Although no new silica sand deposits have been developed since 2003, interest in deposits at the Cassa (Platte County) and Plumbago Creek (Albany County) locations has continued. Silica sand is the primary ingredient in the manufacture of glass, and is also incorporated in hydrofrac sand used to enhance the recoverability of oil and natural gas. Silica deposits of high quality for glass manufacture are scarce west of the Mississippi, and the above-mentioned deposits may prove suitable (Harris, 1988a, p. 24; Harris, 1988b, p. 20).

Soda Ash and Other Sodium Compounds.—Trona, a naturally occurring mineral, is processed to yield soda ash. One hundred short tons of trona can yield approximately 69 short tons of soda ash (Wyoming Mining Association). The process involves calcining heating to approximately 130° C, followed by a refining procedure, which includes dissolution, removal of impurities and insolubles, recrystallization, and drying. Approximately one-half the soda ash produced in Wyoming is used in glass manufacturing (to lower the melting temperature of silica sand), about 25% is used in chemical manufacturing, and the remainder is used for soaps and detergents, pulp and paper production, flue gas desulfurization, water treatment, and other processes (Kostick, 2006; Wyoming Mining Association, 2001§[4]).

Continuing as the world's largest producer of trona and natural soda ash, Wyoming produced approximately 5% more trona in 2004 than in 2003. Since 2003, China has been the world's largest producer of soda ash overall, but produces synthetic soda ash, which costs more to manufacture and creates more environmentally harmful wastes (Kostick, 2006).

Other Industrial Minerals.—Black Hills Lignite, LLC, produced leonardite from its mine in Converse County near Glenrock. It produced 40,600 t (44,800 short tons), an increase of more than 25% from 2003 production. Rich in humic acid, leonardite is useful as a thinner in drilling mud and also as a fertilizer ingredient (Black Hills Bentonite, LLC, 2004§).

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Harris, R.E., 1988a, The Cassa silica rock deposit, Platte County, Wyoming: Wyoming State Geological Survey Report of Investigations No. 42, 38 p.
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Kostick, D.S., 2006, Soda ash: U.S. Geological Survey Mineral Commodity Summaries 2006, p. 154-155.

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Black Hills Bentonite, LLC, 2004, Black Hills Bentonite, LLC, accessed August 10, 2006, via URL http://www.bhbentonite.com.
Wyoming Mining Association, 2001, Wyoming trona, accessed August 8, 2006, via URL http://www.wma-minelife.com/trona/tronmine/tronmine.htm.

[4]References that include a section mark (§) are found in the Internet References Cited section.

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

(Thousand metric tons and thousand dollars)

Mineral	2002		2003		2004	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays:						
Bentonite	3,340	145,000	3,420	148,000	3,510	151,000
Common	33	446	25	55	49	107
Gemstones	NA	12	NA	13	NA	13
Sand and gravel, construction	7,710	32,100	8,290	36,400	10,200	40,100
Stone, crushed	4,450 r	20,500 r	5,020	22,600	7,150	34,500
Combined values of cement (portland), gypsum (crude), helium (Grade-A), lime, soda ash, zeolites (2004)	XX	806,000	XX	792,000	XX	819,000
Total	XX	1,000,000 r	XX	999,000	XX	1,040,000

rRevised. NA Not available. 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
WYOMING: 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]	12	1,740 r	$7,780 r	$4.48 r	10	1,780	$8,250	$4.64	10	2,900	$14,700	$5.09
Granite	1	W	W	4.71	1	W	W	4.74	1	W	W	4.74
Marble	1	W	W	4.13	1	W	W	4.41	1	W	W	4.41
Traprock	1	W	W	3.86	8	W	W	2.76	8	W	W	2.76
Volcanic cinder and scoria	1	W	W	3.87	1	W	W	5.34	1	W	W	5.33
Miscellaneous stone	2	92	481	5.24	1	295	1,550	5.24	1	1,430	7,510	5.24
Total or average	XX	4,450 r	20,500 r	4.60 r	XX	5,020	22,600	4.50	XX	7,150	34,500	4.82

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

WYOMING: 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	W	W	$10.80
Riprap and jetty stone	W	W	11.03
Coarse aggregate, graded:			
Concrete aggregate, coarse	W	W	7.72
Bituminous aggregate, coarse	W	W	6.17
Fine aggregate (-⅜ inch), screening, undesignated	W	W	2.37
Coarse and fine aggregates, graded road base or subbase	W	W	2.95
Chemical and metallurgical, cement manufacture	W	W	4.39
Unspecified:[2]			
Reported	2,630	$12,600	4.79
Estimated	590	2,900	4.93
Total or average	3,210	15,500	4.81
Grand total or average	5,020	22,600	4.50

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

WYOMING: 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), riprap and jetty stone	W	W	$12.39
Coarse aggregate, graded:			
Concrete aggregate, coarse	W	W	7.78
Bituminous aggregate, coarse	W	W	7.17
Railroad ballast	W	W	4.76
Coarse and fine aggregates:			
Graded road base or subbase	W	W	2.90
Other coarse and fine aggregates	49	$712	14.53
Chemical and metallurgical, cement manufacture	W	W	4.41
Unspecified:[2]			
Reported	3,610	17,800	4.94
Estimated	1,300	6,900	5.21
Total or average	4,920	24,700	5.01
Grand total or average	7,150	34,500	4.82

W Withheld to avoid disclosing company proprietary data; included in "Grand 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 4a

WYOMING: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2003, BY USE AND DISTRICT[1, 2]

(Thousand metric tons and thousand dollars)

Use	Districts 2		Unspecified districts	
	Quantity	Value	Quantity	Value
Construction:				
Coarse aggregate (+1½ inch)[3]	W	W	--	--
Coarse aggregate, graded[4]	W	W	--	--
Fine aggregate (-⅜ inch)[5]	W	W	--	--
Coarse and fine aggregate[6]	W	W	581	1,600
Chemical and metallurgical[7]	W	W	--	--
Unspecified[8]				
Reported	2,330	11,000	295	1,550
Estimated	290	1,600	300	1,300
Total	3,850	18,200	1,170	4,450

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]No crushed stone was produced in District 1.

[3]Includes macadam and riprap and jetty stone.

[4]Includes bituminous aggregate (coarse) and concrete aggregate (coarse).

[5]Includes screening (undesignated).

[6]Includes graded road base or subbase.

[7]Includes cement manufacture.

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

TABLE 4b

WYOMING: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2004, BY USE AND DISTRICT[1, 2]

(Thousand metric tons and thousand dollars)

Use	Districts 2		Unspecified districts	
	Quantity	Value	Quantity	Value
Construction:				
Coarse aggregate (+1½ inch)[3]	W	W	--	--
Coarse aggregate, graded[4]	W	W	--	--
Coarse and fine aggregate[5]	W	W	W	W
Chemical and metallurgical[6]	W	W	--	--
Unspecified:[7]				
Reported	2,170	10,300	1,430	7,510
Estimated	1,000	5,600	300	1,300
Total	4,840	24,100	2,310	10,400

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]No crushed stone was produced in District 1.

[3]Includes riprap and jetty stone.

[4]Includes bituminous aggregate (coarse), concrete aggregate (coarse), and railroad ballast.

[5]Includes graded road base or subbase and other coarse and fine aggregates.

[6]Includes cement manufacture.

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

TABLE 5a
WYOMING: 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 and concrete products[2]	713	$4,710	$6.60
Asphaltic concrete aggregates and other bituminous mixtures	642	6,000	9.35
Road base and coverings[3]	1,810	8,700	4.81
Fill[4]	263	938	3.57
Other miscellaneous uses	3	31	10.33
Unspecified:[5]			
Reported	2,260	5,410	2.39
Estimated	2,600	11,000	4.08
Total or average	8,290	36,400	4.39

[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, railroad ballast, and snow and ice control.
[5]Reported and estimated production without a breakdown by end use.

TABLE 5b
WYOMING: 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]	981	$6,560	$6.68
Asphaltic concrete aggregates and other bituminous mixtures	643	5,140	8.01
Road base and coverings	2,630	9,500	3.61
Road and other stabilization (cement)	211	596	2.82
Fill	105	412	3.94
Snow and ice control	30	86	2.91
Other miscellaneous uses	24	258	10.53
Unspecified:[3]			
Reported	1,290	2,710	2.10
Estimated	4,200	15,000	3.52
Total or average	10,200	40,100	3.95

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

TABLE 6a
WYOMING: 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		Unspecified districts	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	210	2,080	504	2,630	--	--
Asphaltic concrete aggregates and road base materials[3]	1,610	11,100	837	3,630	--	--
Fill[4]	126	367	137	571	--	--
Other miscellaneous uses	3	31	--	--	--	--
Unspecified:[5]						
Reported	297	991	1,290	3,290	681	1,130
Estimated	700	2,800	1,900	7,800	--	--
Total or average	2,940	17,300	4,670	17,900	681	1,130

-- 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, railroad ballast, and snow and ice control.

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

TABLE 6b
WYOMING: 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		Unspecified districts	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates (including concrete sand)[2]	422	3,500	559	3,060	--	--
Asphaltic concrete aggregates and other bituminous mixtures	382	3,370	261	1,770	--	--
Road base and coverings[3]	1,210	4,870	1,630	5,230	--	--
Fill	62	300	42	112	--	--
Other miscellaneous uses[4]	26	104	28	240	--	--
Unspecified:[5]						
Reported	12	72	290	1,000	988	1,630
Estimated	1,200	4,700	3,100	10,000	--	--
Total or average	3,280	16,900	5,880	21,600	988	1,630

-- 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 snow and ice control.
[5]Reported and estimated production without a breakdown by end use.