



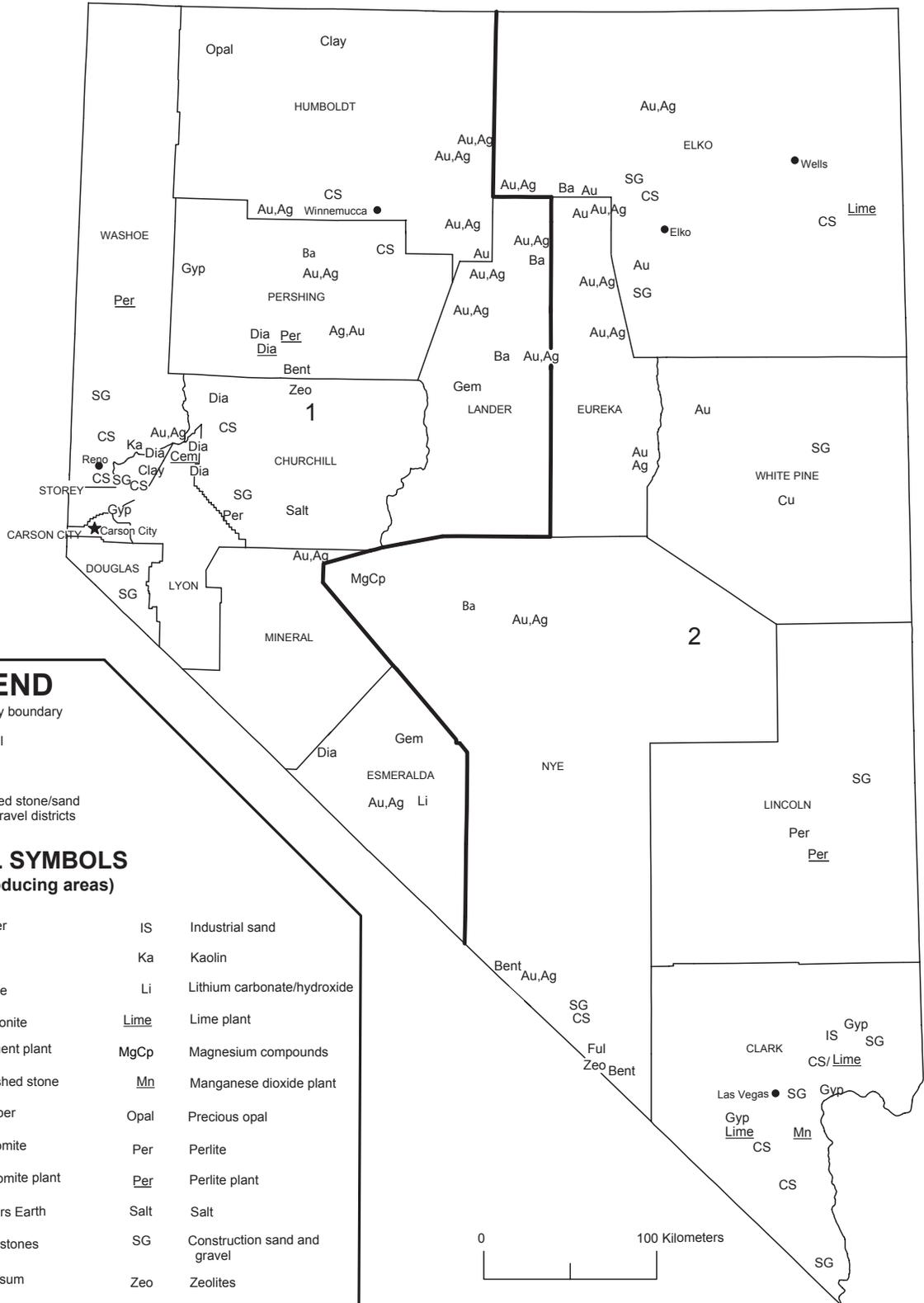
# 2005 Minerals Yearbook

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## NEVADA

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# NEVADA



## LEGEND

— County boundary

★ Capital

• City

1 — Crushed stone/sand and gravel districts

## MINERAL SYMBOLS (Major producing areas)

Ag	Silver	IS	Industrial sand
Au	Gold	Ka	Kaolin
Ba	Barite	Li	Lithium carbonate/hydroxide
Bent	Bentonite	<u>Lime</u>	Lime plant
<u>Cem</u>	Cement plant	MgCp	Magnesium compounds
CS	Crushed stone	<u>Mn</u>	Manganese dioxide plant
Cu	Copper	Opal	Precious opal
Dia	Diatomite	Per	Perlite
<u>Dia</u>	Diatomite plant	<u>Per</u>	Perlite plant
Ful	Fullers Earth	Salt	Salt
Gem	Gemstones	SG	Construction sand and gravel
Gyp	Gypsum	Zeo	Zeolites

0 100 Kilometers

# THE MINERAL INDUSTRY OF NEVADA

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Nevada Bureau of Mines and Geology for collecting information on all nonfuel minerals.

In 2005, Nevada's nonfuel raw mineral production was valued<sup>1</sup> at \$3.88 billion, based upon annual U.S. Geological Survey (USGS) data. This was an increase of \$410 million, a nearly 12% rise from that of 2004, following an 8.8% increase from 2003 to 2004. It was also an alltime high for the State, principally being the result of increases in the price of gold, increases in the production and average price of copper, and an increase in construction sand and gravel production. The State ranked third in the Nation in total nonfuel mineral production value in 2005, which followed rankings of second for the previous 6 years and first in 1993 and 1998. Nevada accounted for more than 7% of the U.S. total nonfuel value in 2005.

Nevada, which has led the Nation in gold production since 1981, provided nearly 83% of the Nation's gold in 2005. In 2005, gold accounted for 78% of the State's total nonfuel raw mineral production value, followed by construction sand and gravel with about 6%, copper (company proprietary data), and crushed stone and silver with about 2% each. For the fourth consecutive year, Nevada ranked second in silver production (first from 1987-2001) accounting for more than 22% of the silver produced from U.S. mines, down from 24% in 2004, 26% in 2003, and 30% in 2002.

In 2005, gold and copper led the State's rise in value with increases of about \$180 million each. Gold production decreased modestly while that of copper jumped significantly as a result of increased production at the Quadra Mining Ltd.'s Robinson Mine, just west of Ely, White Pine County. In addition to the substantial increases in the values of gold and copper were a \$33 million rise in the value of construction sand and gravel and also increases in the values of industrial sand and gravel and lime, up by more than 20% and about 17%, respectively. The unit values of these five nonfuel mineral commodities increased significantly, except that of construction sand and gravel, which was down slightly. The large majority of the State's other nonfuel minerals had smaller increases in value. The largest decrease in value was in that of crushed stone, down \$6 million (table 1). Although not significantly affecting the State's overall total nonfuel mineral value, the value of gemstone production was down about 17%.

In 2005, while Nevada continued to lead the Nation in the quantity of gold produced, it also continued to be the only State to produce magnesite and lithium carbonate minerals (minerals listed in descending order of value) and it remained first of two barite-producing States, second in silver and diatomite, third in

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<sup>1</sup>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 2005 USGS mineral production data published in this chapter are those available as of December 2006. 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>.

gypsum, and 7th in gemstones (gemstones ranking based upon value). While Nevada rose in rank to fourth from fifth in the production of copper, to sixth from seventh in lime, and to sixth from eighth in construction sand and gravel, it decreased to fifth from sixth in zeolite production and was also the producer of significant quantities of industrial sand and gravel. Mercury was produced as a byproduct of gold-silver processing at several mines but output data were not available. Mercury has not been mined domestically as a primary mineral commodity since the closure of the McDermitt Mine in 1992 (Brooks and Matos, 2005<sup>2</sup>).

The following narrative information was provided by the Nevada Bureau of Mines and Geology<sup>3</sup> (NBMG). Production data in the text that follows are those reported by the NBMG as measured by mine shipments, sales, or marketable production (including consumption by producers) and were compiled by the Nevada Commission on Mineral Resources Division of Minerals (NDM) and the Nevada Bureau of Mines and Geology, based upon those State agencies surveys and canvasses, estimates, and information gathered from company annual reports (Price and Meeuwig, 2006, p. 3). The NBMG data are reported by that agency to be nonproprietary and may differ from some USGS production figures as reported to and estimated by the USGS.

## Industry Overview and Trends

Nevada produced the most gold in the shortest period of time in U.S. history. The recent surge in production in the United States largely has been the result of discoveries of Carlin-type gold deposits and other deposits (the large majority currently having been found in Nevada), in which gold occurs primarily in grains invisible to the naked eye. The U.S. production so far in the current period of substantial production (1981 to 2005) has been about 6,070 metric tons (t) [6.07 million kilograms (kg), or 195 million troy ounces], of which about 4,140 t (133 million troy ounces) have been produced in Nevada. This is significantly greater than the total production during the era of the California gold rush of 902 t (29 million troy ounces) from 1849 to 1859; Nevada's Comstock era of about 1,060 t (34 million troy ounces) from 1860 to 1875; and the time period from 1897 to 1920 when Goldfield (Nevada), the Black Hills (South Dakota), Cripple Creek (Colorado), and byproduct production from copper mines in Arizona and Utah contributed to cumulative production of more than 2,950 t (95 million troy ounces). U.S. production from 1996 to 2005 alone was more than 3,140 t (101 million troy ounces). The current surge in production is greater

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<sup>2</sup>References that include a section mark (§) are found in the Internet References Cited section.

<sup>3</sup>Jonathan G. Price, the State Geologist, Richard O. Meeuwig, Editor and Webmaster, Stephen B. Castor, Research Geologist, and John L. Muntean, Research Economic Geologist, coauthored the text of the State mineral industry information provided by the Nevada Bureau of Mines and Geology.

than previous time periods of substantial production not only in terms of cumulative production but also in terms of peak annual production 361 t (11.6 million troy ounces) in 1998 versus 149 t (4.8 million troy ounces) in 1909; 81 t (2.6 million troy ounces) in 1866; and about 96 t (3.1 million troy ounces) in 1853, and duration (at least 25 years for the current surge versus no more than 24 years for any of the earlier ones).

Aggregate production reached an alltime high in 2005 as a result of Nevada's expanding population and needs for construction materials for airports, highways, homes, resort hotels, schools, streets, and various businesses. Ongoing similar demand for construction raw materials was anticipated to continue because of Nevada's annually increasing population. According to the U.S. Census Bureau, Nevada's population reached 2.5 million by mid-2006, up 25% from 2.0 million in the 2000 census (U.S. Census Bureau, 2006§). Population growth was particularly strong in the Las Vegas metropolitan area (Clark County), where an average influx of 9 to 10 new residents per hour was resulting in approximately 0.81 hectares (ha) (two acres) per hour of land development for businesses, homes, and roads. A new cement plant, with production anticipated for 2008, was in the planning stages for the Las Vegas market.

A trend taking place nationwide as well as in the Las Vegas area was the combination of aggregate quarries with landfill operations. Planning for the eventual uses of quarries was vital in areas where urban expansion was also encroaching on the mineral resources. Local quarry resources were mined where practicable and economical in part to reduce transportation costs as well as concerns for highway safety. Post-mining land uses included suburban developments, landfills, and recreation areas. Gypsum mines near the urban growth areas of Las Vegas were being considered as sites for housing developments.

## Employment

The mining industry directly employed 10,561 people in 2005. The average annual pay for mineral industry employees was \$62,716 and was the highest average of any employment sector in the State. The industry was responsible for another 48,000 jobs related to providing the goods and services needed by the industry and its employees (Driesner and Coyner, 2006§). On the average, each of the 10,561 workers in the mining industry in Nevada produced approximately \$361,000 in mined materials in 2005, an alltime high.

## Exploration Activities, Discoveries, and Mine Development Activities

Nevada's exploration activities for industrial minerals continued in 2005 for construction sand and gravel, crushed stone, limestone, gypsum, perlite, silica, and vermiculite. Activities included exploration and the staking of mining claims.

### Industrial Minerals

**Aggregate (Construction Sand and Gravel, Crushed Stone).**—In recent years, aggregate producers have staked

mining claims on carbonate rock resources in the Las Vegas area. However, some of the material may be slated as feed for lime or cement operations. This trend was initiated in 2001 when Rinker Materials Inc. acquired claims on carbonate rocks in the Sloan area south of Las Vegas. In 2004, the U.S. Bureau of Land Management (BLM) completed a Mining Claim Validity Report on these claims, which included comparative testing of materials from the claims with similar material from producers of crushed carbonate rock in the Las Vegas area. On the basis of this report, the BLM challenged the claims in Federal court. As of yearend 2005, the matter was still under consideration.

Nevada Aggregate Holdings staked more than 100 lode claims and nearly 100 placer claims in 2005 over Paleozoic-age carbonate rock exposures in the Dry Canyon Range. These claims, which were presumably staked on aggregate resources, are in the vicinity of the Apex Landfill, which is the site of aggregate production for the Las Vegas metropolitan area. Companies that held claims on carbonate rocks or other aggregate materials in the Las Vegas area in 2005 include Aggregate Industries Management Inc. in the Sloan area, Sierra Ready Mix and Diamond Generating Corp. in the Ivanpah area, and Las Vegas Paving Corp. in the Dry Lake area. In 2005, Excalibar Minerals Inc., a Texas company that produces barite and calcium carbonate product, staked 30 claims in the Independence Mountains in Elko County. The claims were presumably staked for barite because they are in an area of barite prospects near Lone Mountain.

**Gypsum.**—In 2005, more than 130 eight-member placer claims were staked in the Snow Flake block in southeastern Lincoln County about 19 kilometers (km) (12 miles) northwest of Mesquite. The claims, which are in the area of the Snowwhite gypsum prospect, were staked over an extensive surficial gypsum deposit on behalf of Federated Commercial Industries Inc. of Las Vegas.

**Limestone.**—Limestone suitable for cement production is widespread near Las Vegas and several attempts have been made in the past to initiate cement production in the area. Royal Cement Co. reported minor production between 2000 and 2002 at a cement plant near Logandale in Clark County. In 2004, Ash Grove Cement Co. made plans for a major cement plant northeast of Las Vegas on the Moapa Indian Reservation. The proposed source of limestone is from exposures of Devonian-age Sultan Limestone on the reservation. Proposed annual capacity of the plant, which was projected to cost \$250 million, is 1.36 million metric tons (Mt) of cement. Construction was planned to begin in 2006 and be completed in 2008.

**Perlite.**—In 2005, S & B Industrial Minerals NA staked nearly 100 claims in Lincoln County near the Utah State line. No mineral deposits are known in the area. The company is one of the world's largest producers of perlite. S & B Industrial's claims were thought possibly to be for (not previously discovered) perlite deposits, or because the company is also a major clay producer in the area, staked on clay mineral resources.

**Silica.**—In 2005, James Hardie Building Products Inc. conducted an environmental assessment for the expansion of a small mineral materials sales operation at the Kramer Hill

quartzite quarry near Golconda, Humboldt County. The material was mined for testing and is under consideration as feed for the company's fiber cement siding manufacturing plant near Reno. The expansion proposal would cover the removal of as much as 3.6 Mt during a 20-year period from the property, which includes both public and private land. The company staked claims in the area in 2004 and added 10 claims in 2005.

**Vermiculite.**—IBI Corp., a junior international mining and investment company that operates a vermiculite mine in Africa, signed an option agreement in 2004 to purchase claims staked for vermiculite that cover an area of more than 486 ha (1,200 acres) near Mica Peak in Clark County. The vermiculite occurs in altered Precambrian-age rocks in three claim blocks that were originally staked in 1993 and 1994 and include a deposit that was mined on a small scale in the 1940s.

## Metals

Significant increases in exploration in Nevada that began in 2004 continued throughout 2005. Including new claims and annual maintenance of existing claims, Nevada county recorders registered 166,952 claim filings in 2005, a 14.4% increase from that of 2004. A total of nearly 26,800 new claims were filed with the BLM in 2005, a 7% decrease from those of 2004. During 2005, intense staking campaigns were carried out in and around Placer Dome Inc.'s Bald Mountain Mine (White Pine County), in Kobeh Valley, in and around the McDermitt caldera, and in the Bottle Creek District across Desert Valley from the old Sleeper Mine in Humboldt County. In 2005, at least 110 projects were drilled, of which 38 different junior companies completed 60 projects; the rest were done by 12 major or mid-tier companies (Muntean, 2006, p. 13).

**Gold.**—The main exploration objective in Nevada continued to be gold. Major and mid-tier companies continued to focus exploration efforts in and around their active mines in 2005<sup>4</sup> (Muntean, 2006, p. 13). Most new mine reserves were the result of drilling that converted identified resources to reserves. In some cases, resources previously identified by the company were converted to reserves without drilling, simply because of the higher price of gold. Major drill programs were carried out in 2005 by Newmont Mining Corp. at its Leeville, Gold Quarry, Deep Post, Twin Creeks, and Midas Mines. Some known, but as yet undeveloped deposits were in the beginning stages of development. Newmont continued a major program at its Phoenix project in 2005 to put the mine into full production in 2006. The Phoenix Mine was expected to deliver an annual production of between 12,400 and 14,000 kg (400,000 troy ounces and 450,000 troy ounces) of gold as well as 8,160 and 9,070 t (18 million pounds to 20 million pounds) of copper (accounted for as a byproduct credit) during the anticipated

<sup>4</sup>As determined by the NBMG, the classification of companies into major, mid-tier, or junior in this section of the report is arbitrarily based on gold production and market capitalization. The loose criteria were as follows: 1) major companies produce greater than 1 million troy ounces of gold worldwide, and have market capitalizations of over \$3 billion, 2) mid-tier companies produce between 50,000 and 1 million troy ounces of gold and have market capitalizations less than \$3 billion, and 3) junior companies produce less than 50,000 troy ounces of gold and have market capitalizations less than \$500 million.

15-year mine life (Newmont Mining Corp., 2004§). Newmont was also in the process of permitting its Emigrant deposit, southeast of Carlin, Elko County, for a planned startup in 2007 or 2008.

Also in 2005, Barrick Gold Corp. drilled about 76,000 meters (m) (250,000 feet) in and around its Goldstrike Mine on the surface and underground. The Goldstrike Mine is located on the Carlin Trend in north-central Nevada about 40 km northwest of Elko. In addition to a major drill program at its East Archimedes project (a reopening of the Ruby Hill gold mine) near Eureka in 2005, Barrick started prestripping with production planned for 2007.

Other active mines with major drill programs in 2005 included Bald Mountain (Placer Dome), Cortez Joint Venture (60% Placer Dome and 40% Kennecott Minerals Co.), Turquoise Ridge Joint Venture (70% Placer Dome, 30% Newmont), Round Mountain Joint Venture (50% Kinross Gold Corp., 50% Barrick Gold), Marigold Joint Venture (67% Glamis Gold Ltd., 33% Barrick Gold), and Jerritt Canyon (Queenstake Resources Ltd.).

The Northumberland (Newmont Mining) and Ren (Centerra Gold Inc.) projects were the only major drill projects in 2005 undertaken by major or mid-tier companies outside of its active mines. Newmont was attempting to increase and convert to reserves an estimated resource of 62,000 kg (2 million troy ounces) of gold at Northumberland, located north of Round Mountain in Nye County. The company stood to earn a 60% interest in Northumberland in a joint venture with Nevada Western Gold Corp. (a subsidiary of NewWest Resources Goup, the owner of Northumberland), by investing \$25 million in the project. Centerra Gold continued to explore the Ren deposit (in a joint venture with Barrick Gold) located in the northern Carlin trend. Drilling in 2005 increased the measured and indicated resource at Ren to 37,000 kg (1.2 million troy ounces) at a grade of about 13.6 grams per metric ton (g/t) (0.397 troy ounces per short ton) gold.

The discovery of the Cortez Hills deposit by Placer Dome in 2002 continued to fuel much of the investment in junior companies exploring in Nevada. Junior companies concentrated their efforts on the Battle Mountain-Eureka trend, and were either drilling their own properties, or jointventuring them with more major companies. In 2005, Placer continued to delimit the size of the Cortez Hills (60% Placer Dome, 40% Kennecott) and to convert existing resources into declared reserves. Placer Dome estimated in September a bulk-minable reserve of 53.3 Mt of 2.71 g/t (0.079 troy ounces per short ton) gold ore at Cortez Hills, for about 172,000 kg gold (nearly 5.55 million troy ounces). An underground resource (measured and indicated) of 75,300 kg (more than 2.42 million troy ounces) gold at a grade of 14.4 g/t occurs beneath the bulk (open pit) minable reserve. A decline was planned for 2006 to begin converting the underground resources into reserves.

**Other Metals.**—Although gold still dominated the Nevada mining industry, companies were beginning to show interest in other metals. Although Quadra Mining Ltd., which reopened the Robinson copper mine in 2004, did no exploration in 2005, it was planning a significant program for 2006. The only other project in the State at which copper was the primary metal of

interest was Aberdene Mine Ltd.'s New York Canyon project near Luning, Mineral County.

As a result of the high price of molybdenum, Golden Phoenix Minerals Inc. prepared the Ashdown Mine in northwestern Humboldt County to commence production in early 2006. In 2005, Golden Phoenix began a decline to take a bulk sample and built a small flotation mill onsite (Golden Phoenix Minerals Inc., 2006§). Idaho General Mines, Inc. was in the process of assessing whether to develop the Mount Hope porphyry molybdenum deposit north of Eureka and put it into production. Likewise in 2005, Augusta Resource Corp. was planning a drilling project at Mount Hamilton east of Eureka to assess whether the existing molybdenum-copper-tungsten-gold resources there could be put into production.

Despite high silver prices, Midway Gold Corp.'s Black Prince project in Lincoln County was the only reported silver project that was drilled in 2005. Piedmont Mining Company, Inc. and AuEx Ventures, Inc., which leased the property from Newmont Mining Co. in August, planned to evaluate remaining resources and potential at the old Trinity Silver Mine in Pershing County (AuEx Ventures Inc., 2005§).

Vanadium International staked 13 claims in search of vanadium deposits in the south part of the Fish Creek Range in northern Nye County. Interestingly, in a play reminiscent of the substantial increase in uranium exploration in the 1970s, Western Energy Development Corp. staked more than 2,000 claims in 2005 in the McDermitt caldera area west of McDermitt in Humboldt County with the objective of drilling for uranium in 2006.

## Commodity Review

### *Industrial Minerals*

**Aggregate (Construction Sand and Gravel, Crushed Stone).**—Nevada's statewide construction aggregate production based upon NBMG data was estimated to be 42 Mt, 15% more than production for 2004 (Castor, 2005§). This production had an approximate value of \$207 million, well below that of gold and slightly less than the value of copper production. Aggregate production from construction sand and gravel deposits accounted for about 65% of aggregate production statewide, with crushed stone and lightweight aggregate making up the balance. Construction aggregate produced in the Las Vegas area in 2005, estimated to be 31 Mt, was about 15% higher than in 2004. Las Vegas has issued more new home construction permits per 1,000 nonfarming jobs than in any other metropolitan area in the country. The substantial increase in new home construction in recent years, along with attendant infrastructure construction and tourist destination building, has maintained local demand for construction aggregate at high levels for many years.

Sand and gravel operations accounted for more than 70% of the aggregate used in the Las Vegas metropolitan area in 2005, with crushed stone and lightweight aggregate making up the balance. The most important source of sand and gravel aggregate for Las Vegas is the Lone Mountain area northwest of Las Vegas, which accounted for more than 9 Mt in 2005.

Significant production also comes from sand and gravel pits and stone quarries south and northeast of Las Vegas, and in the El Dorado Valley area southeast of Henderson. Since the mid-1990s, portable crushers that produce aggregate from sand and gravel at construction sites have been important producers of base aggregate in Las Vegas.

Companies in the Las Vegas area that produced more than 0.9 Mt (1 million short tons) of aggregate in 2005 were Aggregate Industries, American Sand and Gravel LLC, Las Vegas Paving Corp., Nevada Ready Mix Corp., and Rinker Materials Corp. Companies with production in excess of 454,000 metric tons per year (t/yr) were Granite Construction Inc. and Hollywood Sand and Gravel Co. Nevada Ready Mix Corp. mined all of its aggregate from alluvium in the Lone Mountain area. Minor production came from adjacent bedrock. Las Vegas Paving mostly produced sand and gravel from its Blue Diamond and Lone Mountain pits. The company also produced crushed stone from the Apex landfill about 16 km (10 miles) northeast of Las Vegas. Rinker Materials produced crushed granite from the El Dorado pit near Railroad Pass. Aggregate Industries Management Inc. mined and crushed limestone from Sloan a few miles south of Las Vegas. Community pits and other aggregate mining facilities administered by BLM and operated by several companies contributed more than 6.35 Mt to the Las Vegas area total in 2005. American Sand and Gravel LLC mostly produced aggregate from a community pit in the Lone Mountain area. The Southern Nevada Lightweight operation near the community of Jean produced aggregate for lightweight concrete block and sand for use in stucco. Lightweight aggregate was also shipped into the Las Vegas market by the Cind-R-Lite Block Co. from a cinder operation near Amargosa Valley in Nye County.

Production of construction aggregate in the Reno-Sparks-Carson City area, at about 7.3 Mt, was about 10% higher than in 2004. Companies in the area that produced more than 0.9 Mt of aggregate were Granite Construction Co., Martin Marietta Materials Inc., and RMC Nevada Inc. Granite Construction produced aggregate from several pits in the area, but the bulk of the company's production was crushed andesite and crushed granitic rock from its Lockwood and Hidden Canyon pits, respectively. Most of Martin Marietta's production comes from the Rocky Ridge Quarry north of Sparks, which produces crushed granitic rock. Rilite, Frehner Construction, and A & K Earthmovers, Inc., were also important producers. Crushed rock accounted for about 60% of the aggregate used in 2005 in the Reno-Sparks-Carson City area. Lightweight aggregate, an important component of crushed rock production in the area, was produced by Basalite Concrete Products LLC, Rilite Corp., and RMC Nevada.

Aggregate that was produced outside of the major metropolitan areas in 2005 was estimated to be about 3.6 Mt. Operators in Nye County together produced more than 454,000 t of aggregate in 2005, mostly in the Pahrump area. Churchill, Elko, Lincoln, and Lyon Counties each produced more than 181,000 t of aggregate. Douglas and Humboldt Counties each produced more than 90,700 t (1 million short tons) of aggregate. Other rural Nevada counties are estimated to have produced less than 90,700 t of aggregate each in 2005.

**Barite.**—Nevada produced nearly all the barite mined in the United States. About 95% of the barite sold domestically was used as a weighting agent in oil-and-gas-well drilling fluids. Nevada barite production slipped from 508,000 t in 2004 to 464,000 t in 2005. Nevada barite is mostly sold in the western United States and Canadian markets.

M-I Swaco was the leading Nevada barite producer in 2005, with combined production of about 249,000 t of screened and crushed high-grade ore from the Greystone Mine and ground and bagged barite from its Battle Mountain plant, both in Lander County. Baroid Drilling Fluids (a subsidiary of Halliburton Co.) was the second leading producer in Nevada, shipping 153,000 t. The company mined barite from the Rossi Mine in Elko County and processed it at the Dunphy Mill in Eureka County. Baker Hughes INTEQ shipped 61,700 t of barite from its Argenta operation near Battle Mountain in Lander County. Standard Industrial Minerals shipped a small amount of barite from a deposit of white, paint-grade barite at the P and S Mine in Nye County to a processing plant in Bishop, CA.

Nevada barite mining is now a shadow of its former self of the late 1970s and early 1980s, when as much as 2.18 million metric tons per year (Mt/yr) was produced by 25 or more producers. Since then, increased usage of imported Chinese barite, particularly in the Gulf Coast, sent Nevada production into decline. However, recent increases in domestic demand for barite may spur domestic exploration for the commodity.

**Borate.**—American Borate Co. processed colemanite from stockpile at the Lathrop Wells mill in Nye County. The colemanite was mined from the Billie Mine in Death Valley, CA, which is now shut down. The Nevada plant has a 20,000 t/yr capacity ( $B_2O_3$  basis), but its production was not included in the estimate of total value of Nevada minerals because the ore is from out of State.

**Cement.**—The only major Nevada producer, the Nevada Cement Co. in Fernley, Lyon County, had production of about 540,000 t/yr of cement. The cement was manufactured from Tertiary-age lacustrine limestone mined a few miles south of Fernley, and other ingredients came from northern Nevada. The deposit near Fernley has limited reserves. Nevada Cement was evaluating a limestone deposit in the Natchez Pass Formation in the Humboldt Range of Pershing County. The limestone may be used as raw material in a proposed new cement plant on mill site claims located near the Rye Patch exit on Interstate 80.

**Clay and Shale.**—Nevada clay production was estimated to be 31,000 t in 2005, slightly less than in 2004 (Castor, 2005§). This does not include halloysite clay mined in Washoe County for Nevada Cement (which is included in the cement figure).

IMV Nevada produced more than 27,000 t of bentonite, saponite, and sepiolite from deposits in lacustrine sediments in the Ash Meadows-Amargosa Flat area of Nye County (Castor, 2005§). The clay occurs in shallow, flat-lying deposits in Pliocene-age lacustrine rocks. It was processed at a plant in Amargosa Valley and the clay products are exported worldwide. The saponite and sepiolite deposits are unusual and are considered to have originated in a Pliocene-age playa with an area of at least 57 square kilometers (22 square miles). The sepiolite, which yields most of the profits for the operation, occurs in an almost continuous bed with an average thickness of about 2 mm (7 feet).

**Diatomite.**—The international diatomite industry changed significantly in recent years. Filter aid markets continue to grow, demand for diatomite fillers decreased, and major producers changed ownership. In addition, concerns over health and safety issues associated with the crystalline silica in calcined diatomite have resulted in substitution of talc or calcium carbonate for diatomite fillers.

Nevada accounted for more than 30% of domestic diatomite production. About two-thirds of the diatomite produced in Nevada is used in filtration, with the remainder largely used in absorbents, fillers, and cement. Emerging small-scale uses include pharmaceutical processing and nontoxic insecticides.

Eagle-Picher Minerals, Inc. produces most of Nevada's diatomite at three different locations. The company's Colado operation in Pershing County is the most productive. It consists of a plant at Lovelock that mostly makes filtration product. The company also produces diatomite used in fillers and absorbents at its Clark plant and mine in Storey County, and diatomite is used in insulation from a pit near Hazen in Lyon County.

The Celite Corp. operates a mine at Hazen, with a plant in Fernley, which produces diatomite fillers. Moltan Co. of Tennessee ships absorbent products, cat litter, and soil conditioner under several labels from a mine and plant complex in Lyon County, also in Fernley. The Moltan diatomite resource is large, reportedly containing 100 years of reserves. The Grefco diatomite operation near the Esmeralda/Mineral County line is small relative to other Nevada diatomite producers. American Diatomite Inc. holds claims in the Esmeralda County in the vicinity of the Shu Fly diatomite deposit.

**Gemstones.**—Precious opal was produced from the several mines in the Virgin Valley area of Humboldt County. The best known are the Bonanza, Hidden Valley, Rainbow Ridge, and Royal Peacock Mines. Virgin Valley is a well-known source of gem stones in North America. Much of the opal comes from pay-to-dig operations and was unreported. In addition, Nevada had recorded production of turquoise from the early years of the 20th century and probably has produced more than \$30 million worth of the gemstone. In 2005, minor amounts of turquoise were produced from the Blue Ridge Mine in the Bullion District of Lander County.

**Gypsum.**—In 2005, gypsum production in Nevada was an estimated 1.6 Mt, about 15% less than in 2004. One of the State's largest producers stopped mining in 2005. The two largest Nevada producers, PABCO Gypsum and USG Corp. utilize most of the gypsum mined in Nevada in wallboard plants adjacent to mining operations.

PABCO Gypsum in Clark County mined and processed about 1.5 Mt of gypsum ore in 2005. Although processing yields only about 70% by weight gypsum from the ore, the company still ranks as the largest producer in Nevada. The gypsum, which is in a nearly flat-lying late Miocene-age gypsite blanket in excess of 36 m (120 feet) thick in places, occurs atop a 13-square-kilometer (5-square-mile) mesa.

USG, the nation's leading wallboard producer, was the second leading Nevada producer in 2005, at about 331,000 t. The company mined gypsum in western Pershing County and processed it into wallboard and plaster at a plant at Empire in Washoe County. The gypsum is of the Triassic or Jurassic age

and forms several masses in a 2-square-mile area. The largest mass, the Selenite orebody, contains 85% to 95% gypsum.

The Art Wilson Co. of Carson City shipped anhydrite and gypsum from the Adams Mine in Lyon County. The Adams deposit is associated with limestone in Triassic-age metavolcanic rocks. The D.L. Denman Construction Company mined gypsum at the Pioneer Mine about 16 km (10 miles) east of Las Vegas. Material from these relatively small operations was used in agricultural and cement applications. The Pioneer Mine exploits the same late Miocene-age gypsite deposit as PABCO.

The gypsum mining operation of BPB PLC at Blue Diamond in Clark County was shut down in 2004. The gypsum deposit, which still contained reserves, consisted of nearly pure Permian-age gypsum as much as 9 m (30 feet) thick. The Blue Diamond area has been the site of gypsum mining since 1925 but is now in the path of metropolitan growth, and the former mine site is slated to become an upscale housing development. The adjacent Blue Diamond plant continued to produce wallboard in 2005, using gypsum imported from northern Arizona.

**Lime, Limestone, and Dolomite.**—In 2005, Nevada produced more than 1 Mt of lime. Limestone was mined for lime production at two sites in Nevada that are nearly at opposite ends of the State, but the high-calcium limestone that was utilized at both sites was from the same Devonian-age limestone unit. In addition to lime, relatively minor amounts of crushed limestone were also shipped from both sites, and dolomite is mined at one of the sites.

Graymont Western US, Inc. operated the Pilot Peak plant's high-calcium lime operation in Elko County. It was Nevada's largest producer, mainly marketing lime to gold mining operations for use in cyanide solution pH control. The Pilot Peak plant had three kilns with a combined capacity of more than 635,000 t/yr of quicklime per year and a hydrated lime plant capable of producing 318 metric tons per day (350 short tons per day).

Chemical Lime Co. produced lime at Apex in Clark County. The operation made high-calcium quicklime used in metallurgical processing, paper manufacturing, and environmental markets. The company also produced dolomitic lime and hydrated high calcium lime at Apex, mainly for construction uses. The company's Henderson plant processed Type S lime for building and home construction.

In addition to lime, Graymont Western U.S. and Chemical Lime shipped crushed limestone. Other carbonate rock producers were Min-Ad, Inc. and Nutritional Additives Corp., producers of agricultural and nutritional dolomite products near Winnemucca in Humboldt County. Columbus S.M. LLC, a small California-based company, was evaluating the production of calcium carbonate and magnesium hydroxide from the Columbus Salt Marsh in Esmeralda County.

**Lithium.**—Nevada was the only State with domestic production of lithium raw materials. Chemetall Foote Corp. produced lithium carbonate, lithium hydroxide anhydrite, and lithium hydroxide monohydrate at Silver Peak in Esmeralda County. The lithium chemicals were produced by solar evaporation/preconcentration and subsequent refining techniques from brine that was pumped from beneath the Clayton Valley playa. In 2005, U.S. lithium imports increased more than 200% and exports have fallen by more than 20% since 1997.

**Magnesia.**—Magnesium minerals have been mined at Gabbs Valley in Nye County since 1935. In the 1940s, magnesia was processed in Henderson, NV, to make magnesium metal. From the 1950s to the 1980s, mining and processing were performed by Basic Industries, a major producer of refractory magnesia. Currently, Premier Chemicals LLC owns the magnesia operation in Gabbs Valley. During the 1990s, the availability of cheap foreign refractory magnesia caused production to be switched to light-burned (caustic) magnesia that is mainly marketed for wastewater treatment and agricultural uses. Although production of magnesia was still substantially below its peak in 1981, magnesia shipments from the Gabbs Valley operation increased steadily between 1996 and 2004. Production in 2005 was about the same as in 2004.

About 60% of U.S. magnesia production comes from seawater and natural brines, and the mine at Gabbs Valley was the only location in the country where magnesite and brucite are mined. The brucite, which was shipped in relatively small amounts from the Gabbs operation, was now mainly mined from pods adjacent to igneous rocks in magnesite pits. Magnesite and brucite at Gabbs occur in Triassic-age dolomite. The resource is thought to be well in excess of 50 years at present mining rates.

**Perlite.**—Nevada has large perlite resources and several deposits of perlite that have been mined extensively. The State in recent years has produced only minor amounts of perlite. In 2005, perlite production in Nevada was restricted to relatively small-scale mining of two deposits for niche markets. Wilkin Mining and Trucking Inc. mined perlite from the Tenacity Perlite Mine in Lincoln County. The company has been mining perlite in the area for more than 25 years. In the past, most of the perlite was shipped as crude. The company owned a small popping plant, the Tenacity Perlite Mill, in Caliente. Sales were almost exclusively of expanded perlite that is mainly used for horticultural purposes. In 2005, the company shipped about 1,500 t of expanded perlite.

Eagle-Picher Minerals Inc. produced expanded perlite at its Colado diatomite plant in Pershing County from perlite mined at the Popcorn Mine in Churchill County. The perlite is marketed as a filter aid, and plant capacity is about 7,300 t/yr.

**Potassium Alum.**—A small amount of potassium alum (kalinite) was shipped by Rulco from a deposit in Esmeralda County near Silver Peak. The kalinite is being marketed for horticultural use.

**Salt.**—The Huck Salt Co. produced more than 27,000 t of salt in 2005, up more than 100% during the 2004 production. The salt is mainly used for deicing roads, and production levels are dependent on weather. The 2005 increase was probably owing to depleted road salt stockpiles following a series of heavy snow storms in northern Nevada in the winter of 2004-05. The salt is mined from a playa in Fourmile Flat in Fallabout located in Churchill County.

**Silica.**—Nevada's major silica producer, Simplot Silica Products at Overton in Clark County, shipped about 680,000 t of silica sand in 2005, about the same as in 2004. The sand was mined from a large open pit in the relatively friable Cretaceous-age sandstone, washed in the pit, and transported via an 8-km (5-mile) slurry pipeline to a plant where it is screened and bagged. Silica sand has been produced from the deposit

since the 1930s. Simplot acquired the operation in 1955. The company planned to upgrade its processing facilities in the near future, with a view toward increasing production from levels in 2005 to as much as 771,000 t/yr.

American Cement and Aggregate produced silica sand from the Ordovician-age quartzite about 5 km (3 miles) southeast of Mercury in Nye County. A plan of operations submitted to the BLM in 2001 called for production of as much as 72,600 t/yr. The product, which contains about 98% SiO<sub>2</sub>, is mainly used as construction sand. The company also held claims that cover an abandoned quarry in Eureka Quartzite that contained more than 99% SiO<sub>2</sub> in Clark County.

**Stone, Dimension.**—Nevada is not typically well known as a producer of dimension stone. High-quality cut and polished products are not currently produced from stone mined in the State. Split dimension stone products are produced at two localities in Nevada. Oversize stone blocks are sold for use in wall construction, and new dimension stone operations are being evaluated.

Las Vegas Rock produced ashlar, boulders, crushed landscape rock, and flagstone from its Rainbow Quarries near Goodsprings. The stone is quartz-cemented sandstone that is part of the Jurassic-age Aztec Sandstone, which crops out extensively in Clark County, but is generally too friable for building stone.

Mt. Moriah Stone quarried flaggy, light-gray quartzite from the Cambrian-age Prospect Mountain Quartzite at a quarry in White Pine County. This material, which naturally splits into large slabs, is used for flagstone and other types of uncut building stone.

**Zeolites.**—Nevada contains large identified resources of zeolite. Production has been small, and no zeolite is currently mined in Nevada. Ash Meadows Zeolite LLC ships 907 to 4,540 t/yr of clinoptilolite used in water filtration, odor control, and nuclear cleanup from a plant in Amargosa Valley in Nye County (Castor, 2005§). The clinoptilolite was mined, however, from a small open pit in California that is in a large area of zeolite deposits that extends into Nevada.

## **Metals**

As reported by the NBMG and the NDM, Nevada produced more than 213,000 kg (6.85 million troy ounces) of gold, 309,000 kg (9.95 million troy ounces) of silver, 57,000 t (126 million pounds) of copper, and 109,000 kg (0.24 million pounds) of mercury in 2005. Although gold production was down 2,240 kg (72,000 troy ounces) from that of 2004, Nevada by far maintained its place as the leading producer of gold in the United States, being in excess of 15 times greater than that of the next highest producing State, and more than 6 times that of the combined total of the second through fourth highest producing States. There were 28 mines in Nevada that reported gold production to the NDM in 2005; mercury production was entirely a byproduct of gold-silver processing. Although Coeur d'Alene Mines Corp.'s Rochester Mine remained the leading (primary) silver mine in the United States where silver is the principal product, mining at that operation was planned to end in 2007. In 2005, copper production, encouraged by record-high

prices for the year, was up 370%, entirely because of ramping up of production from Quadra Mining Ltd.'s Robinson copper-gold-silver mine near Ely in White Pine County (Muntean, 2006, p. 13).

**Gold.**—Nevada's production of gold, valued at more than \$3.0 billion, was largely responsible for the United States being the third leading gold producer in the world in 2005; the State alone accounted for 9% of world production of gold. Only the countries of Australia, China, and South Africa produced more gold than Nevada in 2005. Like the northernmost sector of the Republic of South Africa, the "Transvaal," the most productive region of the Republic of South Africa, Nevada is a world leader in terms of gold production per unit area. From the State's mines, 745 t of gold was produced per million square kilometers. (The "Transvaal" Province of the Republic of South Africa was officially restructured into four separate provinces starting in 1994 but still is a commonly used geographical descriptive term.)

Production of gold came from 24 major mining operations in 2005. The Carlin trend in northeastern Nevada accounted for 50% of the total production. Eight additional mining operations, not on the Carlin trend, each produced more than 3,110 kg (100,000 troy ounces) of gold from mostly multimillion-ounce deposits. In large part because of Nevada's production, the United States has been a net exporter of gold, most of which is sold on the international market for jewelry and arts and some of which is sold for its conductive and noncorrosive qualities in computers and other electronics and for use in dental work.

Barrick Gold Corp., with production from its Betze-Post, Meikle, and Ruby Hill Mines, its 50% share of the Round Mountain Mine (50-50 joint venture with Echo Bay Mines Ltd.), and its 33% share of the Marigold Mine (joint venture with Glamis Marigold Mining Co.) produced a total of about 76,600 kg (more than 2,460,000 troy ounces) of gold and quantitatively was the leading producer on the Carlin trend and statewide. For the sixth consecutive year, Barrick's Betze-Post Mine in Eureka County was Nevada's most productive gold mine, with an output of 47,100 kg (more than 1.51 million troy ounces). Barrick's Meikle Mine, the largest underground mine in Nevada, produced more than 15,800 kg (nearly 510,000 troy ounces) of gold (Muntean, 2006, p. 13).

Newmont Mining Corp. was Nevada's second leading gold producer with production as reported from the company's Carlin trend mines—the Capstone/Bootstrap, Midas, and Rain Mines—Newmont's Mule Canyon Mine on the Battle Mountain-Eureka trend (BME), its Phoenix Mine (just south of BME), and on the Getchel trend, the Lone Tree Mine, the Turquoise Ridge joint venture (Newmont—25% share) with Placer Dome Inc., and the Twin Creeks Mine; combined together Newmont had a total Nevada production of nearly 71,200 kg (nearly 2.29 million troy ounces). Newmont's Carlin trend mines alone produced nearly 43,500 kg (nearly 1.4 million troy ounces) of gold, whereas the operations at the Cortez Joint Venture (60% Placer Dome, 40% Kennecott) produced 28,500 kg (916,000 troy ounces) of gold from the Pipeline open pit. Placer Dome Inc., which was acquired by Barrick Gold in early 2006, produced 24,400 kg (nearly 784,000 troy ounces) in 2005 (Muntean, 2006, p. 13; Price and Meeuwig, 2006, p. 8).

Nevada and the United States as a whole have produced a significant portion of the world's gold production. The U.S. Geological Survey estimates that total world gold production, since the beginning of civilization, has been 152,000 t (4.9 billion troy ounces). About 85% of that gold is still in use (in bullion, coins, jewelry, electronics, etc.), and most gold currently being mined is recycled (George, 2007). Through 2005, cumulative gold production in Nevada (beginning with the Comstock lode in 1859) stood at 5,080 t (slightly more than 163 million troy ounces). Approximately 85% of this Nevada total, or 4,320 t (nearly 139 million troy ounces), has been produced since the Carlin Mine began production in 1965; 82% of this same total, or 4,170 t (134 million troy ounces), has been produced during the current period of substantial increase, from 1981 through 2005; and 49% of this total, 2,490 t (80 million troy ounces) has been produced in the decade from 1996 to 2005. Total U.S. production, primarily since 1835, is approximately 16,000 t (514 million troy ounces) or nearly 11% of total world gold production, and total Nevada production is about 3% of total world production and about 31% of total U.S. production. The Carlin trend alone accounts for slightly more than 1% of all the gold ever mined in the world (Price and Meeuwig, 2006, p. 6). By yearend 2005, cumulative production from the Carlin trend reached 1,940 t of gold (62.4 million troy ounces), keeping its place as one of the most productive gold-mining districts in the world.

**Silver.**—Coeur d'Alene's Rochester Mine maintained its place as the leading silver mine in Nevada with a production of about 178,000 kg (more than 5.72 million troy ounces) of silver. Newmont's Midas Mine was the second with production of 67,400 kg (nearly 2.17 million troy ounces) of silver, followed by the Round Mountain Mine in third place with 19,800 kg (more than 636,000 troy ounces) of silver (Muntean, 2006, p. 13).

Much of Nevada's silver production in 2005 was a coproduct or byproduct of gold mining. With a ratio of value (average price of gold to average price of silver) of 61:1 in 2005, only those deposits with more than 61 times as much silver as gold were considered primary silver deposits. Only one such deposit operated in Nevada in 2005—the Coeur Rochester Mine in Pershing County (with a silver to gold production ratio of 81:1). This one mine produced nearly 58% of Nevada's silver in 2005. Nevada's production accounted for 25% of the U.S. total and 1.5% of the world total. Although the Coeur Rochester Mine is approaching closure and production in Alaska now makes that State the leading silver producer in the country because of substantial byproduct silver production, Nevada continued to be referred to by its historic nickname, the "Silver State," by many mining and State government interests, on the basis of both historical and present-day production (Price and Meeuwig, 2006, p. 10).

### **Environmental Issues and Mine Reclamation Awards**

The Nevada Excellence in Mine Reclamation Awards were presented to three mining companies for their accomplishments in restoring and preserving Nevada's environment at the annual Nevada Mining Association Convention, held September 8, 9,

and 10, 2005. Rosebud Mining Co. received the Overall Mine Reclamation Award for their reclamation success at the Rosebud Mine in Pershing County. The Rosebud Mine was a joint venture between Hecla Mining Co. and Newmont Mining Corp., with Hecla as the operator. The underground mine operated from 1997 to 2000. Owing to its impressive work in concurrent reclamation, wildlife habitat enhancement, recontouring and revegetation, and closure plan development and implementation, Rosebud Mining Co. was awarded the Overall Mine Reclamation Award (Driesner and Coyner, 2005§).

Turquoise Ridge Joint Venture was given an award in the category of Innovation in Reclamation Techniques for their work at their Turquoise Ridge Mine in Humboldt County. The Turquoise Ridge Mine was a joint venture between Placer Dome and Newmont Mining Corp., with Placer Dome as the operator. The companies' novel approach to the reclamation and closure of the TRJV Heap Leach Facility addressed several challenging geochemical conditions and eliminated all post-closure discharge from the facility. The original and innovative evaporative cell design incorporated into the TRJV Heap Leach Facility has been copied and used at other mine closure sites in Nevada.

Cortez Gold Mines was honored in the area of Wildlife Habitat Enhancement for their efforts at the Pipeline Mine in Lander County. The Pipeline Mine was a joint venture between Placer Dome and Kennecott Minerals, with Placer Dome as the operator. The unique design and revegetation of the waste rock disposal areas at the Pipeline Mine has created an extremely wildlife friendly site. Additionally, the use of variable topography and native seed mixes has allowed wildlife to rapidly repopulate the mine area. The waste rock disposal areas at the Pipeline Mine were an excellent example of proactive concurrent mine reclamation and successful post-mining land use for enhanced wildlife habitat. "Many of the projects receiving the Nevada Excellence in Mine Reclamation Award are unique in the United States, if not the world," as stated by the Administrator of the NDM. "Nevada's mining industry should be commended for leading the way in successful reclamation and environmental protection."

The Nevada Excellence in Mine Reclamation Awards are given cooperatively by the Nevada Division of Minerals, Nevada Division of Environmental Protection, Nevada Division of Wildlife, BLM, and the U.S. Forest Service. There have been 50 projects and 6 individuals recognized since the awards program began in 1990.

### **Government Programs**

Through a survey conducted early in 2006, the Nevada Division of Minerals collected data for Nevada Bureau of Mines and Geology Special Publication P-15, Major Mines of Nevada 2005. This publication includes, in handbook form, location maps, names and telephone numbers of operators, numbers of employees, and nonproprietary production figures for most mines in Nevada. It also contains a section on economic impacts of the industry. The full contents of this 28-page publication and the NBMG annual report, currently The Nevada Mineral Industry 2005, were produced in print in limited

quantity but also are available for free on the Internet at URL [www.nbmng.unr.edu](http://www.nbmng.unr.edu).

Additional information about the Nevada mineral industry and the U.S. gold industry, including the contents of selected publications, is readily available online through the Nevada Bureau of Mines and Geology Web site at URL [www.nbmng.unr.edu/](http://www.nbmng.unr.edu/) and the Nevada Division of Minerals Web site at URL <http://minerals.state.nv.us/>. Useful national and international data on nonfuel minerals can be obtained from the USGS Web site at URL <http://minerals.usgs.gov/minerals/> and the U.S. Energy Information Administration Web site at URL <http://www.eia.doe.gov/>, which provides data on oil and gas, geothermal, and other energy sources. The Geological Society of Nevada (information accessible at URL [www.gsnv.org](http://www.gsnv.org)) held its semidecadal symposium in May 2005; approximately 90 reviewed papers were published in a bound volume.

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

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	2003		2004		2005		
	Quantity	Value	Quantity	Value	Quantity	Value	
Clays:							
Bentonite	6	817	7	W	7	W	
Fuller's earth	28	3,870	W	W	W	W	
Gold <sup>3</sup>	kilograms	227,000	2,660,000	216,000	2,850,000	212,000	3,030,000
Sand and gravel, construction		37,100	174,000	43,100	197,000	52,300	230,000
Silver <sup>3</sup>	kilograms	322,000	50,900	302,000	65,000	276,000	65,200
Stone, crushed		7,830	48,500	9,760	72,800	9,320	66,800
Combined values of barite, brucite (2003-04), cement (portland), clays (kaolin), copper (2004-05), diatomite, gemstones, gypsum (crude), lime, lithium carbonate, magnesite, perlite (crude), salt, sand and gravel (industrial), zeolites (2004-05), and values indicated by symbol W		XX	252,000	XX	286,000	XX	488,000
Total		XX	3,190,000	XX	3,470,000	XX	3,880,000

W Withheld to avoid disclosing company proprietary data. Withheld values included in "Combined values" 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>Recoverable content of ores, etc.

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

Kind	2004			2005		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Limestone	5	4,330	\$29,900	6	4,710	\$26,700
Dolomite	3	W	W	3	W	W
Granite	3	W	W	3	W	W
Volcanic cinder and scoria	2	W	W	2	W	W
Miscellaneous stone	3	968	9,200	3	1,060	6,580
Total	XX	9,760	72,800	XX	9,320	66,800

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; may not add to totals shown.

TABLE 3  
NEVADA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2005, BY USE<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
<b>Construction:</b>		
Coarse aggregate, graded, concrete aggregate (coarse)	W	W
<b>Fine aggregate (-3/8 inch):</b>		
Stone sand, concrete	W	W
Other fine aggregate	W	W
<b>Coarse and fine aggregates:</b>		
Graded road base or subbase	W	W
Other coarse and fine aggregates	W	W
Other construction materials	2	13
Agricultural, other agricultural uses	W	W
<b>Chemical and metallurgical:</b>		
Cement manufacture	W	W
Lime manufacture	W	W
Chemical stone	W	W
Sulfur oxide removal	W	W
Special, mine dusting or acid water treatment	W	W
<b>Unspecified<sup>2</sup></b>		
Reported	2,620	16,400
Estimated	2,900	18,000
Total	5,520	34,700
Grand total	9,320	66,800

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

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

<sup>2</sup>Reported and estimated production without a breakdown by end use.

TABLE 4  
NEVADA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2005, BY USE AND BY DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		District 2	
	Quantity	Value	Quantity	Value
<b>Construction:</b>				
Coarse aggregate graded <sup>2</sup>	--	--	W	W
Fine aggregate (-3/8 inch) <sup>3</sup>	--	--	W	W
Coarse and fine aggregates <sup>4</sup>	W	W	W	W
Other construction materials	--	--	2	13
Agricultural <sup>5</sup>	W	W	--	--
Chemical and metallurgical <sup>6</sup>	W	W	W	W
Special <sup>7</sup>	--	--	W	W
<b>Unspecified:<sup>8</sup></b>				
Reported	1,840	11,500	777	4,880
Estimated	1,100	7,200	1,800	11,000
Total	3,950	33,100	5,380	33,700

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 concrete aggregate (coarse).

<sup>3</sup>Includes stone sand (concrete) and other fine aggregate.

<sup>4</sup>Includes graded road bases or subbase and other coarse and fine aggregates.

<sup>5</sup>Includes other agricultural uses.

<sup>6</sup>Includes cement and lime manufacture, chemical stone, and sulfur oxide removal.

<sup>7</sup>Includes mine dusting or acid water treatment.

<sup>8</sup>Reported and estimated production without a break down by end use.

TABLE 5  
NEVADA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2005,  
BY MAJOR USE CATEGORY<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete products (blocks, bricks, pipe, decorative, etc.)	3,290	\$24,100	\$7.33
Plaster and gunite sands	582	4,080	7.01
Asphaltic concrete aggregates and other bituminous mixtures	1,300	8,800	6.78
Road base and coverings <sup>2</sup>	8,080	32,100	3.97
Fill	1,680	5,600	3.35
Snow and ice control	58	298	5.14
Other miscellaneous uses <sup>3</sup>	2,120	9,610	4.53
Unspecified: <sup>4</sup>			
Reported	18,300	60,700	3.32
Estimated	16,900	85,100	5.04
Total or average	52,300	230,000	4.41

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

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

<sup>3</sup>Includes filtration.

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

TABLE 6  
NEVADA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2005, BY USE AND DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		Unspecified districts	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates (including concrete sand) <sup>2</sup>	1,010	8,260	2,870	19,900	--	--
Asphaltic concrete aggregates and other bituminous mixtures	358	3,230	891	5,200	49	367
Road base and coverings <sup>3</sup>	1,920	10,500	6,070	21,100	95	481
Fill	1,140	3,940	534	1,660	--	--
Other miscellaneous uses <sup>4</sup>	776	2,810	1,410	7,100	--	--
Unspecified: <sup>5</sup>						
Reported	1,800	9,990	5,530	29,600	11,000	21,100
Estimated	2,100	10,500	14,800	74,600	--	--
Total	9,070	49,300	32,100	159,000	11,100	22,000

-- 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).

<sup>4</sup>Includes filtration and snow and ice control.

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