

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.

Nevada, the Nation's leading State in gold and silver production, ranked second in 1997 in total nonfuel mineral production value,¹ according to the U.S. Geological Survey (USGS). This was the fifth year in the past six in which the State ranked second; in 1993, Nevada was first in the Nation. Nevada mines provided 68% and 42% of the Nation's gold and silver, respectively, and in so doing, the "Silver State" has been first in gold production since 1981 and in silver since 1987. Thirty-two mines reported gold production and 25 mines reported production of silver. The State's total estimated nonfuel mineral value for 1997 was about \$3.03 billion, a decrease of about 6% from that of 1996. This followed a 5.6% increase from 1995 to 1996 (based on final 1996 data). The State accounted for almost 8% of the U.S. total nonfuel mineral production value.

In 1997, gold accounted for 82% of Nevada's nonfuel mineral value, but the metal also accounted for the largest portion of the State's decrease in value. Gold production increased, but owing to a lower average price for gold, the metal's total value decreased by about \$210 million. Other nonfuel minerals that had significant decreases included construction sand and gravel, lithium minerals, and silver. Copper production increased by an estimated 44%, but its value increase was less owing to decreased copper prices. Smaller value increases also occurred for barite and portland cement. In 1996, substantial increases in the values of copper and gold accounted for a large majority of the increase in value. Significant but more moderate increases in the values of lime, diatomite, lithium minerals, crushed stone, portland cement, and construction sand and gravel (in descending order of relative increase) also contributed to that year's rise in value. Only silver showed any significant decrease in value in 1996.

Based on USGS estimates of quantities produced in the 50 States during 1997, Nevada remained first in gold, silver, and barite production; first of three mercury-producing States; and the only State to produce magnesite and brucite (in descending order of value). The State also retained its 1996 ranking in a number of other mineral commodities—it was second in diatomite, second

of two States that produced lithium minerals, fourth of six crude perlite-producing States, and fifth in crude gypsum and zeolites. Nevada moved up in rank to fourth from fifth in copper production. In addition, significant quantities of construction and industrial sand and gravel and lime were produced in the State.

The following narrative information was provided by the Nevada Bureau of Mines and Geology (NBMG).² Production data in the following text are those reported by the NBMG, based on its own surveys, canvasses, and estimates. The NBMG data are reported by that agency to be nonproprietary data (Nevada Bureau of Mines and Geology, 1998) and may differ from some USGS preliminary estimates and production figures as reported to the USGS.

Nevada had a record production year for several mineral commodities (Nevada Bureau of Mines and Geology, 1998). The State reached a gold production milestone in 1997—exceeding 243,000 kilograms (7.8 million troy ounces), and for the second consecutive year exceeded the 218,000 kilogram (7 million ounces) mark. According to the NBMG, Nevada is the third largest producer of gold in the world, behind only South Africa and Australia. Silver production also set a new record for the State, exceeding 768 metric tons, breaking the previous record set in 1995 by over 4.35 tons. Silver production has exceeded the 622 ton (20 million ounces) mark for the fifth year in a row. Copper production was up 50% from that of 1996, and lime production also increased nearly 50% over 1996, largely due to increased demand by gold operations for pH control. Gypsum production also increased owing to the construction industry's demand for more wallboard.

The trend of growing production of gold from underground operations that became more firmly established in 1996 continued in 1997. Twenty percent (48,800 kilograms) of Nevada's gold production was mined underground. Barrick Goldstrike's Meikle Mine in Elko County, for the second consecutive year, was the largest underground gold mine in the United States with 17,900 kilograms produced in 1997. New underground mines expected to begin production in 1998 include Getchell Gold's Turquoise Ridge Mine and Midas Joint Venture's Ken Snyder Mine. While open pit mines will continue to produce most of Nevada's gold, underground mines are becoming increasingly important.

Nevada's reported gold reserves stood at about 3.2 million kilograms (103 million ounces) at the end of 1997. These reserves were defined by the NBMG as those at or near currently operating mines that can be mined at a profit with reasonably foreseeable economic conditions. With the average price of gold

¹The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending on the minerals or mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All 1997 USGS mineral production data published in this chapter are estimates as of January 1998. For some commodities (for example, construction sand and gravel, crushed stone, and portland cement), estimates are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. Call MINES FaxBack at (703) 648-4999 from a fax machine with a touch-tone handset, and request Document # 1000 for a telephone listing of all mineral commodity specialists, or call USGS information at (703) 648-4000 for the specialist's name and number. This telephone listing may also be retrieved over the Internet at <http://minerals.er.usgs.gov/minerals/contacts/comdir.html>. All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved by way of MINES FaxBack or over the Internet at <http://minerals.er.usgs.gov/minerals/>.

²Joseph V. Tingley and Daphne D. La Pointe, Research Geologists, co-authored the remainder of the text of mineral industry information provided by the Nevada Bureau of Mines and Geology. More detail, especially regarding mineral exploration in Nevada in 1997, may be obtained from their original report. See References Cited section at end of this report.

during 1997 somewhat low, many companies had to reevaluate their reserves, and reclassify some as subeconomic resources. Pending a rebound in the price of gold, these subeconomic resources would regain their reserve status. At yearend 1997 gold prices, the existing proven reserves were deemed enough to sustain gold production at then current levels for about 15 years.

For the third year, Barrick Gold's Betze-Post Mine was Nevada's largest gold mine, producing 49,900 kilograms (Tingley and La Pointe, 1998a). Newmont's Carlin trend deposits reported a production of 56,600 kilograms of gold, but this figure is the combined production of several individual mines. Newmont Mining Corp. completed its \$2.1 billion merger with Santa Fe Pacific Gold Corp. in May adding the Lone Tree Complex, the Twin Creeks Mine, and half-interest in the Rosebud Mine to the Newmont portfolio of operations. With the acquisition of these mines, Newmont became the State's largest gold-producing company with over 84,000 kilograms of gold production in 1997.

Other major gold producers in 1997 included Smoky Valley Common Operation's Round Mountain Mine, 15,100 kilograms; Placer Dome's Cortez Gold Mines (including the new Pipeline Mine), 12,600 kilograms; Independence Mining Co.'s Jerritt Canyon Mine, 9,705 kilograms; Barrick Gold's Bullfrog Mine, 6,430 kilograms; Echo Bay Minerals Co., 5,820 kilograms from its McCoy-Cove operation; Getchell Gold's Getchell Mine, 5,520 kilograms; and the Florida Canyon Mine of Florida Canyon Mining Co., 5,100 kilograms. Kinross Gold Corp.'s Candelaria Mine, near Hawthorne, produced 1,650 gold equivalent kilograms in 1997. Active mining ceased on the property in the second quarter, but residual leaching operations are expected to continue to the year 2000.

Nevada gold mines that came into production in 1997 included Placer Dome's Pipeline Mine in Lander County, Homestake's Ruby Hill Mine near Eureka, Hecla's Rosebud Mine (production began in April) in Pershing County, and Cornucopia's Mineral Ridge Mine at Silver Peak. Placer Dome commissioned new gold processing facilities for the Pipeline Mine at its 60%-owned Cortez Joint Venture (Kennecott Minerals Co. owns 40%)—the first gold dore was poured in March.

All of Nevada's metal mines suffered to some extent owing to lower metal prices during 1997. The Mineral Ridge Mine (gold) temporarily closed before yearend. Other closures during the year were the Candelaria (silver and gold), Sterling (gold), and Mount Hamilton Mines (gold and silver). Arimetco ceased mining at its Yerington copper operations in November. Many mines, including Newmont's Carlin Trend operations and Getchell Gold's Getchell Mine reduced employee levels and revised their operations to reduce cost.

Three mines contributed most of Nevada's silver production in 1997. Echo Bay's McCoy-Cove operation produced 342 tons, Coeur d'Alene Mines' Rochester Mine produced 208 tons, and Kinross Gold's Candelaria Mine produced 90.2 tons. Other major producers were Kennecott Rawhide Mining Co.'s Denton Rawhide Mine with 34.2 tons, the Hycroft Mine of Hycroft Resources & Development with 14.9 tons, and Smoky Valley Common Operation's Round Mountain Mine with 11.1 tons. Nevada's newest major silver producer, Hecla's Rosebud Mine, produced 10.5 tons.

Copper production by Arimetco International Inc. from its Yerington operation in Lyon County totaled slightly more than 4,760 tons. The Robinson Mine in White Pine County near Ely, operated by BHP Copper North America, completed its first full year of production in 1997 and shipped concentrates containing 62,600 tons of copper to the BHP smelter at San Manuel, AZ. The property has 260 million tons of minable reserves and a projected mine life of 17 years.

Exploration.—As in previous years, 1997 exploration activity in Nevada was concentrated in a broad band across the central and northern parts of the State. Heavy concentrations of activity were reported along the Battle Mountain-Eureka, Getchell, and Carlin "trends," as well as in specific districts, such as Gold Circle (Midas Joint Venture) and Eureka where major discoveries have been made (Tingley and La Pointe, 1998b). Exploration for new deposits, particularly gold, is an ongoing effort by both current producing companies and others not operating mines in the State. About 310 geologists in Nevada were employed in 1997 primarily to explore for mineral properties to be developed into new mines. These geologists, together with their support staff and expenditures on drilling, assaying, travel, and other related costs, represented a significant economic impact, particularly in the rural areas. In 1997, exploration spending in the State totaled about \$131 million.

In Churchill County, Echo Bay Exploration in joint venture with Americomm Resources Corp. completed a third round of drilling on its property in the Jessup district and in the northwestern part of the county. They further delineated an area of known mineralization with a shallow gold resource and identified a new resource area. To the southeast, in the Bell Mountain district, Ecu Gold Mining Co. Inc. completed its first phase diamond drilling program on the Bell Mountain property, where known reserves are about 3,420 kilograms of equivalent gold. In the New Pass district (Churchill-Lander County line), White Knight Gold (U.S.) Inc. and Quest U.S.A. Resources Inc. are pursuing a mining venture on Quest's New Pass property. Previous work has indicated a more than 2.81-million-metric-ton gold resource grading 1.89 grams per metric ton (0.055 troy ounces per short ton).

In Elko County, High Desert Mineral Resources completed geologic mapping and geophysical survey work on several properties including the Bell Creek property and the Evans Mine area and limited trench sampling at the Bob Creek property in the Carlin district. In northwest Elko County, Atlas Corp. turned its Doby George property (Aura district) over to Western Exploration and Development Ltd. for \$1.6 million, and Crown Resources Corp. continued exploration on its Maggie Summit Project. To the east, Golden Phoenix Minerals investigated the copper, gold, and silver potential of properties in the Contact district. Previous drilling at Contact by Phelps Dodge encountered high-grade intercepts of 10% copper over 12 meters, silver values as high as 439 grams per ton, and gold values as high as 5.14 grams per ton on properties with a reported resource of 227,000 to 454,000 tons of copper. In the Bootstrap district, Barrick Gold Inc. planned exploration of the deeper potential of the Dee gold property owned by Rayrock Yellowknife Resources. In the south part of Bootstrap, drilling results from the Ren property of Romarco

Minerals Inc. indicated a potential for deep, higher-grade mineralization where structures intersect the favorable Popovich Formation.

In western Elko County, exploration activity was at a high level in the Gold Circle district surrounding the town of Midas. Interest centered at the new Ken Snyder discovery of Euro and Franco Nevada Mining Corp. in the heart of the old district. Exploration and definition drilling continued on the high-grade deposit, now estimated by the company to contain 65,300 kilograms of gold and 715,000 kilograms of silver. On adjacent ground, Romarco Minerals Inc. drilled 57 holes exploring its Midas project where high-grade mineralization was intersected over a 518-meter strike length of the Gold Crown vein. About 96 kilometers northeast of Midas (Island Mountain district), Quest International entered into a joint venture on Aur Resources' Coleman Canyon gold project. Westmont Gold Inc. previously explored the property and encountered significant gold mineralization, with gold grades ranging as high as 6.41 grams per ton. Core drilling at the Ivanhoe property of Great Basin Gold Ltd. and Cornucopia Resources Ltd. intersected a northwest-trending structural system hosting epithermal, multi-stage quartz veins containing visible gold and silver mineralization. The structure intersected is in upper plate Valmy Formation rocks and is believed to be a feeder system for the overlying 93,300-kilogram gold resource of the Hollister deposit. The two companies plan to pursue exploration of the Valmy targets. Three companies were active in the Snowstorm Mountains district. Oro Nevada Resources Inc. completed one hole on the Knolls target to test a Controlled Source Audio Magnetotelluric (CSAMT) resistivity high—testing results were negative.

In Esmeralda County, two targets were tested in 1997 by Camnor Resources Ltd. on its Alum district property, southwest of Tonopah. The three holes drilled intersected extensive zones of anomalous silver, gold, mercury, arsenic, and molybdenum in altered rocks, but no economic grades were found. To the northeast, Dia Met Minerals Ltd. commenced Air-Track drilling on its Weepah (district) property in August. Southwest of Goldfield, Cascade Metals Inc. completed preliminary mapping and sampling on the contiguous Florida-Wisconsin, Mozart, and Texas projects in the Lida district and has staked an additional 120 lode claims. In June, Cornucopia Resources Ltd. poured its first gold at the new Mineral Ridge Mine in the Silver Peak district, but in November the company announced the temporary suspension of mining operations owing to depressed metal prices. Eastfield Resources explored two properties near Tonopah. The Three Hills property, containing an estimated gold resource of 5.7 million tons grading 0.788 grams per ton, was explored for high-grade vein and bulk tonnage potential—several surface targets remaining to be drill tested. South of Tonopah, Prism and Eastfield Resources outlined a gold resource of 1.45 million tons grading 0.89 grams per ton on the Hill of Gold property (Divide district). A number of property targets remained to be tested.

In Eureka County, Barrick Gold Exploration Inc. purchased more than 90% of Atlas's Gold Bar properties from Atlas Corp. with an option to acquire the balance within 2 years. The Gold Bar claim block covers about 161 square kilometers in the Antelope district and contains the Gold Bar mill. In the Eureka

district, Alta Gold Co. acquired the 1,820-hectare Lookout Mountain property, south of the town of Eureka, from Echo Bay Mines; Uranex and Cambior completed significant amounts of drilling on the New York Canyon and Hoosac property of High Desert Mineral Resources Inc.; European American Resources announced encouraging drill results from its Prospect Mountain property just outside the town; and Echo Bay Mines stepped up exploration on its Ratto Canyon property. The major property in the Eureka district was Homestake Mining Company's new Ruby Hill Mine. Homestake continued exploration in the immediate area, and a deep drilling program was planned to further define the zone of high-grade sulfide mineralization discovered in 1996 some 457 meters below the West Archimedes open pit. At yearend, Ruby Hill proven and probable reserves stood at 6.38 million tons grading 3.36 grams per ton of gold plus 6.51 million tons of mineralized material grading 2.51 grams per ton of gold.

On the northern border of Eureka County (Lynn district), exploration and development activity continued at a high pace. The Newmont-Barrick HD Venture planned preparation of an Environmental Impact Statement on the Leeville Project where proposed mining operations would take place until the year 2017. High Desert Mineral Resources Inc. and the Barrick Gold Venture (a partnership of Newmont and Barrick) explored the Micron and Golden Boy claims, and Newmont Gold intercepted high-grade gold values in a deep drilling program south of its Post deposit in the northern part of the district. The holes tested the lower-plate rocks below the Roberts Mountains thrust and are considered to be the deepest holes ever drilled in the Carlin Trend. At Rock Creek on the southeast flank of the Sheep Creek Range northeast of Battle Mountain, Altaur Gold optioned a 60% interest in the Rock Creek gold property from Brancote U.S. Inc. of Reno. Previous Rock Creek exploration outlined a small gold resource of about 726,000 tons grading 1.54 grams per ton.

In Humboldt County, the results of a 25-hole drill program on the Converse gold property (Buffalo Mountain district) by Uranex, Inc. doubled that gold resource. The company has now outlined 39 million tons grading 0.686 grams per ton of gold in the main area of mineralization with an additional 6.4 million tons at the same grade delineated in an open extension of the zone to the north. At the Turquoise Ridge and Getchell Underground deposits at Getchell Gold Corp.'s Getchell Mine in the Potosi district, a net 49,800 contained kilograms of proven and probable gold reserves were added in 1997 to previous company estimates. Total gold reserves at yearend were 193,000 contained kilograms, including proven and probable underground reserves of 190,000 kilograms with an average grade of 13 grams per ton. In the southern part of the district, exploration on the Barrick Gold Corp.-Homestake Mining Co. Pinson Mine property identified new open pit reserves that may extend the mine life. Mustang Gold Corp. conducted geologic mapping, sampling, and ground geophysics at its Pearl Canyon property in the Varyville district. A first-phase reverse circulation drill program completed at the Roberts Polymetallic Zone intersected significant amounts of copper and silver over a 305-meter strike length—additional drilling was planned.

In Lander County (Battle Mountain district), Battle Mountain Gold Co. increased total estimated proven and probable gold

reserves at the Phoenix property to 77,900 kilograms. Additional drilling is planned for the Fortitude, Midas, and Phoenix deposits in 1998 in an effort to further expand estimated reserves. In the southwest part of the Battle Mountain district, Consolidated North Coast Industries Ltd. planned to explore the Wilson Independence property near Copper Canyon where prior exploration has indicated a resource of over 24,800 kilograms of gold. In the Buffalo Valley district, west of Battle Mountain, Fairmile Gold Corp. reported that drilling at its Buffalo Valley Project increased the total gold resource to 18,700 kilograms. The Cortez Joint Venture also completed an extensive drilling program on the west side of Coral Gold's Robertson property in Crescent Valley and continued exploration at the South Pipeline project. Exploration drilling at Echo Bay's McCoy-Cove in the McCoy district south of Battle Mountain hit additional gold mineralization that could potentially extend the life of the mine by one or more years.

In Lyon County, GLS Global Assets and Adamas Resources obtained encouraging results from their sampling program on the Hydra-Hercules gold and silver property in the Como district. The property contains a geologic resource estimated by previous operators to be between 3,640 kilograms and 6,630 kilograms of gold and over 46,700 kilograms of silver.

In Mineral County, in the Aurora district, Nevada Consolidated Goldfields, operator of the Aurora Mine, recently acquired the neighboring Aurora Partnership property, which could add 5,600 kilograms (180,000 ounces) of gold to reserves at the Aurora Mine. West of Aurora, in the Borealis district, Cambior Exploration USA Inc. has budgeted \$500,000 for exploration on the Borealis Mine property in 1998. Cambior's exploration and development drilling program will include continued work on the Graben-Freedom Flats sulfide resource, reported by the company to contain an estimated 6,380 kilograms of gold. In the Rawhide district, Kennecott Exploration proceeded in areas adjacent to the Denton-Rawhide Mine, where reserves are reported by Kennecott to stand at about 13,900 kilograms of gold and 121,000 kilograms of silver to be produced over the next 5 years.

In Nye County near Beatty, Inter-Rock Gold Inc. reported that revised minable reserves at the Daisy Mine (Bare Mountain district) now stand at 15.7 million tons grading 0.823 grams per ton. The revised figures incorporate both sulfide gold mineralization and additional oxide mineralization outlined by early 1997 drilling. To the west, in the Bullfrog district, JABA Inc., of Tucson, AZ, announced plans for core drilling on its Providence claims, located adjacent to Barrick Gold's Bullfrog Mine. Miranda Industries Inc. announced completion of the first phase of drilling at its Secret Basin project in the Cloverdale district. Owing to the results, Miranda staked additional claims and now has 80 claims in the area.

In the Golden Arrow district, Tombstone Explorations acquired the Golden Arrow project (composed of 16 patented and 419 unpatented claims) from Kennecott Explorations and commenced drilling late in 1997. Previous operators estimated a resource of 11.3 million tons at 1.34 grams per ton of gold from two zones at Golden Arrow.

The Round Mountain Gold Mine of Echo Bay Minerals and Homestake Mining Co. at Round Mountain adopted a new, optimized open pit plan, eliminating the mining of lower-grade,

higher-cost sulfide material. This reduced the mine's proven and probable reserves by about 37,300 kilograms of gold to 364 million tons of ore grading 0.617 grams per ton of gold plus 129 million tons mineralized material grading 0.549 grams per ton of gold.

Royal Gold, Inc. entered into exploration and lease purchase option agreements with New Concept Mining, Inc. and Nevada Manhattan Mining, Inc. on properties in the Manhattan district. According to the company, the New Concept property contains proven and probable reserves of 1.54 million tons grading 4.46 grams per ton of gold and a total resource of 4.8 million tons at an average grade of 6.5 grams per ton of gold, mostly from underground resources. South of Manhattan, in the Rye Patch district, Tombstone Explorations acquired the Midway property from Kennecott Explorations. Kennecott completed 132 reverse-circulation and 4 diamond drill holes on the property and identified a preliminary resource of 8,400 kilograms of gold.

In Pershing County, falling gold prices prompted Kinross Goldbanks Mining Co. to put off the start of its Goldbanks Mine in the Goldbanks district, south of Winnemucca, until the spring of 1999. Development and exploration activities in the Radio Tower East, Jasperoid Hill, Cone, and Headwaters areas of the Florida Canyon property in the Imlay district resulted in additions to the property's gold resource estimate. According to the company, the Florida Canyon property has proven and probable reserves of 41.3 million tons grading 0.823 grams per ton of gold along with 111.4 million tons mineralized material grading 0.75 grams per ton of gold. At Hecla's Rosebud Gold Mine (Rosebud district), the company has proven and probable reserves consisting of 1.16 million tons of ore at an average grade of 13.4 grams per ton of gold for a total of nearly 15,600 kilograms of gold. The deposit also contains about 105.7 metric tons of silver.

In Storey County, BMR Gold Corp. completed a drill program at BMR's Comstock Mine in the southern part of the district. The program was designed to expand the Billy the Kid ore body to the east and test continuity of mineralization between the defined ore body and the old Hartford pit to the north-northwest. Seven of twelve reverse-circulation holes intersected ore grade intercepts that will add to proven-probable resources. At present, the Comstock Mine contains 2,630 proven-probable equivalent kilograms of gold.

In Washoe County, Canyon Resources Corp. sold its Mountain View property in the Deephole district near Gerlach for \$3 million to Mountain View Gold, Inc. According to the company, the Mountain View property, acquired in 1992 by Canyon Resources, contains an estimated resource of 19 million tons of 0.926 grams per ton of gold lying beneath 30 meters to 180 meters of gravel to the west of the Granite Mountains. Canyon and Homestake Mining Co. drilled a total of 186 holes while evaluating the Mountain View discovery and searching unsuccessfully for other mineralized areas on the property. To the north, in the Leadville district, Royaledge Resources Inc. completed a 10-hole drilling program on its Hog Ranch property, a joint venture with Cameco U.S. Inc. Two small gold resources on the property, identified by the previous operator, were reported by the companies to contain an estimated 2,400 kilograms of gold.

Alta Gold Co. increased its land position adjacent to its Olinghouse Mine, east of Reno, by more than 50% by staking 140 additional mining claims in an area previously withdrawn by the Federal Government. Geochemical work in the new lands defined 10 drill targets, 2 of which are defined by anomalies, each more than 610 meters in length and 512 meters in width.

In White Pine County, Alta Gold Co. has an agreement with Osceola Gold Mining Co. to develop gold properties covering about 730 hectares in the Osceola district. Alta Gold's initial drilling is focusing in the area around the old Gilded Age Mine. During 1997, reports of proven and probable gold reserves at Alta Gold's Griffon property were expanded by the company by more than 40% to nearly 3,100 kilograms (100,000 ounces). of gold and mine life extended by at least 1 year. Site development at Griffon began in July and mining commenced in September with production scheduled for January 1998. A more detailed accounting of Nevada exploration activities may be found in the authors' original report (Tingley and LaPoint, 1998b).

NBMG, in collaboration with the Nevada Division of Minerals in the Department of Business and Industry, produces two special publications on the mining industry in Nevada each year. "Major

Mines of Nevada" is released in the spring and includes names, addresses, telephone numbers, location maps, and production and employment statistics of the major producers. "The Nevada Mineral Industry" is released near the end of the summer as a 50-plus-page publication covering exploration, development, and production activities for the year in metals, industrial minerals, oil and gas, and geothermal power. It also includes a directory of mining and milling operations and a table with resource figures and cumulative production statistics and geologic data for major gold and silver deposits in Nevada. Both publications are available for sale by NBMG and for free on the World Wide Web (<http://www.nbmng.unr.edu>).

References Cited

- Nevada Bureau of Mines and Geology, 1998, Major mines of Nevada—Mineral industries in Nevada's economy—1997: Nevada Bureau of Mines and Geology Special Publication P-9, p. 22-27.
- Tingley, J.V., and La Pointe, D.D., 1998a, Annual review 1997—The United States 1997—Nevada: Mining Engineering, v. 50, no. 5, May, p. 92-96.
- 1998b, Nevada 1997, Nevada Bureau of Mines and Geology, March 1998, 18 p.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NEVADA 1/ 2/

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	1995		1996		1997 p/	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays:						
Bentonite	6	477	6	580	29	352
Kaolin	W	W	25	W	34	W
Copper 3/	6	19,800	W	W	W	W
Gemstones	NA	306	NA	234	NA	224
Gold 3/ kilograms	210,000	2,620,000	213,000	2,680,000	226,000	2,470,000
Sand and gravel, construction	22,500	110,000	22,400	113,000	18,200	93,700
Silver 3/ metric tons	693	115,000	605	101,000	676	94,600
Stone, crushed	2,410	21,400	3,080	25,200	2,900	24,000
Combined value of barite, brucite, cement (portland), clays (fuller's earth), diatomite, gypsum (crude), lime, lithium minerals, magnesite, mercury, perlite (crude), salt, sand and gravel (industrial), and values indicated by symbol W	XX	180,000	XX	315,000	XX	350,000
Total	XX	3,060,000	XX	3,230,000	XX	3,030,000

p/ Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

2/ Data are rounded to three significant digits; may not add to totals shown.

3/ Recoverable content from ores, etc.

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

Kind	1995				1996			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	6	1,610	\$13,300	\$8.30	8	2,170	\$15,600	\$7.17
Dolomite	3	W	W	10.36	3	W	W	14.70
Granite	1	W	W	12.63	1	W	W	12.51
Traprock	1	W	W	4.26	6	W	W	3.30
Volcanic cinder and scoria	1	W	W	2.28	1	W	W	2.20
Miscellaneous stone	1	W	W	4.68	1	W	W	4.41
Total	XX	2,410	21,400	8.90	XX	3,080	25,200	8.18

W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.

1/ Data are rounded to three significant digits except unit value; may not add to totals shown.

TABLE 3
NEVADA: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 1996, BY USE 1/ 2/ 3/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate, graded;			
Concrete aggregate, coarse	684	\$6,190	\$9.04
Bituminous aggregate, coarse	112	559	4.99
Other graded coarse aggregate	50	138	2.76
Coarse and fine aggregates:			
Graded road base or subbase	294	1,300	4.43
Crusher run or fill or waste	45	235	5.22
Other construction materials 4/	259	2,020	7.81
Agricultural 5/	W	W	26.20
Chemical and metallurgical 6/	W	W	11.74
Unspecified 7/			
Actual	679	2,960	4.37
Estimated	71	577	8.13
Total	3,080	25,200	8.18

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

1/ To avoid disclosing company proprietary data, no district tables were produced for 1996.

2/ Includes dolomite, granite, limestone, miscellaneous stone, traprock, and volcanic cinder and scoria.

3/ Data are rounded to three significant digits except unit value; may not add to totals shown.

4/ Includes pipe bedding, riprap and jetty stone, stone sand (concrete), and terrazzo and exposed aggregate.

5/ Includes agricultural limestone and other agricultural uses.

6/ Includes flux stone, lime manufacture, and sulfur oxide removal.

7/ Includes production reported without a breakdown by end use and with estimates for nonrespondents.

TABLE 4
NEVADA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1996,
BY MAJOR USE CATEGORY 1/

Use	Quantity (thousand metric tons)	Value (thousands)	Value per ton
Concrete aggregate (including concrete sand)	1,920	\$13,500	\$7.06
Plaster and gunit sands	359	1,450	4.04
Concrete products (blocks, bricks, pipe, decorative, etc.)	329	1,400	4.24
Asphaltic concrete aggregates and other bituminous mixtures	3,130	15,700	5.00
Road base and coverings 2/	5,850	27,800	4.75
Fill	1,400	4,300	3.07
Snow and ice control	50	226	4.52
Other miscellaneous uses 3/	117	812	6.94
Unspecified: 4/			
Actual	4,790	27,000	5.63
Estimated	4,500	20,500	4.56
Total or average	22,400	113,000	5.02

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes road and other stabilization (cement).

3/ Includes filtration and railroad ballast.

4/ Includes production reported without a breakdown by end use and with estimates for nonrespondents.

TABLE 5
NEVADA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1996,
BY USE AND DISTRICT 1/

(Thousand metric tons and thousand dollars)

Use	District 1		District 2	
	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products 2/	757	3,960	1,850	12,400
Asphaltic concrete aggregates and road base materials 3/	2,590	12,200	7,840 4/	35,800 4/
Other miscellaneous uses 5/	110	768	7	44
Unspecified: 6/				
Actual	7	59	4,780	26,900
Estimated	1,720	6,940	2,770	13,600
Total	5,190	23,900	17,200 4/	88,700 4/

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes plaster and gunit sands.

3/ Includes fill, road and other stabilization (cement), and snow and ice control.

4/ Includes production within state with no districts reported.

5/ Includes filtration and railroad ballast.

6/ Includes production reported without a breakdown by end use and with estimates for nonrespondents.