nbmg Nevada Bureau of Mines and Geology

Metals

Industrial Minerals

Oil and Gas

Geothermal

Special Publication MI-2019

The Nevada Mineral Industry 2019

Exploration
Development
Mining
Processing

University of Nevada, Reno

Starting in 1979, NBMG has issued annual reports that describe the mineral (precious and base metals and industrial minerals including aggregate), oil and gas, and geothermal activities and accomplishments. This report describes those accomplishments in Nevada for 2019, which includes production, reserve, and resource statistics; exploration and development—including drilling for petroleum and geothermal resources, discoveries of orebodies, new mines opened, and expansion and other activities of existing mines; and a directory of mines and mills.

Nevada System of Higher Education 2020

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DRAFT
February 16, 2021

Cover Photos:
North wall of the Round Mountain open-pit gold mine (left), Nye County Nevada and large sample of Native Gold from Round Mountain Mine (right) (***photographer, John Muntean***) The Round Mountain open pit was put into production in 1977 to mine large tonnages of low grade gold ore that has grades of typically 0.02 opt gold (0.069 g/t). However, high grade veins also exist that include large masses of gold and specimen-quality gold. When such gold is recognized in the open pit, geologists use metal detectors to make sure it is mined and put into the gravity circuit at the mill of the mine or saved as specimen samples.

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The Nevada Mineral Industry 2019

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2020

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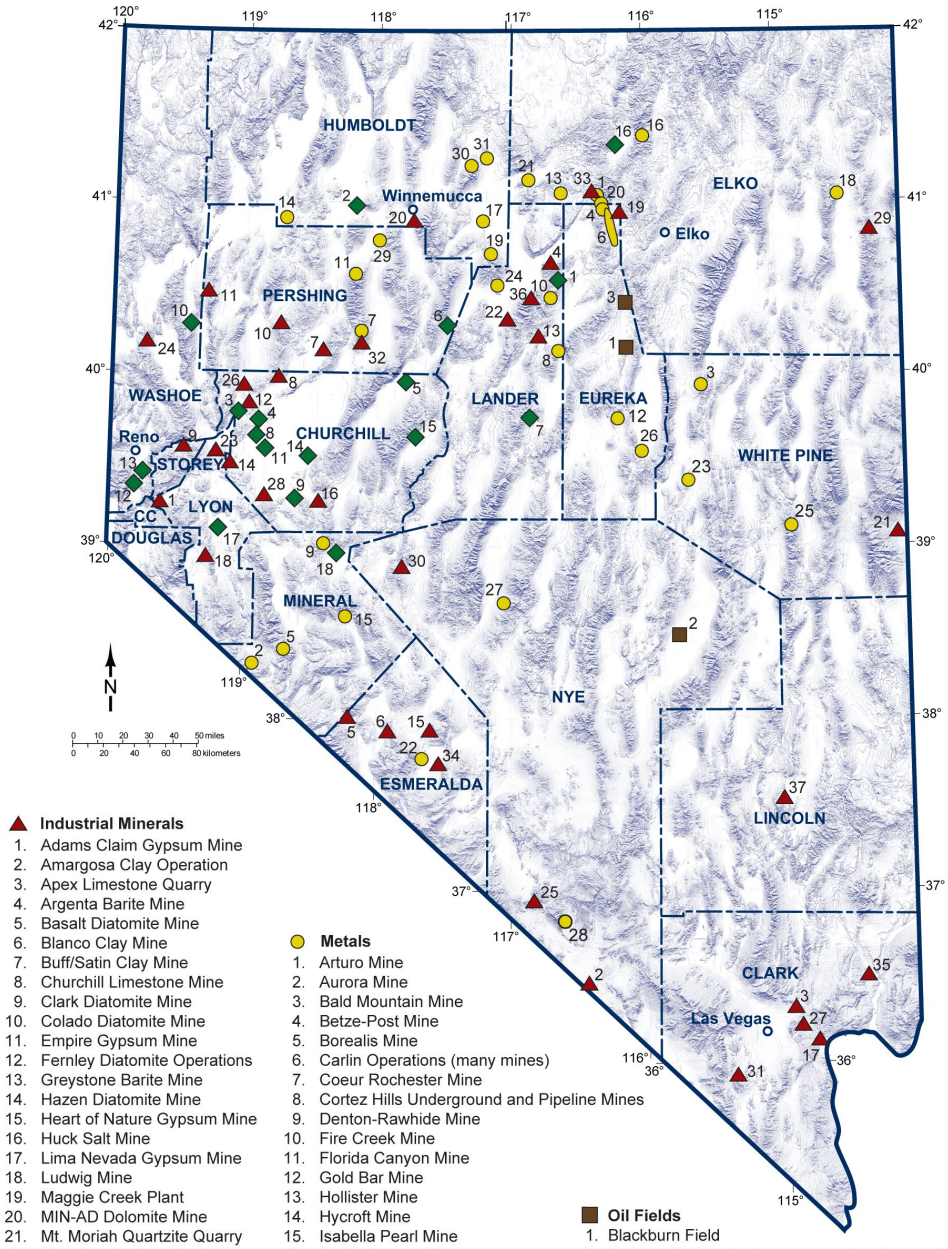

Industrial Minerals

1. Adams Claim Gypsum Mine
2. Amargosa Clay Operation
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5. Basalt Diatomite Mine
6. Blanco Clay Mine
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9. Clark Diatomite Mine
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12. Fernley Diatomite Operations
13. Greystone Barite Mine
14. Hazen Diatomite Mine
15. Heart of Nature Gypsum Mine
16. Huck Salt Mine
17. Lima Nevada Gypsum Mine
18. Ludwig Mine
19. Maggie Creek Plant
20. MIN-AD Dolomite Mine
21. Mt. Moriah Quartzite Quarry
22. Mountain Springs Barite Mine
23. NCC Fernley Limestone Ops.
24. NCC Flanigan Clay Mine
25. New Discovery Mine
26. Nightingale Diatomite Mine
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31. Rainbow Quarry
32. Relief Canyon Limestone Quarry
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35. Simplot Silica Products
36. Slaven Canyon Mine
37. Tenacity Perlite Mine

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3. Tomera Ranch Field

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1. Beowawe
2. Blue Mountain
3. Bradys Hot Springs
4. Desert Peak 2
5. Dixie Valley
6. Jersey Valley
7. McGinness Hills
8. Patua
9. Salt Wells
10. San Emidio
11. Soda Lake 1 and 2
12. Steamboat Hills
13. Steamboat II, and III, Galena
14. Stillwater 1 and 2
15. Tungsten Mountain
16. Tuscarora
17. Wabuska
18. Wild Rose

Major mines, oil fields, and geothermal plants, 2019.

OVERVIEW

by John L. Muntean

This report highlights activities in 2019 in metals, industrial minerals, geothermal energy, and petroleum. The value of overall mineral and energy production in Nevada in 2019 was $8.1 billion, a 3.55% decrease from 2018 (table 1, fig. 1), which followed a 7.6% decrease from 2017. Nevada led the nation in the production of gold and barite ($46.3 million). It was also the only state that produced lithium ($36 million), magnesite ($6.49 million), and the specialty clays, sepiolite and saponite ($13.84 million). Other commodities mined and produced in Nevada in 2019, in order of value, included copper ($391 million), geothermal energy ($311 million), aggregate (sand, gravel, and crushed stone) ($255 million), silver ($102 million), diatomite ($47 million), limestone and dolomite (mainly for cement, $41.5 million), gypsum ($28.8 million), silica ($17.3 million), and petroleum ($14 million). Locations of many of the sites mentioned in the text of this report are shown on NBMG Open-File Report 2019-01, *Nevada Active Mines and Energy Producers,* which is available at http://pubs.nbmg.unr.edu/CDP-NV-active-mines-2019-p/of2019-01z.htm/OF2019-01_plate.pdf.

For the fifth year in a row, Nevada led the United States in terms of value of overall nonfuel (excluding oil, gas, coal, uranium, and geothermal) mineral production in 2019 (according to the U.S. Geological Survey, Mineral Commodity Summaries 2019, http://minerals.usgs.gov/minerals/pubs/mcs/2019/mcs2019.pdf). Nevada accounted for 9.5% of the value of domestic nonfuel mineral production. Nevada has led the nation ten of the last eleven years. Arizona was second and is the country's major copper producer. Texas was third, mainly due to its booming construction industry and demand for aggregate and cement, Minnesota rose to fourth due mainly to production of iron ore. The contributions that mining makes to the economies of Nevada and the U.S. are significant in terms of jobs, commerce, taxes, improvements to the infrastructure, and lowering of the U.S. trade deficit.

Gold production in Nevada in 2019 was just under 4.87 million ounces (151 metric tons), a 12.8% decrease from 2018. This was the first time gold production was below 5 million ounces since 2014. Fortunately, the average gold price rose to $1,392 per ounce in 2019 (fig. 2), which only resulted in a 4% decrease in the value of gold production. Despite the decrease in gold price, the share of gold in the value of Nevada mineral and energy production was 83.7%, essentially the same (84.3%) as in 2018. The decrease in Nevada gold production resulted in Nevada accounting for 71% of total U.S. gold production in 2019, down from 83% in 2018. Nevada alone accounted for 4.6% of world production of gold, which was approximately 106 million ounces (3,300 metric tons) in 2019. Only the nations of China, Australia, Russia, Canada, and Indonesia produced more gold than the state of Nevada.

The section on **Metals** and the tables in **Major Precious-Metal Deposits** and **Other Metallic Deposits** provide details on exploration, new deposit discoveries, new mine openings, mine closures, additions to reserves, and mine expansions. As has been the case for many years, gold continues to be the leading commodity produced in Nevada. Production of gold in 2019 came mainly from 15 major mining operations that each produced greater than 100,000 ounces (3 metric tons). The share of production from the Carlin trend increased from 21% in 2018 to 29% in 2019.

The World Gold Council and U.S. Geological Survey estimate that total world gold production, since the beginning of civilization, has been approximately 6.223 billion ounces (193,550 metric tons). Nevada and the U.S. have produced a significant portion of the world's gold. Cumulative U.S. production, primarily since 1835, is approximately 616 million ounces (18,942 metric tons), which is 10% of total world production, and Nevada's total production of 248 million ounces (7,713 metric tons) accounts for 40 % of total U.S. production and 4% of total world production. Remarkably, 88% of Nevada's gold production has been produced since the Carlin Mine began production in 1965. By the end of 2019, cumulative production from the Carlin trend was 92.5 million ounces (2,877 metric tons), assuring its place as one of the most productive gold-mining districts in the world.

Nevada continues to be in the midst of the biggest gold boom in U.S. history, as the graph of historical U.S. gold production illustrates (fig. 3). The recent surge in production in the U.S. is largely the result of discoveries of Carlin-type gold deposits and other deposits in which gold occurs primarily in grains that are too small to be visible to the naked eye. These deposits are mostly in Nevada. The U.S. production so far in the current boom, the period since 1981, has been 296.1 million ounces (9,210 metric tons). This is significantly greater than the total U.S. production during several past eras, including 1) the California gold rush (1849 to 1859, with 29 million ounces or 900 metric tons), although some estimates of unreported production may bring that figure up to 70 million ounces (2,200 metric tons); 2) the Comstock (Nevada) era from 1860 to 1875 with 34 million ounces (1,060 metric tons); and 3) the period from 1897 to 1920, when Goldfield (Nevada), the Black Hills (South Dakota), Cripple Creek (Colorado), and byproduct gold production from copper mines in Arizona and Utah contributed to cumulative production of 95 million ounces (3,000 metric tons). U.S. production in the last decade from 2010 through 2019

alone was 71.7 million ounces (2,230 metric tons). The current boom is larger than previous booms not only in terms of cumulative production but also in terms of peak annual production and duration. The current boom has lasted at least 38 years versus no more than 24 years for any of the earlier booms.

Table 1. Mineral, geothermal power, and petroleum production in Nevada

	2019		2018 (Revised)		% Change (2018 to 2019)	
Commodity	Quantity	Value	Quantity	Value	Quantity	Value
Gold	4,868,086 oz (151.414 mt kg)	$6,784,292,287	5,581,160 oz (170,062 kg)	$7,079,645,648	-12.78%	-4.17%
Silver	6,282,466 oz (195.406 mt)	$101,901,599	8,011,408 oz (249,183 kg)	$125,859,220	-21.60%	-19.04%
Barite (shipped)	429,882 tons (389,914 mt)	$46,331,297	464,334 tons (421,236 mt)	$46,795,371	-7.40%	1.00%
Copper	143,717,958 lbs (65.189 mt)	$390,912,846	144,655,766 lbs (65,615 mt)	$428,181,067	-8.70%	3.00%
Diatomite	429,882 tons (389,914 mt)	$47,466,527	399,358 tons (362,291 mt)	$46,734,876	7.60%	1.56%
Dolomite	320,495 tons (290,751 mt)	$4,537,427	268,000 tons (245,000 mt)	$4,095,225	19.60%	10.80%
Gypsum	1,662,418 tons (1,508,136 mt)	$28,805,299	2,289,351 tons (2,076,864 mt)	$26,940,355	-27.40%	-37.00%
Limestone	3,515,916 tons (3,189,618 mt)	$37,014,458	3,437,562 tons (3,118,504 mt)	$39,219,511	10.80%	-5.60%
Lithium compounds (shipped)	7,887,994 lbs (3,578 mt)	$36,022,907	12,908,794 lbs (5,855 mt)	$64,595,876	-38.90%	-44.20%
Magnesium compounds (shipped)	324,723 lbs (5,855 mt)	$6,494,420	125,945 tons (114,255 mt)	$8,139,844	158.80%	-20.20%
Molybdenum	766,699 lbs (348 mt)	$9,041,968	341,750 lbs (155 mt)	$4,191,605	124.40%	115.72%
Perlite	2,213 tons (2,007 mt)	$692,241	17,087 tons (15,501 mt)	$831,699	-87.00%	-16.80%
Salt (shipped)	24,532 tons (22,255 mt)	$834,094	19,900 tons (18,053 mt)	$677,678	23.30%	23.10%
Silica sand (shipped)	617,553 tons (560,240 mt)	$17,304,879	716,374 tons (649,884 mt)	$19,626,602	-13.80%	-11.80%
Specialty clays	120,536 tons (109,350 mt)	$13,845,609	91,342 tons (82,864 mt)	$11,670,736	32.00%	18.60%
Geothermal energy (sold)	3,858,318 MWh	$310,949,485	3,466,978 MWh	$265,793,425	17.00%	17.90%
Oil (sold)	266,872 barrels	$14,035,529	251,022 barrels	$13,632,793	6.30%	2.95%
Aggregates	36,890,000 tons (33,466,045 mt)	$255,000,000	31,587,000 tons (28,655,244 mt)	$215,000,000	16.80%	18.60%
Totals		$8,105,482,872		$8,401,631,531		-3.52%

Notes:

$ Values as reported from Taxation to the Nevada Division of Minerals in 2019 and 2018, except for the 6 commodities listed below

1. Gold = 2019 average of 1392.60 in 2019 and an averaage price of $1,268.49/oz in 2018 (source: Kitco website).
2. Silver = 2019 average silver price of #16.22/oz in 2019 and an average price of 2018 avg. price 0f $15.7058/oz. in 2019 (source: Kitco website)
3. Copper = avg. price of $2.72/lb avg in 2019 and and an avg. price $2.96 in 2018 (source: USGS 2108 and 2019 Mineral Commodity Reports, estimated).
4. Molybdenite = NDOM # times 2019 avg. price in 2019erage price of $11.80/lb and 2018 avg. price $12.27/lb (source: USGS 2108 and 2019 Mineral
5. Aggregates = Source: 2019 USGS Mineral Industry Survey
6. Geothermal gross revenue as reported from Taxation to the Nevada Division of Minerals in 2019 and 2018.

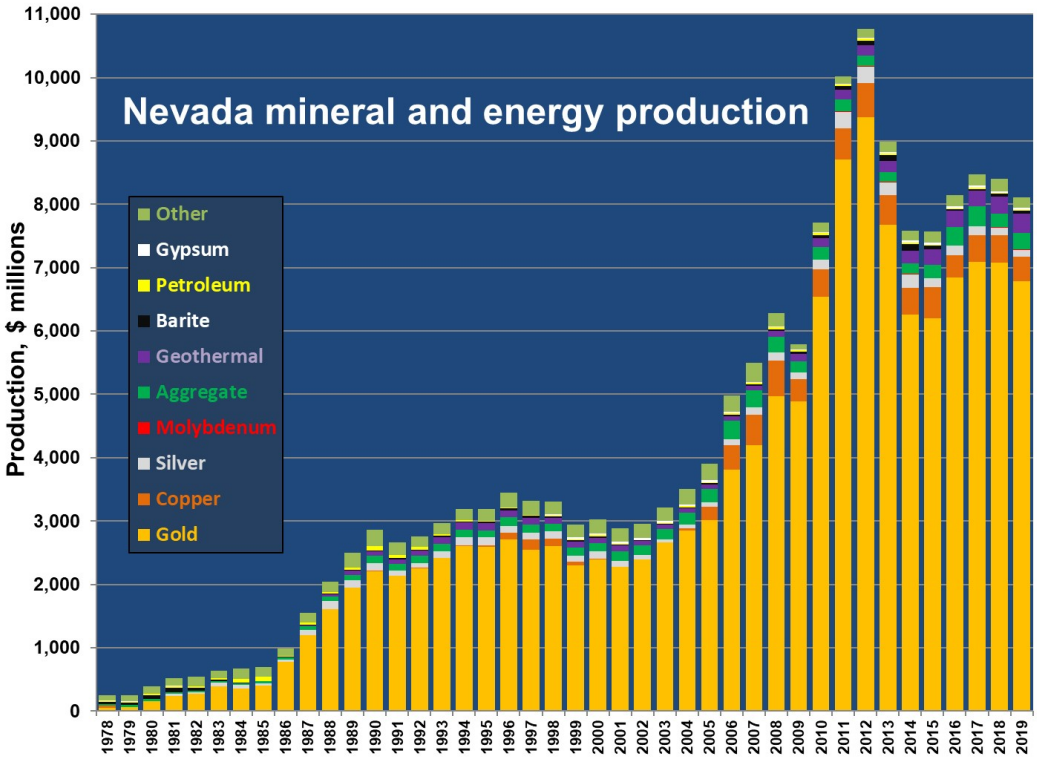


Figure 1. Chart showing relative values of Nevada production of gold, copper, silver, molybdenum, aggregate, geothermal energy, barite, petroleum, gypsum and other minerals from 1978 to 2019. Molybdenum production is only shown for 2011 to 20198.

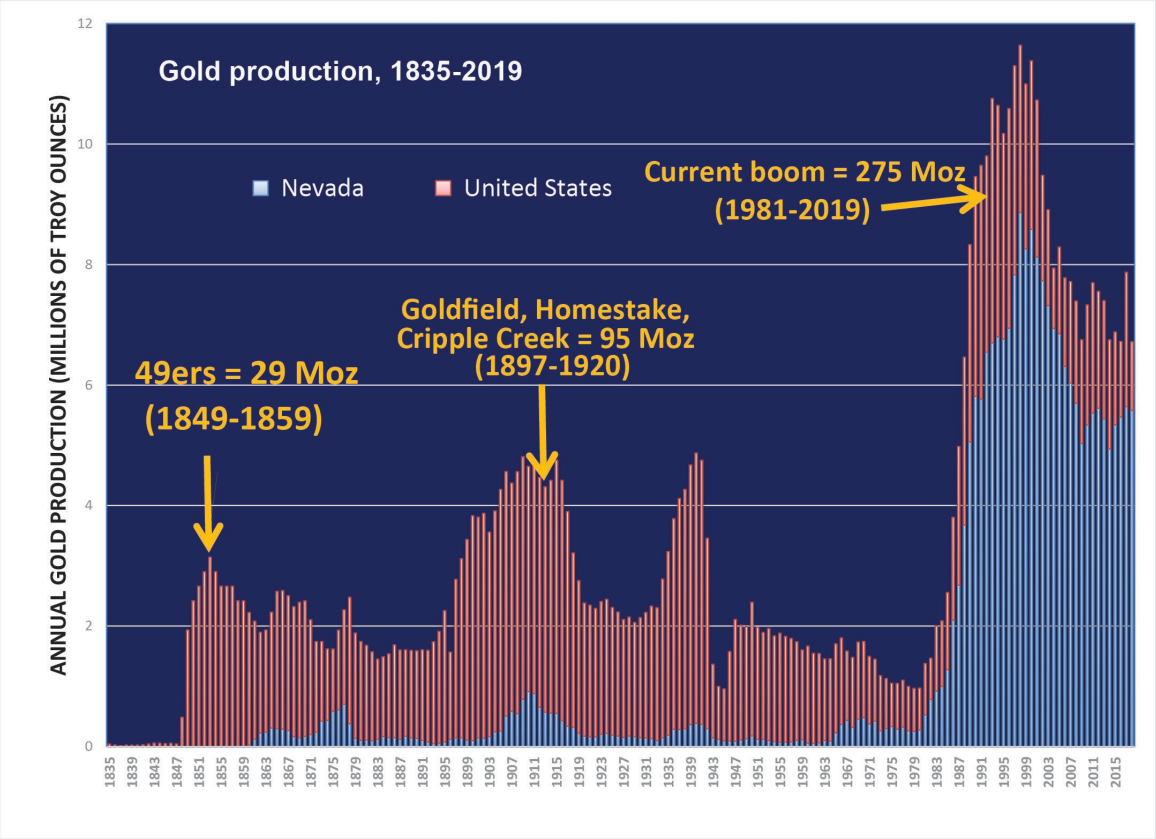


Figure 2. Chart comparing U.S. and Nevada gold production from 1835 to 2019.

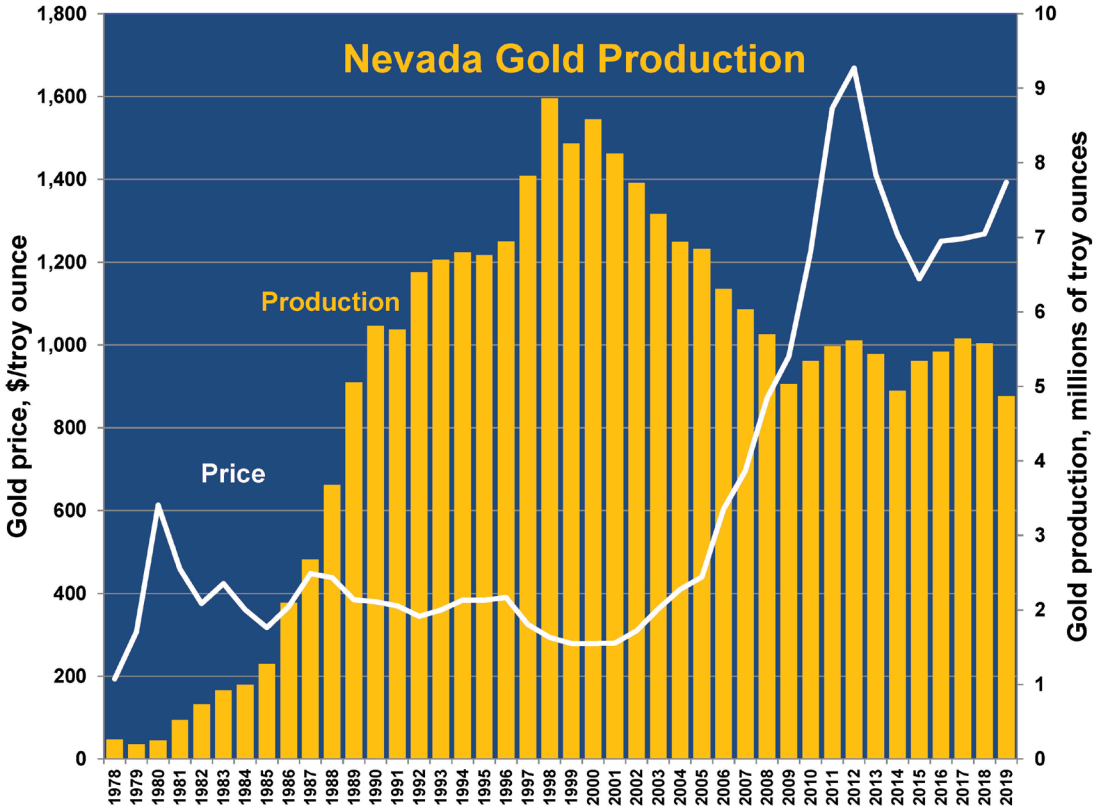


Figure 3. Chart showing Nevada gold production compared to the price of gold from 1978 to 2019.

Barrick Gold Corp. and Newmont Mining Corp. have accounted for the vast majority of Nevada gold production for the last 30 years, particularly from mines on the Carlin trend in northeastern Nevada. Over the years the two companies have discussed mergers and, at times, have considered taking over each other. A merger finally happened in 2019. The merger was triggered by Newmont's merger with Goldcorp, with Newmont as the operator in April of 2019. This triggered Barrick to launch a bid to acquire Newmont. After discussions, Barrick and Newmont agreed to a joint venture agreement in July of 2019.

The new joint-venture company, which was named Nevada Gold Mines LLC, includes most of their assets in northeastern Nevada, including deposits on the Carlin trend, in the Cortez and Getchell districts, and the Long Canyon and Phoenix deposits. In all, assets in northeastern Nevada include 10 underground and 12 open-pit mines, two autoclave facilities, two roasting facilities, four oxide mills, a flotation plant, and five heap leach facilities. Barrick controls 61.5% of the joint venture, and Newmont 38.5%. Almost all the mines in the joint venture will be operated by Barrick. Barrick retained 100% control of its undeveloped high-grade Fourmile deposit in the Cortez district, and Newmont retained 100% control of its undeveloped Fiberline resource located just east of the Twin Creeks mine. 2021 will be the first year since 1964 that Newmont has not operated a mine in Nevada, which was the year before the original Carlin deposit was put into production.

Nevada Gold Mines produced 3,682,043 ounces (114,524 kg) of gold in 2019, which included production by Newmont and Barrick prior to the formation of the joint venture on the Carlin trend, in the Cortez and Getchell districts, and at Phoenix and Long Canyon prior to and after the formation of the Nevada Gold Mines joint venture. Nevada Gold Mines and Barrick produced 943,724 ounces (29,353 kg) of gold from its underground and open pit operations at Cortez, including the Cortez Hills open pit and underground mines and the Pipeline open pit complex.

Nevada Gold Mines, Barrick, and Newmont produced 1,726,426 ounces, (53,698 kg) on the Carlin trend that included multiple open pits and underground operations. Other large gold operations include Kinross Gold Corp.'s Round Mountain mine (350,943 ounces, 10,915 kg) in Nye County and the Twin Creeks mine (359,042 ounces, 11,167 kg) and Turquoise Ridge (444,720 ounces, 13,382 kg), both in Humboldt County by Nevada Gold Mines, Barrick, and Newmont.

Nevada silver production in 2019 totaled 6,282,466 ounces (195,406 kg), a 19% decrease from 2018 (fig. 4).

About 40% of the silver production was a byproduct of gold and copper mining. With a ratio of value (average price of gold to average price of silver) of 86:1 in 2018, only those deposits with more than 86 times as much silver as gold can be considered primary silver deposits. Only one such mine operated in Nevada in 2019, the Coeur Mining Inc.'s Rochester mine in Pershing County, which had a silver-to-gold production ratio of 106:1 and total silver production of 3,761,060 million ounces (116,982) in 2019. It produced about 60% of Nevada's silver in 2019. Nevada silver production in 2019 accounted for 20% of the total U.S. production of 31,507,734 million ounces (980 metric tons) of silver.

Nevada copper production in 2018 was dominated by the Robinson copper-gold-molybdenum mine, operated by KGHM International Ltd. near Ely in White Pine County. It produced 113.1 million pounds (51,316 metric tons) of copper (fig 5). Copper was also produced at Newmont's Phoenix mine near Battle Mountain in Lander County, where the value of 30.6 million pounds (13,880 metric tons) of produced copper was about 34.5% of the value of the mine's gold production. At Phoenix, Newmont produces copper on site with a solvent extraction-electrowinning (SX-EW) plant, as well as producing concentrates that are shipped to smelters outside Nevada, similar to KGHM's Robinson mine. KGHM also produced 341,750 pounds (155 metric tons) of by-product molybdenum from Robinson, the only reported molybdenum production in Nevada in 2019.

Mineral exploration activity in 2019 is summarized in the chapters on **Metals and Industrial Minerals**. Most exploration focused on gold; however, companies also explored for lithium, copper, silver, zinc, barite, and diatomite.

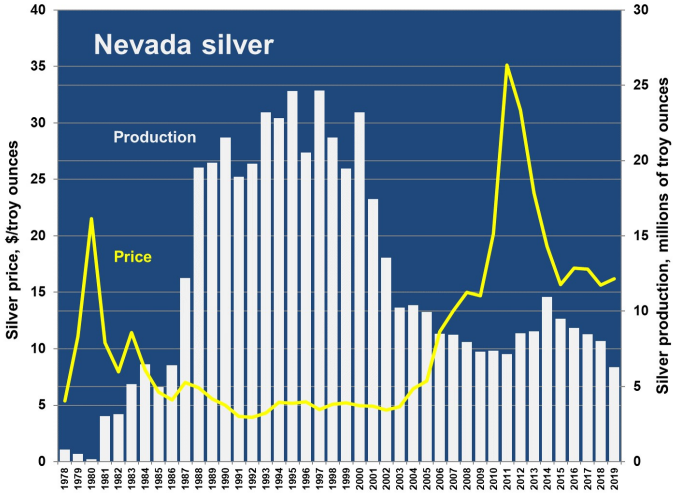


Figure 4. Chart showing Nevada silver production compared to the price of silver from 1978 to 2019.

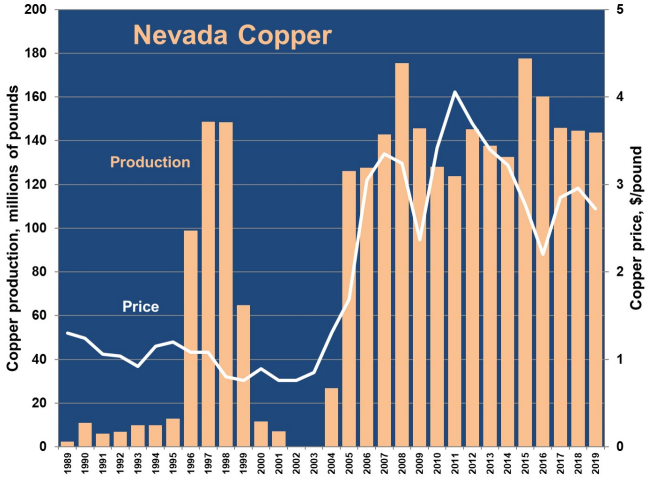


Figure 5. Chart showing Nevada copper production compared to the price of copper from 1989 to 2019.

S&P Global Market Intelligence shows that our estimate of the total annual global nonferrous exploration budget has decreased 3% in recent years to US$9.8 billion from US$10.1 billion. The global exploration budgets for gold remained about the same as in 2018 at just over $700 million. Total worldwide exploration budgets for non-ferrous metals was about the same in 2019 as in 2018, at just under $8 billion.

Exploration activity, including new claims staked, was reported in most of Nevada's 17 counties. The Bureau of Land Management LR2000 database indicated 191,971 claims at the end of 2018, essentially the same as the end of 2018 (fig. 6). A total of 11,920 new claims were staked in 2019, significantly lower than the 17,648 new claims that were staked in 2018.

The number of drill projects for metals increased from 94 projects in 2018 to 98 in 2019 (fig. 7). Advanced exploration projects show promise for major developments, particularly for gold along the Carlin and Battle Mountain-Eureka (Cortez) trends in Eureka, Elko, and Lander Counties, such as Nevada Gold Mines' large Goldrush deposit, Barrick Gold's new high-grade Fourmile discovery near its Cortez mine. The Beatty area continued to draw a lot of attention in 2019. Corvus Gold continued to drill its Mother Lode project and North Bullfrog, and Anglo Gold Ashanti drilled its Silicon project, though it was not a major drill program. Anglo Gold Ashanti has yet to release results of its drilling. Gold Standard Ventures Corp. continued to advance its Railroad-Pinion project near the town of Carlin. Premier Gold Mines Ltd. continued to drill beneath the previously mined open pit at Cove, outlining and adding to the Carlin-style gold resource that occurs beneath the pit. NuLegacy Gold continued to drill at its Red Hill project located just south of Barrick's Cortez property, drilling some of the highest grade intervals ever encountered on the property.

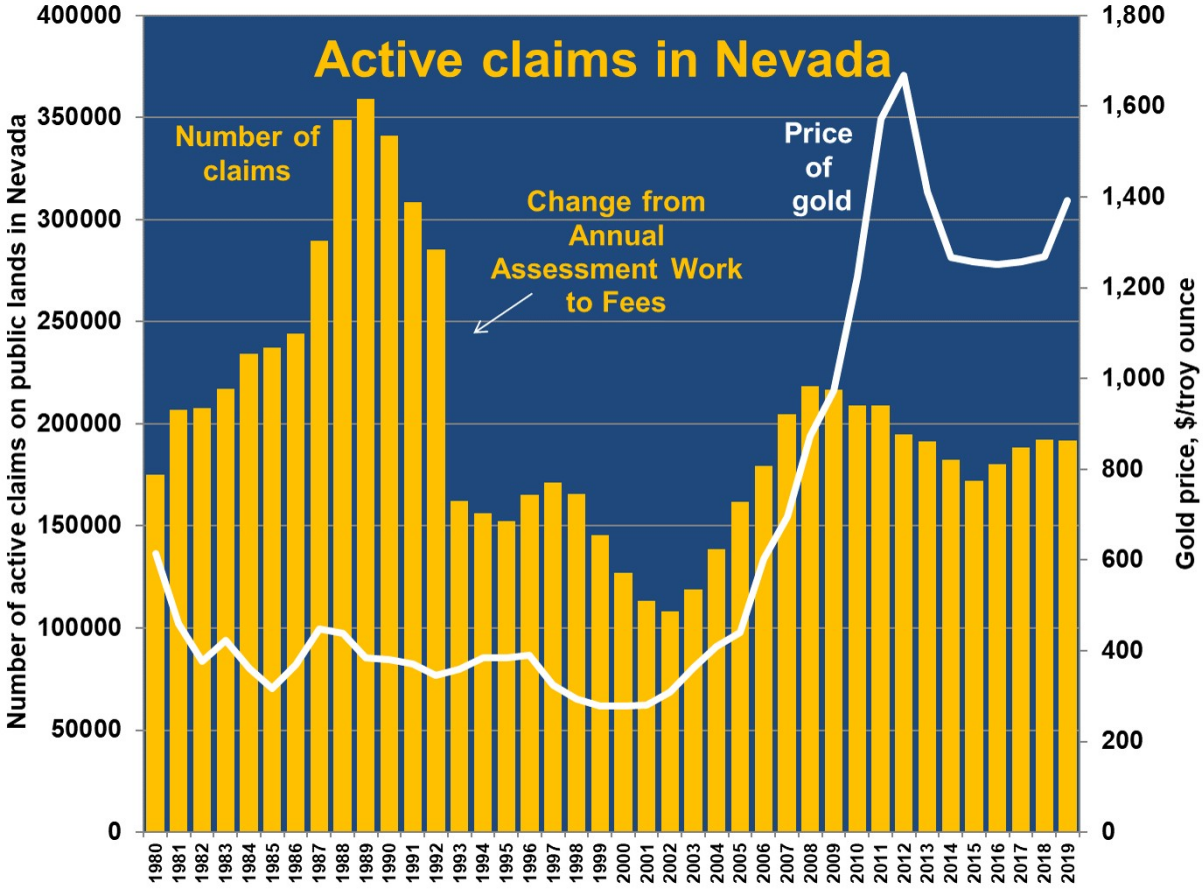


Figure 6. Chart showing number of active mining claims at the end of the year from 1980 to 2019. For comparison, chart also shows the price of gold during that period.

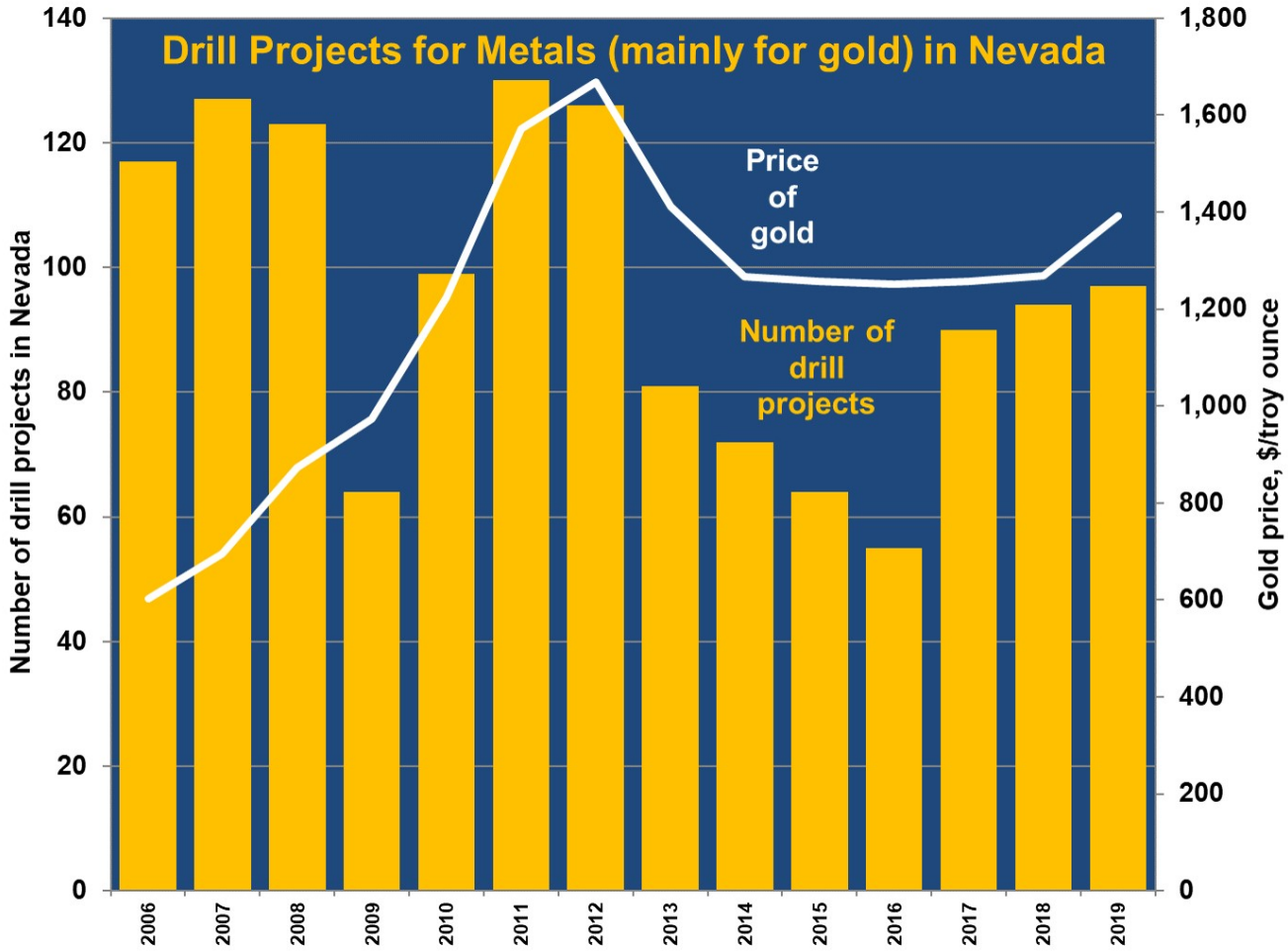


Figure 7. Chart showing number of drill projects targeting metals, mainly gold, from 2006 to 2019. For comparison, chart also shows the price of gold during that period. The number of drill projects shown are minima, given major mining companies and privately held companies are not required to report whether they drilled or not.

The section on **Industrial Minerals** covers developments during 2019 and gives details on important commodities produced from or processed in Nevada, including aggregate, barite, cement, clays, diatomite, dimension stone, dolomite, gypsum, lime, limestone, lithium, magnesium, perlite, potassium alum (kalinite), pozzolan, salt, semiprecious gemstones (opal), silica, and zeolites. Demand for raw materials for construction will likely grow in the future because of Nevada's increasing population and need for additional highways and housing. Nevada's estimated population in 2019 was 3.090 million a 1.98% increase from 2018 and a 14.4% from 2.701 million in 2010 (www.census.gov). Albemarle Corp.'s Silver Peak operation in Clayton Valley in Esmeralda County, where subsurface brines are evaporated on a playa, is the only producer of lithium in the United States. Most exploration for industrial minerals in Nevada was focused on lithium, both in brines and in clay deposits. Most of this exploration is in southwestern Nevada, mainly in Clayton Valley and other nearby playas. Companies that conducted exploration drilling in 2019 included Cypress Development Corp., Enertopia Corp., and Ioneer Ltd.

Lithium Americas Corp. continued to move forward in the development of its lithium in clay resource at Thacker Pass in the moat sediments of the McDermitt Caldera in northern Nevada, near the border with Oregon. Lithium Americas produced over 3,000 kg of high-quality lithium sulfate solution at its process testing facility in Reno. It engaged a third-party vendor to engineer and design lithium carbonate and lithium hydroxide evaporator and crystallizer as well as provide performance guarantees and product samples. It also commenced a definitive feasibility study with a Phase 1 production capacity of 20,000 tonnes per annum of battery-quality LCE (lithium carbonate equivalent).

Ioneer Ltd. moved forward on its Rhyolite Ridge lithium in clay deposit, located 25 km (16 miles) west of Albemarle's Clayton Valley lithium in brine operation. The deposit also includes significant borate-bearing beds. Boron is expected to contribute 30-50% of the revenue.

One of the reasons for the lithium rush in Nevada is Tesla Motors, Inc., along with its partner Panasonic, Gigafactory 1 at Patrick in Storey County. Construction began in June 2014. As of May 2019, Gigafactory 1 had achieved a theoretical capacity of 35 gigawatt-hours per year but utilization levels have resulted in a 24 gigawatt-hour output, according to Panasonic President Kazuhiro Tsuga.

Nevada was once again the leading domestic producer of barite, of which 95% is used for drilling muds in oil wells. Production decreased 7.4% in 2019 (table 1, fig. 9). The barite price is directly tied to the price of oil and gas.

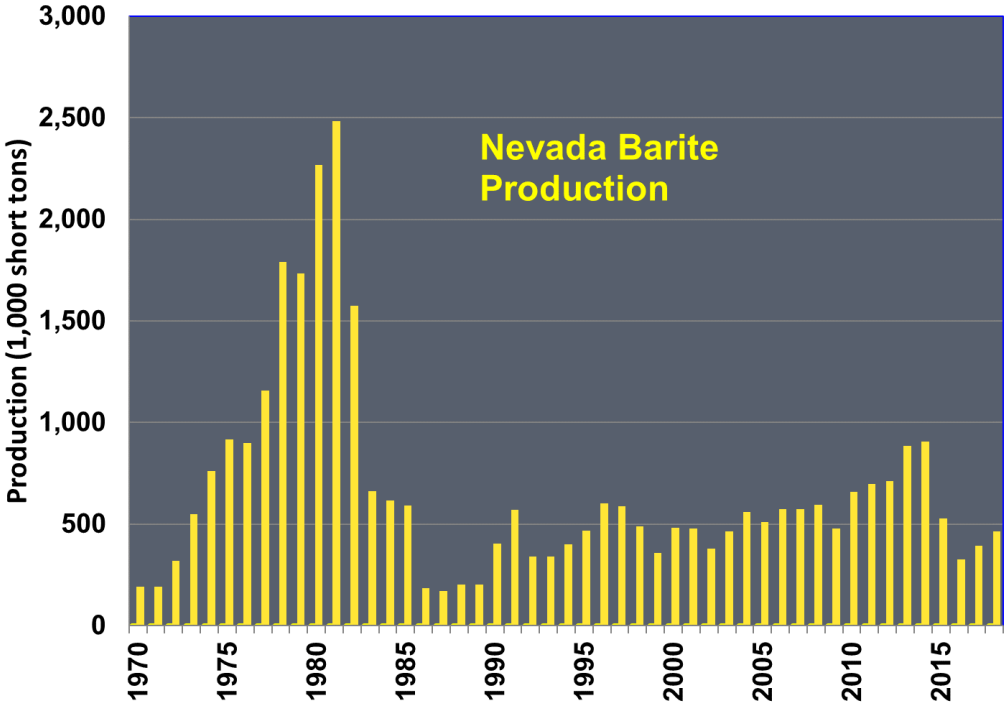


Figure 8. Chart showing Nevada barite production from 1970 to 2019.

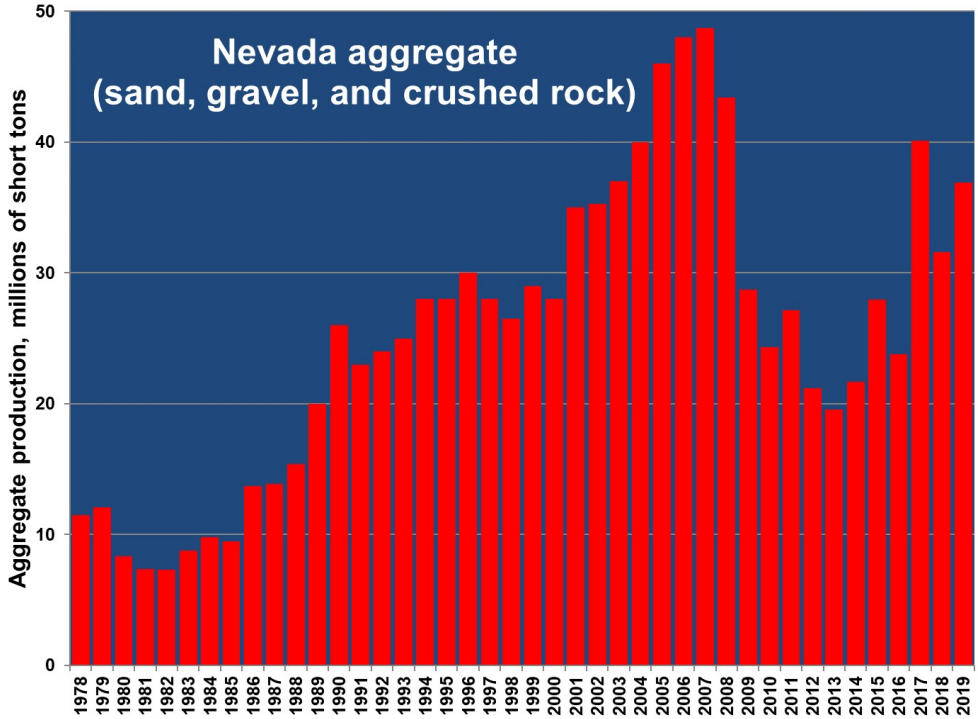


Figure 9. Chart showing Nevada aggregate production from 1978 to 2019.

Nevada was also a leader in the production of several other industrial minerals. Nevada production of diatomite, which is mainly used in filtration, was second only to California in the U.S. Nevada ranked third in the list of six states that produce 67% of the country's crude gypsum. The state's gypsum production, however, decreased 27% in 2019. Premier Magnesia's Gabbs Mine in Nye County is currently the nation's only hard-rock producer of magnesite.

The section on **Geothermal Energy** covers updates on exploration, development and production of geothermal energy in the state in 2019. The total installed geothermal energy capacity in Nevada increased to ~768 MWe (megawatts electric) in 2019. The McGinness Hills 3 power plant completed its first full 12 months of production with ~59 MWe gross generation for the year, exceeding the generator nameplate capacity of 48 MWe. Total gross geothermal power generation in Nevada for 2019 increased to approximately 576 MWe, and net generation (power to market) reached 444 MWe. The difference between the gross and net generation reflects the parasitic losses associated with running the geothermal plant (e.g. downhole pumps), and this averaged 23% in 2019.

In September 2019, the U.S. Bureau of Land Management (BLM) held the largest geothermal lease sale in Nevada in the last 10 years, with 142 parcels posted in the original competitive sale notice equating to 384,369 acres (155549 ha). Thirty seven of those parcels were sold for a total acreage of 102,402 (41,441 ha). In 2019, the Nevada Division of Minerals permitted seven new geothermal wells, and six new geothermal wells were drilled. This was the lowest number of wells drilled in one year since 2001. However, we might expect to see an increase in drilling with the increase in geothermal acreage leased in 2019.

According to the Nevada Division of Minerals, Nevada's net oil production was 266,872 barrels in 2019, an increase of 5% from 2018. Nevada's production accounted for 0.006% of total domestic production in 2019. Production came from 57 actively producing wells in seven fields in Railroad Valley, Nye County, which accounted for 87% of the state's production, and 9 wells in three fields in Pine Valley, Eureka County, which accounted for 13% of the state's production. Five other minor fields were shut-in throughout the year, and four other minor fields plus an outlier well that briefly produced are plugged and abandoned. Nevada ranked 26 out of the 32 oil-producing states. The average per barrel net wellhead price for Nevada crude oil for 2019 was $52.59, an 18% decrease from $64.14 in 2018. The gross proceeds decreased 14% to $14,035,529.62 from $16,356,064.58 in 2018 (2019-2020 Net Proceeds of Minerals Bulletin).

U.S. Senator Catherine Cortez Masto of Nevada introduced the Ruby Mountains Protection Act that would withdraw 450,000 acres (182,000 ha) from oil leasing, though it would continue to protect existing multiple uses including recreation, grazing, and mining. In 2019, the Senate Energy and Natural Resources Committee approved critical Nevada priorities that U.S. Senator Cortez Masto (D-Nev.) introduced. This included the Ruby Mountains Protection Act to prohibit oil and gas development within the Ruby Mountains Ranger District of the Humboldt-Toiyabe National Forest. Geologically, the Ruby Mountains are mainly underlain by metamorphic and plutonic rocks within a metamorphic core complex, which has low to no hydrocarbon potential.

Local economies benefit from mining in Nevada. Construction of new homes, hotels, casinos, other businesses, schools, and roads requires local sources of sand, gravel, crushed stone, gypsum, and raw materials for cement, all of which are abundant in Nevada. According to the Nevada Department of Employment, Training, and Rehabilitation, the Nevada mining and natural resources industry employed an average of 19,866 employees in 2019. The average pay for mineral industry employees during this time was $1660/wk, about a 12% decrease from 2018, but still the highest average of any employment sector in the state.

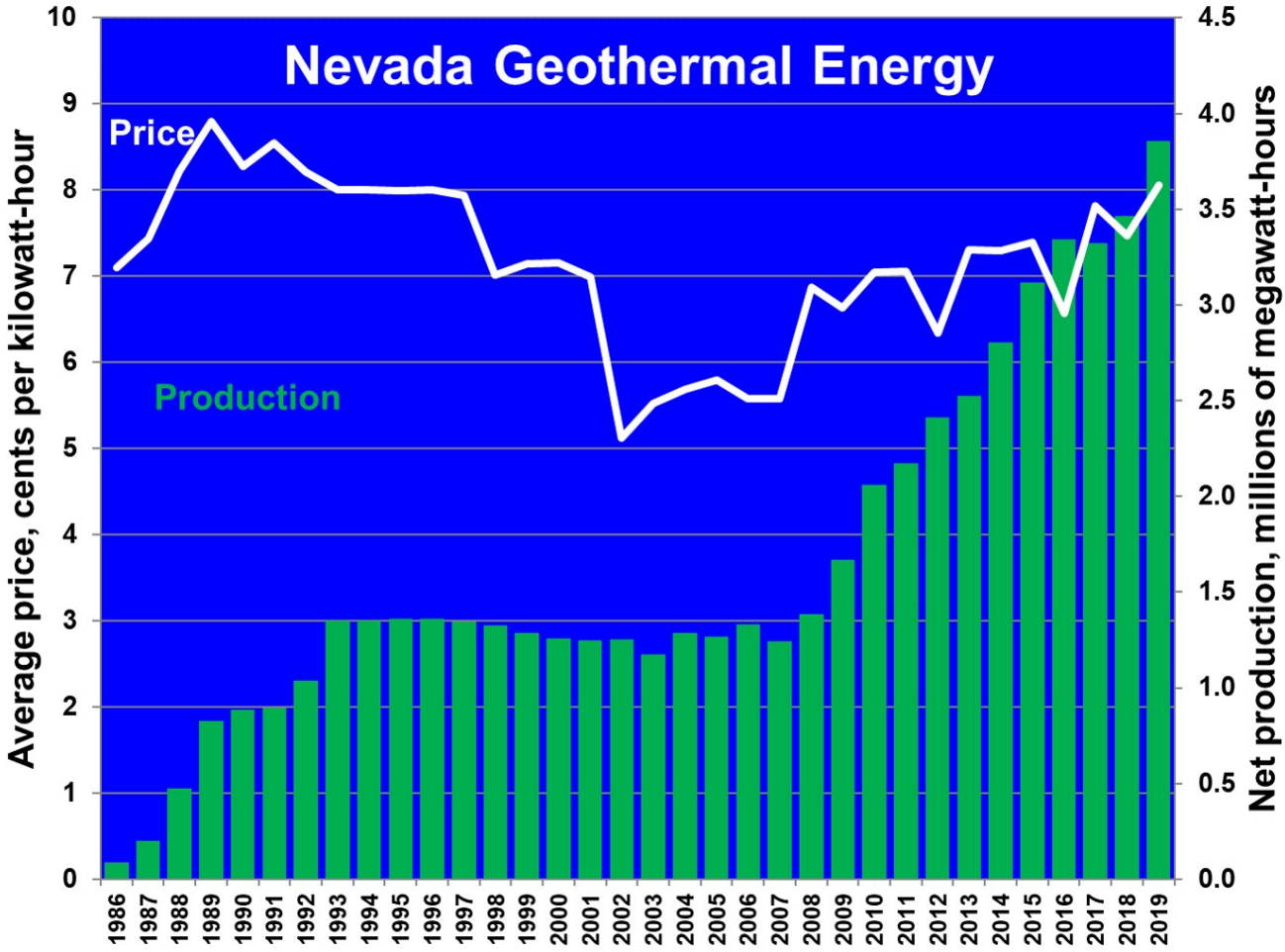


Figure 10. Chart showing net geothermal production in megawatt-hours in comparison to the average price of geothermal power in cents per kilowatt-hour for the period from 1986 to 2019. Note that average price is based on the total MWh produced and total receipts. Actual price for any individual power plant may vary and is held confidential by the state Energy Office.

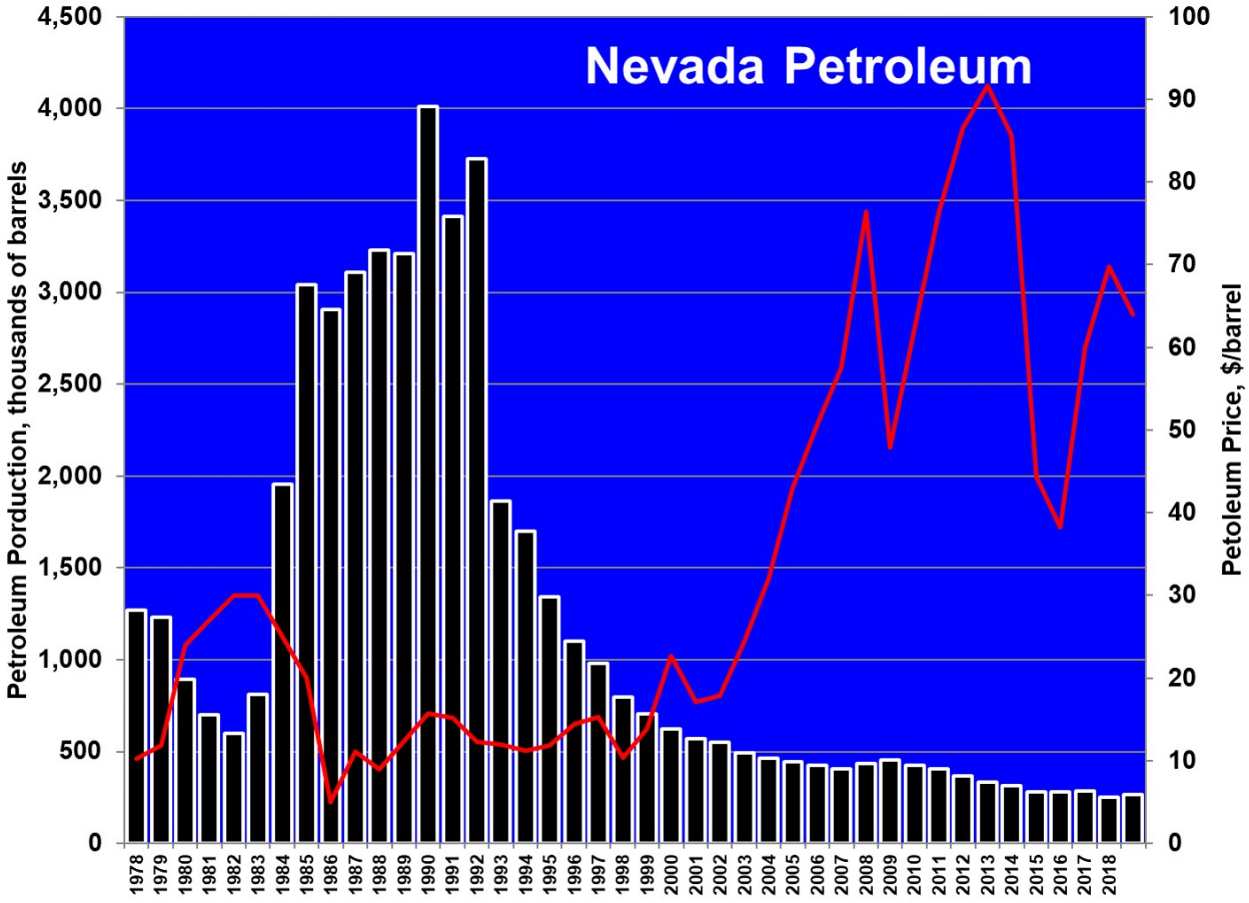


Figure 11. Chart showing Nevada petroleum production and price of petroleum from 1978 to 2019.

Additional information about the Nevada mineral industry and the U.S. gold industry, including the contents of selected publications, is readily available on line through the World Wide Web from the Nevada Bureau of Mines and Geology (www.nbmg.unr.edu/) and the Nevada Division of Minerals (http://minerals.state.nv.us/). Useful national and international data on nonfuel minerals can be obtained from the U.S. Geological Survey (http://minerals.usgs.gov/minerals/), and the U.S. Energy Information Administration (www.eia.doe.gov) provides data on oil and gas, geothermal, solar, wind, hydroelectric, and other energy sources. The Nevada Bureau of Mines and Geology supports several interactive maps on the Web that are backed by periodically updated databases on mineral and energy resources as well as potential exploration activity, land ownership and restrictions, and other geographic information (http://www.nbmg.unr.edu/Mapping/InteractiveMaps.html).

CONVERSION FACTORS

1 metric ton = 1.1023113 short ton = 1,000 kilograms = 2,204.6226 pounds = 32,150.7 troy ounces.

31.1035 metric tons = 1 million troy ounces (31.1035 grams = 1 troy ounce).

453.592 grams = 1 pound (avoirdupois) = 16 ounces (avoirdupois) = 14.5833 troy ounces.

34.2857 grams per metric ton = 34.2857 parts per million by weight = 1 troy ounce per short ton.

METALS

by David A. Davis and John L. Muntean

PRODUCTION

In 2019, Nevada produced 4,868,086 ounces (151,414 kg) of gold, 6,282,466 ounces (195,406 kg) of silver, 143,717,958 pounds (65,189 metric tons) of copper, and 766,699 pounds (348 metric tons) of molybdenum from 26 active mines, as well as minor production from residual leaching from 4 inactive mines and very minor production from a placer operation. Tables 1 and 2 show the production of gold, silver, copper, and molybdenum in 2019 that was reported to the Nevada Division of Minerals. Remaining mine reserves at the end of 2019 are shown in table 3. The average price of gold in 2019 was $1,393/oz, nearly a 19% increase from 2018.

The gold mining industry continued to consolidate in early 2019, when in January, Newmont arranged a merger with Goldcorp, which was finalized in April. In March, Barrick and Newmont-Goldcorp signed an implementation agreement to create a joint venture combining their respective mining operations, assets, reserves, and talent in Nevada. The Nevada Gold Mines joint venture officially launched in July of 2019. Barrick owns and operates 61.5%, and Newmont-Goldcorp owns 38.5% of the Nevada Gold Mines joint venture. The Nevada Gold Mines joint venture, along with Barrick and Newmont prior to the formation of joint venture produced 3,682,043 ounces (101,804 kg), accounted for 76% of Nevada's gold production in 2019. The all-in sustaining cost for all of Nevada Gold Mines production in 2019 was $944/oz and total cash cost was $711/oz.

The Carlin trend produced 1,726,461 ounces (53,699 kg) of gold, which accounted for 35% of Nevada gold production in 2019. The all in sustaining cost for production on the Carlin trend was $984/oz and total cash cost was $746/oz. By the end of 2019, cumulative production from the Carlin trend was 92.5 million ounces (2,877 metric tons) since the original Carlin Mine went into production in 1965.

Nevada Gold Mines' production from the Cortez Mine, which includes the Pipeline open pit, the Cortez open pit, and the Cortez underground totaled 1,344,113 ounces (41,807 kg). The all-in sustaining cost for all production from Cortez was $651/oz and total cash cost was $515/oz.

Nevada Gold Mines LLC's production from Turquoise Ridge totaled 444,720 oz, (13,382 kg). The all-in sustain cost was $846/oz, and the total cash cost was $585/oz.

After Nevada Gold Mines LLC, Nevada's largest gold producers were Kinross Gold Corp. (Round Mountain Mine), SSR Mining (Marigold Mine, Jerritt Canyon Gold LLC (Jerritt Canyon Mine), all of which produced over 100,000 ounces of gold in 2019. The total proven and probable gold reserves at the end of 2019 for all the mines in Nevada that operated in 2019 were 54,787,543 ounces, a drop of 9% from 2018. The average price of gold in 2019 was $1268.40/oz.

Coeur Mining was again the leading silver producer in Nevada at 3,761,060 ounce (116,593 kg), a 25% decrease from 2018. All of its production came from its low-grade open-pit Rochester Mine, the only primary silver mine in Nevada. Kinross Gold's Round Mountain Mine was the second largest silver producer at 921,881 ounces (28,578 kg) Nevada Gold Mines' Phoenix Mine dropped to third, producing 754,270 ounces (23,382 kg) of silver in 2019. Reported silver reserves from the seven mines that reported silver production at the end of 2019 totaled 144,379,900 ounces (4,490,717 kg), essentially the same as at the end of 2018. The average price of silver in 2018 was $16.22/oz, a 15% increase from 2018.

KGHM International's Robinson Mine produced 79% of Nevada's copper. Production in 2019 amounted to 113,132,886 pounds (51,039 metric tons), an increase of 0.5% from 2018. KGHM International also produced 766,699 pounds (348 metric tons) of molybdenum from Robinson in 2018, a 124.4% increase from 2018. Nevada Gold Mines LLC's Phoenix Mine made up the balance of the copper production, producing 30,585,072 (13,873 metric tons), a 3.2% decrease from 2017. Proven and probable reserves of copper at the Phoenix Mine at the end of 2019 were 992,000,000 lbs (449,964 mt).

Table 1. 2019 Nevada Metal Production by Producer				
Operator	**Gold ounces (kg)**	**Silver ounces (kg)**	**Copper pounds (metric tons)**	**Molybdenite pounds (metric tons)**
Nevada Gold Mines JV	3,682,043 (114,524)	1,070,177 (33,286)	30,585,072 (13,873)	
Kinross	660,100 (16,750)	954,345 (29,683)		
SSR Mining	220,227 (6,849)	4,223 (131)		
Jerritt Canyon Gold	117,985 (3,669)	0		
Hecla (Klondex)	66,166 (4,512)	181,741 (29,683)		
KGHM International	51,277 (1,594)	67,634 (2,103)	113,132,886 (51,316)	766,699 (347)
Florida Canyon Mining	43,305 (1,347)	30,877 (960)		
Fiore Gold	37,403 (1,259)	0		
Coeur Rochester	35,401 (1,101)	3,761,060 (116,982)		
McEwen Mining	30,709 (955)	614 (19)		
Rawhide Mining	14,381 (447)	140,187 (4,360)		
Gold Resource Corp,	10,810 (336)	9,574 (298)		
Hycroft Mining	8,916 (277)	56,783 (1,766)		
Mineral Ridge Gold	3,863 (120)	2,324 (72)		
Ruby Hill Mining (residual leaching)	3,356 (104)	2,540 (79)		
Borealis Mining (residual leaching)	605 (19)	387 (12)		
Toquima Gold (placer)	15 (0.47)			
Totals	**4,868,086 (151,414)**	**8,011,408 (249,183)**	**144,655,766 (65,189)**	**766,699 (347)**

EXPLORATION

Exploration activity in Nevada in 2019 appeared to increase, based on exploration indicators that increased in 2017. The vast majority of exploration projects targeted gold. The increase of the average gold price to $1,393 per ounce in 2019 appears to have been the main cause.

Exploration activity, including new claims staked, was reported in most of Nevada's 17 counties. The Bureau of Land Management's LR2000 database indicated 191,971 claims at the end of 2019, essentially the same as the end of 2018 (fig. 6). A total of 11,920 new claims were staked in 2019, significantly lower than the 17,648 new claims that were staked in 2019. The distribution of active claims at the end of 2019 is shown in figure 1. The distribution of new claims staked in 2019 is shown in figure 2. Only 514 new placer claims were staked most likely for lithium exploration, less than half of the placer claims staked in 2018.

Table 4 shows the top ten companies that staked the most new claims, including their general location in Nevada in calendar year 2019. Kinross Gold Corp., who staked the most claims, appears to be one of the few major companies doing greenfields exploration away from active mine site. Their program mainly focused on epithermal prospects in the Santa Rosa Range in northern Nevada in Humboldt County, the northwest end of the Longstreet district in Nye County, the Wildhorse district in Churchill and Lander counties, and the Bullfrog district near Beatty in Nye County. A junior, Big Casino Corp. was second, staking claims in the Shoshone Range, including the Cedars area, the western pediment and the Rocky Pass and Wilson Canyon areas. Hercules Gold USA LLC enlarged its claim block at its Hercules project near Carson City. Kennecott Exploration returned to Nevada to explore for porphyry copper deposits in White Pine County in the general vicinity of the KGHM's Robinson copper mine, as well as in western Nevada in Mineral County. It staked claims in the Muncy Creek district on the eastern flank of the northern Schell Creek Range, including the eastern pediment, as well as the western flank of the central Schell Creek Range, including the western pediment. In western Nevada it staked claims at the north end of the Pilot Mountains in the Santa Fe district.

At least 98 projects were drilled in 2019, compared to a minimum of 94 projects in 2018, marking the third consecutive year of increases in drill projects (fig. 3). Table 5 shows the breakdown of the drill projects by size of company and drill program. Major to mid-tier companies[1] drilled at least 42 projects in 2019, including Nevada Gold Mines LLC, Kinross, Anglo Gold Ashanti, and Newcrest, Coeur Mining Inc., KGHM, Silver Standard Resources, Hecla Mining, Premier Gold Mines, Gold Resource Corp., Oceana Gold, and West Kirkland. The remaining 56 projects were drilled by at least 40 junior companies. Figure 4 shows the location of projects across the state that were drilled in 2019. Possibly, more than the 98 projects were drilled in 2019, especially small drill programs carried out by major or mid-tier companies and privately held companies. Large companies are not required to release much of their exploration results, because exploration commonly does not have a material impact on their businesses.

The main exploration target in Nevada continued to be gold. Of the 98 projects that were known to have been drilled in 2019, gold was the main target for 87 of the projects. Only 11 drill projects targeted metals other than gold. Five projects focused on copper, including small programs at the Pumpkin Hollow project by Nevada Copper, by KGHM at its Robinson Mine, by Great Western Mining at its Marietta and Huntoon exploration projects in Mineral County, and by VR Resources at its Bonita and Junction projects in Humboldt County. Coeur Mining was the only company drilling primarily for silver, at its Rochester open-pit silver deposit in Pershing County and Silver One Resources drilled at its Candelaria project in Mineral County. General Moly carried out a small program at its Mount Hope molybdenum project. First Vanadium Corp. carried out a small drill program at its Carlin vanadium project near the town of Carlin, and Victory metals carried out a small drill program at its Iron Point project.

Exploration activity is summarized below by county and district. Projects that were drilled in 2019 are emphasized. Production, reserves and resources of gold and silver are updated in the sections **Major Precious-Metal Deposits**. Recent production, reserves, and resources from projects producing or targeting other metals are listed in the section **Other Metallic Deposits**.

[1]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 are as follows: 1) major companies produce greater than 1 million ounces of gold worldwide, and have market capitalization of over $3 billion. 2) mid-tier companies produce between 50,000 and 1 million ounces of gold worldwide and/or have market capitalizations less than $3 billion but more than $500 3) junior companies produce less than 50,000 ounces of gold and/or have market capitalizations less than $500 million.

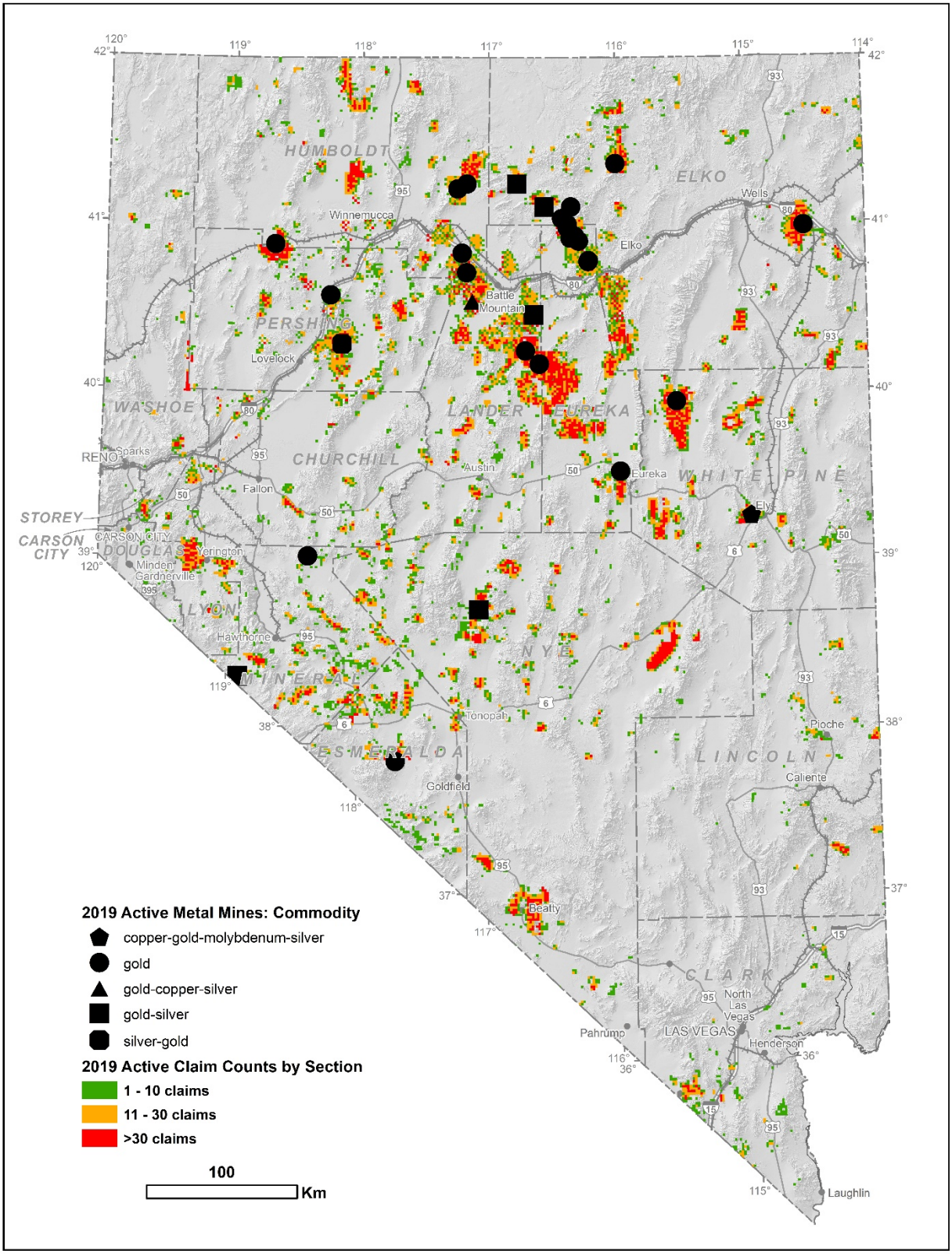


Figure 1. Map showing distribution of active mining claims by section at the end of 2019. Source of data is the U.S. Bureau of Land Management's LR2000 database.

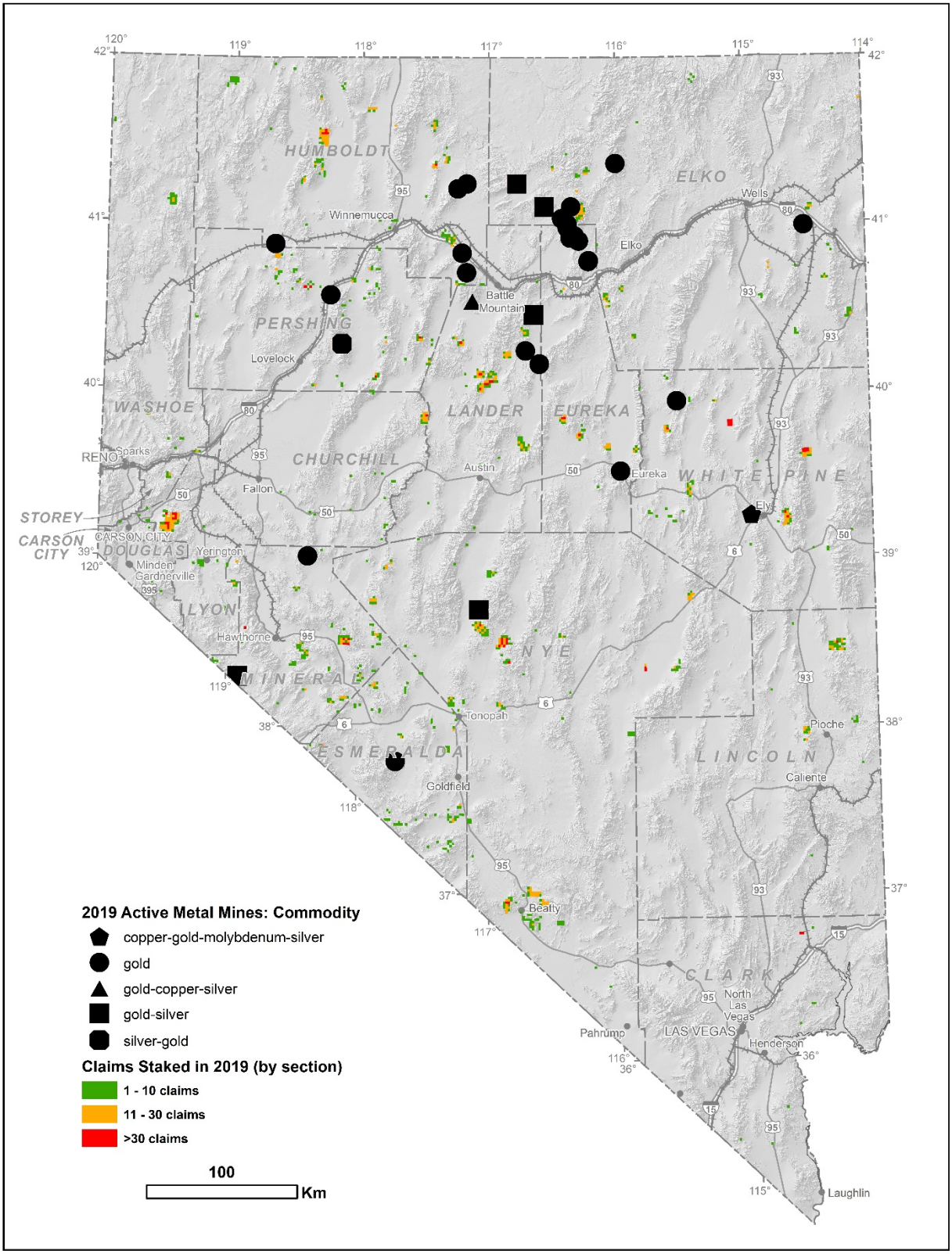


Figure 2. Map showing distribution of active mining claims by section that were staked in 2018. Source of data is the U.S. Bureau of Land Management's LR2000 database.

2019 Metallic Mine Production for Nevada - Final									
Nevada Division of Minerals Annual Status and Production Reports									
Operator	Mine	Gold 2018 (ounces)	Gold 2019 (ounces)	Silver 2018 (ounces)	Silver 2019 (ounces)	Copper 2018 (pounds)	Copper 2019 (pounds)	Molybdenite 2018 (pounds)	Molybdenite 2019 (pounds)
Borealis Mining	Borealis	420	**605**	394	**387**				
Coeur Rochester	Rochester	54,388	**35,401**	5,037,983	**3,761,060**				
Coeur Sterling	Sterling Mine	280	**0**	NR	**NR**				
Fiore Gold	Pan	37,403	**40,499**	NR	**NR**				
Florida Canyon Mining	Florida Canyon	46,878	**43,305**	31,775	**30,877**				
Geo-Nevada	Spring Valley	14	**0**	NR	**0**				
Gold Resource Corp.	Isabella Pearl	0	**10,810**	0	**9,574**				
Hecla (Klondex)	Aurora	3,700	**4,190**	37,174	**22,998**				
Hecla (Klondex)	Fire Creek	65,450	**52,616**	69,004	**63,279**				
Hecla (Klondex)	Hollister	26,612	**3,264**	246,080	**53,025**				
Hecla (Klondex)	Midas	13,852	**6,096**	164,054	**42,439**				
Hycroft Mining	Hycroft	0	**8,916**	0	**56,783**				
Jerritt Canyon Gold LLC	Jerritt Canyon	145,064	**117,985**	NR	**NR**				
KGHM International	Robinson	38,990	**51,277**	171,679	**67,634**	112,552,787	**113,132,886**	459,959	**766,699**
Kinross Gold	Bald Mountain	284,359	**187,585**	21,793	**32,464**				
Kinross Gold	Round Mountain	375,741	**350,943**	798,249	**921,881**				
McEwen Mining	Gold Bar	0	**30,709**	0	**614**				
Mineral Ridge Gold	Mineral Ridge	7,497	**3,863**	3,444	**2,324**				
Nevada Gold Mines	Arturo JV	52,451	**21,029**	NR	**NR**				
Nevada Gold Mines	Betze Post	458,287	**493,546**	70,621	**18,781**				
Nevada Gold Mines	Carlin Trend Operations	926,789	**880,615**	74,494	**57,551**				
Nevada Gold Mines	Cortez Hills OP/Pipeline	974,381	**543,335**	9,049	**35,754**				
Nevada Gold Mines	Cortez Hills UG	290,457	**400,389**	9,772	**26,056**				
Nevada Gold Mines	Lone Tree Complex	24,253	**17,483**	NR	**NR**				
Nevada Gold Mines	Long Canyon	170,205	**189,965**	NR	**NR**				
Nevada Gold Mines	Meikle	337,376	**331,271**	15,918	**12,606**				
Nevada Gold Mines	Phoenix	217,015	**160,700**	826,838	**754,270**	32,102,979	**30,585,072**		
Nevada Gold Mines	Turquoise Ridge JV	444,720	**406,066**	NR	**56,817**				
Nevada Gold Mines	Twin Creeks	359,042	**237,644**	206,161	**108,342**				
New Gold Nevada	Black Rock Canyon	14	**0**	2	**0**				
Rawhide Mining	Denton-Rawhide	15,444	**14,381**	208,875	**140,187**				
Ruby Hill Mining	Ruby Hill	4,648	**3,356**	3,584	**2,540**				
SSR Mining	Marigold Mine	205,161	**220,227**	4,315	**4,223**				
Sunrise Minerals	Sunrise Placer	268	**0**	150	**0**				
Toquima Gold	East Manhattan	0	**15**	0	**NR**				
Totals		5,581,160	**4,868,086**	8,011,408	**6,282,466**	144,655,766	**143,717,958**	459,959	**766,699**

Table 3. Nevada Mine Reserves (Proven and Probable) Reported for End of Year 2019				
Company	**Mine**	**Gold ounces**	**Silver ounces**	**Copper pounds**
Nevada Gold Mines JV (Barrick's portion)	Carlin Operations Surface	**7,100,000**		
Nevada Gold Mines JV (Barrick's portion)	Carlin Operations Underground	**5,900,000**		
Nevada Gold Mines JV (Barrick's portion)	Turquoise Ridge Surface	**2,100,000**		
Nevada Gold Mines JV (Barrick's portion)	Turquoise Ridge Underground	**6,200,000**		
Nevada Gold Mines JV (Barrick's portion)	Long Canyon	**390,000**		
Nevada Gold Mines JV (Barrick's portion)	Cortez Surface	**2,500,000**		
Nevada Gold Mines JV (Barrick's portion)	Cortez (OP and UG)	**3,600,000**		
Nevada Gold Mines JV (Barrick's portion)	Phoenix	**3,300,000**	**24,000,000**	**992,000,000**
Nevada Gold Mines JV	Newmont's Portion of all NGM mines	**14,700,000**		
Barrick	South Arturo (60%)	**347,000**		
Premier Gold	South Arturo (40%)	**231,333**		
Coeur	Rochester	**737,000**	**117,472,000**	
Kinross	Round Mountain	**2,421,000**	**1,622,000**	
Kinross	Bald Mountain	**1,277,000**		
SSR	Marigold	**3,600,110**		
Hecla (Klondex)	Fire Creek	**182,000**	**176,000**	
Gold Resource Corp.	Isabella Pearl	**202,100**	**1,310,700**	
	Totals	**54,787,543**	**143,270,000**	**992,000,000**
* All numbers from 2019 annual reports or other regulatory financial filings. KGHM did not release copper reserves at its Robinson mine				

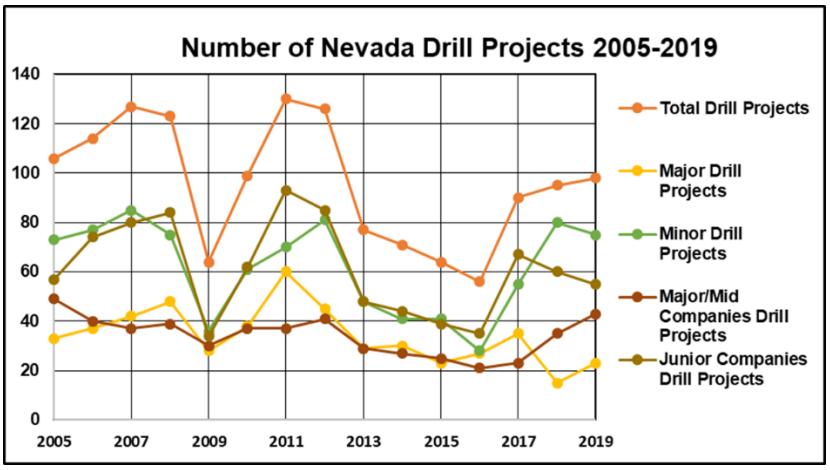


Figure 3. Number of drill projects in Nevada from 2005 to 2019.

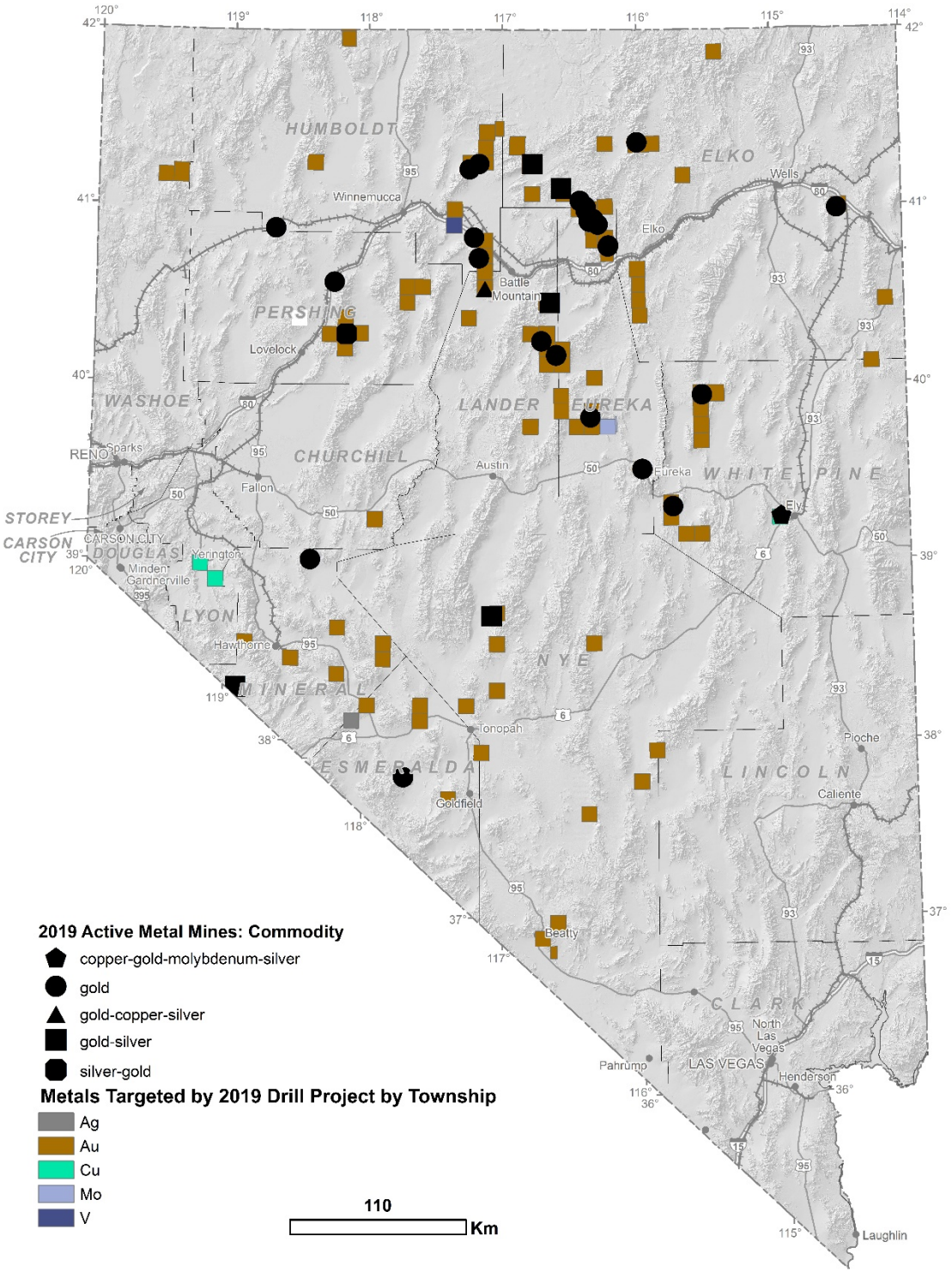


Figure 4. Map showing location of drill projects in 2019 by township that is color-coded by targeted metal.

Table 5. Companies that staked the most new claims in 2019.

CLAIMANT	Number of Claims	Main Areas of Staking
KINROSS GOLD CORP.	1,260	1) Paradise Valley District, Santa Rosa Range, south of Buttermilk Summit (Humboldt County) 2) Northwest end of the Longstreet District (Nye County) 3) Northeast end of Wildhorse District (Churchill and Lander Counties) 4) Bullfrog District (Nye County)
BIG CASINO CORP.	1.071	1) Shoshone Range including the Cedars area, including the western pediment, Rocky Pass and Wilson Canyon areas (Lander County) 2) Altanta Mining District (Lincoln County)
HERCULES GOLD USA LLC	971	1) Como District at north end of the Pine Nut Mountains (Lyon County)
KENNECOTT EXPLORATION CO.	851	1) Muncy Creek District, northern Schell Creek Range and its eastern flank, including pediment (White Pine County) 2) Duck Creek and Cleve Creek Districts, central Schell Creek Range and its western flank, including western pediment, (White Pine County) 3) Santa Fe District at north end of Pilot Mountains, including western pediment (Mineral County)
GOLDEN MINERALS CORP.	583	1) South end of the Bilk Creek Mountains, including the southwest, south, and southeast pediments (Humboldt County)
BASIN AND RANGE RESOURCES LLC	414	1) Tuscarora Mountain, just northeast of the north end of the Carlin Trend (Elko County) 2) North end of the White Pine Mountains, mainly near the old Illipah mine (White Pine County)
ANGLO GOLD ASHANTI	390	1) Bare Mountain District, expansion of its Silicon claim block (Nye County)
RENNAISSANCE GOLD INC.	240	1) Highland District, Nye County 2) Southern Pequop Mtns, Elko County 3) Quinn Canyon Range, White Pine County 4) Don Dale District, Lincoln County 5) West end of the Goldbanks District, Pershing County
CP HODINGS CORP.	234	1) West pediment of the Toquima Range, west of old Northumberland mine (Nye County) 2) Bob's Creek area near Beowawe (Lander County) 3) Northern Tuscarora Mountains (Elko County) 4) South end of Como District (Lyon County) 5) North end of Kamma Mountains (Pershing County) 6) South end of Pilot Mountain District (Mineral County) 7) Masonic District (Mineral County)
BROWNSTONE VENTURES	209	1) Area between old Preble mine and Iron Point, including pediment east of Iron Point (Humboldt County 2) North end of Whistler Mountain (Eureka County)

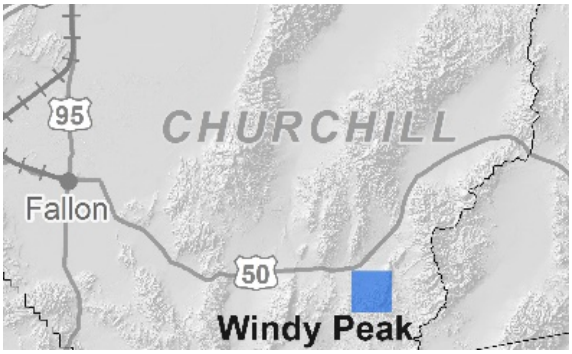
Table 5. Breakdown of 2019 drill programs for metals in Nevada.

2019 Drill Projects	Major/Mid-Tier Companies	Junior Companies	Total
Major Drill Program	**16** (16)	**3** (0)	**19** (16)
Minor Drill Program	**26** (6)	**53** (57)	**79** (82)
Total	**42** (23)	**56** (57)	**98** (98)

For comparison, the number of drill programs in 2018 is shown in parentheses.

Major programs are arbitrarily defined as >25 drill holes.

CHURCHILL COUNTY



Bell Mountain District

Bell Mountain. The Bell Mountain project controlled by Eros Resources Corp. consists of four patented claims and 172 unpatented lode claims covering 3,616 acres (1,463 ha). The property lies within the area of the proposed expansion of the Fallon Range Training Complex by the U.S. Navy, which was put on hold in June 2020. While no exploration work was conducted through 2019, the company was having a preliminary environmental assessment prepared, which was completed and issued in January 2020. A final environmental assessment and finding of no significant impact were also issued in 2020 followed by a soil and rock chip sampling program. The project calls for four open pits—Spurr, Varga, Sphinx, and East Ridge pits—and a heap leach pad, crusher, processing plant, and associated infrastructure. (BLM Bell Mountain Exploration Corporation Bell Mountain Mine Project, Preliminary Environmental Assessment, DOI-BLM-NV-C010-2019-0013-EA, 1/2020; BLM Bell Mountain Exploration Corporation Bell Mountain Mine Project, Final Environmental Assessment, DOI-BLM-NV-C010-2019-0013-EA, 3/2020; BLM Finding of No Significant Impact, Bell Mountain Exploration Corporation Bell Mountain Mine Project Environmental Assessment, Record of Decision, DOI-BLM-NV-C010-2019-0013-EA, 3/25/2020; BLM Decision Record, Bell Mountain Exploration Corporation Environmental Assessment, Record of Decision, DOI-BLM-NV-C010-2019-0013-EA, 4/7/2020; Eros Resource Corp., news releases, 4/15/2020, 10/27/2020; Eros Resource Corp., Management Discussion and Analysis, 4/29/2020; Eros Resource Corp., website, https://www.erosresourcescorp.com)

Eastgate District

Windy Peak. In December, Patriot Gold Corp. completed ten reverse circulation holes of a Phase I drilling program at its Windy Peak project in Churchill County, Nevada. The program was designed to determine the lateral extent of the mineralization at Windy Flats North by stepping out approximately 300 feet (90 m) from an area of closely spaced historic drilling, and the holes were dispersed throughout the target area. Eight of the holes encountered gold intercepts greater than or equal to 10 feet (3 m) with gold grades greater than 0.0029 opt (0.1 g/t). The drilling results indicate that the mineralization is open to the northeast along strike and down-dip, thins to the north and south, and is closed to the west by an erosional surface presently overlain by thick overburden. It also indicates that potential mineralization lies at depth in the northeastern part of the Windy Flats North area.

The project area is underlain by a thick sequence of layered volcanic rocks folded into a broad north-south trending antiform. The western part of this antiform contains widespread chalcedonic sinter breccia at the top and locally moderate amounts of visible cinnabar. Outcrops of east-west trending faulted vein-breccia zones are exposed along the south face of the main hill. A small open pit follows one of the breccia zones with gold-silver mineralization extending beyond the pit to the east and west, and maybe occurring in several sub-parallel, vein-breccia zones. The mineralization is characterized by low sulfide concentrations and is hosted in variably welded, mostly latitic lithic ash flow tuff units. The styles of mineralization are associated with: 1) both low angle and steeply dipping structures containing quartz veins, 2) hydrothermal vent breccias, 3) the margins of volcanic domes, and 4) volcanic formations that have undergone silicification. The quartz veins of the first style are generally restricted to only one meter in width, while the zones of the other styles of mineralization are tens to hundreds of meters thick and display variably silicified and argillically altered host rock. The

property consists of 114 unpatented claims totaling approximately 2,337 contiguous acres (946 ha). (Patriot Gold Corp., 10-K Form, 3/26/2020; Patriot Gold Corp., news releases, 12/5/2019, 3/3/2020; Patriot Gold Corp. website, http://www.patriotgoldcorp.com)

Table Mountain District

Lovelock Cobalt Mine. Global Energy Metals Corp. signed a definitive agreement in early 2019 with Nevada Sunrise Gold Corp. whereby the latter would acquire an 85% interest in the Lovelock Cobalt Mine and the Treasure Box Mine. The agreement includes Global Energy Metals Corp. issuing $200,000 worth of stock to Nevada Sunrise Gold Corp. and conducting $2,500,000 worth of exploration over a three-year period. Though no drilling was reported, Global Energy Metals Corp. conducted field work and metallurgical testing. A bulk sample taken from the waste rock in the historic dumps in front of the mine openings underwent initial analysis resulting in a head assay of 0.2% cobalt, 0.19% nickel and 2.84% copper. The company contracted MWH Geo-Surveys International, Inc., who conducted an Unmanned Aerial Vehicle Magnetometer Survey. The survey involved 155 line miles (248 line km) with 165-foot (50-m) spacing over an area of 4.8 square miles (12.4 square km). Initial results identified numerous new strong magnetics trends apparently correlating very well with historic zones of mineralization. (Nevada Sunrise Gold Corp. website, http://www.nevadasunrise.ca; Global Energy Metals Corp. Management Discussion and Analysis, 10/28/2020; Global Energy Metals Corp. news releases, 1/21/2019, 3/26/2019, 8/8/2019, 8/14/2019, 12/2/2019, 4/7/2020, 9/17/2020, 10/7/2020; Global Energy Metals Corp. website, https://www.globalenergymetals.com)

CLARK COUNTY

Goodsprings District

Goodsprings (Cobalt and Base Metals). In 2018, Tyranna Resources, Ltd., of West Perth, Australia, acquired full ownership of US Cobalt Pty Ltd and its assets including the Goodsprings Cobalt and Base Metals projects just west and southwest of the town of Goodsprings. The property contained 329 claims covering 6,580 acres (2,663 ha). The company conducted rock chip and stream sampling programs, and in early 2019, the company conducted a 3D induced polarization and resistivity survey. The company applied for a drilling permit, but the BLM has delayed its approval. The company then offered up the property to third parties for development or sale, but in 2020, the company dropped the property. (Tyranna Resources, Ltd. news releases, 2/12/2019, 7/26/2019, 10/31/2019, 1/31/2020, 4/29/2020, 7/31/2020, 10/29/2020; Tyranna Resources, Ltd. website, https://www.tyrannaresources.com)

Goodsprings (Copper and Cobalt). New World Cobalt, Ltd., of Subiaco, Australia, conducted a surface geochemical sampling program and an Induced Polarization ground-based electrical geophysical survey at its fully owned Goodsprings Copper and Cobalt project in 2018. However, other than acquiring the rights to explore and develop a privately-owned 120-acre (49-ha) parcel of land that includes and encompasses the high-grade Columbia Copper-Cobalt Mine, the company conducted no further field work on the property in 2019. The company said this situation may change when cobalt prices improve. A number of peripheral claims were dropped, and the property was reduced to 118 claims covering about 2,300 acres (930 ha). (New World Cobalt, Ltd., Annual Report, 9/20/2020; New World Cobalt, Ltd., Quarterly Activities Report, 2/1/2019, 5/1/2019, 8/1/2019, 10/31/2019, New World Cobalt, Ltd., website, http://www.newworldcobalt.com)

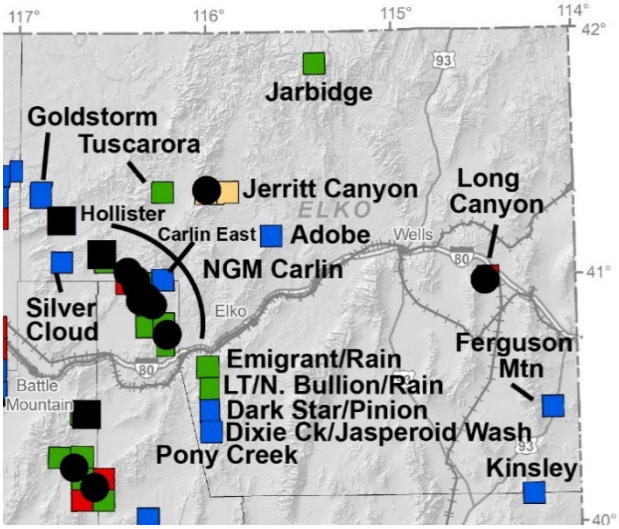
DOUGLAS COUNTY

Buckskin District

Willow and Nev-Lorraine. Abacus Mining and Exploration Corp. drilled its Willow and adjacent Nev-Lorraine properties on the southeast side of the Buckskin Range in 2018, but no drilling was reported for 2019 into 2020. Abacus Mining and Exploration Corp. has an option agreement with Almadex Minerals, Ltd., whereby the former can acquire up to a 75% interest in the Willow project. An initial 60% interest can be acquired by issuing 2,500,000 common shares of stock and conducting

at least $3,000,000 of exploration work over a five-year period. Abacus Mining and Exploration Corp. also signed a separate 10-year lease with the three owners of the Nev-Lorraine claims which adjoin the southeast side of the Willow property. While no details about exploration work were reported, the company conducted the required $600,000 of exploration work on the Willow property for the period February 22, 2019, through February 22, 2020, and $20,000 of exploration work on the Nev-Lorraine property during the calendar year 2019. The optioned properties covers 25,333 acres (10,252 ha**).** (Abacus Mining and Exploration Corp. Management Discussion and Analysis, 4/28/2020; Abacus Mining and Exploration Corp., website, http://www.amemining.com)

ELKO COUNTY



Bootstrap District

South Arturo/El Nino. Barrick Gold Corp. produced 21,029 ounces of gold from the South Arturo Mine (a.k.a. Arturo Mine project) located at the north end of the Carlin trend, a 60% decrease from 2018. This includes production from the new El Nino underground mine of about 14,900 ounces. The operation also produced silver in 2018, At least 3,800 ounces were produced in 2019. The operation is a joint venture between Barrick Gold Corp. (60%) and Premier Gold Mines, Ltd, (40%). With Small Mine Development as the contracted mine operator, commercial production commenced from the El Nino underground mine with the first gold pour on September 26, 2019. Premier Gold Mines, Ltd, reported its 40% share of production from the El Nino Mine at 5,964 ounces of gold, with an additional 3,855 contained ounces being stockpiled for future processing. Production was on hold during the first quarter of the year, and resumed during the second quarter with gold being recovered from the old South Arturo Phase 2 open pit stockpile. Premier Gold Mines, Ltd, recovered 2,124 ounces of gold (its 40% share) from the stockpile through the rest of the year with an additional 392 pre-production ounces of gold from the Phase 1 open pit. The company also reported producing 1,523 ounces of silver as its 40% share. Production was mainly from ore stockpiled from the mining at the old Phase 2 (West Button Hill) pit, which was completed in 2017. The ore was trucked to the Goldstrike processing facilities three miles (five km) to the south and toll milled. 45,082 tons (49,694 mt) of ore with an average grade of 0.18 opt (6.16 g/t) gold were processed with an average gold recovery of 84.2%. The co-product all-in sustaining costs per ounce of gold sold was $836.

Exploration drilling focused primarily on East Dee, El Nino, and high priority exploration targets near to the open pits. Definition drilling was conducted at East Dee, a high-grade mineralized zone located just east of the Phase 1 open pit, to establish mineral resources with a high level of confidence. Drilling at El Nino focused on reserve definition and expansion including in-fill and step-out drilling from the underground drill stations. At least one core and 31 reverse circulation holes were drilled from the underground stations at El Nino. Significant gold intercepts included 120 feet (39.6 m) grading 0.25 opt (8.7 g/t), 105 feet (32 m) grading 0.29 opt (9.93 g/t), 165 feet (50.3 m) grading 0.19 opt (6.36 g/t), 80 feet (24.4 m) grading 0.6 opt (20.6 g/t), 75 feet (22.9 m) grading 0.68 opt (23.22 g/t), 135 feet (41.1 m) grading 0.22 opt (11.41 g/t), 65 feet (19.8 m) grading 0.48 opt (16.46 g/t), 175 feet (53.3 m) grading 0.25 opt (8.3 g/t), 17 feet (51.8 m) grading 0.32 opt (11.13 g/t), and 30 feet (9.1 m) grading 0.76 opt (25.89 g/t). Geotechnical drilling was conducted at the proposed Phase 3 pit, and least six core holes were drilled. Significant gold intercepts included 370 feet (112.8 m) grading 0.21 opt (7.29 g/t), 205 feet

(62.5 m) grading 0.23 opt (7.93 g/t) gold, and 390 feet (118.9 m) grading 0.052 opt (1.78 g/t).

Capital costs for the year were $27,700,000 with $17,800,000 spent on stripping of the Phase 1 open pit, $5.5 million for underground development at El Nino and $4.4 million in equipment. Construction of Phase 1 open pit got underway in mid-2018 with more than 1,500,000 tons (1,360,000 mt) of material being stripped by the start of 2019. A minor amount of gold was produced from this material. Heap leach material was stockpiled for potential processing at a facility that will be located on the Dee Joint Venture property. If the heap leach option is approved, construction of that facility will begin in 2020. The capital cost of the entire Phase 1 open pit project is expected to be about $90,000,000.

The El Nino underground deposit is the down-plunge extension of the old Phase 2 pit mined in 2016 and 2017. It is a Carlin-type deposit containing gold in arsenian pyrite. The deposit is hosted in breccias caused by hydrothermal alteration and collapse structures in commonly decalcified, mostly calcareous sedimentary rocks. Mineralization remains open at depth and locally along strike. Two portals are collared in the old Phase 2 pit, and the capital cost of the entire El Nino underground project was about $36,400,000. (Elko Free Press, 10/6/2019; Nevada Gold Mines, LLC, NI 43-101 Technical Report on the Carlin Complex, 3/25/2020; Barrick Gold Corp. Annual Information Form, 3/25/2029; Barrick Gold Corp. website, www.barrick.com; Premier Gold Mines, Ltd, Management Discussion and Analyses, 3/4/2020; Premier Gold Mines, Ltd, Annual Information Form, 3/27/2020; Premier Gold Mines, Ltd, news releases, 1/29/2019, 5/8/2019, 6/25/2019, 9/27/2019, 10/28/2019, 12/18/2019; Premier Gold Mines, Ltd, website, www.premiergoldmines.com).

Carlin District

Carlin Vanadium. First Vanadium Corp. (formerly Cornerstone Metals, Inc.) drilled its Carlin Vanadium project in 2018 but not in 2019. Though the details were not released, the company spent $1,273,126 on exploration during the fiscal year ending in November 2019. The Carlin Vanadium project contains one of the largest known primary vanadium resources in the country. The deposit is considered to be of the syngenetic type and is hosted in shale of the Devonian Woodruff Formation. It is stratigraphically controlled and generally follows the strike and dip of the host rock. The vanadium is in the form of metahewetite (CaV_6O_{16} $3(H_2O)$) and is finely and evenly disseminated in the deposit. The average estimated true thickness of the deposit is about 110 feet (33.5 m). The resource area has a 6,000-foot (1,830-m) north-south-trending strike length and a 2,000-foot (600-m) east-west width. The newly leased Cole Creek Property (see below) added another 660 feet (200 m) of strike length to the southern end of the deposit. Union Carbide drilled six holes on the Cole Creek Property in the 1960s, which showed this part of the deposit ranged between 35 feet (10.67 m) and 95 feet (28.96 m) and averaged 61 feet (18.54 m) in thickness with and grades ranging from 0.37% to 0.82% V_2O_5 and averaging 0.57% V_2O_5. The company acquired the historical data on this property and was able to extend the mineralization another 330 feet (100 m) southward along strike. First Vanadium commenced drilling Cole Creek Property in 2020.

The potential for gold on the property was recognized towards year's end. Silicified outcrops containing elevated gold and trace element values were interpreted as signs of hydrothermal fluid leakage from a potential high-grade gold target at depth. Gold-bearing outcrops on the Black Kettle prospect of the property were drill tested to shallow depths in the 1980s and 1990s with some success, though the depth potential was not recognized.

First Vanadium Corp. reported the metallurgical test results on nine samples. The vanadium extraction rates ranged between 92% and 98% for both oxidized and unoxidized mineralized material of low, average and high vanadium grades. The company issued an NI 43-101 technical report with a new resource in early 2019 and was preparing another one as an economic assessment without updated resources to be issued in 2020.

The Carlin Vanadium project consists of 150 unpatented mineral claims covering 2,528 acres (1,023 ha) and 80 acres (32 ha) of fee land known as the Cole Creek Property located on the northwestern flank of the Piñon Range. The company has an option agreement on the original 72 mining claims covering 1,140 acres (385 ha) with Americas Gold Exploration, Inc., and Golden

Predator US Holding Corp. to acquire full interest in the Carlin Vanadium Project, which also includes the Black Kettle gold prospect immediately southeast of the vanadium deposit. The agreement includes paying $2,020,000 cash and issuing 2,000,000 shares of common stock in installments over a four-year period plus conducting about $800,000 in exploration and other work commitments over six years. The remaining mining claims were staked by the company in early 2019.

The Cole Creek property was acquired in January through a five-year Access and Mineral Lease Agreement. First Vanadium Corp. paid the lessor $50,000 upon signing, and pays another $20,000 annually for the lease of all minerals beneath the surface of the property to be replaced with a 5% net smelter return royalty upon commencement of any mining. First Vanadium Corp. is also required to spend $100,000 on the property within 36 months or pay the lessor any difference should there be a shortfall. (First Vanadium Corp. news releases, 1/31/2019, 3/19/2019, 3/27/2019, 4/4/2019, 4/24/2019, 11/12/2019, 12/172019, 8/24/2020; First Vanadium Corp., NI 43-101 Technical Report, 1/31/2019, 5/11/2020; First Vanadium Corp. website, https://firstvanadium.com)

Emigrant/Rain. Effective July 1, 2019, the Emigrant and Rain mines became part of the Carlin Complex of Nevada Gold Mines, LLC (Barrick Gold Corp. 61.5% and Newmont Corp. 38.5%), with Barrick Gold Corp. as the designated operator. Newmont Corp. ended active mining at its Emigrant open pit in December 2018 with residual leaching by Nevada Gold Mines LLC continuing into 2020. The Rain Mine ceased operations in 2004 and has been undergoing closure and reclamation activities since then. Production from the Emigrant Mine is included in Newmont's production totals for the Carlin trend. A change in the mine's operating plan and a company decision to concentrate on other projects led to a shortening of the life of the mine.

Untested drill targets do remain in the southern portion of the deposit. At higher gold prices, the deeper mineralization in these targets may be reconsidered. The mineralization of the Rain and Emigrant deposits is hosted in the Antler overlap assemblage. Drilling was conducted in the Rain sub-district during the second half of the year, though little detail was released. One hole intercepted 20 feet (6.1 m) grading 25 opt (8.52 g/t) hosted in 426 feet (130 m) of thick breccia overprinted by silicification and sulfidation altering carbonate rock. This shows the potential for structurally controlled high-grade mineralization below the stratigraphic level of past exploration and production. A second hole, 2,000 feet (600 m) south of the Rain fault, intercepted 11 feet (3.5 m) grading 0.23 opt (7.5 g/t). This indicates mineralization is open to the south and west. (Barrick Gold Corp., Management Discussion and Analyses 8/12/2019; Barrick Gold Corp. Annual Report, 3/25/2020; Nevada Gold Mines, LLC, NI 43-101 Technical Report on the Carlin Complex, 3/25/2020; Newmont Corp. Form 10-K, 2/21/2020; Newmont Corp. website, https://www.newmont.com)

Coal Mine District

Adobe. Sitka Gold Corp. conducted soil and outcrop sampling and drilled its Adobe project near Coal Mine Canyon in the Adobe Range in 2018 but not in 2019. The company had acquired an option to earn full interest in the property in December 2015. Despite elevated gold values returned from the Adobe drill program, the target is considered too deep to efficiently explore further. In August, 2019 Sitka Gold Corp. terminated its option agreement. (Sitka Gold Corp. Management Discussion and Analysis, 4/29/2020; Sitka Gold Corp. website, https://www.sitkagoldcorp.com)

Ferguson Spring District

Ferguson Mountain. In January, Hochschild Mining, PLC, signed an option agreement with Renaissance Gold Corp. whereby the former could earn up to a 51% interest in the Ferguson Mountain project. Hochschild Mining, PLC, would spent $3,000,000 over a five-year period plus spent $200,000 within 18 months of signing the definitive agreement. A CSAMT survey was conducted along with geologic mapping and soil and rock chip sampling programs. A drilling program was then designed to test structural and stratigraphic targets associated with mineralized high-angle structures and several low-angle stratigraphic and structural horizons, including the

top of the Devonian unconformity in Devonian and younger carbonate host rocks. The company completed seven reverse circulation holes totaling 4,641 feet (1,415 m) on the Ferguson Mountain project. However, no reportable intercepts were encountered, and the company terminated its option. In 2020, Renaissance Gold Corp. and Evrim Resources Corp. merged to form Orogen Royalties, Inc. (Hochschild Mining, PLC, Annual Report, 4/17/2020; Renaissance Gold Corp. news releases, 1/17/2019, 6/20/2019, 7/31/2019, 10/18/2019, 1/6/2020, 8/17/2020; Orogen Royalties Inc. website, https://www.orogenroyalties.com)

Gold Circle District

Midas. During the first quarter, the Klondex Gold and Silver Mining Co, a subsidiary of Hecla Mining Co., mined 6,096 ounces of gold and 42,439 ounces of silver from its Midas Mine, 35% and 32% decreases, respectively, from 2018. Fire Creek and Midas ore is processed using a counter current decantation circuit, and the Hollister ore is processed using a carbon in leach circuit. Total mill recovery of gold and silver was approximately 87% and 53%, respectively. The Midas mill processed ore at a steady rate during 2019, but with the suspension of mining at Midas, batch processing of ore is planned until the suspension of production at Fire Creek. Third-party options are being evaluated for continued operation of the mill. The amount of ore milled from the three mines combined was 210,397 tons grading 0.361 opt gold and 1.64 opt silver, an 80% increase in volume, a 10% increase in gold grade, and a 20% decrease in silver grade from 2018. Production was suspended in the fourth quarter mainly due to the cost of production and capital exceeding sales.

The gold and silver mineralization at Midas is hosted in several northwest-striking veins, which are divided into four principal groups based on their location and orientation. The Main Veins and East Veins host most of the identified mineralized material. The Main Veins dip eastward and are gold dominant with the main production coming from the Colorado Grande and Gold Crown Veins. The East Veins dip westward and contain a higher silver content than the Main Veins. The third group of veins consist of the Queen and Trinity Veins located south of the existing workings and south of the regional South Owyhee fault. No mine production has come from them to date, but they represent high-priority, near-mine exploration targets. The fourth group of veins are west of the Main Vein system and include the Link and Midas Trend Veins. These veins have yet to be delineated from underground. Surface exploration efforts focused on target definition within the district, and recent drilling was conducted around the Main and East Veins, but no results were released.

The property covers about 30,000 acres (12,140 ha) and includes 1,489 unpatented claims on BLM land, 33 of which are leased. The remainder is owned and leased private property covering 2,985 acres (1,208 ha). The mill on the property has a design capacity of 1,200 tons (1,089 mt) per day and processes ore from the company's Fire Creek and Hollister operations as well as Midas. (Hecla Management Discussion and Analysis, 5/7/2020; Hecla Mining Co. 10-K Report, 2/10/2020; Hecla Mining Co. website, http://www.hecla-mining.com)

Independence Mountains District

Big Springs. Anova Metals Ltd. of West Perth, Australia, drilled its Big Springs property in 2017 but not in 2018 or 2019. As of the end of 2019, the company was working to divest itself of the Big Springs project to concentrate on its Australian assets. (Anova Metals, Ltd., quarterly report, 1/28/2020, Anova Metals, Ltd., website, http://anovametals.com.au)

Jerritt Canyon. At its Jerritt Canyon property, Jerritt Canyon Gold, LLC, (Sprott Mining Inc., 80%; Whitebox Asset Management, 20%) produced 117,985 ounces of gold, a 19% decrease from 2018. Open-pit mining in 1999, and all mining since then has been conducted underground. Small Mine Development is doing the contract mining. All underground mines are less than 1,000 feet (305 m) in depth. In recent years, ore has been produced from the Smith (Lee Smith), SSX/Steer, Starvation Canyon, and Saval mines with SSX-Steer being the main producer. Saval, where Jerritt Canyon Gold, LLC, was doing in-house mining, was shut down in the spring because the resources were running low, and the company changed its focus. Starvation Canyon was

then shut down as its resources were depleted. Mining continued at Smith and SSX-Steer.

On-going exploration has generally been focused around Smith and SSX-Steer deposits. The two are only 4,200 feet (1,280 m) apart. An exploration program, which included a magnetic survey, commenced in late July, though the details including that of drilling activity were not released. The property covers 119 square miles (308 square km), and the company was considering expanding its exploration activities.

A 2018 NI 43-101 technical report was recently posted on the company's website. The report did not provide updated reserves but did provide updated resources for the Saval 4, Smith, SSX, and West Mahala deposits. In 2020, Sprott Mining Inc. bought out the 20% share owned by Whitebox Asset Management. (South Jerritt Exploration Project, 9/2020; Elko Daily Free Press, 3/7/2020; Elko Free Press Mining Quarterly, Spring 2020; Jerritt Canyon Gold, LLC, news release, 7/1/2020; Jerritt Canyon Gold, LLC, NI 43-101 Technical Report, 9/28/2018; Jerritt Canyon Gold, LLC, website, www.jerrittcanyon.com)

Ivanhoe District

Hollister. Klondex Hollister Mines, Inc., a subsidiary of Hecla Mining Co., mined 3,264 ounces of gold and 53,025 ounces of silver from its Hollister Mine, 86% and 72% decreases respectively from 2018. The ore was processed at the Midas Mill, and the carbon then sent to the Aurora Mill for stripping.

Definition drilling was conducted to update resources in the West Gloria, 5190, Pump Chamber, East Clementine, and 5278 areas. Early in the year, two rigs were active at West Gloria area conducting definition drilling on the extension of the West Gloria to the west. The drilling proceeded from the end of the 5265-level and focused on down-dip extensions of high-grade intersections of the Gloria Vein to the north and west. Drill holes intercepted parallel structures north of the Gloria Vein, which confirmed mineralization was stepping northwestward. A long exploration hole drilled in these northern structures intercepted three zones of quartz-calcite veins and multiple intervals of crackle breccia and stockworks including an interval grading 20.2 opt (693 g/t) silver. The hole bottomed in adularia alteration. The results of four holes drilled at West Gloria were reported. Significant intercepts included 1) 11.6 feet (3.5 m) grading 0.32 opt (11 g/t) gold and 6.1 opt (209 g/t) silver; 2) 5.5 feet (1.7 m) grading 0.25 opt (8.57 g/t) gold and 10.2 opt (350 g/t) silver, including 2.5 feet (0.75 m) grading 0.38 opt (13 g/t) gold and 20.2 opt (693 g/t) silver; and 2) 3.3 feet (1 meter) grading 0.77 opt (26.4 g/t) gold and 10.9 (374 g/t) silver, including 0.6 feet (18 cm) grading 1.53 opt (52.5 g/t) gold and 18.7 opt (641 g/t) silver.

Two surface exploration holes were drilled east of the Hatter Graben resource, though no details were released. This included a 1,500-foot (460-m) geotechnical hole in the Hatter Graben decline. The Hatter Graben vein system is located about 2,500 feet (760 m) east of the Hollister mine underground development and has been down-dropped about 800 feet (245 m) lower than the current mine resource. It consists of a system of mineralized veins with a known vertical extent of 1,400 feet (430 m) and an east-west trending strike length of 2,000 feet (610 m). The zone is open along strike to the east and west and at depth with mineralization strengthening eastward. High grade intersections occur up to 4,000 feet (1,220 m) along strike to the east. Gold and silver mineralization is hosted mainly in the Ordovician quartzite, siltite and argillite. Higher grades are associated with banded quartz veins ranging from a few inches to a few feet in width. Extensive zones of quartz vein stockwork and quartz matrix breccias also contain significant mineralization.

Development of a drift from the Hollister mine underground workings to the Hatter Graben area was commenced in the third quarter of 2018. However, mining at Hollister and the development of the Hatter Graben were suspended in June of 2019, and the mine was placed on care and maintenance. Surface mapping, sampling, and alteration mineral spectroscopy will continue into 2020, but no more drilling was anticipated for the near future. The suspension was mainly due to the cost of production and capital exceeding sales.

The company's property consists of 1,005 unpatented lode claims and 11 unpatented mill site claims that cover an area in excess of 15,000 acres (6,070 ha) on BLM land. An additional 209 unpatented lode claims covering 4,320 acres (1,728 ha) part of the project through agreements. (Hecla Mining Co., news release 5/8/2019; Hecla Mining

Co. Management Discussion and Analysis, 8/7/2019, 5/7/2020; Hecla Mining Co. 10-K Report, 2/10/2020; Hecla Mining Co. website, www.hecla-mining.com)

Jarbidge District

Jarbidge. Newcrest Mining, Ltd., headquartered in Melbourne, Australia, completed 19,054 feet (5,809 m) of diamond core drilling mainly in the central part of the Jarbidge district. The company continued reconnaissance mapping and sampling to define additional targets, which with geophysics and hyperspectral alteration studies helped identify a new target northeast of the central area. No drilling or other details were released. The company applied and received approval from the U.S. Forests Service to conduct a one-year drilling program. The program includes the construction of 13 drill sites each covering an area 80 feet (24 m) by 50 feet (15 m) and allowing for multiple holes to be drilled at each site at angles that varying from 45° to 80°. Between 15 to 20 holes may be drilled between 1,000 feet (300 m) to 3,000 feet (915 m) deep. The company will use up to two core drill rigs to test the geologic targets. The company has an option to buy the property. (Elko Free Press, 4/19/2019, 9/5/2019; U.S. Forest Service, Decision Memo, Newcrest Exploration Project Plan of Operations No. 06-19-01 Mountain City Ranger District, Humboldt-Toiyabe National Forest Elko County, Nevada, 6/27/2019; Newcrest Mining, Ltd., Quarterly Exploration Reports, 7/25/2019, 10/24/2019, 1/30/20202; Newcrest Mining, Ltd., website, https://www.newcrest.com.au)

Kinsley District

Kinsley Mountain. In November of 2019, Liberty Gold Corp. and Nevada Sunrise Gold Corp. completed three reverse circulation holes totaling 3,700 feet (1,128 m) on the Kinsley Mountain project (Liberty Gold Corp., 79%; Nevada Sunrise Gold Corp., 21%). Gold intercepts included: 1) 15 feet (4.6 m) grading 0.021 opt (0.715 g/t) in the Hamburg Shear Zone; 2) 20 feet (6.1 m) grading 0.026 opt (0.90 g/t) in the Cambrian Secret Canyon Shale; 3) 5 feet (1.5 m) grading 0.049 opt (1.67 g/t) in the Cambrian Notch Peak Breccia, and 10 feet (3 m) grading 0.036 opt (1.23 g/t) in the Secret Canyon Shale. The two companies budgeted $590,287 for exploration for the year.

The gold mineralization is of the sediment hosted Carlin-type and is present as both oxidized and unoxidized. Gold present in oxidized rocks is associated with silica, calcite, and iron oxides including goethite, limonite, jarosite, hematite, and scorodite. Gold present in the unoxidized rocks consists of micron-sized or smaller particles associated with silica, calcite, and pyrite, with lesser amounts of arsenopyrite, sphalerite, and cinnabar. In the Dunderberg Shale, the unoxidized mineralization is associated with very fine grained, brownish-gray disseminated pyrite with orpiment and realgar locally present in the Dunderberg Shale in the Western Flank area.

The property consists of 513 unpatented lode claims covering 2,807 acre (1,136 ha) plus six leased patents covering 10,410 acres (4,213 ha). In December, Liberty Gold Corp. signed a definitive purchase option agreement to sell its 79.1% interest in the Kinsley Mountain Gold Project to Barrian Mining Corp. Liberty Gold Corp. will receive $7,500,000 to be paid in three stages over a two-year period and retain a 1% Net Smelter Return Royalty. At the end of May 2020, Barrian Mining Corp. changed its name to New Placer Dome Corp. (Liberty Gold Corp., news releases, 12/2/2019; Liberty Gold Corp, website, http://libertygold.ca; Nevada Sunrise Gold Corp. news releases, 11/4/2019; Nevada Sunrise Gold Corp. website, http://www.nevadasunrise.ca; New Placer Dome Corp. news releases, 12/2//2019, 12/9/2019, 5/22/2020; New Placer Dome Corp. website, https://newplacerdome.com)

Pequop District

Long Canyon. Nevada Gold Mines, LLC, (Barrick Gold Corp., 61.5%; Newmont Corp., 38.5%) produced 189,965 ounces of gold from its Long Canyon Mine, a 12% increase from 2018. The cost of sales attributable to gold was $1,088 per ounce, the all-in sustaining costs were $681 per ounce and the total cash costs were $333 per ounce.

Long Canyon is a sediment-hosted disseminated gold deposit with oxide ore. The mine was averaging 110,000 tons (99,800 mt) per day grading about 0.062 opt gold. Crushing is not necessary so the mine has no crusher. The ore goes straight from the mine to the leach pad. The

processing plant has six carbon columns capable of holding seven or eight tons (six to seven mt) of carbon per tank. Once loaded, the carbon is sent to the company facility at Carlin, where the gold is stripped and the carbon regenerated. Mining is still in Phase 1, which is all above the water table.

The company spent $12,000,000 on "Advanced Projects, Research and Development and Exploration" and $1,000,000 on reclamation at Long Canyon. Brownfield exploration and development for new reserves is ongoing, which included drilling, though no details were released. Phase 2 will involve expanding and deepening the open pit below the water table, going underground, adding an oxide mill, and constructing dewatering wells. The ore is all oxide, so there will be no acid generation or the need for complex milling or autoclaving. Mineralization was extended to 3 miles (5 km) along a north-northeast-trending strike and was still open in all directions. The underground mine is expected to add 25 years to the life of the operation. The expansion is projected to increase the total surface disturbance to about 7,215 acres (2,920 ha) from the current 3,879 acres (1,570 acres). However about half of that would be on private property. (Steve Grosz, e-mail, 9/22/2020; Elko Free Press, 12/6/2019; Elko Free Press Mining Quarterly, Winter 2019; Newmont Corp. Management Discussion and Analysis, 2/21/2020; Newmont Corp. Audited Annual Financial Statements, 2/21/2020; Newmont Corp. Form 10-K, 2/21/2020; Newmont Corp. website, www.newmont.com; Barrick Gold Corp. Annual Information Form, 3/25/2020; Barrick Gold Corp. website, www.barrick.com)

Railroad/Robinson Mountain Districts

Railroad-Pinion Project. Gold Standard Ventures Corp. conducted a $23,708,185 exploration program across its Railroad-Pinion Project that included $7,948,972 for drilling. The Railroad-Pinion Project covers 53,569 acres (21,679 ha). Of this, 29,941 acres (12,117 ha) 1,455 unpatented claims are owned by the company, 207 unpatented claims are leased, and 30 patented claims are either owned or leased by the company. The remaining 23,628 acres (9,562 ha) are private property whereby the company owns between 49.2% to 100% of the mineral rights. The Project is divided into a North Railroad and South Railroad. North Railroad is mainly in the Railroad mining district and includes the Bald Mountain, LT, North Bullion, POD, and Sweet Hollow deposits. South Railroad is mainly in the Robinson Mountain mining district includes the Dark Star, Dixie, Hidden Star, Jasperoid Wash, and Ski Track deposits. Exploration activities for separate deposits are given below. (Gold Standard Ventures NI 43-101 Technical Reports, 10/24/2019, 2/13/2020; Gold Standard Ventures Corp. Management Discussion and Analysis, 3/30/2020; Gold Standard Ventures Corp. Annual Information Form, 3/30/2020; Gold Standard Ventures website, https://goldstandardv.com)

Railroad District

LT. Gold Standard Ventures Corp. completed two reverse circulation holes totaling 1,364 feet (416 m) on its LT target at the south end of the North Railroad Project about two miles (3 km) northeast of the Pinion deposit. The first hole was lost before reaching its target and was not assayed. The second hold intercepted 40 feet (12.2 m) grading 0.046 opt (1.58 g/t) gold, including 10 feet (3.1 m) grading 0.15 opt (5.16 g/t). The mineralization is begins about 75 feet (23 m) below the current topographic surface and is well-oxidized, with cyanide solubility assays averaging 89%. The mineralization is hosted in decalcified, silicified, iron oxide bearing multilithic breccia proximal to a north-striking igneous dike in the hanging wall of a north-striking quartz feldspar porphyry dike. (Gold Standard Ventures NI 43-101 Technical Reports, 10/24/2019, 2/13/2020; Gold Standard Ventures Corp. news releases, 11/12/2019, 10/29/2020; Gold Standard Ventures Corp. Management Discussion and Analysis, 3/30/2020; Gold Standard Ventures website, https://goldstandardv.com)

North Bullion Gold Standard Ventures Corp. completed two drill holes on its North Bullion deposit, but no results were released. The North Bullion deposit is in the northeastern part of the North Railroad Project and is not exposed at the surface. The mineralization occurs in a triangular shaped horst in the footwall of the major north-south-striking, steeply east-dipping, North Bullion fault zone. The western edge of the horst is bounded by a northeast-striking, northwest-dipping

fault. Gold mineralization is hosted in two main subzones: 1) a gently-to-moderately-dipping upper subzone of strongly sheared siliciclastic and carbonate rocks of the Mississippian Webb and Tripon Pass Formations; and 2) in a flat-lying, lower subzone of dissolution-collapse breccias developed above and within silty micrite of the Mississippian Tripon Pass Formation and calcarenite of the Devonian Devils Gate Limestone. Gently east-dipping dacite sills cap the deposit. Another, smaller volume of mineralization exists along the Massif fault. The mineralization ranges from 345 feet to 1,300 feet (105 m to 400 m) in depth and steepens in dip from 10° to 45° to the east as the subzones approach the eastern strand of the North Bullion fault zone. Gold is associated with sooty pyrite, silica, carbon, clay, barite, realgar, and orpiment, and the mineralization contains elevated levels of arsenic, mercury, antimony, and thallium. A NI 43-101 prefeasibility report was issued in October 2019. (Gold Standard Ventures NI 43-101 Technical Reports, 10/24/2019, Gold Standard Ventures website, https://goldstandardv.com)

Robinson Mountain District

Dark Star. Gold Standard Ventures Corp. completed 83 reverse circulation holes totaling 44,442 feet (13,549 m) and one core hole totaling 997 feet (304 m) at its Dark Star deposit, which is part of South Railroad Project. Another 12 holes were drilled mainly to collect metallurgical samples and geotechnical data, however, no results were released. The drilling program was a continuation of step-out and infill drilling as part of an expanded development that commenced in 2018. Dark Star is hosted in Pennsylvanian siliciclastic and carbonate rocks of the Tomera and Moleen Formations and occurs in a linear, north-northeast-striking horst block in the footwall of two major faults that bound the east and west flanks of the deposit. Dark Star, Dark Star North, Hidden Star, and Dixie lie along the Dark Star Corridor, which consists of a five-mile (8-km) long system of prominent north-south to northeast-trending folds; steep, en echelon normal faults; and extensive hydrothermal alteration. The new drilling started with three reverse circulation rigs testing new targets at depth below the current resource model and lateral resource expansion to the north, west and south of the current Dark Star resource. Targets were being tested in the northern part of the deposit where mineralization is open to the north, west and at depth, and shallow oxide targets were being tested in the southern part of the deposit where mineralization is open to the south and southeast. Holes for infill drilling of the current resource were being spaced at about 100 feet (30 m) for conversion to measured and inferred classification.

Significant reverse circulation hole gold intercepts at Dark Star included 1) 340 feet (103.7 m) grading 0.017 opt (0.59 g/t), including 65 feet (19.8 m) grading 0.038 opt (1.32 g/t); 2) 70 feet (21.3 m) grading 0.016 opt (0.56 g/t), including 10 feet (3.1 m) grading 0.055 opt (1.89 g/t); 3) 75 feet (22.9 m) grading 0.56 opt (1.92 g/t), including 45 feet (13.7 m) grading 0.089 opt (3.04 g/t); 4) 295 feet (89.9 m) grading 0.022 opt (0.77 g/t) gold, including 95 feet (29 m) grading 0.045 opt (1.53 g/t); 5) 265 feet (80.8 m) grading 0.03 opt (1.02 g/t), including 45 feet (13.7 m) grading 0.039 opt (1.35 g/t) and 50 feet (15.2 m) grading 0.052 opt (1.8 g/t); 6) 170 feet (51.8 m) grading 0.031 opt (1.07 g/t) including 55 feet (16.8 m) grading 0.075 opt (2.58 g/t); 7) 50 feet (15.2 m) grading 0.31 opt (1.08 g/t); 8) 310 feet (94.5 m) grading 0.017 opt (0.58 g/t), including 35 feet (10.7 m) grading 0.04 opt (1.36 g/t); 9) 190 feet (58 m) grading 0.027 opt (0.93 g/t), including 70 feet (21.3 m) grading 0.053 opt (1.82 g/t); 10) 130 feet (40 m) grading 0.036 opt (1.25 g/t), including 50 feet (15.2 m) grading 0.059 opt (2.02 g/t); 11) 455 feet (138.7 m) grading 0.033 opt (1.12 g/t), including 125 feet (38.1 m) grading 0.076 opt (2.61 g/t); The significant core hole gold intercepts were 385 feet (117.3 m) grading 0.045 opt (1.54 g/t) including 145.5 feet (44.3 m) grading 0.074 opt (2.55 g/t) and 105.5 feet (32.1 m) grading 0.04 opt (1.38 g/t). At least 11 holes encountered no significant mineralization and confirmed the known limit of the extent of the gold zone to the east and northeast of the deposit.

An NI 43-101 prefeasibility report was issued in October. (Gold Standard Ventures NI 43-101 Technical Reports, 10/24/2019, 2/13/2020; Gold Standard Ventures Corp. news releases, 1/22/2019, 2/5/2019, 3/4/2019, 3/26/2019, 4/25/2019, 8/6/2019, 10/9/2019; Gold Standard Ventures Corp. Management Discussion and Analysis, 3/30/2020; Gold Standard Ventures Corp. Annual

Information Form, 3/30/2020; Gold Standard Ventures website, https://goldstandardv.com)

Dixie. Gold Standard Ventures Corp. completed eight drill holes on its Dixie (also known as Dixie Creek) deposit, but no details were released. The Dixie deposit about 2.2 miles (3.5 km) south of the Dark Star deposit. The gold mineralization extends about 6,600 feet (2,000 m) north to south by 1,475 feet (450 m) east to west and remains open in multiple directions. The mineralization is hosted within Pennsylvanian-Permian debris flow conglomerate and the underlying calcarenite where these units are crosscut by quartz-feldspar porphyry dikes and sills occupying north-striking faults. In two holes, the mineralization was of both mixed oxide and reduced. A NI 43-101 prefeasibility report was issued in October and an updated NI 43-101 prefeasibility report was being prepared for release in early 2020.

Jasperoid Wash. Gold Standard Ventures Corp. completed ten drill holes on its Jasperoid Wash deposit, but no details were released. The deposit is about 4 miles (6 km) south of the Pinion deposit. The mineralization is in a pervasively oxidized Pennsylvanian-Permian debris flow conglomerate. Deposit contains a north-northeast striking zone about 2,460 feet (750 m) long by 1,150 feet (350 m) wide of near-surface, shallow, oxide gold mineralization that remains open to the north, west, and east. About three miles (5 km) north of Jasperoid Wash lies Ski Track. Ski Track is a northwest-striking, 2.5-mile (4-km) long structural corridor exposing altered Pennsylvanian-Permian carbonate rocks similar to the rocks hosting gold mineralization at Dark Star, Jasperoid Wash and Dixie. The Ski Track corridor is considered to be the northern extension of the Jasperoid Wash corridor. A NI 43-101 prefeasibility report was issued in October with a resource for Jasperoid Wash and an updated NI 43-101 prefeasibility report was being prepared for release in early 2020. (Gold Standard Ventures NI 43-101 Technical Reports, 10/24/2019, 2/13/2020; Gold Standard Ventures Corp. Management Discussion and Analysis, 3/30/2020; Gold Standard Ventures Corp. Annual Information Form, 3/30/2020; Gold Standard Ventures website, https://goldstandardv.com)

Pinion. Gold Standard Ventures Corp. drilled its Pinion deposit in 2018 and commenced another drill program in 2020. Pinion is part of the South Railroad Project. No exploration drilling was conducted in 2019, though 19 holes were drilled to collect metallurgical samples and geotechnical data. No details were released concerning these drill holes. The gold mineralization at Pinion is very continuous and widespread within a highly permeable, silicified, and oxidized collapse breccia. The breccia is sandwiched between relatively impermeable silty micrite of the overlying Mississippian Tripon Pass Formation and thickly-bedded calc-arenite of the underlying Devonian Devils Gate Formation.

An NI 43-101 prefeasibility report was issued in October. The reports propose an open-pit mine for the Pinion deposit with an 8-year mine life, 3.07:1 strip ratio, and initial capital expense of $132,900,000. Gold recovery would be through carbon columns and an adsorption, desorption, and recovery plant. Of a reserve estimate of 52,000,000 tons (47,200,000 mt) grading 0.024 opt (0.82 g/t) gold and 0.14 opt (4.7 g/t) silver, 33,800,000 tons would be run-of-mine heap leach, 17,700,000 tons (16,100,000 mt) would go through a 3-stage crush and agglomeration to heap leach, and 408,000 tons of sulfide ore would be sent to toll milling. Run-of-mine recovery was estimated to be 72% gold and 22% silver, and crushed ore recovery was estimated to be 76% gold and 43% silver. (Gold Standard Ventures NI 43-101 Technical Reports, 10/24/2019, 2/13/2020; Gold Standard Ventures. Corp. news release, 8/4/2020; Gold Standard Ventures Corp. Management Discussion and Analysis, 3/30/2020; Gold Standard Ventures Corp. Annual Information Form, 3/30/2020; Gold Standard Ventures website, https://goldstandardv.com)

Pony Creek. Contact Gold Corp. spent $2,221,756 on exploration including $716,458 on drilling, assaying, and geochemistry at its Pony Creek property. The company completed 25 reverse circulation holes totaling 15,285 feet (4,660 m). The drilling focused on the Bowl, Appaloosa, and Stallion (West) Zones. The drilling program was designed to step out from the area drilled in 2018 and to expand the mineralized footprint in both the high grade oxide zone and northward towards the Stallion Zone.

Significant gold intercepts from the five holes drilled in the Bowl Zone included 1) 40 feet (12.2 m) grading 0.035 opt (1.21 g/t) gold, including 10 feet (3 m) grading 0.1 opt (3.47 g/t); 2) 55 feet (16.76 m) grading 0.026 opt (0.88 g/t), including 15 feet (4.6 m) grading 0.055 opt (1.87 g/t); 3) 75 feet (22.86 m) grading 0.017 opt (0.58 g/t), including 15 feet (4.6 m) grading 0.043 opt (1.46 g/t); and 4) 25 feet (7.6 m) grading 0.049 opt (1.69 g/t);

Significant gold intercepts from the five holes drilled in the Appaloosa Zone included 95 feet (29 m) grading 0.011 opt (0.38 g/t), including 10 feet (3 m) grading 0.064 opt (2.19 g/t) and 25 feet (7.62 m) grading 0.025 opt (0.84 g/t), including 10 feet (3 m) grading 0.046 opt (1.56 g/t). The Appaloosa Zone is an at-to-near-surface oxide gold corridor about 0.75 miles (1.2 km) northeast of the Bowl Zone. It is about 660 feet wide and extends over a mile (1.6 km) strike length. It potentially connects to the Bowl Zone and to the Mustang target to the northwest. The mineralization is open in all directions.

Significant gold intercepts from the six holes drilled in the Stallion Zone included 1) 210 feet (64 m) grading 0.01 opt (0.35 g/t), including 5 feet (1.5 m) grading 0.036 opt (1.25 g/t), and 2) 200 feet (61 m) grading 0.0088 opt (0.3 g/t). The Stallion Zone was discovered during the 2018 drilling program, and the 2019 drilling extended the mineralization 160 feet north of the 2018 drilling. The zone is an oxide gold corridor about a mile (1.6 km) north of the Bowl Zone that extends over a 1.5-mile (2.3-kmere) strike length. The mineralization is open in all directions and may continue eastward beneath a low angle fault towards the Mustang target. This fault is the contact between a thin veneer of unmineralized rock and the underlying mineralized clastic carbonate rock.

The Mustang target combines the Moleen and Willow targets, which has yet to be drilled. It lies 2,000 feet (600 m) north of the Stallion Zone and is immediately south of the Jasperoid Wash deposit in the Railroad-Pinion Project of Gold Standard Ventures Corp. It extends west-northwest from the Appaloosa Zone, and is defined by: west-northwest structurally controlled gravity and soil anomalies with a 1.5-mile (2.3-km) strike length cutting clastic and carbonate rocks of the Pennsylvanian to Permian Moleen and Strathearn Formations.

The company dropped 313 claims during the year, and the property then contained 1,012 claims covering about 20,206 acres (8,177 ha). (Contact Gold Corp. news releases, 3/26/2019, 5/23/2019, 7/10/2019, 7/31/2019, 8/15/2019, 9/5/2019, 9/18/2019, 10/9/2019, 10/27/2019, 3/31/2020; Contact Gold Corp. Annual Information Form, 3/31/2020; Contact Gold Corp. Management Discussion and Analysis, 3/31/2020; Contact Gold Corp. website, http://www.contactgold.com)

Snowstorm Mountains District

Goldstorm. In June, Seabridge Gold entered into a definitive agreement with Mountain View Gold Corp. whereby the former will acquire full interest in the Goldstorm Project by issuing 25,000 common shares to the latter. The Goldstorm property consists of 134 mining claims and 1,160 leased acres (460 ha) totaling about 3,900 acres (1,578 ha) and lies less than two miles (three km) east of the Snowstorm Property. Seabridge carried out a drill program in late 2019, but no results were released. (Seabridge Gold news releases, 6/5/2019, 6/12/2019, 8/15/2019, 1/23/2020; Seabridge Gold Annual Information Form, 3/27/2020; Seabridge Gold website, https://seabridgegold.net)

Tuscarora District

Tuscarora. In April, American Pacific Mining Corp. entered into an earn-in agreement with OceanaGold U.S. Holdings Inc., a U.S. subsidiary of OceanaGold Corp., whereby the latter can earn up to a 51% interest in the former's Tuscarora Gold Project. OceanaGold U.S. Holdings Inc., is required to make an initial payment of $50,000 and then invest $4,000,000 over the next four years after which the company $200,000 in cash or shares and become the operator. The company will then have sixty days to exercise an option to earn an additional 24% by investing a further $6,000,000 over the following four years.

Magee Geophysical Services and Zonge Geoscience of Reno were contracted to conduct gravity and CSAMT surveys in June. The gravity survey consisted of 458 gravity station readings. The CSAMT survey covered 13-line miles (21-line km). Data from this and a 2018 survey were merged and processed, which revealed potential subsurface orientations of lithological contacts,

alteration contacts, cross-cutting structures and vein features. Numerous vein type targets were interpreted and recommended for drill testing.

OceanaGold U.S. Holdings Inc., completed seven totaling 7,538 feet (2,298 m), which included 6,225 feet (1,897 m) of reverse circulation drilling in six holes and 1,313 feet (400 m) of diamond core drilling in one hole. The drilling program tested Target B and Target D between September 12, 2019 and October 21, 2019. Target B was drilled with three reverse circulation holes and one core hole about 2,100 feet (630 m) east-southeast of the old Dexter open pit. Drilling encountered a fault in the hanging wall of an andesite intrusion. Anomalous mineralization consisted of pyrite that is associated with open fractures in a felsic lithic tuff. Pyrite-rich massive sulfide stringer mineralization associated with quartz veining was also intercepted in several narrow intervals. Intercept in the core hole included 1) 3 feet grading 0.033 opt (1.12 g/t) gold and 0.53 opt (18.1 g/t) silver; 2) 5 feet (1.52 m) grading 0.061 opt (2.08 g/t) gold and 0.22 opt (7.5 g/t) silver, and 3) 5 feet (1.52 m) grading 0.1 opt (3.47 g/t) gold and 0.15 opt (5.3 g/t) silver. Target D was drilled with three reverse circulation holes about 3,100 feet (950 m) south-southwest of the old Dexter open pit. Drilling encountered a fault structure with minimal wall rock alteration and mineralization. Anomalous mineralization consisting of crystalline pyrite was intercepted in a fault zone between depths of 270 feet (82.3 m) and 300 feet (91.44 m). One hole intercepted 5 feet (1.52 m) grading 0.034 opt (1.18 g/t) gold and 0.029 opt (1 g/t) silver.

The property consists of 91 unpatented lode mining claims covering approximately 1,880 acres (761 ha). OceanaGold U.S. Holdings Inc., terminated the agreement on January 29, 2020. Elko Sun Mining Co. then signed earn-in agreement with American Pacific Mining Corp. to earn up to a 51% interest in the property. (American Pacific Mining Corp. news releases, 4/15/2019, 8/20/2019, 9/16/2019, 8/4/2020; American Pacific Mining Corp. NI43-101 Technical Report, 4/3/2020; American Pacific Mining Corp. Management Discussion and Analysis, 4/29/2019; American Pacific Mining Corp. website, https://americanpacific.ca)

West of Ivanhoe District

Silver Cloud. Blackrock Gold Corp., completed detailed mapping and received assay and geochemical determination from an additional 342 soil samples collected on the Northeast Veins Target on northeastern portion of the Silver Cloud project. The soil survey confirmed and expanded the previously announced soil anomaly. These were designed to accentuate the east-west oriented alteration zones identified in the Northeast Veins Target. The mapping and soil surveys identified eight veins. Six opal/chalcedony veins were identified on Humdinger Ridge, which contained cinnabar and hematite minerals. The veins strike northerly and northwesterly to northeasterly, dip steeply and vary from less than 1.5 feet (50 cm) to more than 16 feet (5 m) thick. These veins occur over an area of 0.4 square miles (one square km). On Honey Hill about 1,300 feet (400 m) north of Humdinger Ridge, two similar veins oriented in a west-northwest direction were identified. All veins lie within an east-northeast oriented altered structural zone that is over 3,900 feet (1,200 m) long by 1,900 feet (575 m) wide. The corridor is open to the east and west. The soil survey returned low-level gold and sporadic detectable silver. The veins cut Miocene-age volcanic rocks which lie immediately above the Ordovician upper plate sedimentary rocks.

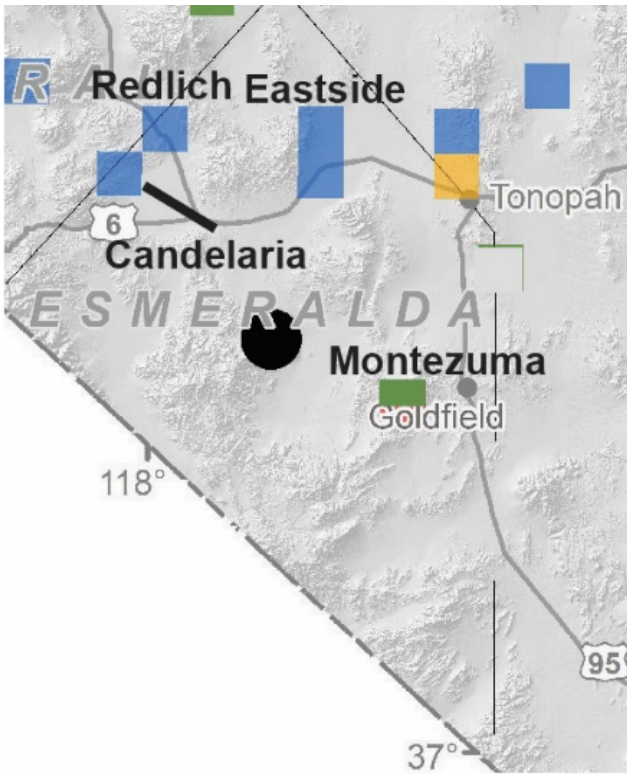
Based on the mapping and soil data, the company completed five core holes totaling 7,240 feet (2,207 m) on its Silver Cloud Property. The project consists of 572 mining claims covering about 11,500 acres (4,654 ha). The drilling program was designed for 6,600 feet (2,000 m) of core drilling to test the Main vein and a sub-parallel hanging wall vein just to the south of it at the Silver Cloud mercury mine and the east-west vein system between the Silver Cloud Mine and Northwest Canyon.

Significant gold intercepts at Silver Cloud included 1) 10 feet (3 m) grading 0.034 opt (1.163 g/t), including 2.6 feet (0.8 m) grading 0.11 opt (3.93 g/t); and 2) 16.4 feet (5 m) grading 0.02 (0.69 g/t) including 7 feet (2.2 m) grading 0.033 opt (1.144 g/t). Significant silver intercepts at Silver Cloud included 1) 16 feet (4.88 m) grading 0.047 opt (14 g/t); 2) 5 feet (1.52 m) grading 1.19 opt (40.8 ppm); 3) 10.5 feet (3.2 m) grading 0.54 (18.8 g/t); and 5 feet (1.52 m) grading 0.48 opt (16.6 g/t).

The best gold intercept at Northwest Canyon (1,550 m west of the Silver Cloud Mine), intersected a 1.5 m vein zone grading 8.32 g/t Au 0.26 opt),starting at 263 m (864 ft). Significant silver intercepts at NW Canyon included 5 feet (1.52 m) grading 0.32 opt (11.2 g/t) and 5 feet (1.52 m) grading 0.29 g/t (10.1 g/t).

The drill results increased the understanding of the east-west orientation of the epithermal vein system and delineated a drill-defined mineralized strike of 800 feet (250 m) that appears to be open both along strike and down-dip. Three of holes in the Silver Cloud Mine area intercepted mineralized zones of up to 20 feet (6.1 m) thick at depth indicating the veins and fractures are coalescing down dip into thicker zones. The structures encountered were considered to be in the upper levels of the epithermal vein system. (Blackrock Gold Corp., news releases 7/29/2019, 8/8/2019, 9/3/2019, 9/23/2019, 10/7/2019, 10/24/2019, 3/11/2020; Blackrock Gold Corp., website, https://blackrockgold.ca)

ESMERALDA COUNTY



Divide and Tonopah Districts

Gold Mountain. West Kirkland Mining, Inc. spent $1,286,040 on its Hasbrouck Gold Project. The company concentrated on permitting the project for mining and conducted no drilling and little other exploration work. The project covers about 127,691 acres (5,136 ha) in two separate blocks and contains four deposits—Hasbrouck Mountain, Gold Mountain, and Hill of Gold (Divide district) and Three Hills (Tonopah district). Most of the deposits controlled by Hasbrouck, LLC, which is a joint venture between West Kirkland Mining, Inc., (75%) and Clover Nevada, LLC, (25%) a subsidiary of Waterton Precious Metals Fund II Cayman, LP. In 2017, the company entered into a lease agreement with Tonopah Divide Mining Co. for full interest on mining patents and mineral claims, known as the Tonopah Divide Lease, which covered 2,506 acres (1,014 ha) between Hill of Gold and the Hasbrouck Mountain. Because of its decision to concentrate on permitting, the company halted exploration of the lease and terminated the lease agreement in October 2019. The company had filed its mine plan of operation with the BLM in September 2017. The mine plan of operation was under review through 2019 and was accepted in early 2020. In 2020, the company changed its name to West Vault Mining, Inc., and then acquired the 25% interest Waterton Precious Metals Fund II Cayman, LP, had in the project. (West Kirkland Mining, Inc., Management Discussion and Analysis, 11/15/2019, 4/27/2020; West Kirkland Mining, Inc., news releases 3/28/2019, 3/5/2020, 6/29/2020, 7/22/2020; West Kirkland Mining, Inc., website, https://www.westvaultmining.com)

Gilbert District

Eastside. Allegiant Gold, Ltd., completed 21 reverse circulation holes totaling 10,398 feet (3,170 m) in the Adularia Hill area on its Eastside Project. Nearly all the holes intercepted hydrothermal alteration and anomalous gold grading between 0.00058 opt to 0.0026 opt (0.02g/t to 0.09 g/t) from top to bottom, irrespective of the host rock lithology. Eighteen of the 21 holes contained at least 5 feet (1.5 m) grading more than 0.029 opt (0.9 g/t) gold. The Eastside project contains a low-sulfidation, mostly oxidized, epithermal gold-silver deposit hosted mainly in upper Oligocene to

upper Miocene rhyolite domes and less so in andesite flows and volcaniclastic rocks. The Adularia Hills area is about 7.8 miles (12.5 km) south of the Original Zone and about 2 miles (3 km) north of the Castle Zone and the old Boss open-pit mine, which operated in 1988. The Adularia Hills target was discovered through surface sampling of an ovoid area of about 4,600 feet (1,400 m) by 2,800 feet (850 m). Gold occurs in and along silica ribs and other structures with associated stockworks of quartz and adularia veining. The mineralized structures cut Tertiary andesite, tuffs, rhyolite plugs and flow domes, and Ordovician basement rocks. The company prepared a NI 43-101 technical report with an updated resource at year's end. (Allegiant Gold, Ltd., NI 43-101 Technical Report, 12/30/2019; Allegiant Gold, Ltd., Annual Information Form, 7/10/2020; Allegiant Gold, Ltd., Management Discussion and Analysis, 1/17/2020, 2/18/2020; Allegiant Gold, Ltd., news releases, 2/26/2019, 4/17/2019, 6/11/2019, 12/10/2019; Allegiant Gold, Ltd., website, www.allegiantgold.com)

Goldfield District

Gemfield. Gemfield Resource, LLC, which is managed by the Elko Mining Group, LLC, has completed the majority of the required baseline studies for the proposed Gemfield Project open-pit mine about 1.5 miles north of Goldfield. Waterton Global Resource Management owns the project, which includes the Goldfield, Goldfield Main, and McMahon Ridge deposits. While no details have been released, the company reported that over the last five years, the project has been undergone development and extensive optimization efforts including multiple drilling programs, metallurgical test work, geotechnical engineering, and hydrological studies. The company proposed building and operating a conventional open pit mine. The proposal includes building the open pit; crushing facilities, conveyors, and associated stockpiles; waste rock disposal areas; overburden stockpile; and related infrastructure. The pit will eventually be 3,500 feet (1,070 m) by 3,300 feet (1,000 m) by 525 feet (160 m) deep. The proposal also calls for 121 additional acres (49 ha) for exploration and drilling. The BLM issued preliminary and final environmental impact statements and a record of decision approving the project. The project requires the looping of 2.5 miles (4 km) of US 95 up to a half mile (0.8 km) to the west around the project area. The property contains 563 patented and 586 unpatented mining claims covering about 15,000 acres (6,070 ha).(California Builder and Engineer, Future Gemfield Mine Expected to Boost Economic Prospects in Rural Nevada, 3/5/2020; Nevada Department of Transportation, https://www.nevadadot.com/projects-programs/gemfield; BLM Gemfield Mine Project, Final Environmental Impact Statement, DOI-BLM-NV-B020-2018-0052-EIS, 6/2019; BLM Gemfield Mine Project, Draft Environmental Impact Statement, DOI-BLM-NV-B020-2018-0052-EIS, 2/2019; BLM Gemfield Mine Project, Environmental Impact Statement, Record of Decision, DOI-BLM-NV-B020-2018-0052-EIS, 7/26/2019; Waterton Global Resource Management website, www.watertonglobal.com)

Palmetto District

Palmetto. ML Gold Corp. had drilled the Palmetto Project and issued an NI 43-101 technical report with a maiden resource estimate in 2018 but terminated its option in on the property early 2019. Smooth Rock Ventures Corp. signed an option agreement to acquire full interest in the Palmetto Project by paying $50,000 on signing the agreement, $200,000 upon completion of due diligence within 30 days of signing, and $250,000 on or before one year from the date of signing. Though no drilling was conducted, the company was preparing a NI 43-101 technical report with a recalculated resource. The project consists of 116 claims covering about 2,217 acres (897 ha). The optioned claims were owned by Aniela K., John H., Halina, and Roseanne Szymanski. (Smooth Rock Ventures Corp. NI 43-101 Technical report, 10/20/2020; Smooth Rock Ventures Corp. news releases, 7/2/2019, 7/31/2019, 7/28/2020, 9/2/2020; Smooth Rock Ventures Corp. website, https://smoothrockventures.com)

Rock Hill District

Redlich. In 2017, Ely Gold Royalties, Inc., entered into option agreements with Pyramid Gold (US) Corp. whereby the latter can acquire full interest in the Redlich, Moho, and Olympic Projects, by

paying $600,000 over a four-year period. The former retained a 2.5% net smelter return. In 2018, Pyramid Gold (US) Corp. assigned the option agreements for the Moho and Redlich Projects to Hochschild Mining PLC, with the agreement terms remaining the same. Hochschild Mining, PLC, drilled the Redlich Project in 2018, but no significant results were obtained. The property was not drilled in 2019 and Hochschild Mining, PLC, terminated its option. (Ely Gold Royalties, Inc., website, https://elygoldinc.com; Ely Gold Royalties, Inc., Management Discussion and Analysis, 4/30/2019; Hochschild Mining, PLC, Annual Report, 5/3/2019; Hochschild Mining, PLC, news release, 2/20/2019; Hochschild Mining, PLC, website, http://www.hochschildmining.com)

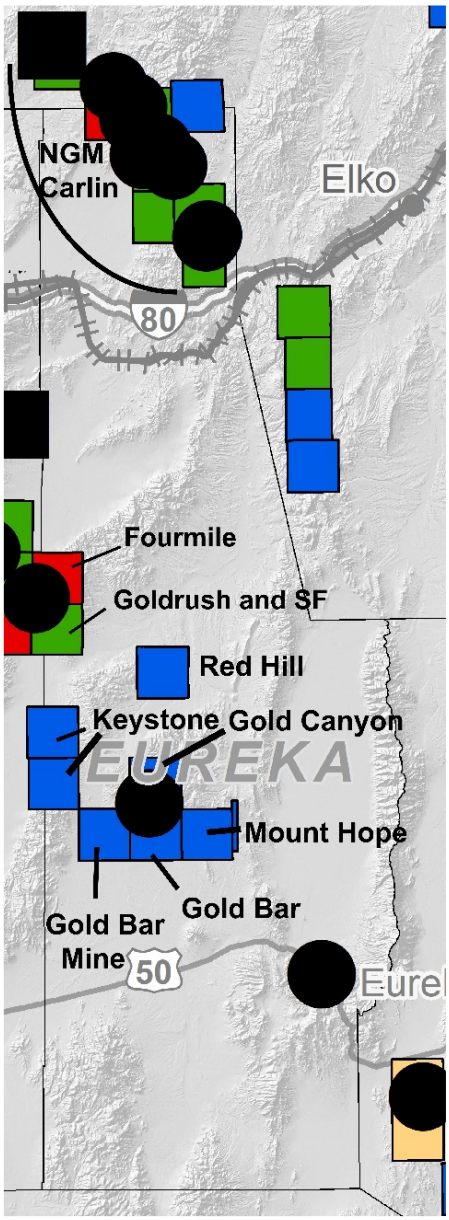
Silver Peak District

Mineral Ridge. Mineral Ridge Gold LLC, a subsidiary of Scorpio Gold Corp., produced 3,863 ounces of gold and 2,234 ounces of silver from its Mineral Ridge Mine, 50% and 38% decreases respectively from 2018. Mining was temporarily shut down in early November 2017 to better evaluate the remaining resources due to higher strip ratios and limited pad capacity. No new ore was added to the leach pads, and production through 2019 and into 2020 was from leaching. The cash cost was $1,271 per ounce sold, a 44% decrease from 2018. The recovery rates from solutions processed through the ADR plant were 85% for gold and 45% for silver compared to 86.3% and 43%, respectively, in 2018.

In June 2018, the BLM approved an amendment to the plan of operations that allowed for mining expansion, but also authorized exploration drilling on an additional 1,400 acres (567 ha). In June 2019, the company received approval of its water pollution control permit, which would allow the company to advance its exploration activities. However, no exploration activities including drilling were conducted during the year, and future exploration will be planned as exploration funds become available. The property was last drilled in 2017.

The Mineral Ridge Project consists of 60 patented claims totaling 860 acres (348 ha); private property totaling 122.65 acres (50 ha); and 677 unpatented lode claims and one unpatented millsite claim totaling 12,897 acres (5,221 ha) for a total of 13,879 acres (5,619 ha). Through 2018, ownership of the mine was Scorpio Gold Corp. 70% and Elevon, LLC, an affiliate of Waterton Global Value L.P., 30%. On March 4, 2019, Scorpio Gold Corp. acquired the 30% owned by Elevon, LLC, and became sole owner. (Scorpio Gold Corp. news releases, 3/6/2019, 6/24/2019, 4/22/2020; Scorpio Gold Corp. Management Discussion and Analysis, 4/29/2020; Scorpio Gold Corp. website, https://www.scorpiogold.com)

EUREKA COUNTY



Antelope District

Gold Bar/Afgan-Kobeh. McEwen Mining Nevada, Inc., commenced mining at its Gold Bar Mine on January 16, 2019. The first ingot was poured on February 16 and commercial production was announced on May 23. The mine produced 30,709 ounces of gold and 614 ounces of silver. The company mined 2,114,000 tons (1,198,000 tones) of mineralized material grading 0.0239 opt (0.82 g/t) gold and processed 2,659,000 tons (2,412,000 tones) of mineralized material grading 0.0236 opt (0.81 g/t) gold. The silver to gold ratio was 84:1. The average recovery rate was difficult to measure and was given at 82% for the life of the mine. The average all-in sustaining cost for the year was $1,282 per ounce of gold. Most of the material mined during the year was from the Cabin Creek pits, which averaged 18% higher in gold grade and 8% higher in contained gold ounces but 8% less tons mined when compared to the company's block model. However, when mining transitioned to the Gold Pick West pit, it had lower ore tons, gold grade, and contained ounces came from the upper benches, than what was predicted from the block model. This was due to a greater structural control on the mineralization than was expected.

The company spent $7,200,000 on target-generating exploration though numbers and depths of holes were not reported. Exploration activities focused on targets around the Gold Bar Mine, including drilling at Gold Bar South (former Afgan deposit of the Afgan-Kobeh property) to confirm and upgrade the resource estimation and potentially convert resources to reserves. The drilling increased confidence in the existing resource, which may lead to mining possibly commencing in 2021 at Gold Bar South. Significant gold intercepts included 1) 180 feet (54.9 m) grading 0.062 opt (2.13 g/t), 2) 80 feet (38.1 m) grading 0.194 opt (6.66 g/t), 3) 150 feet (45.7 m) grading 0.064 opt (2.19 g/t), 4) 120 feet ((36.6 m) grading 0.079 opt (2.7 g/t), 5) 140 feet (42.7 m) grading 0.068 opt (2.32 g/t), 6) 170 feet (91.4 m) grading 0.065 opt (2.21 g/t), and 7) 155 feet (47.2 m) grading 0.061 opt (2.1 g/t). A deep core hole was completed at Pot Canyon to test near surface and deep targets near the Wall fault, which is interpreted as an extension of the Cortez fault. The hole penetrated multiple target zones returning near-surface gold mineralization and Carlin-type alteration and pathfinder elements at several stratigraphic horizons. Among the intercepts were 78 feet (23.8 m) grading 0.023 opt (0.8 g/t) of oxide mineralization and 53 feet (16.2 m) grading 0.038 opt (1.3 g/t) of sulfide mineralization. A deep core hole was also completed at Cabin Creek. It cut 377 feet (84 m) jasperoid at 2,000 feet (600 m) in the Roberts Mountain Formation.

The property contains 2,988 claims covering 96 square miles (248 square km) on BLM administered lands. Three deposits, Gold Pick, Gold Ridge, and Cabin Creek, collectively referred to as Gold Bar North comprise the main gold resource. Gold Pick is the largest and contains about 78% of the total resource. Mineralization there has a strike length of over 4,000 feet (1,220 m) and a width of 1,600 feet (490 m). The Gold Bar South deposit contains a resource comparable to Gold Ridge and Cabin Creek and is located about 6.8 miles (11 km) southeast of Gold Bar North. The Gold Pick and Gold Ridge satellite deposits were mined by Atlas Corp. and produced 474,069 ounces of gold. However, Atlas Corp. never put Cabin Creek and Gold Bar South into production. All of the defined mineralization is contained in oxidized carbonate host rocks within 500 feet (150 m) of surface. The mineralization is mainly hosted in the Bartine Member of the Devonian McColley Canyon Formation, which is about 250 to 380 feet (76 to 116 m) thick. Minor amounts of mineralization also is present in the underlying dolomitic limestone Kobeh Member of the McColley Canyon Formation where it is adjacent to apparent feeder structures.

In August, McEwen Mining, Inc., agreed to buy the rights Fremont Gold, Ltd., had to the nearby Gold Canyon Property. In 2018, Fremont Gold, Ltd., signed an option agreement with Ely Gold Royalties, Inc., whereby the former could acquire the Gold Canyon Property, minus a 2% net smelter return, by making a series of cash payments totaling $802,500 over a five-year period. McEwen Mining, Inc., would acquire this agreement and issue 300,000 common shares to Fremont Gold, Ltd. Fremont Gold, Ltd., drilled the property in 2018, but not in 2019. (Fremont Gold, Ltd., 8/16/2019; McEwen Mining, Inc., news releases, 2/5/2019, 5/23/2019, 8/20/2019, 10/15/2019, 6/17/2020; McEwen Mining, Inc., Form 10K,

3/16/2020; McEwen Mining Inc. website, https://www.mcewenmining.com)

Gold Bar Mine. Fremont Gold, Ltd., completed three reverse circulation totaling about 3,300 feet (1,000 m) on its Gold Bar property. The program targeted several geochemical anomalies southeast of a coincident gold and mercury geochemical anomaly that may represent an extension to the historic Gold Bar mine. In 2017, Fremont Gold, Ltd., signed an option agreement with Ely Gold and Minerals, Inc., whereby the former can acquire the Gold Bar Property, minus a 2% net smelter return, by making a series of cash payments totaling $1,000,000 over a five-year period. Due to poor drilling results, the company terminated the agreement in July 2019. The property consists of 96 unpatented and 12 patented claims covering 5,520 acres (2,235 ha) centered around the Gold Bar open-pit mine. The pit produced 286,354 ounces of gold from 3,986,000 tons (3,616,075 mt) of ore between 1986 and 1994. The property is adjacent to the Gold Bar property of McEwen Mining, Inc., that was also part of old Gold Bar property formerly owned by Atlas Precious Metals, Inc. (Fremont Gold, Ltd., news releases, 2/6/2019, 7/23/2019; Fremont Gold, Ltd., Management Discussion and Analysis, 7/25/2019; Fremont Gold, Ltd., website, https://fremontgold.net)

South Roberts. S2 Resources, Ltd., drilled the South Roberts Project in 2018 but terminated its option with Renaissance Gold Corp. on the property in 2019. Renaissance Gold Corp. sold the property to an undisclosed private U.S. company in 2020. In August, 2020, Evrim Resources Corp. and Renaissance Gold Inc. merged forming a new company called Orogen Royalties Inc. (S2 Resources, Ltd., Financial Report for the Year Ended 30 June 2019, 10/9/2019; Renaissance Gold Corp. news release, 1/17/2019, 8/18/2020; Orogen Royalties Inc. website, https://www.orogenroyalties.com)

Carlin Trend

Nevada Gold Mines JV: Carlin Operations On July 1, 2019, Barrick Gold Corp. and Newmont Corp. entered into an agreement creating a joint venture under Nevada Gold Mines, LLC, which combined their respective mining operations, assets, reserves, and talent in Nevada. The properties included are Cortez, Goldstrike, Turquoise Ridge and Goldrush deposits of Barrick Gold Corp. and the Carlin operation, Twin Creeks, Phoenix, Long Canyon, and Lone Tree deposits of Newmont Corp. Nevada Gold Mines, LLC, is operated by Barrick Gold Corp., and ownership is 61.5% Barrick Gold Corp. and 38.5% Newmont Corp. Nevada Gold Mines, LLC, was preparing an NI 43-101 technical report covering the affected properties and included updated reserves and resources. The report was released in early 2020. The mines of the Barrick Gold Corp.'s Goldstrike operation and Newmont Corp. Carlin operation are now collectively referred to as the Carlin Complex. The Carlin Complex includes the Goldstrike open pit and underground Meikle Mine, the Leeville underground mine, the Pete Bajo/Fence underground mine, the Exodus underground mine, the Genesis/Tri-Star Complex open pits (Goldstar and Silverstar), the Gold Quarry open pit, Emigrant open pit, and the satellite open-pit deposits (Perry and Green Lantern). It also includes seven processing facilities and associated infrastructure. Just prior to that, in April 2019, Newmont Mining Corp. and Goldcorp, Inc., merged to form Newmont Corp.

Newmont Corp. reported 880,615 ounces of gold and 57,551 ounces of silver from its Carlin trend operations in 2019. Production came from four open pits and four underground operations. The open pits were the Goldstar pit and Silverstar (formerly Genesis) pit in the Lynn district (northern Carlin trend) and the Gold Quarry pit in the Maggie Creek district and the Emigrant pit (discussed separately) in the Carlin district (southern Carlin trend). Mining at the Emigrant pit ended in December 2018 with production continuing from leaching. The underground operations were the Leeville, a shaft mine, and the Exodus and Pete Bajo, both portal mines and the Chukar, a portal mine accessed from the bottom of the Gold Quarry pit. About 30% of production is from open pits, and the rest from underground mines.

About 70% of the ore processed was refractory with the rest being non-refractory. The bulk of the ore from the underground mines and higher grade refractory ore from the open pits are processed through the Mill 6 roaster. Mill 6 consists of a grinding circuit, roasting circuit and a

conventional carbon-in leach circuit. Higher grade oxide ore from the open pits is processed by conventional milling and cyanide leaching at Mill 5. Mill 5 also contains a flotation mill for treating lower grade, non-carbonaceous, sulfidic refractory ore to produce a gold/pyrite concentrate. During the year, Mill 5 processed ore from the Gold Quarry and Tri-Star deposits. Lower-grade material with suitable cyanide solubility (non-refractory) from the open pits is treated on one of four heap leach pads. The processing facilities are available for ore tolling.

During the year, Newmont Corp. and Nevada Gold Mines completed 138,114 feet (42,108 m) of both reverse circulation and diamond core on 19 exploration projects (exclusive of grade control drilling). These programs included initial drill testing, in-fill drilling, and reserve definition. Exploration programs also included airborne geophysical surveys, hydrological surveys, and geotechnical studies.

The Tri-Star Complex is the former Genesis Complex and contains the Goldstar, Silverstar (Genesis), Bobstar, Bluestar Point, and Payraise deposits. The gold deposits occur over an area of about 2 by 1.2 miles (3.2 by 1.9 km) and are developed along the Tuscarora, Turquoise, and Ridge anticlines within the Lynn window. The deposits range from about 600 feet to 1,500 feet (183 m to 457 m) by 200 feet to 600 feet (61 m to 183 m) in size. The Silverstar deposit occurs in the hinge zone of the Tuscarora anticline, and the Bluestar Point, Bobstar, Goldstar, and Payraise deposits occur on the anticlines. The anticline to the west, which is intruded in the north by the Jurassic Goldstrike intrusion. The mineralization is mainly hosted in laminated silty limestone and bioclastic debris flows of the Devonian Popovich and Silurian to Devonian Roberts Mountains Formations, but locally can also occur in contact metamorphosed calc-silicate hornfels. ; siliceous mudstone, siltstone and calcarenite of the Devonian Rodeo Creek Formation; mudstone/quartz hornfels of the Ordovician Vinini Formation; and fractured Goldstrike intrusive margins. The mineralization is locally stratabound but is typically discordant to the formations along faults with thicknesses ranging from 49 feet to 300 feet (15 m to 91 m). At Silverstar, the mineralization is poorly drilled and not well defined in structural targets and host lithologies along the Genesis fault corridor. Exploration drilling will focus on these targets and on mineralization in untested underground drilling targets. Deeper structural targets are still open to the south and southwest at Goldstar along low angle thrust zones, particularly along the Revelation fault and its intersection with the Ridge fault. Development drilling was conducted during the year at Northstar, which is the northern extent of mineralization outside of the Tri-Star area. The drilling tested the extent of mineralization and updated areas of historical wide-spaced drilling. The mineralization continues to trend northward across the former Barrick-Newmont claim boundary.

Gold Quarry consists of ten geologically distinctive mineral zones: Quarry Main, Deep West, Deep Sulfide Feeder, Chukar North, Chukar South, Good Hope, Mac, Magpie, Southwest, and Wedge. Four dominant fault sets include (from youngest to oldest): north-striking, basin-bounding, normal faults (Grey, and Tuff faults); northeast-striking normal faults (Chukar, Alunite, Bad Attitude, and Deep Sulfide Feeder faults); the northwest-striking Good Hope reverse fault; and the low-angle Roberts Mountains thrust. The mineralization is mainly bounded on the northwest by the Chukar-Alunite fault zone and on the southeast by the Deep Sulfide Feeder fault zone. The mineralization is generally located in the hanging wall of the Chukar-Alunite fault zone and in the footwall of the Good Hope fault. The gold mineralization is disseminated with the higher grades concentrated adjacent to these structures. The main host rocks are the silty limestone sections of the Silurian to Devonian Roberts Mountains Formation; silty limestone and calc-arenite in the upper 300 feet (90 m) of the Devonian Popovich Formation; siliceous mudstone, and cherty siltstone of the Devonian Rodeo Creek Formation. Most of the drilling has been reverse circulation with a nominal spacing of 150 feet by 150 feet (46 m by 46 m). The extent of the Gold Quarry deposit is not fully known since little drilling has been conducted south and southeast along mineralized structures. In addition, the potential exists to expand the pit westward and southwestward beyond the old West of West pit, and into the northern portion of the now mined out Chukar underground workings. Stratigraphic-controlled mineralization along the west wall is open and

needs to be evaluated, and the structures and lithology in the Phase 7 layback area to the west of the pit are known to host mineralization but have had very limited drilling to date. Also, mineralization hosted along the Good Hope fault may follow this structure away from the pit toward the Tusc pit.

The Exodus and Northwest Exodus deposits are both accessed from the Exodus underground mine. The Northwest Exodus underground mine extension was completed in 2018 as an expansion of Exodus. The expansion includes exploration platforms for future expansion and is expected to add 10 years to the life of the mine. The ore has largely been refractory with an average gold recovery rate of 86%. The mineralization is mainly hosted in the Devonian Popovich Formation, is bound on the west by the Castle Reef fault, and is restricted on the east by the Eastern dike swarm. The mineralization is structurally controlled and follows nearly vertical structural fabrics and crosses stratigraphic boundaries. The mineralization also occurs on the footwall side of the Castle Reef fault in the Silurian to Devonian Roberts Mountains and the Ordovician Hanson Creek Formations. Dikes intruding the sedimentary rocks consist of lamprophyres, biotite-feldspar porphyries, and granodiorite. The steeply dipping Big Green dike, Castle Reef intrusive, and Eastern dike swarm appear to have been the main mineralization conduits, and the highest gold values are located within or adjacent to these intrusive rocks. All remaining reserves of the Exodus deposit are in the Exodus footwall. Drilling has generally been ongoing with exploration potential existing to the north and west of the current underground workings. That area is more geologically similar to Northwest Exodus than the historically mined Exodus proper.

The Green Lantern deposit lies along the north–northwest-trending Tuscarora anticline and is hosted in stratigraphic horizons along the Secret fault and in localized pods at favourable fault intersections within poorly-altered calcareous rocks of the Silurian to Devonian Roberts Mountains Formation. The N30º–40ºE-striking Secret fault and N45ºW-striking Castle Reef fault are the principal structures of the area. The Castle Reef fault controls the mineralization, and the Secret fault localizes the mineralization to the northeast. Also, several unnamed northeast-striking faults locally help to focus high-grade mineralization. The main deposit trends along the Secret fault at depths ranging between 700 feet and 1,000 feet (213 m and 305 m) and is generally horizontal with the stratigraphy and minor folding from east-west compressional tectonics. The deposit is the connection area between the Lantern and North Lantern open pits along the Secret Fault and will involve a layback around those pits. Drill spacing has nominally been 100 feet by 100 feet (30 m by 30 m) at the North Lantern pit and 75 feet by 75 feet (23 m by 23 m) at the Lantern III pit. Both of these deposits are partly contained within the Green Lantern resource. Exploration will focus on the Green Lantern deposit with additional targets to the northwest along the Castle Reef fault above the Exodus deposit and to the north along untested dikes that carry high grade mineralization at both the Lantern II and Exodus deposits.

The Leeville underground complex includes the Four Corners, Turf, and West Leeville deposits and the active Leeville underground mine. These deposits are mainly hosted in carbonates of the Devonian Rodeo Creek and Popovich Formations, the Silurian to Devonian Roberts Mountains Formation. The mineralization is also locally hosted in a series of highly altered, undifferentiated sills and dikes cutting across the stratigraphy. The gold mineralization is all refractory with the mineralized material consisting of 60%–90% quartz, 5%–20% kaolinite, 1%–17% carbonate, and 3%–7% pyrite. Drilling is generally ongoing. Most of it is conducted by underground coring and is completed from drifts above the mineralization whereby the shallow dipping mineralization is intercepted at ideal intersections. Exploration is open in most directions and extends from known mineralization and mining areas. Testing is being conducted at multiple targets along the preferred lithologic host rocks in the Popovich and Rodeo Creek Formations. These targets are to the north, northeast, and southwest from Leeville. The average gold recovery at Leeville was 86% and ranged between 78%–90%. Testing of gold recovery for the Turf deposit was estimated to average 82% and ranged between 73%–92%. Testing of gold recovery for the Four Corners deposit ranged from about 27.3%–92.3%.

One hole was completed within Little Boulder Basin, which intercepted significant alteration. Little Boulder Basin is an area of extensive

disturbance and post-mineral cover between Goldstrike and Leeville, and this hole was the first of a series of framework holes in support of target delineation. Another hole was drilled to the south at Richmond Mountain. Though the alteration encountered was not encouraging, the hole did confirm the geological interpretation.

The Pete Bajo Complex consists of the Pete Bajo, Fence, Full House, and Rita K deposits and the active Pete Bajo underground mine. The Pete Bajo deposit is the down-dip extension of the mineralization mined in the Pete open pit. The Fence deposit lies to the north about 1,200 feet (366 m) down-dip of the Pete Bajo deposit. The Full House deposit is a down-dip extension of the Carlin East deposit and is offset by the Bullmoose fault. Most of the gold mineralization in the Pete Bajo Complex is hosted in the lower unit of the Devonian Popovich Formation and locally in the Silurian to Devonian Roberts Mountains Formation. A series of northwest-striking, northeast-dipping normal faults off-set these units, and an east-west-striking, sub-vertical dike swarm cut across the Pete Bajo and Fence deposits. Exploration is open in most directions and extends from the known mineralization and mines in the Full House and Fence areas with multiple targets in the Popovich Formation.

The Perry deposit is a satellite deposit of the Pete Bajo deposit and lies about 0.5 miles (0.8 km) northwest of the Pete deposit. The mineralization is hosted mainly in silty limestones of the Silurian to Devonian Roberts Mountains Formation and along the contact with the underlying Ordovician Hanson Creek Formation that hosts only minor mineralization. The deposit lies on the northwest-striking, east-dipping Castle Reef fault on the east limb of the Tuscarora anticline. The Castle Reef fault is considered to have been the main conduit for the mineralization. The extent of the mineralization is not well defined and is open for development.

Exploration and development of the Mike deposits on the Carlin trend continued through 2018 and into 2019. Mike is owned by the Newmont Corp. and is not part of the group of mines taken over by Nevada Gold Mines. (Nevada Gold Mines, LLC, NI 43-101 Technical Report on the Carlin Complex, 3/25/2020; Elko Free Press Mining Quarterly, Spring 2019; Elko Daily Free Press, 6/6/2019, 12/6/2019; Newmont Corp. news release, 4/18/2019; Newmont Corp. Management Discussion and Analysis, 4/25/2019, 7/25/2019; Newmont Corp. Form 10-K, 2/21/2020; Newmont Corp. website, https://www.newmont.com)

Cortez District

Fourmile. Barrick Gold Corp. completed 43 diamond core holes totaling 147,613 feet (45,005 m) on its Fourmile Project, 0.6 to 2 miles (1 to 3 km) north of Goldrush. The objective of the drilling included step-out drilling, which tested for mineralization more than 200 feet (60 m) from the defined resource, infill drilling that was focused around the edge of the resource, and drilling to test the continuity along the Goldrush/Fourmile corridor. Drilling continued into 2020. Little data was released but one intercepted 84 feet (25.6 m) grading 2.36 opt (80.9 g/t) and 95 feet (29 m) grading 1.59 opt (54.6 g/t).

In September, new discovery was made about 0.6 miles (1 km) north of Fourmile in an area of sparse, framework drill holes spaced 650 to 1,300 feet (200 to 400 m) apart. The discovery hole, intercepted a thick zone of brecciated host rock with three mineralized intervals including 35 feet (10.7 m) grading 0.72 opt (24.8 g/t), 15 feet (4.6 m) grading 1.44 opt (49.4 g/t), and 20 feet (6.1 m) grading 0.62 opt (21.2 g/t). A follow-up drill hole intercepted multiple discontinuous zones of high-grade gold mineralization over a vertical interval of 820 feet (250 m) including 10 feet (3.1 m) grading 0.18 opt (6.2 g/t), 25 feet (7.5 m) grading 0.27 opt (9.22 g/t), 10 feet (3.1 m) grading 1.4 opt (47.85 g/t), 12 feet (3.7 m) grading 2.51 opt (86.2 g/t), 16 feet (4.8 m) grading 1.24 opt (42.5 g/t), and 9 feet (2.7 m) grading 5.26 opt (180.4 g/t).

Mineralization remains open in several directions, especially in the vicinity of the intersection of two important ore controlling faults. Significant mineralization was found at the intersection of the steeply west-dipping Anna and the moderately west-dipping Sadler reverse fault and associated fold. Near this structural intersection, brecciated, metasomatized carbonate rock hosts high-grade mineralization. This zone remains open both down-dip to the west and along strike. Fourmile and Goldrush combined may be part of a 4.4-mile (7-km) long mineralized system with the mineralization between the two projects also being open but under exploration.

Fourmile is not made part of Nevada Gold Mines, LLC, (Barrick Gold Corp. 61.5% and Newmont Corp. 38.5%) It is 100% owned by Barrick. (Barrick Gold Corp. Management Discussion and Analysis, 5/8/2019, 8/12/2019, 11/6/2019, 2/20/2020; Barrick Gold Corp. Q4 2019 Presentation, 2/12/2020; Barrick Gold Corp. Annual report, 3/25/2020; Barrick Gold Corp. Annual Information Form, 3/25/2020; Barrick Gold Corp. website, https://www.barrick.com)

Goldrush. Effective July 1, 2019, the Goldrush complex became part of Nevada Gold Mines, LLC (Barrick Gold Corp. 61.5% and Newmont Corp. 38.5%), with Barrick Gold Corp. as the designated operator. Barrick Gold Corp. conducted drilling programs at Goldrush, but few details were released. The object of the drilling programs included defining the edge and continuity of the orebody, addition to the inferred resource addition, and exploration upside definition. The Goldrush deposit remains open in a number of directions, and much of the drilling focused on the area between Fourmile and Goldrush where the mineralization of both deposits is expected to coalesce.

The company submitted a plan of operation to the BLM in September. Construction of twin exploration declines to provide access better access to drilling the ore body got underway in 2018 and progressed through 2019. The declines will also better support both the conversion of existing measured and indicated resources into proven and probable reserves and additional exploration drilling for new resources. The declines are located next to the existing Horse Canyon Haul Road in the northern part of Grass Valley and will provide access to the Goldrush ore body in Horse Canyon from the west. The exploration declines can be converted to production declines in the future. The declines reached 4,250 feet (1,296 m) of development by year's end. The plan calls for 13,120 feet (4,000 m) of development expected to be completed by November 2020. Total capital cost of the Goldrush project is estimated to be about $1,000,000,000. The ore is refractory. First production may come in 2021, and the life of the mine is expected to be 21 years. (Barrick Gold Corp. Management Discussion and Analysis, 5/8/2019, 8/12/2019, 11/6/2019, 2/20/2020; Nevada Gold Mines, LLC, NI 43-101 Technical Report on the Carlin Complex, 3/25/2020; Barrick Gold Corp. Annual report, 3/25/2020; Barrick Gold Corp. Annual Information Form, 3/25/2020; Barrick Gold Corp. website, https://www.barrick.com)

SF. Bravada Gold Corp. completed two reverse circulation holes totaling 2,880 feet (878 m) on its SF property about four miles (6 km) east of Goldrush. These were the first holes to be drilled on the property and targeted mineralized Devonian Wenban Formation rocks beneath a broad, poorly exposed "hanging wall" anticline in the Devonian Horse Canyon Formation. Widely scattered rock-chip float samples collected here contained anomalous gold assaying between 50 ppb to over 100 ppb and arsenic assaying over 100 ppm. The holes successfully intercepted anomalous gold and base-metal mineralization within a sequence of stacked thrust sheets that repeated the transition from the Horse Canyon Formation to the Wenban Formation in each. The Wenban Formation is well exposed west of the drill holes and is the main host rock in other nearby deposits such as at Goldrush. The drill holes intercepted long intervals of anomalous gold assaying between 10 ppb and 100 ppb with rare spikes of greater than 100 ppb. The drill holes also intercepted widespread anomalous base metals such as 100 ppm to 439 ppm copper and 200 ppm to 2,738 ppm zinc with lesser anomalies in lead and molybdenum. This may represent being in proximity to an intrusion-related gold/base-metal system. The high correlation between gold and copper suggests the most significant gold mineralization should lie outboard of the source intrusion, which has yet to be found at the surface on the property. Most regional intrusions exposed at surface range in age from Jurassic to Cretaceous. (Bravada Gold Corp., news release, 8/12/2019; Bravada Gold Corp., Management Discussion and Analysis, 3/31/2020; Bravada Gold Corp., website, https://www.bravadagold.com)

Eureka District

Ruby Hill. Ruby Hill Mining Co., LLC, a subsidiary of Waterton Precious Metals Fund II Cayman, LP, produced 3,355 ounces of gold and 2,540 ounces of silver from its Ruby Hill Mine. Mining was never resumed by the company or its predecessor, Barrick Mining Corp., after the wall

failure in November 2013. Production was from the leach pads, and no drilling has been reported since then. The ore is mainly oxide material, and processing includes on-site gold recovery by zero-discharge heap leach and carbon column facilities. Royal Gold, Inc., owns a 3% net smelter return in the mine. Ruby Hill Mining Co., LLC, was formed in 2015 and is managed by Elko Mining Group, LLC. (Nevada Business Search; Waterton Global Resource Management news release, 12/17/2015; Royal Gold, Inc., website, https://www.royalgold.com; Waterton Global Resource Management website, www.watertonglobal.com)

Gibellini District

Bisoni McKay and Bisoni-Rio. In 2018, Stina Resources, Ltd., conducted trenching and sampling programs on it Bisoni McKay property and its adjacent Bisoni-Rio property. The company changed its name to CellCube Energy Storage Systems, Inc., and no further exploration work was reported through 2019. In January, the company spun-off its Vanadium properties into a new subsidiary called V23 Resource Corp. Regency Gold Corp. (now Clean Air Metals, Inc.) signed a letter of intent with CellCube Energy Storage Systems, Inc., to acquire V23 Resource Corp. However the agreement lapsed and Regency Gold Corp. decided not to pursue the deal. In August 2020, Nevada Vanadium, a subsidiary of Silver Elephant Mining Corp., acquired the properties for $200,000 cash and $500,000 worth of Silver Elephant Mining Corp. common shares. (Clean Air Metals, Inc., Management Discussion and Analysis, 5/22/2020; CellCube Energy Storage Systems, Inc., Management Discussion and Analysis, 5/30/2019; Silver Elephant Mining Corp., news releases, 8/24/2020, 8/18/2020; Nevada Vanadium, LLC, website, https://www.nevadavanadium.com)

Gibellini Hill/Louie Hill. Nevada Vanadium, LLC, a subsidiary of Silver Elephant Mining Corp., (formerly Prophecy Development Corp.) announced a drilling program for its Gibellini Project and adjacent Louie Hill Project, but it was apparently not carried out. Also, no other exploration work was reported. The company submitted a plan of operations to the BLM. The operation will include the pit, waste rock disposal facility, crushing and processing facilities, heap leach pad, stockpile, and support infrastructure. The mine is projected to produce 3,300,000 tons of materialized material annually or 15,700,000 tons of materialized material containing 120,500,000 pounds of vanadium over the seven-year mine life. The project covers 6,456 acres (2,613 ha) on public land and contains from north to south the North Trench prospect, Gibellini deposit, Louie Hill deposit, and Middle Earth, Big Sky, BR-1, and BR-2 prospects, which lie along an 8-mile (13-km), north-northeast-trending vanadium belt. In 2020, the company acquired the Bisoni Vanadium Project, which adjoins the Gibellini Project along the same belt to the south-southwest. Nevada Vanadium, LLC, was a subsidiary of Prophecy Development Corp. (BLM press release, 7/14/2020; Silver Elephant Mining Corp. news releases, 1/21/2019, 7/8/2019, 1/8/2020, 2/14/2019, 9/24/2019, 3/18/2020, 3/23/2020, 8/24/2020, 8/18/2020; Nevada Vanadium, LLC, website, https://www.nevadavanadium.com; Silver Elephant Mining Corp., website, https://www.silverelef.com)

Lynn District

Carlin-East. Ridgeline Minerals Corp. has an option to acquire full interest minus a 3.25% net smelter return royalty in the Carlin-East Project, and from Carlin East, LLC, for cash and equity considerations over a three-year. Ethos Gold Corp. owns 8% of Carlin Type Holdings Ltd., the parent company owning Ridgeline Minerals Corp. Ethos Gold Corp. has the right to hold this interest through the next three phases of financing. Ridgeline Minerals Corp. drilled two reverse circulation holes totaling 4,160 feet (1,268 m). One hole intercepted altered and mineralized Lower Plate Devonian Rodeo Creek Formation, but did not return any economically significant gold intercepts. The hole did intercept over 800 continuous feet (245 m) of anomalous gold and Carlin-type pathfinder elements starting down from 2,100 feet (640 m). The best intercept was 150 feet (46 m) grading 24 ppb gold and 1.24 ppm silver in multiple dacite dikes. The second hole stopped well short of its intended target depth, but intercepted higher gold and trace-element values than those in the first hole. The results suggest the

holes may have intersected the outer alteration halo of a Carlin-type gold system.

The company also contracted McGee Geophysical Services of Reno to conduct a gravity survey over part of the property. The objectives were to delineate structures, lithologies and alteration related to possible gold mineralization and to track the Lower Plate carbonate rocks trending northward beneath upper plate rocks from the Carlin Mine towards the Property. A second gravity survey was conducted to extend gravity coverage to the northern limit of the property and infill two gaps in the primary grid. The gravity survey supported the interpretation that multiple high-angle normal faults extend from the Leeville Mine complex northeastward to the property and trending northward beneath upper plate rocks from the Carlin Mine towards the property. The company issued a NI43-101 technical report on the property current through the end of the year. The project consists of 422 lode claims and fee land covering about 15 square miles (39 square km). (Ethos Gold Corp. news release, 5/30/2019, 7/23/2019; Ethos Gold Corp. website, https://ethosgoldcorp.com/; Ridgeline Minerals Corp. NI 43-101 Technical Report, 12/30/2019; Ridgeline Minerals Corp. website, https://www.ridgelineminerals.com)

Goldstrike. On March 10, 2019, Barrick Gold Corp. and Newmont Corp. entered into an agreement creating a joint venture under Nevada Gold Mines, LLC, which combined their respective mining operations, assets, reserves, and talent in Nevada. The properties included are Cortez, Goldstrike, Turquoise Ridge and Goldrush of Barrick Gold Corp. and Carlin, Twin Creeks, Phoenix, Long Canyon, and Lone Tree of Newmont Corp. Nevada Gold Mines, LLC, is operated by Barrick Gold Corp., and ownership is 61.5% Barrick Gold Corp. and 38.5% Newmont Corp. Nevada Gold Mines, LLC, was preparing an NI 43-101 technical report covering the affected properties and included updated reserves and resources. The report was released in early 2020. The mines of the Barrick Gold Corp. Goldstrike operation and Newmont Corp. The Carlin operations are now collectively referred to as the Carlin Complex, and the agreement took effect on July 1.

At its Goldstrike operation, Nevada Gold Mines, LLC, (Barrick Gold Corp., 61.5%; Newmont Corp., 38.5%) produced 493,546 ounces of gold and 18,781 ounces of silver from the Betze-Post open pit. The company produced 331,271 ounces of gold and 12,606 ounces of silver from the Meikle and Rodeo underground mines.

Statistics for the first six months of 2019 were reported for the Goldstrike open pit and underground mines, which included Barrick Gold Corp.'s 60% share of South Arturo. Afterwards, the statistics are lumped together as Carlin as per the new joint venture under Nevada Gold Mines, LLC. The following is for the first six months of 2019 with changes compared to the same period in 2018. 1,448,000 tons (1,314,000 mt) of ore with an average grade of 0.095 opt (3.25 g/t) were mined from the open pit, and 1,035,000 tons (939,000 mt) of ore with an average grade of 0.27 opt (9.24 g/t) were mined from the underground mines. The autoclave processed 2,719,000 tons (2,467,000 mt) of ore with an 59% recovery rate and produced 138,000 ounces of gold, 5% and 13% increases respectively in tones processed and gold produced. The all-in sustaining cost was $976 per ounce, a 15% decrease from 2018.

The gold mineralization at the Betze-Post open pit is 6,000 feet (1,829 m) long, trends northwest, and averages between 600 feet to 800 feet (183 m to 244 m) wide and 400 feet to 600 feet (122 m to 183 m) thick. Production was largely from the Third and Fourth Northwest laybacks. The Third Northwest layback was completed in 2019 and the Fourth Northwest layback was in progress and scheduled for completion in 2020. The pit has two remaining phases: Fifth Northwest and West Barrel. The company completed three drill projects totaling 63,438 feet (19,341 m) for the open pit. The projects included initial drill testing, in-fill drilling, and reserve definition drilling. On-going geologic and drill programs at Betze-Post continue to define the deposit limits with the most recent drilling focusing on the extent of mineralization to the northwest. Exploration potential exists adjacent to the current open pit along strike on favorable mineralized structures and along the preferred lithologic units such as the Devonian Popovich Formation.

The underground mineralization consists of the Meikle and Rodeo deposits, which are hosted in carbonate dissolution collapse breccias and

limestones of the Devonian Bootstrap Limestone and Devonian Popovich Formation and various intrusive rocks. Meikle also includes the Meikle Extension, South Meikle, East Griffin, and West Griffin zones, and adjoins the Banshee deposit to the north-northwest. Rodeo also includes West Rodeo and Barrel and adjoins East and West Griffin to the north-north west and the North Post deposit and JV Post to the south-southeast. The mineralization of the combined ore zones is about 12,000 feet (3,660 m) long by about 1,950 feet (595 m) wide. It starts about 590 feet (180 m) below surface and continues to more than 1,920 feet (586 m) below surface. The company completed seven drill projects containing 405 reverse circulation and diamond core holes totaling 135,971 feet (41,444 m) for the underground mines, which also included initial drill testing, in-fill drilling, and reserve definition drilling. Drilling of the Goldstrike underground mineralization is extending the known mineralization from current mining areas to the north along the intrusive breccia at Banshee towards the known mineralization at Ren. It is also focused on the deep extents of mineralization below Rodeo, Meikle and North Post. Recent work was conducted on the Rodeo Deep and Post Footwall targets. The former lies below the main Rodeo deposit with mineralization consisting of silicified breccias along Zappa and Dormant fault systems hosted in the Lower Laminated Unit of the Silurian to Devonian Roberts Mountain Formation. The latter connects Lower Rodeo to the North Post mining area along the PFW fault with mineralization consisting of silicified breccias within the Lower Laminated Unit of the Silurian to Devonian Roberts Mountain Formation.

The property has two processing facilities—an autoclave installation, which was originally designed to treat non-carbonaceous sulfide ore, and a roaster, which was used to treat carbonaceous ore that responds poorly to cyanidization. The recovery rate was 61.5% for the autoclave and 88.9% for the roaster. These facilities process the ore from both the Goldstrike and Cortez properties where both ores are refractory. The combined capacity of the two facilities is between 29,000 and 30,000 tons (26,000 to 27,000 mt) per day. The autoclave was recently retrofitted and upgraded with the construction of the Total Carbonaceous Material (TCM) project, which allows for the use of calcium thiosulphate instead of cyanide to process double refractory ore. Resin is used to collect the dissolved gold rather than activated carbon. The new TCM circuit will allow the autoclaves to operate throughout the life of the mine and speed up the processing of stockpiled carbonaceous material. Gold recovered from the ore is processed on-site into dore and shipped to outside refineries for processing into bullion. The processing facilities are open for ore tolling. The property covers 10,372 acres (4,197 ha) of which 1,922 acres (778 ha) are unpatented claims on BLM administered land and the rest are private property owned by Barrick Nevada. (Nevada Gold Mines, LLC, NI 43-101 Technical Report on the Carlin Complex, 3/25/2020; Barrick Gold Corp., news release 4/22/2019; Barrick Gold Corp., Management Discussion and Analyses 8/12/2019; Barrick Gold Corp. Annual Report, 3/25/2020; Barrick Gold Corp. Annual Information Form, 3/25/2020; Barrick Gold Corp. website, www.barrick.com)

Mount Hope District

Mount Hope. General Moly, Inc., carried out a minor drill program on its Mount Hope property (General Moly Inc., 80%; POS-Minerals Corp., 20%) in 2019, but no results were released. The company concentrated on lowering costs and carried out a small drill program. The company did receive all the necessary water permits from the State Engineer. The BLM issued a draft and final supplemental environmental impact statement involving rights-of-way, water rights and air quality. The BLM then issued a record of decision affirming the measures called for in the environmental impact statement. The Mount Hope project is estimated to last 80 years with 44 years of mining and ore processing, 30 years of reclamation, and five years of post-closure monitoring. The ore body contains approximately 966,000,000 tons of molybdenite ore that would produce about 1,100,000,000 pounds of recoverable molybdenite during the ore processing time frame. The actual mine life would be 32 years resulting in 1,700,000,000 tons of waste rock by the end of the 32-year mine life, and 1,000,000,000 tons of tailings by the end of the 44 years of ore processing. Ore would be mined from an open pit and processed by roasting and flotation. The project will also include waste rock disposal facilities, tailing storage facilities, milling

facilities, and related infrastructure. The project covers 23,065 acres (9,334 ha) with 8,618 acres (3,388 ha) of disturbance. (BLM, Mount Hope Project Final Supplemental Environmental Impact Statement, DOI-BLM-NV-B010-2017-0031-EIS 2/2019; BLM, Mount Hope Project Final Supplemental Environmental Impact Statement, DOI-BLM-NV-B010-2017-0031-EIS 8/2019; BLM, Mount Hope Project Final Supplemental Environmental Impact Statement, Record of Decision, DOI-BLM-NV-B010-2017-0031-EIS 9/2019; General Moly Inc. news releases, 7/29/2019, 9/30/2019, General Moly Inc. Form 10-K, 5/4/2020; General Moly Inc. website, http://www.generalmoly.com)

Northern Simpson Park Mountains

Red Hill. NuLegacy Gold Corp. completed five core holes totaling 7,314 feet (2,230 m) on both flanks of the northeast-southwest trending Rift anticline. Four holes were drilled on the eastern flank of the Rift anticline—two at the Western Slope target, two at the Serena Offset target, and one on the western flank at the Fourmile Look-a-like target. One hole drilled on the eastern flank of the Rift anticline intercepted 89 feet (27.1 m) grading 0.079 opt (2.7 g/t) gold, including 17 feet (5.2 m) grading 0.28 opt (9.6 g/t) gold in strong alteration consisting of silicification, decarbonatization and brecciation in the targeted Wenban 5 host unit of the Devonian Wenban Formation. This intercept is one of several in a series of high-grade intercepts spanning about 4,900 feet (1,500 m) across the east flank of the Rift anticline from North Iceberg west through the Serena zone 2, and now from the Western Slope towards the Rift anticline. Of the remaining three holes drilled on the east flank one encountered weak gold and trace element values through most of its length and terminated in the Wenban 4 unit with its last 5 feet (1.5 m) grading 0.077 opt (2.63 g/t) gold). This indicates that the mineralization may occur deeper in the section. The two holes drilled in the Serena Offset target, just west of the Serena deposit, intercepted strong alteration and trace element geochemistry but no significant gold values, suggesting the main part of that mineralization probably lies northwest of the Serena Offset. The hole drilled at the Fourmile Look-a-like target was lost before reaching the target depth due to technical drilling difficulties. The company also conducted a gravity survey and a CSAMT survey containing 14.9 line-miles (23.8 km-miles) running east-west over the Rift anticline to the west of the Iceberg deposit.

The company had suspended field work earlier in 2019 until the gold market improved or better financing options became available including through a joint venture or merger. Funds were raised later in the year allowing for the commencement of the fall drill program. The property covers 41.7 square miles (108 sq km). (NuLegacy Gold Corp. news releases, 6/3/2019, 10/8/2019, 10/21/2019, 2/18/2020; NuLegacy Gold Corp. Management Discussion and Analysis 2/27/2020; NuLegacy Gold Corp. website, https://www.nulegacygold.com)

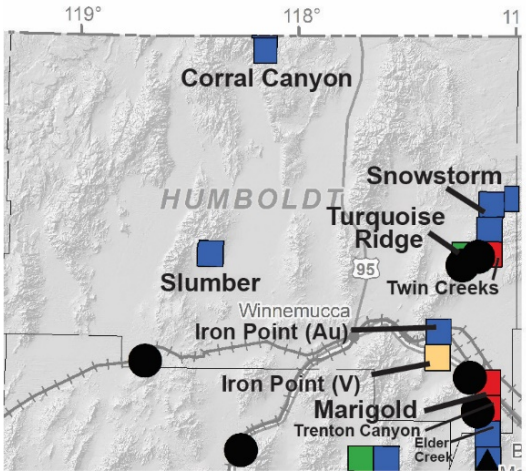
Roberts District

Keystone. U.S. Gold Corp. completed one core and six reverse circulation holes totaling 13,177 feet (4,017 m) on its Keystone Project in T23–24N, R48E. The drilling was designed to test the Tip Top target in the northern part of the project area and the Sophia, Sophia South, and Nina Skarn targets in the central part of the project area. Five of the holes intercepted significant gold mineralization. Almost all of the holes drilled intercepted moderate to thick intervals of anomalous gold values with moderate to locally strong associated pathfinder metals within both Carlin-style and skarn style mineralization. Gold intercepts are hosted in upper plate and lower plate rocks where favorable structures exist, including the Ordovician Valmy and Comus Formations, along the Roberts Mountains Thrust and the contact between the Devonian Horse Canyon unit and the Wenban Formation, particularly the favorable Wenban Unit 5.

The core hole that was drilled into the Sophia target intercepted 4.9 feet (1.5 m) grading 0.062 opt (2.11 g/t) gold in oxide material. The reverse circulation hole drilled into the Sophia target intercepted no significant mineralization. Two holes were drilled into the Tip Top target. One intercepted 10 feet (3 m) grading 0.015 opt (0.530 g/t), 5 feet (1.5 m) grading 0.016 opt (0.54 g/t) gold in oxide material, and 5 feet (1.5 m) grading 0.01 opt (0.33 g/t) gold in sulfide material. The other hole intercepted 15 feet (4.6 m) grading 0.028 opt

(0.95 g/t) gold, including 5 feet (1.5 m) grading 0.041 opt (1.41 g/t) gold in oxide material, and 5 feet (1.5 m) grading 0.017 opt (0.57 g/t) gold in sulfide material. The first hole drilled into the Nina Skarn target intercepted 5 feet (1.5 m) grading 0.04 opt (1.36 g/t) gold, and 40 feet (1.2 m) grading 0.021 opt (0.71 g/t) gold, all in oxide material, and 10 feet (3 m) grading 0.012 opt (0.41 g/t) gold in sulfide material. The one hole drilled into the Sophia South target intercepted no significant mineralization. The property consists of about 650 lode claims covering about 20 square miles (52 square kiliom). (U.S. Gold Corp. Form 10-K, 7/13/2020; U.S. Gold Corp. news releases, 7/30/2019, 11/12/2019; U.S. Gold Corp., website, https://www.usgoldcorp.gold)

HUMBOLDT COUNTY



Battle Mountain District

Marigold. Through its subsidiary Marigold Mining Co., SSR Mining, Inc., (formerly Silver Standard Resources, Inc.) produced 220,227 ounces of gold and 4,223 ounces of silver from its Marigold Mine, a 7% increase in gold and a 2% decrease in silver from 2018. Mining was largely from the Mackay pit. The company mined 81,613,000 tons (74,039,000 mt) of material, at a strip ratio of nine to one at an average grade of 0.012 opt (0.4 g/t) gold. The ore was all oxide. The gold recovery was 75.4%. The all in sustaining cost was $1,034 per ounce

SSR Mining, Inc., completed 184 reverse circulation holes totaling 203,084 feet (61,916 m) and 24 diamond core holes totaling 33,669 feet (10,265 m). Exploration activities mainly focused on converting mineral resources into mineral reserves at Red Dot. The company also conducted exploration drilling in areas north and south of Red Dot, within the Mackay pit, and on the Crossfire and East Basalt targets in the Valmy area. Significant gold intercepts at Crossfire were 1) 159 feet (48.4 m) grading 0.025 opt (0.85 g/t), including 30 feet (9.1 m) grading 0.098 opt (3.33 g/t); 2) 95 feet (29 m) grading 0.032 opt (1.11 g/t) including 40 feet (12.2 m) grading 0.061 opt (2.11 g/t); and 4) 60 feet (18.3 m) grading 0.047 opt (1.6 g/t). Significant intercepts at East Basalt (oxide) were 1) 185 feet (56.4 m) grading 0.021 opt (0.71 g/t) including 30 feet (9.1 m) grading 0.067 opt (2.31 g/t) and 2) 125 feet (38.1 m) grading 0.043 opt (1.48 g/t) including 30 feet (9.1 m) grading 0.097 opt (3.33 g/t). A significant intercept at the Mackay pit was 1) 135 feet (41.1 m) grading 0.023 opt (0.79 g/t) including 35 feet (10.7 m) grading 0.059 opt (2.02 g/t), Significant intercepts at Red Dot were 1) 60 feet (18.1 m) grading 0.062 opt (2.13 g/t); 2) 38 feet (11.7 m) grading 0.054 opt (1.84 g/t); 3) 82 feet (24.9 m) grading 0.032 opt (1.09 g/t); 4) 107 feet (32.6 m) grading 0.14 opt (4.73 g/t); 5) 58 feet (17.7 m) grading 0.05 opt (1.72 g/t); and 6) and 65 feet (19.8 m) grading 0.11 opt (3.79 g/t). Significant intercepts at Valmy were 1) 40 feet (12.2 m) grading 0.12 opt (3.98 g/t); 2) 200 feet (61 m) grading 0.033 opt (1.13 g/t), including 30 feet (9.1 m) grading 0.072 opt (2.48 g/t); and 3) 60 feet (18.3 m) grading 0.047 opt (1.6 g/t).

Marigold is a Carlin-like deposit, with both structural and stratigraphic controls to ore. The ore is oxidized and hosted in argillite, quartzite, sandstone, limestone, chert and meta-volcanic rocks of the Ordovician Valmy Formation, Pennsylvanian—Permian Antler sequence, and Late Devonian to Late Permian Havallah sequence. Northwestward trending Cretaceous granodiorite dikes cut these rocks. The mineralized zones are generally tabular and shallow-dipping, becoming steeper near normal faults, which trend N10°E to N20°W. Eight deposits of interest were noted for 2018.

Draft and final environmental impact statements involving the Mackay Optimization Project were issued. The proposal would increase the authorized surface disturbance by an additional approximate 2,056 acres (832 ha) of which 801

acres (324 ha) would be on BLM land. A number of pits would be combined. The East Hill, Target 1, Target 2, and Target 3 pits would become part of the Mackay pit. The 8-Pit and Terry Zone pit would become part of the North Mackay pit. The 5-North pit would be enlarged, and it and the Mackay and Mackay North pits would be mined below the water table requiring the construction of dewatering facilities. A record of decision was issued approving the project. (BLM, Mackay Optimization Project, Draft Environmental Impact Statement, DOI-BLM-NV-W010-2016-0002-EIS, 5/2019; BLM, Mackay Optimization Project, Final Environmental Impact Statement, DOI-BLM-NV-W010-2016-0002-EIS, 9/2019; BLM, Mackay Optimization Project, Record of Decision, DOI-BLM-NV-W010-2016-0002-EIS, 10/2019; SSR Mining, Inc., Management Discussion and Analysis, 2/20/2020; SSR Mining, Inc., new release 6/27/2019; SSR Mining, Inc., Annual Information Form, 3/19/2020; SSR Mining, Inc., website, http://www.ssrmining.com)

Trenton Canyon. In June of 2019, SSR Mining, Inc., acquired the Trenton Canyon and Buffalo Valley properties from Newmont Corp. and Fairmile Gold Mining, Inc., for $22,000,000. Both properties are adjacent to the Marigold property and combined cover about 21,990 acres (8,900 ha). The company spent $2,000,000 on drill testing sulfide targets, completing 64 reverse circulation totaling 68,306 feet (20,825 m). A new sulfide zone was discovered 1,000 feet (300 m) north of the South pit. The zone is hosted in carbonaceous mudstone immediately below the Ordovician Valmy Formation quartzite. Significant gold intercepts from four holes drilled in this zone included 1) 310 feet (94.5 m) grading 0.15 opt (5.19 g/t); 2) 25 feet (7.6 m) grading 1.3 opt (44.68 g/t); 3) 20 feet (13.7 m) grading 0.19 opt (6.68 g/t); 4) 270 feet (83.2 m) grading 0.058 opt (1.98 g/t), including 45 feet (13.7 m) grading 0.18 opt (6.11 g/t); 5) 325 feet (99.1 m) grading 0.028 opt (0.97 g/t), including 30 feet (9.1 m) grading 0.13 opt (4.34 g/t); and 6) 255 feet (77.7 m) grading 0.046 opt (1.57) g/t gold, including 30 feet (9.1 m) grading 0.23 opt (7.89 g/t). Significant gold intercepts in confirmation drilling of oxide mineralization included 165 feet (50.3 m) grading 0.057 opt (1.94 g/t gold) from the surface, 70 feet (21.3 m) grading 0.032 opt (1.08 g/t), and 50 feet of transitional oxide-sulfide (15.2 m) grading 0.04 ppm (1.38 g/t). A significant intercept at West pit at Trenton was 100 feet (30.5 m) grading 0.21 opt (7.27 g/t) from a depth of 900 feet (274.3 m), which lead to the discovery of transitional oxide-sulfide gold mineralization. A significant intercept at Relay Ridge was 355 feet (108.2 m) grading 0.091 opt (3.13 g/t) from a depth of 90 feet (27.4 m) including 70 feet (21.3 m) grading 0.37 opt (12.73 g/t).

The property covers 18,162 acres (7,350 ha) and is immediately south of and along the mineralized trend of the Marigold Mine. Mineralization extends about 3.1 miles (5 km) along a north-south trend and varies between 2,300 feet and 4,900 feet (700 m and 1,500 m) in width. It is hosted in the Pennsylvanian-Permian Edna Mountain Formation, Antler sequence, and Battle Formation and the Ordovician Valmy Formation. The property includes Trenton Canyon South and West open pits and the North Peak open pit. The mines last produced in 2007. The infrastructure at Trenton Canyon includes the North Peak heap leach pads and processing facilities. (SSR Mining, Inc., news releases 6/27/2019, 5/14/2010; SSR Mining, Inc., Management Discussion and Analysis, 2/20/2020; SSR Mining, Inc., Annual Information Form, 3/19/2020; SSR Mining, Inc., website, http://www.ssrmining.com)

Buffalo Mountain District

Lone Tree/Brooks. Effective July 1, 2019, the Lone Tree Complex became part of Nevada Gold Mines, LLC (Barrick Gold Corp. 61.5% and Newmont Corp. 38.5%), with Barrick Gold Corp. as the designated operator. Nevada Gold Mines, LLC produced 17,483 ounces of gold from its Lone Tree Complex. Most of the production comes from the Brooks pit located about three miles (5 km) to the southwest of the Lone Tree pit. Mining commenced in at the Brooks pit in 2015 with the ore being hauled to the Lone Tree heap leach pad for processing. The Lone Tree pit has been in closure since 2007 and the company is conducting on-going reclamation activities. What Lone Tree production persists comes from the residual heap leaching operation with four haul trucks ranging between 150 and 190 tons (136 to 172 mt) moving leach material around for the leaching operation. The Lone Tree autoclave and flotation mill are on

care and maintenance. Reporting on the Lone Tree Complex was usually combined with that for the Phoenix Mine by Newmont Corp. and now Nevada Gold Mines, LLC. No drilling or other exploration activity was released. (Newmont Corp. Form 10-K, 2/21/2020; Newmont Corp. website, https://www.newmontgoldcorp.com)

Disaster District

Corral Canyon. In November, Canarc Resource Corp. completed five core holes totaling 5,248 feet (1,600 m) on its Corral Canyon property. Assays were not released though three of the holes intercepted broad alteration zones and narrow quartz veins but no economic values. The property covers an at least 1.75-mile (2.8-km) long volcanic-hosted, low sulfidation epithermal gold system of middle Miocene age. The company staked the property in 2018. In the first half of 2019, the company conducted detailed geologic mapping, a district-scale soil sampling program, rock-chip sampling, re-logging of previous core holes, and an analysis of historical geophysical data. Four high priority targets were then identified in the third quarter. The property consists of 92 claims covering about 1,800 acres (730 ha). (Canarc Resource Corp. news releases, 10/15/2019, 11/28/2019, 4/29/2020; Canarc Resource Corp. Annual Information Form, 3/27/2020; Canarc Resource Corp. website: http://www.canarc.net)

Iron Point District

Iron Point (vanadium). Victory Metals, Inc., completed two phases of drilling at its Iron Point vanadium prospect in the northeast quarter of T35N, T41E. Phase I drilling was conducted around an area of vanadium mineralization drilled in the 1960s and 1990s. It consisted of 69 reverse circulation holes and four core holes. The final footage was not released, but the program originally called for over 26,000 feet (8,000 m) of drilling. Significant V_2O_5 intercepts included 1) 85 feet (26 m) grading 0.49%, including 20 feet (6 m) grading 0.72%; 2) 75 feet (23 m) grading 0.63%, including 20 feet (6 m) grading 0.88%; 3) 90 feet (27 m) grading 0.56%; 4) 145 feet (44 m) grading 0.48%; and 5) 150 feet (46 m) grading 0.38%. The mineralized area consists of two high-grade zones —Upper High Grade Zone and New High Grade Zone—and a lower grade vanadium envelope. The drilling extended the deposits beyond 1,200 m trending north-northwest by 700 m trending east-northeast mineralized area. The mineralization is still open to the north and south.

Phase II was drilled as an in-fill program and was designed to test lateral and depth extensions of vanadium mineralization defined in Phase I. It consisted of 42 reverse circulation holes totaling 26,470 feet (8,070 m) and 11 core holes totaling 5,494 feet (1,675 m). Significant V_2O_5 intercepts included 1) 172 feet (52.4 m) grading 0.47% including 19 feet (5.8 m) grading 1.2%; 2) 54 feet (16.6 m) grading 0.54%, including 14 feet (4.4 m) grading 0.94%; and 3) 200 feet (61 m) grading 0.47% including 35 feet (10.7 m). Twenty-seven of the holes were in an area below the southern part of the Historical Vanadium Mineralized Zone and covered a rectangular area trending 2,600 feet (800 m) northwest by about 1,000 feet (300 m). The mineralization was open to the east, west, south, and at depth.

The company also contracted McClelland Laboratories, Inc., of Sparks, Nevada, to conduct metallurgical tests. The company used composited reverse circulation samples with a median head grade of 0.38% V_2O_5. The results demonstrated up to a 94.3% vanadium recovery rate at atmospheric pressure and 8-hour leach times. The project consists of 730 unpatented lode claims covering about 12,822 acres (5,189 ha) and is owned by the company's subsidiary Brownstone Ventures (US), Inc. (Victory Metals, Inc., Management Discussion and Analysis, 7/29/2019, 6/17/2020; Victory Metals, Inc., Management Discussion and Analysis, 6/17/2020; Victory Metals, Inc., news releases, 2/8/2019, 2/28/2019, 3/6/2019, 4/10/2019, 4/17/2019, 5/27/2019, 9/30/2019, 2/18/2020, 3/3/2020, 4/2/2020; Victory Metals, Inc., website, https://victorymetals.ca)

Iron Point (gold). Ethos Gold Corp. executed an earn-in agreement with Victory Metals, Inc., whereby the former can earn a 50% undivided interest in the gold and silver rights at the Iron Point gold project. The company is required to spend $5,000,000 over a three-year period with $1,000,000 being spent the first year. Victory Metals, Inc., will retain full interest in the vanadium deposits on the property. Ethos Gold

Corp. completed three reverse circulation holes and two core holes on the property. Total footage was not released though the original plan called for four holes to total 10,330 feet (3,200 m). Two angled reverse circulation holes were drilled from the same pad in the North Target area about three miles (4.75 km) north of Interstate 80. One was oriented 60° southeastward and the other 60° southwestward. The two core holes and a reverse circulation hole were drilled in the South Target area a few miles north of Interstate 80. Drilling was designed to test for Carlin-type gold mineralization hosted in Lower Plate stratigraphy below the Roberts Mountain thrust fault at depths of up to 2,300 feet (700 m).

In the North Target area, no upper plate rocks are present, and the holes were collared in the Ordovician Comus Formation. The southeasterly-oriented hole intercepted several intervals of strongly anomalous gold including 36 feet (11 m) grading 0.0067 opt (0.23 g/t) and 49 feet (15 m) grading 0.0061 opt (0.21 g/t). The rocks consisted of varying degrees of decalcification, sooty black sulfides, and silicification with highly elevated pathfinder elements. The southwesterly-oriented hole intercepted rocks with the same characteristics and elevated pathfinder elements and gold values up to 0.0029 opt (0.10 g/t). The results suggest gold values are increasing to the east or southeast of the drill pad.

In the South Target area, the southern core hole penetrated Roberts Mountain thrust at about 1,384 feet (422 m) and intercepted a wide interval of highly altered lower plate rocks with significant intervals of anomalous gold grading up to 0.0064 opt (0.22 g/t). Pathfinder elements, including arsenic, antimony, mercury, and thallium, also occur at elevated levels. The hole also intercepted 56 feet (17 m) grading 2.96 opt (101.4 g/t) silver including 5 feet (1.5 m) grading 15.86 opt (543.6 g/t) silver occurring immediately above the Roberts Mountain thrust plane. Also, the bottom 20 feet (6 m) of this hole graded 0.005 opt (0.17 g/t) gold, which suggests the system may be intensifying at depth. The lower plate rocks display varying degrees of decalcification, sooty pyrite and other sulfides, and silicification. The rocks appear to be highly folded with bedding varying from nearly horizontal to nearly vertical. The northern core hole penetrated lower plate rocks at about 1,290 feet (393 m). This hole encountered a mixture of porphyritic intrusive rocks and skarn, which probably formed by replacement lower plate rocks to the bottom of the hole at 1,810 feet (552 m). Locally elevated pathfinder elements and anomalous Au values up to 0.0044 opt (0.15 g/t) are present within a 59-foot (18-m) interval immediately above the apparent Roberts Mountain Thrust grading 0.009 opt (0.31 g/t) gold, including 5 feet (1.5 m) grading 0.034 opt (1.16 g/t) gold. (Ethos Gold Corp. news release, 5/17/2019, 6/18/2019, 10/2/2019; Ethos Gold Corp. website, https://ethosgoldcorp.com; Victory Metals, Inc., website, https://victorymetals.ca)

Jackson Mountains District

Slumber. NV Gold Corp. executed a binding letter of intent with Tim Percival and Darryl Killian allowing the former to enter into a Lease Agreement for an undivided 100% right, title and interest in the Slumber Gold Property in T39N, R32E. NV Gold Corp. will pay $10,000 upon execution of the lease and then conduct minimum annual work commitments and pay advanced royalties respectively as follows: first anniversary—$25,000 and $25,000; second anniversary—$75,000 and $35,000; third anniversary—$75,000 and $45,000; fifth anniversary and annually afterwards—$100,000 and $50,000.

The company completed seven holes totaling 3,580 feet (1,091 m). One hole was lost in the alluvium, and two holes returned no significant gold values. The mineralization is hosted in felsic volcanic rocks. Five of the holes intercepted zones of moderate to intense silicification. Quartz veining, locally with fine-grained pyrite, was present in some of the intervals of silicification. The holes were angled to test a prominent, northeast-trending, silicified ridge. Alteration halos around zones of silicification include proximal white hydrothermal-clay alteration and distal green propylitic chlorite alteration. Silver to gold ratios are generally less than 5 to 1. The best intercept in one hole included 130 feet (39.6 m) grading 0.01 opt (0.34 g/t) gold and 0.038 opt (1.3 g/t) silver, including 75 feet (22.8 m) grading 0.014 opt (0.47 g/t) gold and 0.047 opt (1.6 g/t) silver.

Prior to the drilling program, the company contracted Geophysical Services of Reno to

conduct two detailed ground geophysical surveys over the Slumber project area—a gravity survey, and a ground magnetic survey. The geophysical surveys cover an area of about 1.5 square miles (4 square km). The gravity data indicate the presence of a broad north-northeast-trending bedrock trough, crossed by two deeper northeast-trending fault-bounded basins. The magnetic data indicate a 6,600-foot (2,000-m) by 1,000-foot (330-m) area of greatly reduced magnetic susceptibility elongated in a north-northeast direction and coincident with a gravity low. This may represent a zone of hydrothermal alteration. (NV Gold Corp. Management Discussion and Analysis, 12/18/2019; NV Gold Corp. news releases, 5/30/2019, 7/18/2019, 8/1/2019, 8/22/2019, 9/25/2019, 10/28/2019; NV Gold Corp. website, http://www.nvgoldcorp.com)

Potosi District

Turquoise Ridge. Effective July 1, 2019, the Turquoise Ridge Mine became part of the Turquoise Ridge Complex of Nevada Gold Mines, LLC (Barrick Gold Corp. 61.5% and Newmont Corp. 38.5%), with Barrick Gold Corp. as the designated operator. The Turquoise Ridge underground mine (ownership prior to July 1: 75% Barrick Gold Corp., 25% Newmont Goldcorp Corp.) produced 406,066 ounces, a 14% increase from 2018. The mine also produced 56,617 ounces of silver. Under this new arrangement Turquoise Ridge and Twin Creeks were combined and referred to as Turquoise Ridge. Turquoise Ridge produces high-grade refractory (carbonaceous/sulfide) gold ore from an underground operation with an estimated remaining mine life of 19 years. The mine is accessed by two shafts and a system of internal ramps, and utilizes underhand drift-and-fill mining methods with cemented rock fill. The mine was hoisting 2,980 tons (2,700 mt) of ore per day. This is expected to increase following the completion of a third shaft that is under construction. This third shaft is a new production shaft located closer to the current mining areas. It will be sunk conventionally to a total depth of about 3,300 feet (1,000 m) and will have the ability to load skips at two levels.

For the six months prior to July 1, the all-in sustaining costs for the Turquoise Ridge Mine were $632 per ounce, a 14% decreases from the same period in 2018. Production was from 545,000 tons (495,000 mt) of material with an average grade of 0.44 opt (15.12 g/t) gold mined with a recovery rate of 92%. After July 1 2019, production numbers for the Turquoise Ridge and Twin Creeks Mines were combined.

Underground mining at Turquoise Ridge has recently been focused on the gold mineralization hosted in the laminated to thinly bedded silty limestone sedimentary units in the hanging wall of the Getchell fault. The mineralization is controlled by stratigraphy, complex faulting, the contact zone with igneous dikes, and broad ponding beneath a thick basalt flow. The underground mineralized zone in the hanging wall starts about 1,300 feet (400 m) below the surface and extends northward from the shafts for 1.125 miles (1.8 km) and continues to more than 3,300 feet (1 km) below the surface.

Nevada Gold Mines, LLC, completed 422 drill holes in the Turquoise Ridge underground mine. The programs were mainly definition drilling for upgrading mineral resources and reserves adjacent to and within gaps in the proven and probable mineral reserve shapes with some step out exploration drilling, about half core holes and half reverse circulation holes. Few details were released, but exploration was conducted over several underground targets including the Turquoise Ridge Corridor fault zone, Upper Footwall Pond, the down-dip and northeast extension of the Footwall Pond, the North Zone and South Zone Getchell Extensions, and the Powder Hill Extension. Other main targets of exploration interest include: The BPE Extensions, which are apparently continuous mineralization at the base of the North Pillow Basalt along both low-angle and high-angle, northeast striking, northwest dipping faults; the Turquoise Ridge Corridor Mineralization, which is apparently continuous mineralization along the known high grade Turquoise Ridge Corridor of northeast-striking faults; the Getchell fault, which may be continuous mineralization along the Getchell fault and associated intersecting structures (BBT, Turquoise Ridge Corridor); Summer Camp, which contains poorly drilled mineralization in an old open pit south of Turquoise Ridge underground mine that may be an smaller scale analog to Getchell/Turquoise Ridge deposit; and South Zone, which is lower-grade mineralization

concentrated on mostly BBT-type structures in the second shaft area.

Refractory ore from Turquoise Ridge was processed at the Twin Creeks autoclave owned by Newmont Corp. Ore delivered to the Twin Creeks facility for processing was direct shipped when mined, rather than holding an extra month of stockpile in inventory. This eliminated the double handling of ore. The property covers 5,935 acres (2,402 ha), which consists of 246 unpatented mining claims and mill sites covering 2,829 acres (1,145 ha) 3,106 acres (1,257 ha) of patented/fee land. (Nevada Gold Mines, LLC, NI 43-101 Technical Report on the Turquoise Ridge Complex, 3/25/2020; Barrick Gold Corp. Management Discussion and Analysis, 5/8/2019, 8/12/2019, 11/6/2019, 2/20/2020; Barrick Gold Corp. Annual Information Form, 3/25/2020; Barrick Gold Corp. Annual Report, 3/25/2020; Barrick Gold Corp. website, https://www.barrick.com; Newmont Corp. Form 10-K, 2/21/2020; Newmont Corp. website, https://www.newmontgoldcorp.com)

Twin Creeks. Effective July 1, 2019, the Twin Creeks Mine became part of the Turquoise Ridge Complex of Nevada Gold Mines, LLC (Barrick Gold Corp. 61.5% and Newmont Corp. 38.5%), with Barrick Gold Corp. as the designated operator. Under this new arrangement Twin Creeks and Turquoise Ridge were combined and referred to as Turquoise Ridge with the Vista and Mega pits referred to as Turquoise Ridge Surface. The company produced 237,644 ounces of gold and 108,342 ounces of silver at the Twin Creeks Mine. For the six months prior to July 1, the all-in sustaining cost was $855 per ounce, a 2% decrease from the same period in 2018.

The Vista underground mine is a longhole stoping operation that targets a narrow, steeply dipping structure with an average horizontal thickness of approximately 10 feet (3.3 m), and which produces approximately 1,100 tons (1,000 mt) of ore per day. It is located in part of the old Vista Phase 6 pit and is accessed by two portals and a series of spiral ramps/raises with footwall drives used to access the ore. It has an estimated remaining mine life of about two years. Small Mine Development was contracted to operate the mine.

The Vista pit has been mined out as an oxide deposit, but now has reserve potential as a refractory ore open pit layback. Gold occurs in mainly structurally controlled pods hosted in the Valmy Formation.

To the south is the Mega pit, which is 2.5 miles (4 km) north to south, 1 mile (1.6 km) east to west, and over 1,200 feet (365 m) deep. Mining occurred in Cut 25, which will continue to deepen the pit by another 160 feet (48 m). Also in line for mining is Mega Pit Cut 55. It lies between the Mega Pit Cut 23 and the central Mega Pit backfill. It is being studied as an underground mine as well as an open pit. The open pits have been in operation for over 30 years, and produce about 78,200 tons (71,000 mt) of ore per day. Ore from the Vista pit is mainly oxide and goes to the Juniper mill, which processes higher-grade oxide ores by conventional milling for cyanide leaching. The ore from the Mega pit is mainly refractory and goes to the Sage mill. The autoclaves at the Sage mill process higher-grade refractory ores and lower-grade material with suitable cyanide solubility for treatment on heap leach pads. The Vista underground mine produces sulfide ore.

Nevada Gold Mines, LLC, completed 48 drill holes totaling 35,900 feet (10,945 m) in both the open pits and the underground mine. The company also has it budgeted to start drilling the area between the Mega and Vista Pits, and Vista underground mining areas and the Turquoise Ridge Mine.

The property covers 19,563 acres (7,925 ha) consisting of 613 unpatented claims and mill sites covering 10,176 acres (4,118 ha) and 9,410 acres (3,808 ha) are patented/fee lands. The Fiberline project is located on the east side of the Mega Pit. This project is owned by Newmont Gold Corp. and is not part of the Nevada Gold Mines, LLC, agreement. (Nevada Gold Mines, LLC, NI 43-101 Technical Report on the Turquoise Ridge Complex, 3/25/2020; Barrick Gold Corp. Management Discussion and Analysis, 5/8/2019, 8/12/2019, 11/6/2019, 2/20/2020; Newmont Corp. Management Discussion and Analysis, 4/25/2019, 7/25/2019, 11/5/2019, 2/21/2020; Newmont Corp. Form 10-K, 2/21/2020; Annual Information Form, 3/25/2020; Barrick Gold Corp. Annual Report, 3/25/2020; Barrick Gold Corp. website, https://www.barrick.com; Newmont Corp. website, www.newmont.com; Small Mine Development website, http://www.undergroundmining.com)

Snowstorm Mountains District

Snowstorm/Goldstorm. Seabridge Gold drilled four reverse circulation holes totaling 12,486 feet (3,807 m) including 6,022 feet (1,836 m) as reverse circulation and 6,464 feet (1,971 m) as core on its Snowstorm Property. Drilling efficiency was poor due to difficult ground conditions and the targeted number of feet to be drilled was not met before stopping for winter weather. The results were not released. The drilling was designed to test for an extension of the Getchell trend and distinctive structural and stratigraphic features similar to those found at the Twin Creeks and Turquoise Ridge mines located 4 miles (6 km) and 9 miles (15 km) respectively to the southwest. Despite the technical difficulties, the drilling encountered favorable host rocks for a Getchell-style deposit which involves Ordovician carbonate rocks intercalated with basaltic tuff and sills. The carbonate stratigraphy locally contains weak carbonate dissolution and organic-carbon impregnation, which along with the appropriate clay mineralogy, indicates the drilling may have intercepted the host rocks on the margin of a hydrothermal system. The drilling was concentrated along a major north-trending structure which appears to have postdated mineralization. The property consists of 977 mining claims and 5,800 acres (2,347 ha) of fee land totaling about 25,300 acres (10,250 ha).

Sulphur District

Hycroft. Hycroft Mining Corp., produced 3,264 ounces of gold and 53,025 ounces of silver from its Hycroft Mine. Mining was shut down in 2015 after Hycroft Mining Corp. emerged from bankruptcy, and production thereafter was from heap leaching. Mining restarted in April of 2019 with production commencing in August. Mudrick Acquisition Corp. acquired Hycroft Mining Corp. in 2020, creating the publicly traded Hycroft Mining Holding Corp., and changing the name of Hycroft Mining Corp. to Hycroft Resources and Development, LLC. Presently, the Bay Area, Boneyard, and Brimstone pits are authorized for mining. The most recent mining prior to the 2015 shutdown was conducted from the Bay Area, Brimstone, Central, and Porter pits. Mining is presently in the Central pit only. The ore is crushed and then placed on leach pads while the new pad is under construction. The leached solution then goes to the Brimstone Merrill Crowe processing plant. However, when production increases, a newer plant built in 2012 but subsequently idled will be restarted. No exploration or drilling programs were released. The property consists of 3,247 unpatented mining claims covering about 68,759 acres (27,826 ha) and 30 private parcels covering a combined 1,912 acres (774 ha).

Draft and final environmental impact statements were issued preparation for the Hycroft Mine Phase II Expansion Project. The project would expand mining, ore processing activities, and supporting facilities and infrastructure. The surface disturbance would increase from 6,144 acres (2,486 ha) to 14,881 acres (6,022 ha) and extend the existing authorized plan of operation boundary eastward. The existing Brimstone pit would be expanded by 50 acres (20 ha) and deepened below the pre-mining groundwater table. An oxygen plant would be constructed, and the milling operation would be modified to process ore in an ambient oxidation and leaching process. The South Waste Rock Facility would be expanded, and a Northeast Tailings Storage Facility and North Heap Leach Facility East with associated solution ponds would be constructed. Exploration for new reserves and expanding existing ones would be conducted on a continuing basis and would include drilling as necessary. The proposed Phase II Expansion Project would extend mining from 2024 to 2039 and extend ore processing activities to 2041. (Elko Free Press, 9/6/2020; Nevada Business Search, 2020; Mining Data On-Line, https://miningdataonline.com/property/586/Hycroft-Mine.aspx#Mining; BLM, Hycroft Mine Phase II Expansion Project Draft Environmental Impact Statement, DOI-BLM-NV-W030-2015-0007, 5/2019; BLM, Hycroft Mine Phase II Expansion Project Final Environmental Impact Statement, DOI-BLM-NV-W030-2015-0007, 10/2019; Hycroft Mining Corp. Corporate Update Presentation 5/2020; Hycroft Mining Corp. website, http://www.hycroftmining.com)

Battle Mountain District

Elder Creek. Timberline Resources Corp. completed five reverse circulation holes totaling 3,985 feet (1,215 m) on its Elder Creek property.

The first hole targeted the core of the induced polarization/resistivity geophysical anomaly identified in 2018. The hole intercepted about 590 feet (180 m) of intensely stockwork quartz-veined, altered (quartz-biotite +/- sericite) zone in the Cambrian Harmony Formation quartzite and hornfels and an underlying 1,361-foot (415-meter) thick section of intensely-altered, quartz-feldspar, variably porphyritic intrusive rock. The alteration of the intrusive rock is dominated by quartz-sericite with variable amounts of chlorite and biotite alteration. Porphyry style mineralization is present throughout the section and is particularly notable in the intrusive phase as pyrite-chalcopyrite +/- molybdenite with anomalous copper, molybdenum, and silver. Relative to the hole drilled in 2018 about 820 feet (250 m) to the west southwest, this hole intercepted a much thicker section of porphyry-style altered intrusive rock with increased silicic alteration and overall increased sulfide mineral content primarily as pyrite. This correlates well with the core of the induced polarization anomaly. Significant assays intercepted included 1) 1,690 feet (515.3 m) grading 0.058 opt (2 g/t) silver, 0.07% copper, and 212 ppm molybdenum, including 205 feet (62.5 m) grading 0.12 opt (4 g/t) silver, 0.12% copper, and 222 ppm molybdenum; 2) 65 feet (19.9 m) grading 0.15 opt (5 g/t) silver, 0.25% copper, and 181 ppm molybdenum; and 3) 25 feet (7.6 m) grading 0.15 opt (5 g/t) silver, 0.21% copper, and 233 ppm molybdenum.

Three holes were drilled along the east side of the old Valmy pit to offset and expand the mineralization identified in and drilled in 2018. These holes all bottomed in mineralization in intense silica alteration. Significant intercepts included 1) 405 feet (123.5 m) grading 0.058 opt (2 g/t) silver and 0.16% Cu, including 405 feet (123.5 m) grading 0.15 opt (5 g/t) silver and 0.2% Cu; 2) 185 feet (56.4 m) grading 0.088 opt (3 g/t) silver and 0.22% Cu; 3) 150 feet (45.7 m) grading 0.088 opt (3 g/t) silver and 0.16% Cu; and 4) 15 feet (4.6 m) grading 0.26 opt (9 g/t) silver and 0.34% Cu. A fifth hole was drilled to test the Morning Glory Hill target. This hole intercepted 305 feet (93 m) grading 0.0023 opt (0.08 g/t) gold, 0.26 opt (9 g/t) silver, and 0.25% Cu.

Hydrothermal breccias are locally present in the Elder Creek complex. Alteration is extensive and occurs in broad annular zones suggesting the presence of a large magmatic-hydrothermal center forming an Elder Creek porphyry system. The intense stockwork fractured and quartz veined core of the system extends over 2 miles (3 km) on a northeasterly trend and is almost one mile (1.5 km) wide. Actinolite alteration occurs locally within the quartz veined core. Potassic alteration covers an area of about 2.5 miles (4 km) by 1.6 miles (2.5 km), and the outer limit of biotite-pyrite-pyrrhotite hornfels in the Harmony Formation sandstones exceeds and area of 3 miles (4.5 km) by over 2 miles (3.5 km). Several northerly-trending zones of late-stage, feldspar-destructive quartz-sericite-pyrite alteration occur in the outer part of the porphyry system with the largest zone, near the Gracie Mine, exceeding 1.25 miles (2 km) by 0.9 miles (1.5 km).

The property consists of 583 claims covering about 9,600 acres (3,885 ha). In 2018, the company acquired the interest Americas Gold Exploration, Inc., had in the Elder Creek property. This involved an agreement to earn up to a 51% interest from McEwen Mining, Inc. by conducting $2,600,000 worth of work over a 4-year period. (Timberline Resources Corp. Form 10-K, 1/10/2020; Timberline Resources Corp. news releases, 7/9/2019, 1/8/2020; Timberline Resources Corp. website, https://timberlineresources.com)

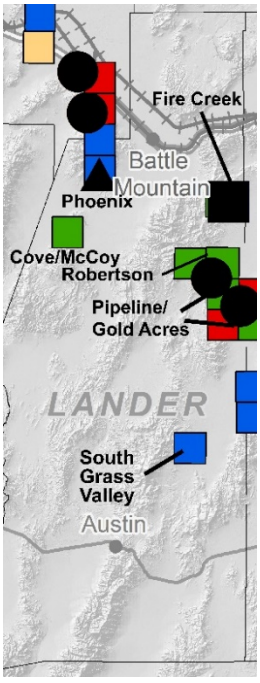
Paiute (formerly ICBM). Timberline Resources Corp. completed two holes totaling reverse circulation holes totaling 1,130 feet (345 m) on its Paiute property. The first hole intercepted 125 feet (38.1 m) grading 0.01 opt (0.356 g/t) gold and 0.012 opt (0.4 g/t) silver associated with pyrrhotite-pyrite-arsenopyrite in silicified, metamorphosed arkosic sandstone. The second hole twinned and deepened an earlier hole and intercepted multiple zones of gold mineralization in granodiorite porphyry and metamorphosed arkosic sandstone. Intercepts included 1) 80 feet (24.4 m) grading 0.015 opt (0.514 g/t) gold and 0.012 opt (0.4 g/t) silver, and 2) 25 feet (7.6 m) grading 0.033 opt (1.123 g/t) gold and 0.018 opt (0.6 g/t) silver.

Hydrothermal alteration of intrusions consists of argillization, silicification, quartz veins and stockworks accompanied by zones of hydrous iron oxides as fracture fillings, disseminations, and occasional gossans. Chlorite and actinolite occur locally within the quartz veins and may represent retrograde metamorphism. Quartz veining occurs

throughout the project area and increases in intensity within the alteration zones. A 16,500-foot (5-km), N10–20ºE striking structural zone up to 1,500 feet (460 m) wide extends through the central part of the property. Locally, the structures are occupied by granodiorite porphyry dikes and are typically altered and mineralized. The major styles of mineralization in the Paiute area are porphyry copper-gold, and gold-bearing structurally controlled vein systems. The main gold mineralized zone on the property is coincident with the N10–20°E trending structural zone. In unoxidized rock, fresh disseminated and vein pyrite is pervasive throughout the project area.

The Paiute property adjoins the Elder Creek property on the southeast and consists of 65 unpatented claims covering 1,343 acres (544 ha). In 2018, the company acquired the 73.7% interest Americas Gold Exploration, Inc., had in the Paiute property. The remainder is owned by Lac Minerals (USA) LLC, a subsidiary of Barrick Gold Corp. The Paiute property consists of 65 claims covering 1,343 acres (535 ha). (Timberline Resources Corp. Form 10-K, 1/10/2020; Timberline Resources Corp. news release, 1/16/2020; Timberline Resources Corp. website, https://timberlineresources.com)

LANDER COUNTY



Battle Mountain District

Lewis. In March of 2019, Gold Standard Ventures Corp. commenced drilling on its Lewis Project, which covers parts of T31–32N, R43E, with the southern end of the property just north and northwest of the Phoenix Mine of Nevada Gold Mines, LLC. The company spent $464,391 on drilling, but few results were released. Two drill holes were to test Antler sequence host rocks along the north-northwest striking strong gravity gradient coming out of the Phoenix open pit. Another two holes were to test for eastern, shallow oxide extensions of the Virgin deposit about 2,300 feet (700 m) north of the Phoenix pit. The holes were designed to test Antler Sequence host rocks where northwest-striking faults intersect the Virgin fault corridor just north of historic drill holes, one of which intercepted 79 feet (24 m) grading 0.035 opt (1.20 g/t) gold and 145 feet (44.2 m) grading 0.026 opt (0.88 g/t) gold and 0.5 opt (17.3 g/t) silver. The property covers 5,340 acres (2,161 ha) and contains at least nine mineralized zones or areas. (Gold Standard Ventures Corp., news release, 3/21/2019, 5/5/2020, 5/19/2020; Gold Standard Ventures Corp., NI 43-101 Technical Report, 5/1/2020; Gold Standard Ventures Corp. Management Discussion and Analysis, 3/30/2020; Gold Standard Ventures Corp. Annual Information Form, 3/30/2020; Gold Standard Ventures Corp., website, https://goldstandardv.com)

Phoenix. Effective July 1, 2019, the Phoenix Mine became part of Nevada Gold Mines, LLC (Barrick Gold Corp. 61.5% and Newmont Corp. 38.5%), with Barrick Gold Corp. as the designated operator. Nevada Gold Mines, LLC produced 160,700 ounces of gold, 754,270 ounces of silver, and 30,585,072 pounds of copper from its Phoenix Mine, 26%. The company combines the Phoenix Mine and the Lone Tree Complex in most of the company reports. The all-in sustaining cost was $1,282 per ounce gold, a 23% increase from 2018. Phoenix is a skarn-hosted polymetallic deposit, and about half of the ore is non-refractory. The company noted that brownfield exploration and development for new reserves was ongoing but no drilling results were released.

The mine property covers 3,315 acres (1,341 ha) of BLM land and 5,027 acres (2,034 ha) of private property. The mine consists of five open

pits—Iron Canyon, Midas, Phoenix, Reona, and Sunshine (Copper Canyon). The Phoenix open pit (also known as the Fortitude pit area) is a lateral and vertical expansion of the Fortitude, Midas, Reona, Minnie, and South Canyon/Bonanza pits. The Reona and Midas pits together are known as the Bonanza pit. The Sunshine and Iron Canyon pits are currently inactive.

The mill is the largest semi-autogenous grinding (SAG) mill in the United States and the second largest in North America. It is a multi-stage 48,000-ton (42,500-mt) per day beneficiation facility, with a crushing and grinding circuit; a gravity separation facility; a dedicated cyanide leaching facility for gold and silver; a three-stage flotation circuit for concentrating copper, gold, and silver followed by a filtration system; and a cyanide vat leaching circuit followed by carbon-in-pulp circuit for beneficiating the remaining ore fraction and production of a precious metal dore through carbon stripping, electrowinning, and retorting.

The BLM recently issued a final environmental impact statement about the proposal to deepen the pit and expand it to the east and west, which will extend the life of the mine from 2040 out to 2063. The mine's two main pits, the Fortitude (Phoenix) and Bonanza pits, will grow together into one big one to be called the Phoenix pit. The proposal is also to expand the copper leach facility, waste rock facilities, and tailings storage. (Elko Free Press, 6/6/2019; BLM, Final Environmental Impact Statement, DOI-BLM-NV-B010-2016-0009-EIS, 7/2018; Newmont Corp. Form 10-K, 2/21/2020; Newmont Corp. website, https://www.newmont.com; Barrick Gold Corp. Annual report, 3/25/2020; Barrick Gold Corp. Annual Information Form, 3/25/2020; Barrick Gold Corp. website, https://www.barrick.com)

Buffalo Valley District

Buffalo Valley. In June, SSR Mining, Inc., acquired the Buffalo Valley property from Fairmile Gold Mining, Inc. The property covers 3,830 acres (1,550 ha), with the pit about 7.5 miles (12 km) south-southwest of the Trenton Canyon pits. It is hosted in the Late Devonian to Late Permian Havallah sequence and Tertiary intrusive rocks. The property includes an open pit that last produced in 1990. No drilling or other field work was reported, though the company was reviewing and modeling existing data. (SSR Mining, Inc., news releases 6/27/2019, 5/14/2010; SSR Mining, Inc., Management Discussion and Analysis, 2/20/2020; SSR Mining, Inc., Annual Information Form, 3/19/2020; SSR Mining, Inc., website, http://www.ssrmining.com)

Fire Creek. The Klondex Gold and Silver Mining Co., a subsidiary of Hecla Mining Co., mined 52,616 ounces of gold and 63,279 ounces of silver from its Fire Creek Mine. The ore was trucked 165 miles (264 km) to the Midas mill for processing. There has been a lack of investment in mine development including in the decline system and horizontal drifts. This has resulted in insufficient platforms, which has hampered efforts to explore new targets for replenishing reserves as they are depleted. The company is limiting near-term mining to areas of completed development.

Definition drilling was conducted to upgrade and expand resources at the Spirals 2, 3, 4, and 9 and the Titan and North zones. Up to four rigs were operating underground. Some drilling results were reported for the Joyce, Honeyrunner, Karen, Vonnie, and Veins 3,8, 12, 39, 40, 59, 64, and 76. These structures run through Spirals 2, 3, and 4.

Drilling at Spiral 2 focused on the up-dip, southern extents of Vein 39 and the Joyce vein. The Vein 39 drilling encountered strong alteration but weak assays in the structures. The drilling of the Joyce vein encountered continuous veins with moderate grades. The best results occurred along Vein 40, a ladder vein between Vein 39 and the Joyce vein. Drilling of Vein 40 intercepted 7.5 feet (2.3 m) grading 0.80 opt (24 g/t) gold and 1.4 opt (48 g/t) silver, including 1.1 feet (34 cm) grading 2.24 opt (77 g/t) gold and 1.3 opt (45 g/t) silver. Drilling of Vein 39 also intercepted 1.3 feet (40 cm) grading 1.24 opt (43 g/t) gold and 16.9 opt (579 g/t) silver.

Drilling at Spiral 3 targeted up-dip extent of veins and intersected mineralization characterized by large, low-grade zones containing narrow, high-grade structures with some continuity. Drilling along the Honeyrunner structure intercepted 30.7 feet (9.4 m) grading 0.17 opt (5.7 g/t) gold and 0.5 opt (17 g/t) silver, including 2 feet (60 cm) grading 0.4 opt (14 g/t) gold and 1.4 opt (48 g/t) silver. Drilling along the Karen structure intercepted 11.9 feet (3.6 m) grading 0.27 opt (9.3 g/t) gold and 0.4 opt (14 g/t) silver. Drilling on Vein 59 intercepted 4.9 feet (1.5 m) grading 0.97 opt (33 g/t) gold and

0.8 opt (27 g/t) silver, including 0.5 feet (15 cm) grading 5.99 opt (202 g/t) gold and 5.1 opt (175 g/t) silver.

Drilling at Spiral 4 focused on the upper and lower portions. Drilling strongly argillized basalts in the Vonnie Vein intercepted 5 feet (1.5 m) grading 0.97 opt (33 g/t) gold and 1.2 opt (41 g/t) silver. Drilling in the Joyce Vein intercepted 1) 6.2 feet (1.9 m) grading 0.55 opt (19 g/t) gold and 17.2 opt (590 g/t) silver, including 2.2 feet (70 cm) grading 1.28 opt (44 g/t) gold and 43.2 opt (1,481 g/t) silver; and 2) 12.5 feet (3.8 m) grading 0.29 opt (9.9 g/t) gold and 1.3 opt (45 g/t) silver, including 1.7 feet (52 cm) grading 1.11 opt (38 g/t) gold and 4.6 opt (158 g/t) silver. Drilling, mapping, and channel sampling at Spiral 4 indicate the mineralization in the Joyce and Vonnie Veins and Vein 06 is along the margins of multiple north-striking, steeply-dipping dikes and is dominated by a strong clay alteration with semi-continuous, high-grade calcite/quartz veining in structural zones.

The property covers about 18,755 acres (7,590 ha) and consists of 831 unpatented mining claims on BLM-administered land, private property, and mineral leases. (Hecla Mining Co. 10-K Report, 2/10/2020; Hecla Mining Co. website, https://www.hecla-mining.com)

Pipeline Complex. Effective July 1, 2019, the Cortez Mine, which includes the Pipeline Complex, became part of Nevada Gold Mines, LLC (Barrick Gold Corp. 61.5% and Newmont Corp. 38.5%), with Barrick Gold Corp. as the designated operator. Production reported to the State of Nevada is combined with that for the Cortez Hills open pit reported below. The company included Pipeline in its Cortez drilling program, but no results were released.

The Pipeline Complex contains the mill for the Cortez operation. The mill includes crushing and grinding facilities, carbon in leach circuits, reagent storage areas and a recovery/refining circuit. Mill throughput varies from 10,430 to 15,000 tons (9,500 to 13,500 mt) per day depending upon the hardness of the ore. About 93% of the ore is considered non-refractory. The recovery rates per ore type were: 62% oxide, 74% mill, and 76% refractory. The grade and metallurgical character of the ore determine the type of processing. Lower grade run-of-mine oxide ore is heap leached at the existing facilities. Higher-grade non-refractory ore is treated in a conventional mill using cyanidation and the carbon in leach process. Refractory ore is stockpiled on site in designated areas and trucked 100 miles (160 km) to Goldstrike for processing.

The company received a Record of Decision approving amending the Cortez Gold Mines Operations Area plan of operation to begin mining the Deep South deposit. The amendment also involved modifications at the Pipeline and Gold Acres Complexes. These included deepening the Crossroads pit by 200 feet (61 m); laying back parts of the Pipeline, Crossroads, and Gap pit walls; reconfiguring the currently authorized backfill in the Pipeline and Gap pits; modifying the existing Pipeline/South Pipeline Waste Rock Facility; and expanding the existing oxide ore stockpile. The proposed modifications for the Gold Acres Complex included 1) expanding and deepening the Gold Acres pit and developing three satellite pits (Alta, Bellweather, and Pasture); 2) expanding the Gold Acres South Waste Rock Facility; 3) combining the Gold Acres North and Gold Acres East waste rock facilities into one facility. It also includes bringing oxide ore from the South Arturo Mine to the Pipeline Mill for processing. (Elko Free Press, 9/16/2019; BLM, Deep South Expansion Project Environmental Impact Statement, Record of Decision, File Number: NVN-067575 (16-1A) DOI-BLM-NV-B010-2016-0052 EIS, 9/9/2018; Nevada Gold Mines, LLC, NI 43-101 Technical Report on the Carlin Complex, 3/25/2020; Barrick Gold Corp. LLC, NI 43-101 Technical Report, 3/22/2019; Barrick Gold Corp. Management Discussion and Analysis, 5/8/2019, 8/12/2019, 11/6/2019, 2/20/2020; Barrick Gold Corp. Annual report, 3/25/2020; Barrick Gold Corp. Annual Information Form, 3/25/2020; Barrick Gold Corp. website, https://www.barrick.com)

Robertson. Effective July 1, 2019, the Robertson Project became part of Nevada Gold Mines, LLC (Barrick Gold Corp. 61.5% and Newmont Corp. 38.5%), with Barrick Gold Corp. as the designated operator. The company completed 84 core holes totaling 49,023 feet (14,946 m) for infill, metallurgical studies and geotechnical investigations on the Robertson Project, but no results were released. The areas drilled included the Porphyry, Altenburg Hill, and Gold Pan/39A

zones. Metallurgical testing continued with drill samples collected during the 2017 through 2019 drilling programs, and studies were underway to determine if lower grade material can economically be heap leached. The Robertson property is now considered part of the mineral resource base for the Cortez Mine complex. An NI 43-101 technical report was released early in the year, which included some discussion of the Robertson Project. The property consists of 415 unpatented claims and nine patented claims covering 8,480 acres (3,432 ha), and includes the Core, Gold Ridge, Excluded, and RUF mining claims. (Coral Gold Resources, Ltd., 5/22/2019, 7/30/2019, 11/14/2019, 3/16/2020; NI 43-101 Technical Report, 3/22/2019; Barrick Gold Corp. Annual Information Form, 3/25/2020; Barrick Gold Corp. Annual Report, 3/25/2020; Barrick Gold Corp. website, https://www.barrick.com)

Callaghan Ranch District

South Grass Valley. In September 2018, Nevada Exploration, Inc., commenced a Phase 1 core drilling program on its Grass Valley Project that extended into 2019. The project area is centered on the Grass Valley Stock, at the intersection of a parallel series of northwest-trending fold axes and a major north-northwest structural corridor that cuts through a greater than 1,650-foot (500-m) thick sequence of lower-plate bedrock. Eight widely spaced core holes were drilled of which six were completed in 2018 and two totaling about 2,745 feet (837 m) in 2019. The holes were drilled over an area 1.9 miles (3 km) long by 0.5 miles (0.8 km) wide. The program was designed to confirm if enriched gold and Carlin-type deposit pathfinder elements found in groundwater sampled in 2017 are associated with a mineralized hydrothermal system similar to those responsible for large Carlin-type deposits.

Except for the first drill hole, all of the Phase 1 holes passed through 308 feet to 718 feet (94 m to 219 m) of alluvial cover into a Silurian through Cambrian sequence of predominantly limestone and mudstone that in turn continued to the bottoms of the holes ranging in total depth from 813 feet to 2,132 feet (248 m to 650 m). These rocks are considered to be in the lower plate of the Roberts Mountain thrust that typically host Carlin-type deposits. The rocks have also undergone widespread, intense alteration in the form of decalcification, argillization, and silicification. Variability in the intensity of alteration suggests an upper and a lower zone of more focused fluid flow. The lower zone in particular contains increased silicification and more pyrite. The drilling also encountered broad zones of syn-cataclastic dissolution breccias, which also represent favorable host units for Carlin-type gold mineralization. The hydrothermal alteration is associated with mostly greater 650-foot (200-m) thick intervals containing anomalous Carlin-type pathfinder elements, including local enrichment associated with local structures and fractures. Specifically, concentrations of arsenic, mercury, antimony, and thallium within the massive alteration zones exceeded the exploration thresholds for defining Carlin-type gold deposit footprints, and coincide with thick intervals of low-level gold as would be expected if these wide-spaced drill holes intersected the footprint of a large deposit. The drilling results confirmed that fluids were active at the project site and contained the characteristic mineral budget associated with large Carlin-type gold deposits. The results also suggested the holes penetrated the margins of a large Carlin-type hydrothermal system with significant potential to host Carlin-type gold mineralization.

The company commenced a Phase 2 core drilling program in May and completed three holes totaling 6,225 feet (1,848 m) of drilling, though only 3,208 feet (978 m) of core were recovered. The company also collected 100 groundwater samples from 54 new purposed-drilled bore holes and 922 soil samples. The last hole drilled, which was completed to 2,834 feet (864 m) as the northernmost hole, was the first hole to penetrate through the bottom of the intense, multi-phase silicified breccia seen at the bottom of many of the earlier drill holes. Here, the silicified breccia zone was about 660 feet (200 m) thick and contained significant pyrite and the highest grade-thicknesses for antimony, arsenic, mercury, and thallium seen to date on the project. The hydrogeochemistry data have established that the north-south trending zone of highly anomalous gold and pathfinder elements in groundwater is most intense along the margins of the Grass Valley Stock. The soil geochemistry data have extended the anomalous mercury in soils northward along the axis of the major north-

northwesterly trending structural corridor. The latest drilling has extended intense alteration features in bedrock associated with highly anomalous pathfinders elements along a strike length of more than 11,500 feet (3,500 m). The company considers this to be consistent with the margins of multiple, overlapping Carlin-type gold deposit footprints.

The company staked another 3,000 acres (1,200 ha) of claims. Prior to that, the property consisted of 491 unpatented mining claims covering 8.6 square miles (22.1 square km). (Nevada Exploration, Inc., Management Discussion and Analysis, 8/27/2018, 3/28/2019; Nevada Exploration, Inc., news releases, 2/26/2019, 5/16/2019, 5/23/2019, 6/27/2019, 8/1/2019, 9/19/2019; Nevada Exploration, Inc., website, https://www.nevadaexploration.com)

Cortez District

Cortez Hills. Effective July 1, 2019, the Cortez Hills open pit and underground mines at Barrick Gold's Cortez mine became part of Nevada Gold Mines, LLC (Barrick Gold Corp. 61.5% and Newmont Corp. 38.5%), with Barrick Gold Corp. remaining as the designated operator. Barrick Gold Corp. produced 543,335 ounces of gold and 35,754 ounces of silver from its Pipeline and Cortez Hills open mines. Barrick Gold Corp. also produced 400,389 ounces of gold and 26,056 ounces of silver from its Cortez Hills underground mine. The processing is done at Pipeline Complex oxide mill facility and at the Mill 6 roaster at the Goldstrike facility, which processes refractory ore. For all of the production at Cortez (Cortez Hill and Pipeline, open pit and underground), 116,788,000 tons (105,949,000 mt) of material were mined. Of this, 16,137,000 tons (14,640 mt) grading 0.02 opt (0.67 g/t) were open pit ore, and 1,411,000 tons (1,280,000 mt) grading 0.31 opt (10.66 g/t) was underground ore. The oxide mill processed 3,816,000 tons (3,462,000 mt) of ore with a 78% recovery rate. The roaster processed 1,943,000 tons (1,763,000 mt) of ore with an 87% recovery rate. Mining at the Cortez Hills open pit ended during the first quarter of 2019. Underground mining is expected to last through 2031.

No details were released, but the company completed more than 164,000 feet (50,000 m) of mainly diamond drilling, excluding the Fourmile Project. The drilling mainly focused on in-fill and grade control at Cortez Hills underground, Cortez Pits, Goldrush, and Crossroads, and Robertson. Core drilling is the preferred drilling method during the initial phases of exploration with reverse circulation drilling used in condemnation holes or as pre-collars for core tails in select areas. Drilling in the Cortez Hills area is conducted from surface and underground platforms. Mineralization remains open at depth. Cortez Hills consists of the Breccia, Middle, Lower, Renegade, and Deep South Zones, and the Pediment deposit. The mineralization extends up to about 4,250 feet (1,300 m) along strike with a maximum width of about 1,380 feet (420 m). The mineralized zone starts about 390 feet (120 m) below surface and continues down to a depth of more than 2,000 feet (600 m), where it remains open at depth. Exploration to fully delineate the extent of the Cortez Hills deposit is ongoing.

Capital expenditures in 2019 were $255,000,000. This included $90,000,000 for sustaining the minesite and $165,000,000 on projects. The Deep South project involves underground development of the Cortez Hills Lower Zone and construction of the Rangefront twin declines. The Deep South Zone is a -20° southeast plunging extension of the Lower Zone, which extends 2,100 feet (640 m) along strike. It will be mined down to the 3,050-foot (930-m) level. It consists of an upper section that averages 180 feet (55 m) wide and 120 feet (37 m) thick, a central section that averages 200 feet (61 m) wide and 85 feet (26 m) thick, and a lower section, known as Renegade, which averages 120 feet (37 m) long by 160 feet (49 m) wide and 120 feet (37 m) thick. Initial production is anticipated in 2022 or 2023.

The company received a Record of Decision approving amending the Cortez Gold Mines Operations Area plan of operation to begin mining the Deep South deposit. The modifications for the Cortez Hills Complex included expanding the existing underground operations by increasing the depth of mining by 1,300 feet (406 m); constructing additional surface support facilities for the underground operations; extending the Pediment portion of the Cortez Hills pit to create the Pediment East and Pediment South extensions; potentially backfilling the Cortez Hills pit with approximately 63,000,000 tons (57,000,000 metric

tons) of waste rock; and constructing a new refractory ore/oxide ore stockpile The modifications also included expanding and deepening the old Cortez pit by about 200 feet (61 m) and backfilling the northern portion of the Cortez pit and the Ada pit with about 63,000,000 tons (57,000,000 metric tons) of waste rock.

The property covers 222,526 acres (90,055 ha) of unpatented claims owned or leased by the company and 42,565 acres (17,226 ha) of patented mining claims and other private property also owned or leased by the company. (Elko Free Press, 9/16/2019; BLM, Deep South Expansion Project Environmental Impact Statement, Record of Decision, File Number: NVN-067575 (16-1A) DOI-BLM-NV-B010-2016-0052 EIS, 9/9/2018; Barrick Gold Corp. Management Discussion and Analysis, 5/8/2019, 8/12/2019, 11/6/2019, 2/20/2020; Barrick Gold Corp. LLC, NI 43-101 Technical Report, 3/22/2019; Nevada Gold Mines, LLC, NI 43-101 Technical Report on the Carlin Complex, 3/25/2020; Barrick Gold Corp. Annual report, 3/25/2020; Barrick Gold Corp. Annual Information Form, 3/25/2020; Barrick Gold Corp. website, https://www.barrick.com)

McCoy District

McCoy-Cove. Premier Gold Mines, Ltd., spent $4,200,000 on its McCoy-Cove property. Also, in 2018, Barrick Gold Corp. signed an option agreement with Premier Gold Mines, Ltd., whereby the former could acquire a 60% interest in the McCoy-Cove property. The latter would retain a 100% interest in the Cove deposit part (a.k.a. Cove Carve Out), which includes the Helen, Gap, and CSD/CSD deposits. The agreement called for Barrick Gold Corp. to spend $6,000,000 on exploration by June 30, 2019, and another $16,500,000 on exploration by June 30, 2022. Barrick conducted exploration work, including drilling, but terminated the agreement in early 2020.

Three types of mineralization occur on the property including Carlin-type at Cove in the Helen, CSD, and Gap Zones; polymetallic sheeted vein in the deep 2201 zone; and skarn mineralization at the historic McCoy pit. The drilling program completed 10 reverse circulation holes totaling 27,915 feet (8,511 m), two reverse circulation pre-collars for 2,719 feet (829 m), and two core holes totaling of 4,591 feet (1,400 m). The program was designed to drill additional reverse circulation holes west of the Helen Zone to test the apex of an antiform. The program was also designed to drill test targets east of the McCoy-Cove Property in the pediment area and south of the McCoy-Cove Property in the Reflection Target area. Among the targets included are Alpha, Windy Point, Saddle South, Antenna, Clara, Beacon, and Lighthouse.

Few details drilling results were released. The Beacon and Lighthouse areas showed strong alteration and mineralization, but the assays were pending. One hole was drilled at the Antenna Target and intercepted 390 feet (119 m) grading 0.12 opt (4.12 g/t) gold, including 20 feet (6.1 m) grading 0.46 opt (15.7 g/t) gold and 110 feet (33.5 m) grading 0.17 opt (6 g/t) gold including 40 feet (12.2 m) grading 0.24 opt (8.1 g/t) gold). The hole bottomed in mineralization grading 0.16 opt (5.6 g/t) gold. The Antenna target contains a swarm of northeast-striking, northwest-dipping Eocene dikes and faults between McCoy and Cove. Many of these features are primary and secondary controls to mineralization in the Cove and McCoy pits, but the area had had only a few drill holes. This hole was to first to test the area at depth and penetrated to the Middle Triassic Favret Formation, which is the main carbonate host rock.

Premier Gold Mines, Ltd., had been focusing on permitting and pre-development for mining since 2017. Construction of underground exploration ramping for drill station development was originally planned to begin in the third quarter but was delayed until hydrology testing and modeling could be completed. Drilling and installation of piezometers required for hydrological modeling were started in late 2018 and completed during the first quarter of 2019. Two new wells drilled to 1,600 feet (488 m) and 1,950 feet (595 m) required for the groundwater model were completed. Pumping tests were conducted at the two wells through the second half of the year and into 2020. The property covers 30,660 acres (12,408 ha). (Elko Free Press, 6/10/2019; Premier Gold Mines, Ltd., news releases, 3/27/2019, 4/29/2019, 6/25/2019; Premier Gold Mines, Ltd., presentation, 4/2019; Premier Gold Mines, Ltd., Annual Information Form, 3/30/2020; Premier Gold Mines, Ltd., website, http://www.premiergoldmines.com)

West of Kingston District

Golden Brew. Regulus Resources, Inc., completed three reverse circulation holes totaling 7,508 feet (2,289 m) on the Golden Brew Property. The property contains zones of structural complication, gravity lows, and magnetic lows in what may be a Carlin type arsenic-antimony-gold system located within an uplifted horst block on the western edge of a shallowly buried lower plate window. It also contains a large zone of gold mineralization of up to 0.12 opt (4 g/t) gold in jasperoid exposed on the lower slopes of the Toiyabe Mountain Range. The jasperoid covers an area of 2,500 feet (760 m) by 200 feet (60 m). Bedrock depths varied from 1,479 feet (451 m) to 1,893 feet (577 m) with the redox zone varying from 548 feet (167 m) to 679 feet (207 m) below the gravel contact. The best intercept was 82 feet (25 m) of Carlin-type mineralization starting at a depth of 2,296 feet (700 m). The mineralized zone assayed up to 163 ppb gold and 475 ppm arsenic within decalcified thinly bedded silty limestones. One hole from this drilling phase and three from earlier phases form a cluster of four holes situated at the south-east corner of the Golden Brew horst block. The horst exhibits weak Carlin-type mineralization over an area of 1,900 feet (580 m) by 1,000 feet (300 m).

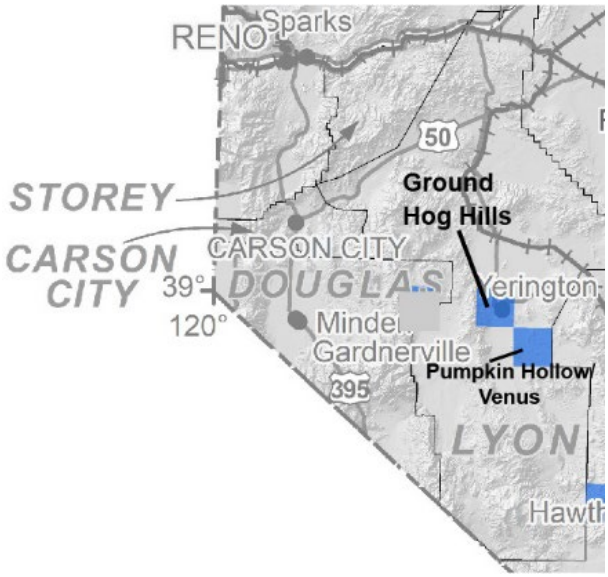
The property consists of 153 claims in T16N, R42E. Regulus Resources, Inc. had an option agreement with Highway 50 Gold Corp. whereby the former can earn a 50% interest in the project by spending $5,000,000 on exploration over a five-year period. Regulus Resources, Inc., terminated the agreement in October of 2019. Highway 50 Gold Corp. commenced seeking a third party farm-out to undertake more drilling. (Regulus Resources, Inc., news release, 4/3/2019, 10/31/2019; Regulus Resources, Inc., website, http:www.regulusresources.com; Highway 50 Gold Corp., news release, 4/3/2019, 8/13/2019, 10/31/2019; Highway 50 Gold Corp., Management Discussion and Analysis, 4/22/2020; Highway 50 Gold Corp., website, http://www.highway50gold.com)

LINCOLN COUNTY

Wilson Creek Range District

Mars. Mars. In January, Hochschild Mining, PLC, signed an option agreement with Renaissance Gold Corp. whereby the former could earn up to a 51% interest in the Mars Project. Hochschild Mining, PLC, would spend $3,000,000 over a five-year period plus spent $300,000 within 18 months of signing the agreement. The project area contains a Carlin-type gold system hosted lower Paleozoic sedimentary rocks exposed over a 2.8-mile (4.5-km) strike length peripheral to a Mesozoic intrusive center. The system includes anomalous gold in the soils and extensive jasperoid alteration with rock chips assaying up to 0.11 opt (3.7 g/t) gold. In addition to a 746-sample soil survey, Hochschild completed ten reverse circulation holes totaling 7,610 feet (2,320 m). The drilling tested multiple alteration cells over approximately two miles (three km) and intercepted silicified carbonates under clay-altered, volcanic rocks. The silicification was associated with strong up to 2,200 ppm arsenic, up to 681 ppm antimony, and up to 18 ppm mercury, but the gold assays were low. The best intercept was 20 feet (6.1 m) grading 0.011 opt (0.39 g/t) gold. Hochschild terminated its option. In 2020, Renaissance Gold Corp. and Evrim Resources Corp. merged to form Orogen Royalties, Inc. (Hochschild Mining, PLC, Annual Report, 4/17/2020; Renaissance Gold Corp. news releases, 1/17/2019, 6/20/2019, 7/31/2019, 10/18/2019, 1/6/2020, 8/17/2020; Orogen Royalties Inc. website, https://www.orogenroyalties.com)

LYON COUNTY



Yerington District

Groundhog Hills. Singatse Peak LLC carried out a small drill program on its Groundhog Hills copper prospect in the heart of the Yerington district. No results were released.

Pumpkin Hollow. In December, Nevada Copper Corp. commenced production and shipped its first concentrates from its Pumpkin Hollow Underground Project. The company also stockpiled over 130,000 tons (118,000 mt) of run-of-mine ore on the surface. The company issued a NI 43-101 technical report, which was a prefeasibility report for the underground and open pit mines with updated reserves and resources.

December 2019 to March 2020 was the testing and start-up period. Limited amounts of low grade, preproduction copper concentrates were delivered as defects within the mill were rectified. The process plant for the Underground Project was designed to process 5,000 tons (4,536 mt) per day of copper ore and to produce a 26% or greater copper concentrate. The plant contains a coarse ore storage facility, a SAG mill, a ball mill crusher comminution circuit, rougher flotation, regrind circuit, and cleaner flotation. Flotation concentrate will be thickened, filtered and sent to a concentrate load-out stockpile for subsequent transport/shipping. Plant performance was improving over time and reached 85% of throughput capacity with recoveries above 90% and concentrate grades above 25%. The concentrates were trucked to a rail transload facility with access to the Union Pacific mainline in the Tahoe Reno Industrial Center. Concentrates were then be shipped by rail to west coast ports for bulk shipment.

Pumpkin Hollow consists of a series of high-grade skarn/iron oxide-copper-gold deposits. The deposits are grouped into a Western Area and an Eastern Area. The Western Area deposits are considered to be open pit minable and include the North, Northwest, South and Southeast deposits. The planned open pits are still under study. The Eastern Area deposits are too deep for open pit mining and are being mined underground. They include the East (East-north and East-south) and E2 deposits and the JK34 zone. The East deposit lies 7,000 feet (2,100 m) east of the North deposit.

The Company staked about 5,700 acres (2,307 ha) of unpatented claims which expanded the Pumpkin Hollow property to the northeast. Known as the Tedeboy area, the new claim block is within 1.25 miles (2 km) of the underground mine but outside of the resource area. The company completed seven shallow reconnaissance drill holes totaling 3,475 feet (1,059 m) as well as conducted mapping, sampling, and an aeromagnetic survey in the Tedeboy area, which appears to have porphyry-style alteration and copper mineralization at surface. The drilling program was designed to provide information on the structural geology and intercepted significant copper grades. The signatures are significant in that the source of the existing underground and open pit skarn/skarn/Iron Oxide Copper Gold deposits is as yet unknown and may be an undiscovered porphyry system. Significant intercepts included 1) 25 feet (6.6 m) grading 0.33% copper and 0.0003 opt gold; 2) 26 feet (7.9 m) grading 0.39% copper; and 3) 30 feet (9 m) grading 0.93% copper, 0.0026 opt gold, and 0.012 opt silver.

Including the newly staked claims, the property consists of about 23,300 acres (9,389 ha) of contiguous mineral rights including about 10,700 acres (4,330 ha) of private land and leased patented claims. (Nevada Copper Corp. news releases, 4/11/2019, 12/16/2019; 12/24/2019, 12/30/2019, 1/16/2020; Nevada Copper Corp. Management Discussion and Analysis, 3/31/2020; Nevada Copper Corp. Annual Information Form, 5/15/2020; Nevada Copper Corp. NI 43-101

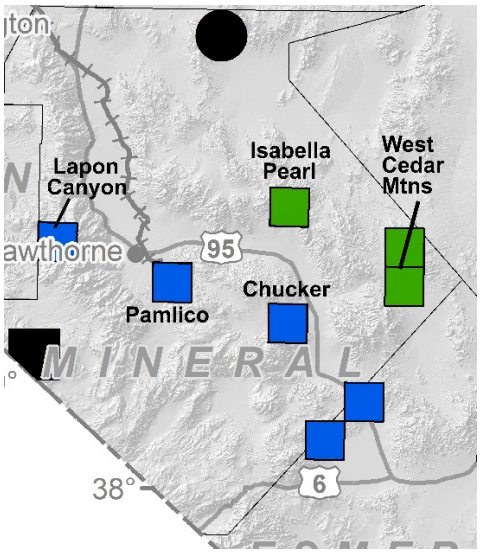
Technical Report, 1/21/2019; Nevada Copper Corp. website, https://www.nevadacopper.com)

Venus. Altan Nevada Minerals, Ltd., completed four holes totaling 4,264 feet (1,300 m) on its Venus property which adjoins the south end of the Pumpkin Hollow Property. The project contains copper-iron skarns and copper porphyry intrusions. The first hole was drilled in an area with outcropping copper and gold bearing quartz veins containing a magnetic/chargeable high. The entire hole drilled through Triassic andesite cut by numerous quartz-rich, fractured Jurassic granitic dikes. The hole was collared in Triassic volcanics and remained in andesite the entire hole. Numerous quartz-rich, fractured Jurassic granitic dikes intrude the andesite. The hole intersected copper mineralization towards the bottom of the hole, which was at a depth of 1,220 feet (372 m). The copper mineralization was hosted in porphyritic granitic dikes and andesite. The mineralization occurred as blebs and disseminated grains of pyrite and chalcopyrite associated with coarse-grained epidote and calcite. Zones of elevated copper and gold occurred throughout the hole. The best intercepts were 10 feet (3.1 m) grading 0.0038 opt (0.13 g/t) gold, 0.012 opt (0.4 g/t) silver, 0.095% (951 ppm) copper and 3 feet (0.9 m) grading 0.011 opt (0.36 g/t) gold and 0.22% (2225 ppm) copper.

The second hole targeted a surface soil geochemical anomaly and an isolated chargeability feature close to the boundary with the Pumpkin Hollow property. The hole penetrated 882 feet (269 m) of Quaternary colluvium and a Tertiary volcanic sequence apparently thickened by a fault. The Tertiary rocks were underlain by Jurassic porphyry quartz monzonite cut by Jurassic quartz monzonite porphyry dikes to a depth of 1,000 feet (305 m). Copper mineralization/alteration was encountered in the Jurassic rocks. The best intercept was 36 feet (11 m) grading 0.0088 opt (0.3 g/t) silver and 0.037% (371 ppm) copper. This was hosted in a Jurassic quartz monzonite porphyry dike associated with minor disseminated pyrite and chalcopyrite grains accompanied by elevated iron and sulfur values. The hole ended in weak mineralization.

The last two holes did not reach the Triassic-Jurassic basement rocks and were not assayed. The company also collected 176 new soil samples on a 600-foot by 1,500-foot (183-meter by 457-meter) sample spacing. The soils were submitted after drilling commences, but the results were not released. The property consisted of 111 claims and was expanded to 208 claims covering 4,169 acres (1,687 ha) based on the results of magnetic and induced polarization/resistivity surveys conducted in 2018 and geological surveys. (Altan Nevada, Management Discussion and Analysis, 6/16/2020; Altan Nevada, news releases, 2/1/2019, 8/1/2019, 8/2/2019, 4/1/2020; Altan Nevada website: http://www.altnev.com)

MINERAL COUNTY



Aurora District

Aurora. Klondex Aurora Mines, Inc., a subsidiary of Hecla Mining Co., processed and recovered 4,190 ounces of gold and 22,998 ounces of silver through the Aurora (a.k.a. Esmeralda) Mill. No ore was mined in 2019, and no details on the continuation of the processing of tailings were released. Carbon from ore processed at the Midas Mill from the Hollister Mine was stripped at the Aurora facility. The mill was placed on care-and-maintenance during the first quarter of 2020. No drilling or other exploration work was reported. The property consists of 448 unpatented lode claims, 92 patented claims, and 944 acres of private property covering about 9,928 contiguous acres (4,018 ha). (Elko Hecla Mining Co., Management Discussion and Analysis, 5/7/2020; Hecla Mining

Co. 10-K Report, 2/10/2020; Hecla Mining Co. website, https://www.hecla-mining.com)

Candelaria District

Candelaria. Silver One Resources, Inc., completed four core holes totaling 4,049 feet (1,234 m) on the north end of the old Mount Diablo pit at its Candelaria Silver Project. The drilling was part of a program that continued into 2020 and targeted the down-dip, potentially high-grade extensions of a mineralized system encountered in a 2001 drill program north of the Mount Diablo pit and between the Northern Belle and Mount Diablo pits. Significant intercepts included 1) 72.5 feet (22.1 m) grading 4.62 opt (158.54 g/t) silver and 0.0093 opt (0.32 ppm) gold, including 26.2 feet (8 m) grading 9.15 opt (313.67 g/t) silver and 0.018 opt (0.63 ppm) gold; 2) 90.6 feet (27.62 m) grading 10.21 opt (350.11 g/t) silver, including 26.2 feet (8 m) grading 32.94 opt (1,129.4 g/t) silver and 0.039 opt (1.33 ppm) gold; and 3) 54.3 feet (16.56 m) grading 9.28 opt (318.27 g/t) silver and 0.017 opt (0.58 ppm) gold, including 27.1 feet (8.27 m) grading 14.64 opt (501.88 g/t) silver and 0.028 opt (0.95 ppm) gold.

Silver-bearing mineralization is hosted by quartz stockworks along the Lower Candelaria Shear Zone and Pickhandle Gulch thrust fault emplaced during early Cretaceous regional thrust faulting. Several types of veining are present, but the only type known to be of economic importance is mineralized fault zones hosting pyrite and sphalerite and minor galena, chalcopyrite and arsenopyrite in a gangue of altered country rock, quartz and dolomite. Sericitization, silicification and pyritization are common.

The company conducted metallurgical testing on the historic leach pads. The results showed that up to 75% of the total silver contained in composite samples can potentially be recovered by reprocessing the material using very fine grinding in combination with microbubble technology. This is an increase of more than 47%–79% over historic production recoveries. (Silver One Resources, Inc., NI 43-101 Technical Report, 8/6/2020; Silver One Resources, Inc., news releases, 5/21/2019, 7/25/2019, 11/7/2019, 11/18/2019, 3/2/2020; Silver One Resources, Inc., Management Discussion and Analysis, 4/16/2020; Silver One Resources, Inc., website, https://www.silverone.com)

Borealis District

Borealis. Borealis Mining Co., LLC, produced 605.4 ounces of gold and 387 ounces of silver from its Borealis oxide heap leach mine. Borealis Mining Co., LLC, was a subsidiary of Gryphon Gold Corp. and is managed by Elko Mining Group, LLC. The operation leached material from existing heap leach pads. No drilling or other exploration work has been reported since at least 2012.

Mount Grant District

Lapon Canyon. Walker River Resources Corp. conducted a detailed geological and mapping survey at its Lapon Canyon gold project, located on the western flank of the Wassuk Range. The geological mapping was initially done by helicopter, which resulted in the discovery of an intensely altered and silicified zone with sulfide mineralization hosted in sedimentary rocks on the front range of the project. The company then completed 13 reverse circulation holes. The drilling program was designed to focus on expansion and infilling of the Lapon Rose Zone and the newly discovered zone, to follow up on and delineation of new mineralized zones, and to test new targets. Three of the drill holes returned no significant results. Significant gold intercepts mainly from the Lapon Rose Zone included: 1) 70 feet (21.3 m) grading 0.019 opt (0.638 g/t) and 2) 110 feet (33.5 m) grading 0.04 opt (1.37 g/t). Significant gold intercepts, mainly from the new zone, included 1) 75 feet (22.9 m) grading 0.04 opt (1.37 g/t), including 45 feet (13.7 m) 0.059 opt (2.01 g/t); 2) 45 feet (13.7 m) grading 2.8 opt (96.03 g/t), including 5 feet (1.5 m) of 15.96 opt (547.05 g/t); 3) 5 feet (1.5 m) 3.37 opt (115.38 g/t); 4) 5 feet (1.5 m) 5.82 opt (199.06 g/t); and 6) and 5 feet (1.5 m) grading 8.9 opt (305.25 g/t) and 5 feet (1.5 m) 2.15 opt (73.86 g/t). A hole drilled at the Honeypot target intercepted 5 feet (1.5 m) 10.1 opt (346.4 g/t) gold.

The Lapon Rose Zone contains mineralization in a broad, altered, fractured, and brecciated northeast trending structural zone. This zone contains many areas of anomalous gold with the higher grades located in sub-vertical en echelon

zones of intense alteration. The location and morphology of the Lapon Rose Zone is related to the emplacement of a diorite intrusion that contains no gold. The surrounding fresh granite is generally un-mineralized, although drilling has encountered gold values within the granite, generally near its contacts in the Lapon Rose Zone.

The company bought the Rattlesnake Project from MSM Resources, LLC, for 910,000 common shares. The project consists of 15 unpatented lode claims south of the newly discovered range front zone. A sample collected from the interior of an old adit assayed 0.51 opt (17.36 g/t) gold and 0.41 opt (13.9 g/t) silver. The company also staked the Pikes Peak Project which consists of 36 claims about 2.5 miles (4 km) north of the Lapon Canyon. One sample assayed 0.26 opt (9 g/t) gold, 1.15 opt (39.4 g/t) silver, and 2.22% copper. The Rattlesnake and Pikes Peak claims cover over five miles (8 km) of possible extensions of the range front zones to the west, north, and south of Lapon Canyon. They also contain a number of old milling facilities and underground workings with adits and vertical shafts and a network of existing roads providing access to these old workings. The new claims expanded the property to 147 claims covering 2,940 acres (1,190 ha). (Walker River Resources Corp. Management Discussion and Analysis, 3/30/2020; Walker River Resources Corp. news releases, 4/17/2019, 5/21/2019, 9/4/2019, 9/16/2020, 10/17/2019; Walker River Resources website, http://wrrgold.com)

Rawhide District

Denton-Rawhide. Rawhide Mining, LLC, produced 14,381 ounces of gold and 140,187 ounces of silver from its wholly-owned Denton-Rawhide Mine. In 2018, the BLM approved a proposal by Rawhide Mining, LLC, to amend its plan of operation to expand existing facilities at the Denton-Rawhide Mine site and to expand its mining operation onto the Regent property, also referred to as the Regent Hill property. On the Regent property, two open pits (Regent and East Regent), a waste rock storage facility, a stockpile area, and support facilities would be constructed. The company began mining operations on the Regent property during the second quarter with the mineralized material being processed at the company's Rawhide mine facility 1.5 miles away. The amendment calls for mining 5,300,000 tons (4,800,000 mt) of mineralized material and 5,500,000 tons (5,000,000 mt) of waste rock from two Regent Hill pits. The property consists of 196 unpatented mining claims covering 3,006 acres (1,217 ha).

At the Rawhide Mine site, the amendment calls for one waste rock storage facility to be expanded and another one would be mined with the material being placed on the leach pads. Three heap leach pads and two process ponds would be constructed. Exploration will be permitted on targets in the Western Exploration Target area referred to as the North Buckskin Project, the Toiyabe Project, the Black Eagle Project, and the Chicago Gulch Project. These targets are also on the Buckskin-Rawhide East property, which is being leased by Rawhide Mining, LLC, from Emgold Mining Corp. Exploration was previously conducted on the Chicago Gulch and Buckskin North Projects. The property was drilled in late 2013 but no drilling has been reported since then, and none was reported for 2019. These actions will potentially add eight years to the life of the mine. (U.S. Bureau of Land Management, Environmental Assessment, DOI-BLM-NV-C010-2018-0015-EA 7/2018; U.S. Bureau of Land Management, Decision Record, DOI-BLM-NV-C010-2018-0015-EA 8/2018; Ely Gold Royalties, news release, 12/18/2019; Ely Gold Royalties, website, https://elygoldinc.com; Emgold Mining Corp., website, https://emgold.com)

Santa Fe District

Isabella Pearl. Walker Lane Minerals Corp., a subsidiary of Gold Resource Corp., produced 10,810 ounces of gold and 9,574 ounces of silver from its Isabella Pearl Mine. The company mined 1,030,345 tons (934,723 mt) of ore grading 0.022 opt (0.76 g/t) gold. The low grade stockpile contained 584,174 tons (529,959 mt) grading 0.015 opt (0.51 g/t) gold. Mining was conducted by a contract miner. Loaded carbon was sent to a third party, and the first dore was poured in April. Commercial production was reached in October. The ADR plant was completed and commissioned in October, and dore production commenced on site. Lower-grade ore was mined during the year in order to access the higher-grade portions of the

Pearl deposit. The all-in sustaining cost was $1,049 per ounce of gold.

The company completed 110 reverse circulation holes totaling 26,555 feet (8,096 m). The program focused on exploration and expansion of mineral reserves and included in-fill and step-out drilling of the Pearl, Civit Cat North, and Scarlet targets. Significant gold intercepts in the area of the east side of the open pit included 1) 55 feet (26.76 m) grading 0.017 opt (0.59 g/t), including 10 feet (3 m) grading 0.048 opt (1.64 g/t); 2) 80 feet (24.38 m) grading 0.017 opt (0.59 g/t), including 10 feet (3 m) grading 0.052 opt (1.77 g/t), and 3) 75 feet (22.86 m) grading 0.03 opt (1.03 g/t), including 15 feet (4.6 m) grading 0.059 opt (2.02 g/t).

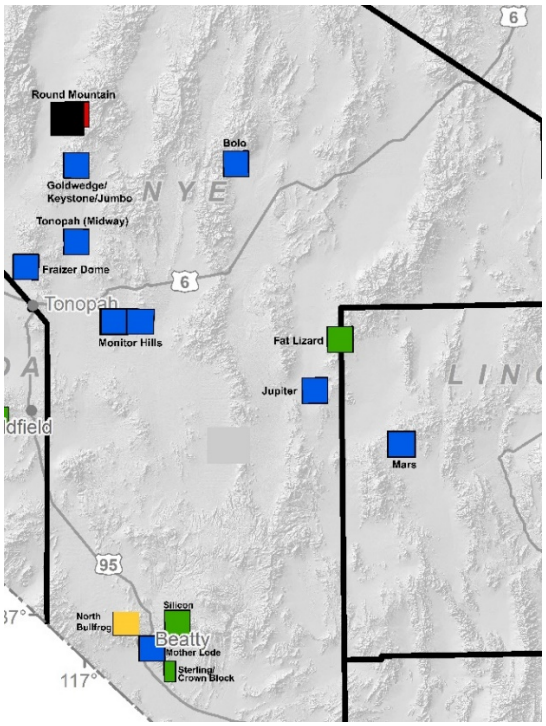
Scarlet is a potential new deposit about 1,300 feet (400 m) northwest of the Isabella Pearl pit. Surface geological and alteration mapping and rock chip sampling continued along the Scarlet trend to the northwest and in the historic mining area at the Civit Cat North West target. Significant gold drill intercepts at Scarlet included 1) 35 feet (10.67 m) grading 0.02 opt (0.67 g/t), including 5 feet (1.52 m) grading 0.039 opt (1.32 g/t); 2) 20 feet (6.1 m) grading 0.041 opt (1.39 g/t), including 10 feet (3 m) grading 0.066 opt (2.27 g/t); 3) 75 feet (22.86 m) grading 0.022 opt (0.76 g/t), including 15 feet (4.6 m) grading 0.048 opt (1.65 g/t); and 4) 80 feet (24.38 m) grading 0.03 opt (1.03 g/t), including 15 feet (4.6 m) grading 0.12 opt (4.1 g/t).

The property covers 494 mining claims comprising 9,000 acres (3,642 ha). The mine has an estimated life of about 4.5 years. Mid-Tertiary volcanic rocks cover much of the property and consist of intermediate lava flows and ignimbrite ash-flow sheets. These rocks unconformably overlie Triassic and Jurassic sedimentary rocks and Jurassic and Cretaceous intrusive rocks. Several major fault zones trend through the property and are dominated by various splays and offset branches that host the gold mineralization in the Tertiary rocks. The Isabella Pearl deposit consists of the Isabella, Pearl, and Civit Cat gold-silver mineralized zones. Argillic alteration is widespread and the mineral assemblages include abundant alunite indicating these deposits are high-sulfidation epithermal in nature. (Gold Resource Corp. news releases, 3/26/2019, 4/29/2019, 6/5/2019, 10/7/2019, 1/29/2020; Gold Resource Corp. Form 10-K, 3/2/2020; Gold Resource Corp. website http://www.goldresourcecorp.com)

Silver Star District

Chucker. Smooth Rock Ventures Corp. signed an option to purchase full interest in the Chucker Property minus a 1.5% gross production royalty. The company paid $10,000 upon signing the option, issued of 2,000,000 common shares within 5 business days upon receiving TSX Venture Exchange Approval, and pay $10,000 on or before one year from the date of the signing. The company then completed an initial reverse circulation drilling program which focused on the surface exposures around the historical workings of the range front fault and other exploration targets on the property. Details of drilling program were not released. The project consists of 28 unpatented claims covering about 560 acres (227 ha). (Smooth Rock Ventures Corp. news releases, 6/27/2019, 8/8/2019, 9/17/2019, 9/2/2020; Smooth Rock Ventures Corp. Management Discussion and Analysis, 3/31/2020, 8/17/2020; Smooth Rock Ventures Corp. website, https://smoothrockventures.com)

NYE COUNTY



Bare Mountain District

Mother Lode. Corvus Gold, Inc., completed 21 holes in the first half of the year on its Mother Lode property as a continuation of a program commenced in 2018. The drill rig was then moved to the North Bullfrog Project. The drill rig then returned to the Mother Lode project and drilled six more holes that were completed by year's end as part of a program that continued into 2020. The program focused on in-fill drilling and testing new targets. Most of the drilling occurred north and southwest of the old pit. The drilling extended the mineralization to the north and west. The company also conducted an induced polarization survey over the Mother Lode deposit.

The gold mineralization is Miocene in age and is hosted in a series of shallowly dipping, tuffaceous volcanic sediments and sills as well as the underlying limestones of the Silurian to Devonian Roberts Mountain formation. The mineralization is controlled by a series of high angle, north-northwest trending structures hosting Miocene dikes and sills and the east-northeast-trending, north-dipping, Fluorspar Canyon detachment fault. The intersection of these two main structural trends resulted in a large damaged zone, opening the way for the intrusive activity thought to be genetically related to the gold system. The north-northwest trending structural zones host higher grade mineralization in excess of 0.088 opt (3 g/t) gold over widths of 33 feet (10 m) and 130 feet (40 m).

Several new zones were discovered. The mineralization continues in a northerly direction at least 1,300 feet (400 m) from the old pit. There, the newly discovered North Zone showed mineralization continuing to thicken and increase in grade to the north. Significant gold intercepts in the North Zone included 1) 415 feet (126.5 m) grading 0.053 opt (1.85 g/t), including 55 feet (16.72 m) grading 0.062 opt (2.12 g/t); 2) 125 feet (38.1 m) grading 0.079 opt (2.71 g/t); 3) 60 feet (18.3 m) grading 0.12 opt (4.2 g/t); 4) 55 feet (16.76 m) grading 0.13 opt (4.43 g/t), and 5) 35 feet (10.7 m) grading 0.18 opt (6.28 g/t); and 120 feet (36.58 m) grading 0.046 opt (1.59 g/t).

The new Deep Zone was discovered about 660 feet (200 m) north-northwest of the old pit lying about 330 feet (100 m) below the main Mother Lode deposit. It consists of an upper oxide zone hosted in Paleozoic carbonate rocks over a mainly sulfide dominated zone hosted in intrusive rocks. Significant gold intercepts in the Deep Zone (Upper Oxide) included 1) 30 feet (9.14 m) grading 0.034 opt (1.17 g/t); 2) 85 feet (25.91 m) grading 0.071 opt (2.43 g/t) including 60 feet (18.29 m) grading 0.096 opt (3.3 g/t); 3) 135 feet (41.14 m) grading 0.071 opt (2.43 g/t) and 4) 100 feet (30.48 m) grading 0.05 opt (1.71 g/t).

The Central Intrusive Zone was discovered trending about 1,300 feet from the west side of the old pit northward. This may represent a new oxide zone hosted in an intrusive dike system directly below the main Mother Lode deposit. Significant gold intercepts in the Central Intrusive Zone included: 1) 135 feet (41.15 m) grading 0.047 opt (1.6 g/t), including 50 feet (15.24 m) grading 0.11 opt (3.6 g/t); and 2) 39 feet (22.9 m) grading 0.047 opt (1.6 g/t), including 35 feet (10.7 m) grading 0.055 opt (1.9 g/t).

Drilling results from other areas are as follows. Significant gold intercepts in the Main Zone included: 85 feet (25.9 m) grading 0.041 opt (1.42 g/t), including 60 feet (18.3 m) grading 0.053 opt (1.81 g/t); 2) 120 feet (36.6 m) grading 0.052 opt (1.79 g/t); 3) 195 feet (59.4 m) grading 0.044 opt (1.51 g/t), including 50 feet (15.2 m) grading 0.087 opt (2.99 g/t); 4) 62 feet (18.9 m) grading 0.061 opt (2.09 g/t); 5) 160 feet (48.8 m) grading 0.034 opt (1.15 g/t).

Significant gold intercepts in the Upper Oxide Zone included: 1) 80 feet (24.4 m) grading 0.022 opt (0.74 g/t); and 45 feet (13.71 m) grading 0.02 opt (0.67 g/t). Significant gold intercepts in the Lower Oxide Zone included 1) 45 feet (13.7 m) grading 0.019 opt (0.66 g/t); and 2) 35 feet (10.7 m) grading 0.032 opt (1.09 g/t) including 10 feet (3.04 m) grading 0.061 opt (2.08 g/t); Significant gold intercepts in the New Deep Zone included 1) 165 feet (50.3 m) grading 0.044 opt (1.5 g/t), including 110 feet (33.5 m) grading 0.057 opt (1.94 g/t). Significant gold intercepts in the Southwest Zone included 120 feet (36.57 m) grading 0.059 opt (2.03 g/t). Significant gold intercepts in the West Zone included: 1) 90 feet (27.4 m) grading 0.026 opt (0.9 g/t), including 10 feet (3 m) grading 0.035 opt (1.2 g/t); and 2) 50 feet (15.24 m) grading 0.034 opt (1.15 g/t) including 15 feet (4.6 m) grading 0.078 opt (2.68 g/t).

The Mother Lode property partly adjoins the company's North Bullfrog property on the

southeast. The property consists of 445 lode claims covering about 14.3 square miles (36.5 square km). The Mother Lode property, which included the Sunday Night anomaly, last produced between 1989 and 1991, with N.A. Degerstrom, Inc., as the operator. (Nevada Mineral Industry MI-1990; Corvus Gold Inc., news releases, 3/19/2019, 4/3/2019, 6/3/2019, 6/11/2019, 11/7/2019, 12/5/2019, 1/14/2020, 1/30/2020; Corvus Gold Inc., NI 43-101 Technical Report, 10/7/2020; Corvus Gold Inc., Form 10-K, 8/9/2019, 8/13/2020; Corvus Gold Inc., website, http://www.corvusgold.com)

Silicon. AngloGold Ashanti, North America, Inc., a subsidiary of Anglo Gold Ashanti, completed 20 reverse circulation totaling 26,266 feet (8,008 m) and eight diamond core holes totaling 10,916 feet (3,328 m) in 2019 on its Silicon Project in T11S, R48E, which was the continuation of a program commenced in the fourth quarter of 2018. The program was designed to follow up on earlier drilling to further understand the alteration system and to test other litho-structural targets in the Silicon-Thompson structural corridor. No drilling results were released. The company also conducted induced polarization, magnetic, and gravity surveys and has on-going geological mapping and surface geochemical sampling programs.

The project area contains extensive exposures of a shallow acid-sulfate steam-heated cap over the upper portions of a low-sulfidation, epithermal gold system. The property sits on the southwestern margin of the Timber Mountain caldera, and may be underlain by a basement high according to gravity data and the regional geology. The rocks are mainly Miocene volcanic tuffs much of which have undergone acid leaching which variably altered them to alunite, kaolinite, chalcedony, opal, and residual silica. Mercury mineralization occurs locally occurs in the steam-heated acid-sulfate camp as cinnabar-bearing chalcedony, opal, and acid-leached residual silica. Local mines include the Silicon Mine, which produced some ceramic silica, and the Thompson Mine, which produced 72 flasks of mercury prior to 1943 and a small amount in the mid-1950s.

The company acquired full interest minus a 1% net smelter return royalty to the Silicon Project consisting of 277 claims covering 5,700 acres (2,307 ha) from Orogen Royalties. The company also owns a further 1,414 claims covering 29,215 acres (11,823 ha) under its own name. (NBMG Bulletin 77; AngloGold Ashanti, North America, Inc., AngloGold Ashanti, North America, Inc., Annual Report, 12/31/2019; AngloGold Ashanti, North America, Inc., Interim 2019 – Results Presentation, 6/30/2019; AngloGold Ashanti, North America, Inc., Form 10-F, 12/31/2019; Orogen Royalties Inc. website, https://www.orogenroyalties.com)

Sterling/Crown Block. In late 2018, Coeur Mining, Inc., acquired Northern Empire Resources and its assets including the Sterling Mine and Crown Block. No mining occurred at the Sterling Mine in 2018 or 2019, and though 280 ounces of gold were produced from leaching in 2018, none was produced in 2019. The Crown Block is located about four miles (6.4 km) north of the Sterling Mine and consists of Daisy, Secret Pass, and SNA deposits just southwest of the Sterling property. The company spent $4,800,000 on expansion drilling and $800,000 on conversion drilling.

Two reverse circulation rigs were active and completed about 88,300 feet (26,900 m) of drilling through the end of November. One rig focused on expansion drilling at the Daisy, Daisy South and West, Secret Pass, and SNA resource zones in the Crown Block. The company targeted oxide heap-leachable gold hosted in Paleozoic sedimentary rocks in the Daisy and Secret Pass areas. Significant gold intercepts included 1) 145 feet (44.2 m) grading 0.06 opt (2.0 g/t) gold; 2) 40 feet (12.2 m) of 0.15 opt (5.1 g/t); and 3) 175 feet (53.3 m) grading 0.08 opt (2.6 g/t). The company also drilled near SNA with one hole intercepting 75 feet (22.9 m) of 0.05 opt (1.7 g/t) gold.

The second rig focused on drilling extensions of known mineralization in and around the Sterling mine by targeting the higher grade faults controlling oxide gold mineralization in historical mining areas. At Sterling, one hole intercepted 390 feet (119 m) grading 0.05 opt (1.6 g/t) gold and 145 feet (44.2 m) grading 0.11 opt (3.8 g/t) gold. One hole drilled southeast of Sterling intercepted 225 feet (68.6 m) of 0.04 opt (1.2 g/t) gold. Infill drilling at Sterling was conducted in August near the historic 8 Adit and 144 zones at the southern portion of the historic Sterling mining area also had encouraging results. Intercepts from these holes are interpreted to be the northern extension of higher-

grade mineralization mined in the historic underground workings. (Coeur Mining, Inc., news releases, 5/1/2019, 8/7/2019, 11/4/2019, 12/17/2019, 2/18/2020; Coeur Mining Inc. 10-K Report, 2/19/2020; Coeur Mining, Inc., website, https://www.coeur.com)

Bullfrog District

North Bullfrog. Corvus Gold Inc. completed 42 holes on its North Bullfrog property. The program was designed for in-fill and step out drilling to expand the resource areas and to test several new targets.

Drilling was conducted in the Cat Hill area near the center of the project. Cat Hill is underlain by heterolithic and monolithic debris flow breccias of the Miocene Rainbow Mountain sequence. The alteration consists of overlapping assemblages of both steam-heated alteration and silicified ribs with quartz veining. Fine vuggy, northeast-trending silicified ribs with quartz replacing calcite coexist with an opal-kaolinite alunite assemblage that locally exhibits alunite veinlets. Surface rock chip samples have yielded up to 0.4 opt (1.4 g/t) gold from quartz vein material. The alteration suggests a fluctuating paleo-groundwater table resulted in the juxtaposition of contrasting styles of hydrothermal alteration. Most of the mineralization intercepted is oxidized.

Significant gold intercepts at Cat Hill included: 70 feet (21.3 m) grading 0.03 opt (1 g/t); 10 feet (3 m) grading 0.04 opt (1.37 g/t); 15 feet (4.6 m) grading 0.072 opt (2.47 g/t). At West Cat Hill, one hole intercepted a broad zone of well mineralized stockwork quartz. Significant gold intercepts at West Cat Hill included 50 feet (15.24 m) grading 0.017 opt (0.58 g/t) and 15 feet (4.6 m) grading 0.011 opt (0.39 g/t).

Drilling was conducted at Jolly Jane. Low-grade mineralization was extended about 2,500 feet (750 m) north of the Jolly Jane mineral resource. Significant gold intercept at North Jolly Jane included 1) 30 feet (9.15 m) grading 0.015 opt (0.5 g/t); 2) 25 feet (7.62 m) grading 0.02 opt (0.7 g/t); and 3) 55 feet (16.76 m) grading 0.015 opt (0.5 g/t). The best intercept at South Jolly Jane included: 60 feet (18.29 m) grading 0.012 opt (0.4 g/t).

Four holes were drilled on the Jasperoid target, which is just south of the Sierra Blanca Mineral Resource area. Mineralized bedding-parallel jasperoid is present in limey beds of the Woods Canyon Formation and north-northwest-trending, hydrothermally altered, recessive quartz-porphyry dikes cut both the Wood Canyon Formation and the Zabriskie Quartzite. Discontinuous, crustiform-banded quartz veins up to a foot (30 cm) wide run sub-parallel to the dikes. One such quartz vein yielded 0.058 opt (2 g/t) gold from a prospect on the east side of the target area. The quartz-porphyry dikes are also anomalous in gold. Corvus drilled four angle holes in 2019 targeting the dikes and quartz veins at depth in the Wood Canyon Formation. All holes intersected widely scattered anomalous gold up to 0.2 ppm.

Much of the drilling occurred in the Sierra Blanca area in the northwestern part of the project area. The greater Sierra Blanca area includes the Sierra Blanca, East Sierra Blanca, North Sierra Blanca, West Sierra Blanca, and Yellow Jacket, as wells as the Air Track Hill, West Air Track, and Savage Valley areas. The Sierra Blanca is divided by the east-west-trending Cairn fault into the Sierra Blanca block to the south and the North Sierra Blanca block to the north. The Yellow Jacket Vein Zone lies to the east and trends north-northwest. Disseminated mineralization occurs across the entire area and appears to be controlled by high-angle structures that fed fluids into permeable stratigraphic intervals, mainly within the volcanic rocks. The Sierra Blanca tuff is altered to a fine-grained mixture of quartz and adularia with disseminated pyrite. The quartz-adularia alteration is less widespread or not as well developed in the underlying Pioneer Formation, which is usually altered to a light green smectite-illite+adularia-chlorite assemblage. The tuffs are progressively altered to smectite-illite, illite-adularia, and to quartz-adularia in most intensely altered area, where the higher gold grades occur.

The West Sierra Blanca target is a large pediment covering an area over 0.7 miles (one km) long by 0.35 miles (0.5 km) wide. The mineralization here is mainly oxide with the oxide-sulfide boundary at depths between 330 feet (100 m) and 660 feet (200 m). Drilling tested structural zones along the west side with positive results from a north-trending structural zone containing disseminated and fine stockwork quartz and dikes. Gold intercepts at included: 1) 55 feet (16.76 m) grading 0.04 opt (1.37 g/t); 2) 50 feet (15.24 m) grading 0.019 opt (0.65 g/t); 3) 70 feet (21.34 m)

grading 0.02 opt (0.68 g/t); 5) 45 feet (13.72 m) grading 0.027 opt (0.93 g/t); and 6) 425 feet (129.54 m) grading 0.013 opt (0.46 g/t). Significant gold intercepts at New Discovery at West Sierra Blanca included: 10 feet (3 m) grading 0.042 opt (1.43 g/t); 20 feet (6.1 m) grading 0.031 opt (1.05 g/t); 75 feet (22.8 m) grading 0.026 opt (0.89 g/t); 60 feet (18.3 m) grading 0.023 opt (0.8 g/t); and 130 feet (39.6 m) grading 0.21 opt (0.71 g/t).

Drilling at other areas adjacent to the Sierra Blanca included the following results. Significant gold intercepts at East Sierra Blanca Extension included 30 feet (9.14 m) grading 0.016 opt (0.55 g/t). Gold intercepts at North Sierra Blanca included 80 feet (24.4 m) grading 0.022 opt (0.77 g/t), including 35 feet (10.7 m) grading 0.031 opt (1.05 g/t).

Drilling was also done to test for northward expansion of the Yellow Jacket vein system. The results showed the system trending more north-south than expected. Gold intercepts included: 80 feet (24.4 m) grading 0.035 opt (1.21 g/t)

The property contains 17,848 acres (7,223 ha) of patented and unpatented mining claims. (Corvus Gold Inc., news releases, 8/6/2019, 9/23/2019, 10/23/2019; Corvus Gold Inc., NI 43-101 Technical Report, 10/7/2020; Corvus Gold Inc., Form 10-K, 8/9/2019, 8/13/2020; Corvus Gold Inc., website, http://www.corvusgold.com)

Manhattan District

Goldwedge. Scorpio Gold Corp. completed nine diamond core holes totaling 3,177 feet (928 m) on the Keystone-Jumbo claim block of its Goldwedge property. Mineralization within the Keystone and Jumbo deposits is controlled by high-angle faults striking N30°W cut by weaker structures trending N30°E and N80°E. The gold is localized and hosted in silicified polylithic fault breccias, silicified metasediments, and oxidized quartz-pyrite-gold veinlet stockworks surrounding the core of the mineralization. Significant intercepts included 48 feet (14.6 m) grading 0.064 opt (2.2 g/t) gold and 1.33 opt (45.6 g/t) silver and 25 feet (6.1 m) grading 0.03 opt (1 g/t) gold and 0.12 opt (4.11 g/t) silver. (Scorpio Gold Corp. news releases, 2/5/2019, 6/6/2019, 12/6/2019, Scorpio Gold Corp. Management Discussion and Analysis, 4/29/2020; Scorpio Gold Corp. website, https://www.scorpiogold.com)

Monitor Hills

Monitor Hills. Allegiant Gold, Ltd., completed 15 reverse circulation holes on its Monitor Hills property in T1N, R45-46E. The drilling encountered broad zones of anomalous gold, but zones of higher golds grade were only present in narrow 5-foot to 10-foot (1.5 to 3 m) intervals. Carlin-style gold mineralization occurs in replacement silicification (jasperoid) of carbonate rocks, or along iron-stained fault zones in Cambrian and Ordovician sedimentary rocks. The mineralized faults trend mainly north with northeast and northwest trending structures also being mineralized. The property consists of 106 unpatented claims covering about 2,120 acres (858 ha). The company considered the drilling results to be too low-grade and abandoned the project. (Allegiant Gold, Ltd., Management Discussion and Analysis, 1/17/2020; Allegiant Gold, Ltd., news releases, 1/29/2019, 2/26/2019, 4/17/2019; Allegiant Gold, Ltd., website, www.allegiantgold.com).

Quinn Canyon Range. Renaissance Gold's Fat Lizard project, in Nye County, Nevada was subject to an earn-in agreement with OceanaGold Corp. Oceana drilled three holes of oriented core, totaling 4,275 ft (1303 m (4275 foot). The program was designed to test the deeper levels of an exposed high-level alteration system. No reportable intercepts were encountered in the drilling. (Renaissance Gold press release, (10/18/2019)

Queen City District

Jupiter. In November, Ramelius Resources, Ltd., headquartered in East Perth, Australia, completed three reverse circulation holes totaling 2,595 feet (791 m) on the Jupiter Project in T2S, R53E. The program tested "Long Canyon-type" targets along the Cambrian-Ordovician unconformity and the distal halo of an outcropping and magnetically indicated intrusive body. The drilling intercepted a zone of iron-rich silicification underneath the unconformity. However, the zone contained no reportable gold assays and only weakly anomalous antimony up to 19.6 ppm, arsenic up to 126 ppm, mercury up to 1.29 ppm, and thallium up to 2.48 ppm. The results were weaker than those encountered in the 2018 drilling, and the company

was reevaluating continued exploration of the property. The geology consists of Cambrian limestone and chert in unconformable and thrust fault contact with Ordovician limestone, chert, and shale. The carbonate rocks are cut by a west-northwest-trending intermediate Oligocene intrusion with associated with small skarn bodies. The rocks are cut by west-northwest and east-west trending faults, which in turn are cut by north, northeast and northwest trending transtensional faults. The Cambrian rocks contain jasperoid bodies associated in part with altered felsic dikes. The gold mineralization is hosted throughout the carbonate rocks and is particularly associated with the faults, jasperoid bodies, felsic dikes, and subtle anticlines. The Tertiary rocks contain extensive argillic alteration with locally up to 10% disseminated pyrite and iron/jasperoidal silica alteration along the contact with the underlying Cambrian limestones. The mineralization is open in all directions. Ramelius Resources, Ltd., executed a binding agreement in 2017 with Kinetic Gold (U.S.), Inc., a wholly owned subsidiary of Renaissance Gold, Inc., now Orogen Royalties, Inc., whereby the former may earn up to 75% interest in the Jupiter Project by spending $3,000,000 within 5 years. (Orogen Royalties, Inc., news release, 1/6/2020; Ramelius Resources, Ltd., Annual Report, 6/30/2019, 6/30/2020; Ramelius Resources, Ltd., website, http://www.rameliusresources.com.au; Orogen Royalties, Inc., website, http://www.orogenroyalties.com)

Round Mountain District

Round Mountain. The Round Mountain Gold Corp. and KG Mining (Round Mountain) Inc., subsidiaries of Kinross Gold Corp., produced 350,943 ounces of gold and 921,881 ounces of silver from its Round Mountain Mine (Smoky Valley Common Operation). Mining was conducted at the main Round Mountain pit and the Gold Hill pit north of the main pit, and all of the ore is non-refractory. Round Mountain Gold Corp. mined 24,817,000 tons (22,514,000 mt) of ore. Also, 27,304,000 tons (25,804,000 mt) of ore grading 0.033 opt (1.13 g/t) were processed with a recovery rate of 84.9%. Grade and recovery are from the mill.

The company spent $241,500,000 on capital expenditures, a 30% increase from 2018. The increase was due to the Phase W project and an increase in capitalized stripping activities. The company spent $4,800,000 on exploration and business development, a 300% increase from 2018. The company completed 44,800 feet (14,000 m) of drilling at Phase S (south pit layback), Phase X (northwest continuation of Phase W mineralization), and within the South Caldera Rim. The Phase S drilling resulted in converting 565,000 ounces of gold from inferred resources to measured and indicated resources.

The Round Mountain pit is presently 10,700 feet (3,260 m) long in a northwest-southeast direction and 8,800 feet (2,680 m) wide. Many areas of the pit are being mined below the oxide zone. Gold Hill is presently 3,000 feet (915 m) long in an east-west direction and 2,600 feet (790 m) wide in a north-south direction. The ore is oxide material that presently needs no crushing due to proper blasting. With the current mineral reserves, mining at Gold Hill is expected to continue through 2022 and heap leaching through 2027.

Gold is recovered using three independent processing operations. These include crushed ore heap leaching on a reusable pad, run-of-mine ore heap leaching on a dedicated pad, and gravity/flotation. Lower grade oxidized ores are placed on the dedicated pad and usually leached for 120 days. The higher grade oxidized ores are crushed and placed on the reusable pad and leached for 60 days. Afterwards it is relocated to the dedicated pad.

The Phase W expansion project was completed with the first gold bar poured from the new vertical carbon-in-column plant in May. Along with the new plant, the expansion included the Phase W layback of the current pit, construction of a new heap leach pad, additions to the mining fleet and equipment, relocation of some existing infrastructure, construction of new mine infrastructure such as the truck shop, warehouse, wash bay, and fuel island. Low grade Phase W ore encountered during work on the layback was placed on the existing heap leach pads. Stripping and dewatering activities are expected to continue until late 2020. The expansion is expected to add five years (2020–2024) to the life of the mine with leaching continuing out to 2027 and with an extra 1,500,000 more ounces of gold to be produced.

(MarketScreener, Kinross Gold: Provides Update on Development Projects and Full-Year 2019 Exploration Results, 2/13/2020; Kinross Gold Corp. Management Discussion and Analysis, 2/12/2020; Kinross Gold Corp. Annual Information Form, 330/2019; Kinross Gold Corp. Annual Report, 4/2/2020; Kinross Gold Corp. website, https://www.kinross.com)

Rye Patch District

Tonopah (Midway). Viva Gold Corp. (formerly Aintree Resources, Inc.) completed 16 reverse circulation holes totaling 7,111 feet (2,168 m) on its Tonopah project (formerly known as the Midway project). Six holes were part of a program commenced in December 2018 but completed in 2019. This program was designed to fill in gaps between known mineralized structural zones and to test the extension of mineralized structures. Some of the results are noted below. The company commenced an exploration drilling program in mid-year, but the results were not released.

Gold intercepts include the following. A hole drilled to infill the south end of the Dauntless Zone intercepted 1) 10 feet (3 m) grading 0.23 opt (8 g/t); 2) 15 feet (33.5 m) grading 0.78 opt (26.9 g/t); 3) 110 feet (33.5 m) grading 0.076 opt (2.6 g/t) including 5 feet (1.5 m) grading 0.41 opt (14.1 g/t) and 5 feet (1.5 m) grading 0.66 opt (22.7 g/t);. A hole drilled to infill a gap in the northern Dauntless Zone intercepted 20 feet (6.1 m) grading 0.096 opt (3.29 g/t) and 25 feet (7.6 m) grading 0.12 opt (4.13 g/t). A hole drilled to test the northern extent of the Dauntless Zone intercepted 60 feet (18.3 m) grading 0.013 opt (0.44 g/t). A hole drilled as a test step-out of about 2,600 feet (800 m) southeast of the Discovery Zone intercepted 15 feet (4.6 m) grading 0.071 opt (2.42 g/t), including 5 feet (1.5 m) grading 0.19 opt (6.65 g/t). A hole drilled as a test step-out about 1,650 feet (500 m) east of the Discovery Zone intercepted 70 feet (21.3 m) grading 0.018 opt (0.6 g/t).

With the exception of a single outcrop, the surface geology at the property is predominately valley fill. The valley fill covers several rhyolitic to mafic Tertiary volcanic units, which unconformably overlie black argillites of the Ordovician Palmetto Formation. The property contains a near surface low-sulfidation epithermal gold system with almost vertical quartz-adularia-gold veins hosted in the argillite and the overlying rhyolitic rocks. The mineralization is also associated with the discontinuity between the Palmetto Formation and lower sequence of the Tertiary volcanics. Significant alteration and mineralization is localized within a low-angle zone which includes and often parallels the erosion surface at the top of the Palmetto Formation and with several facies in the Tertiary volcanic rocks, particularly where veins and mineralized structures intersect this contact zone.

The distribution of mineralization and alteration is strongly influenced by the structural geology. The Rye Patch fault system is a complex, oblique-slip fault system containing numerous northwest-trending splays. Subordinate steeply dipping, north-south striking extension fractures are developed between two bounding strike slip faults. Gold-bearing veins occur in a series of en-echelon clusters along a 1.5-mile (2.4 km) northwest-trending band of mineralization with contact-related gold mineralization also present along this entire band. Two overlapping mineralized trends have been identified. The main trend parallels the Rye Patch fault system, striking west-northwest for at least 10,000 feet (3,000 m) with a 1,650-foot (500-meter) width. The mineralization is open along strike and is typically hosted in the lower part of the Tertiary volcanic rocks and locally in the uppermost argillites parallel to the disconformity. The grade ranges between 0.1 ppm to 5 ppm gold. The secondary trend consists of extensional fractures striking north-northwest to north with near-vertical dips. The fractures host veins and hydrothermal breccia's with mineralization grading from 1.0 to over 30 ppm gold. These extensional fracture zones are best represented in the Discovery and Dauntless Zones. The vein textures are indicative of high level, near surface emplacement and include void fills, crustiform coatings, colloform banding, and comb structures.

In mid-year, the company issued a NI 43-101 technical report with an updated resource estimate, and then issued a revised a NI 43-101 technical report at year's end. The company was also preparing an NI 43-101 preliminary economic assessment with an updated resource estimate. The property consisted of 444 unpatented claims covering 8,762 acres (3,546 ha). (Viva Gold Corp., NI 43-101 Technical Reports, 5/15/2019,

12/23/2019, 4/29/2020, 9/23/2019, 11/7/2019; Viva Gold Corp., news releases, 1/29/2019, 2/11/2019, 2/25/2019, 5/21/2019, 6/3/2019; Viva Gold Corp. Annual Information Form, 2/27/2019; Viva Gold Corp. website, https://vivagoldcorp.com)

Tonopah District

Frazier Dome. NV Gold Corp. completed one hole totaling 699 feet (213 m) on its Frazier Dome Project in T4N, R42E about 7 miles (11 km) north of Tonopah. The company intended to conduct 5,250 feet (1,600 m) of drill focused on vectoring in on potential deep bonanza-grade feeder zones. However, the program was halted after one week and the results were not released. The property contains a low- to intermediate-sulfidation, volcanic-hosted epithermal gold system with high-grade mineralization. The gold occurs in silicified breccias adjacent to a Middle Miocene felsic dome with surface samples grading up to 0.18 opt (6.1 g/t) gold over 10 feet (3 m). High-grade gold also occurs in north-northwest-trending quartz veins with surface samples grading up to 0.32 opt (11.2 g/t) gold within volcanic rocks east of the dome and along the contact between the volcanic rocks and underlying Paleozoic basement rocks. The company added 71 lode claims to the project in March. The project consists of 143 lode claims covering about 2,955 acres (1,196 ha). The company made the property available for option. (NV Gold Corp. Management Discussion and Analysis, 12/18/2019, 4/24/2020; NV Gold Corp. news releases, 8/1/2019, 8/13/2019, 1/30/2020; NV Gold Corp. website, http://www.nvgoldcorp.com)

Tonopah North. In June, Oakdale Resources, Ltd, signed a binding option term sheet with Alpine Resources (USA) Pty, Ltd., whereby the former could acquire the Alpine Project, which includes the Tonopah North property. Oakdale Resources, Ltd, will conduct a two phase exploration program. Upon completion, Oakdale Resources, Ltd., can exercise the option by acquiring all of the shares in Alpine Resources (USA) Pty, Ltd., and reissuing them as shares in Oakdale Resources, Ltd, the number of which being determined by the size of a JORC compliant resource discovered. In 2020, the company changed its name to Oar Resources, Ltd.

The company conducted its first phase of exploration which included a 3D induced polarization survey. The survey was carried out on two lines about 1,000 feet (300 m) apart with 330-foot (100 m) dipole spacing. The survey indicated a number of structures and a zone of possible alteration associated with the structures. The basement consists of metamorphic rocks of the Ordovician Palmetto Formation. These rocks contained significant carbonaceous material, which is chargeable and affected the survey at depth.

The second phase is a three-hole drilling program targeting a north zone and a south zone separated only by an area of poor outcrops. The north zone contains a structure with a flexure and a flattening dip associated with an increase in gold values. The south zone contains stockworks with the potential for bulk-mineable gold mineralization. The company completed one core hole to 499 feet (152 m) in the south zone with a second core hole still being drilled at year's end in the north zone. The completed hole intercepted wide zones of intense fracturing and iron oxide deposition but no significant gold or silver values were encountered. This was thought due to a lack of quartz veining. (Oakdale Resources, Ltd., news releases 6/27/2019, 10/1/2019, 10/21/2019, 10/30/2019, 11/21/2019, 12/29/2019, 2/14/2020, 12/23/2020; Oar Resources Ltd. website, https://www.oarresources.com.au)

Tybo District

Bolo. In September, Barrian Mining Corp. completed 10 reverse circulation holes totaling 6,029 feet (1,838 m) on its Bolo Project. Apex Geoscience, Ltd., managed the drill program. Significant intercepts in the Uncle Sam zone included: 1) 75 feet (22.9 m) grading 2.18 opt (74.9 g/t) silver, including 15 feet (4.6 m) grading 4.32 opt (148 g/t) silver; 2) 70 feet (21.3 m) grading 0.71 opt (24.2 g/t) silver and 0.0093 opt (0.32 g/t) gold, including 25 feet (7.6 m) grading 1.25 opt (43 g/t) silver and 0.015 opt (0.52 g/t) gold. Significant gold intercepts in the South Mine fault zone included 1) 275 feet (83.8 m) grading 0.04 opt (1.37 g/t), including 95 feet (29 m) grading 0.097 opt (3.34 g/t) and 45 feet (13.7 m) grading 0.14 opt (4.97 g/t) and 2) 440 feet (121.9 m) grading 0.035 opt (1.19 g/t), including 50 feet (15.2 m) grading

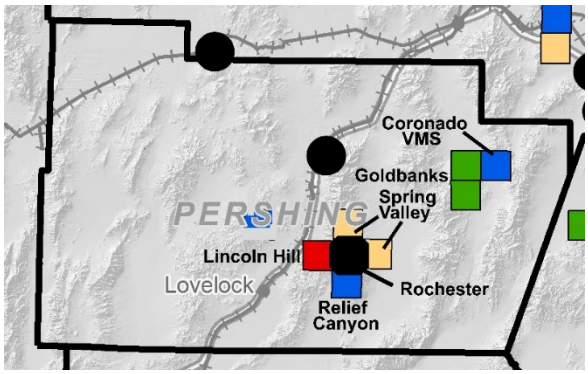
0.095 opt (3.25 g/t) and 40 feet (12.2 m) grading 0.097 opt (3.32 g/t)

The combined data from the latest and historical reverse circulation drilling define a 0.75-mile (1.2-km) north-south-trending corridor of gold-silver mineralization containing the South Mine fault zone, Uncle Sam, and Northeast Extension zones. The mineralization has strong subvertical structural control and appears to extend laterally at low angles within favorable silty carbonate units. The new drilling also extended the mineralization about 130 feet to 160 feet (40 m to 50 m) vertically below that intercepted in previous (2017) drilling and indicates the mineralization remains open below 500 feet (150 m) in depth. In the South Mine fault zone, one hole intercepted Carlin-style oxide gold mineralization within silicified and oxidized jasperoids, siliceous siltstones, and cherty limestones within the hanging wall Cambrian Windfall Formation. The intensity of alteration decreased below 200 feet (60 m), but remained continuous to 300 feet (91 m). Weak to moderate silicification and oxidization alteration occurs locally below 300 feet (91 m) into the footwall Silurian to Devonian Roberts Mountains Formation dolomite. The Uncle Sam prospect is about 1,640 feet (500 m) south and 820 feet (250 m) vertically below the South Mine fault zone. The drill data suggest the existence of a distinct silver (with or without gold) mineralized zone offset about 330 feet to 500 feet (100 m to 150 m) west of and up to 660 feet (200 m) below surface within the footwall of the main South Mine fault zone. The mineralization occurs over a 1,150-foot (350-meter) vertical extent.

In May, the company had KLM Geoscience, LLC, conduct an induced polarization induced polarization and resistivity geophysical survey. The consisted of 6.4 line-miles (10.2 line-km) over nine lines targeting the Mine fault and other mineralized structures that host the Uncle Sam, South Mine fault, and Northern Extension mineralized zones. The survey identified many high-priority anomalies that will need follow-up drill testing and indicate a greater than 3,600-foot (1,100-meter) strike length geophysical signature. These zones may be inter-connected and contain multiple sub-parallel zones along the Mine fault Trend.

In 2018, Barrian Mining Corp. entered into an agreement with Allegiant Gold, Ltd., whereby the former can acquire up to a 50.01% undivided interest in the Bolo Project. Barrian Mining Corp. will issue to Allegiant Gold, Ltd., $1,000,000 in common shares over a three-year period and must spent $4,000,000 on exploration by December 31, 2022. At the end of May 2020, Barrian Mining Corp. changed its name to New Placer Dome Corp. (New Placer Dome Corp. news releases, 5/13/2019, 5/24/2019, 8/20/2019, 9/4/2019, 9/27/2019, 10/21/2019, 10/23/2019, 10/28/2019, 11/4/2019, 11/7/2019, 5/25/2020; New Placer Dome Corp. Management Discussion and Analysis 10/26/2020; New Placer Dome Corp. website, https://newplacerdome.com)

PERSHING COUNTY



Antelope Springs District

Relief Canyon. On April 3, Pershing Gold Corp., then owner of the Relief Canyon Project, completed its merger with Americas Silver Corp. In September, Americas Silver Corp. changed its name to Americas Gold and Silver Corp. On the same day, Americas Gold and Silver Corp. entered into a financing arrangement with Sandstorm Gold, Ltd., for $42.5 million in gross proceeds to fund the development of Relief Canyon through to production. The agreement consists of a $25,000,000 precious metal delivery and purchase agreement, a $10,000,000 convertible debenture, and a $7,500,000 equity placement. The Relief Canyon Project covers about 29,000 acres (11,700 ha) and consists of 1,137 owned unpatented mining claims, 120 owned millsites, 62 leased unpatented mining claims, 320 acres (130 ha) of owned private minerals 7,546 acres (3,054 ha) of leased and subleased private lands.

The Company commenced construction activities in mid-July and completed them in late January 2020. Construction included building new heap leach pads, refurbishment of the adsorption-desorption-recovery plant, installation of a primary jaw crusher and associated equipment, and installation of a 3,200-foot (976-meter) overland conveyor system. Prior to construction, the leach pad was permitted for 21,000,000 tons (19,000,000 mt) on 72 acres (29.1 ha), and the 3,000-gpm (11,300 liters per minute) adsorption desorption recovery processing plant was a state-of-the-art facility, which was more than adequate for the existing pits and satellite deposits. Pershing Gold Corp. had previously acquired permits to add a gold refinery system and mercury abatement equipment (which were part of the upgrade) to be able to pour its own dore instead of sending loaded carbon rods to another mine with a refinery.

Americas Gold and Silver Corp. also commenced pre-production activities in the existing open-pit mine, which actually consists of three pits—the North pit, the South pit, and the Light Bulb pit. Active mining got under way in December. Waste stripping was conducted in the North and Lightbulb areas. Mining, crushing, stacking and processing operations were ramping up by year's end.

The company completed five in-fill drill holes during the second quarter of 2019 in support of the current resource model, but no results were released. The mineralization is mainly found in three structurally-controlled zones characterized by distinctive host rocks. From structurally lowest to highest, the zones are the Jasperoid Zone, the Lower Zone, and the Main Zone. The Main Zone hosts most of the current and historical gold resources. The Lower and Jasperoid zones were recently discovered below the Main Zone in the North pit area. The mineralization in all three zones is associated with quartz-illite+fluorite+kaolinite alteration. The Main Zone mineralization is mainly hosted in a collapse breccia in massive limestone at the top of the Triassic Cane Spring Formation and extends a short distance (usually less than 10 feet 3 m) into the overlying Triassic Grass Valley Formation. Within the deposit area, the contact between the two formations and the mineralized breccia horizon form a broad, northeast-trending antiform that plunges about 10° to the southwest. The thickest portions of the breccias and the associated mineralization lie mainly along the antiform crest. The breccia and mineralization thin and pinch out down dip on the northwest limb, and are very thin to nonexistent on the southeast limb. The Lower Zone and Jasperoid Zone mineralization is hosted within the foliated deformed limestone package below the massive limestone of the Cane Spring Formation. Lower Zone mineralization has a strong spatial association with gabbro sills and/or transposed dikes, and is hosted in or proximal to complex tectonic breccias and local carbonate-dissolution collapse breccias. The Jasperoid Zone is hosted in a sequence of limey ductile tectonites locally containing stretched and boudinaged quartz veins, stretched quartz-pebble conglomerate and sandstone, folded and foliated limestone, and altered gabbro, all of which have been replaced by dark-colored quartz. (Americas Gold and Silver Corp., 10-K Form, 3/9/2020; Americas Gold and Silver Corp., Management Discussion and Analysis, 3/9/2020, 5/15/2020; Americas Gold and Silver Corp. news releases, 5/13/2019, 9/5/2019, 12/19/2109, 2/18/2020; Americas Gold and Silver Corp. website, https://www.americas-gold.com)

Goldbanks District

Goldbanks. Premier Gold Mines, Ltd., drilled the Goldbanks Project in 2018 but not in 2019. The company had an an option agreement with Kinross Gold USA, Inc., whereby the former could earn a 50% interest in the Goldbanks project by spending $20,000,000 in exploration on the property over five years, including a guaranteed commitment of $3,500,000 during the first 18 months. Due to poor drilling results in 2018, the company terminated the option on December 26, 2019. (Premier Gold Mines, Ltd., news releases, 5/29/2019; Premier Gold Mines, Ltd., Management Discussion and Analysis, 11/12/2019, 3/4/2020; Premier Gold Mines, Ltd., website, www.premiergoldmines.com)

Imlay District

Florida Canyon. Florida Canyon Mining, Inc., operated the Florida Canyon Mine and produced 43,305 ounces of gold and 30,877 ounces of silver in 2019. The all in sustaining cost was $1,337 per gold ounce. The plant processed 20,165 tons

(18,294 mt) tons of ore per day. Gold deposited on the pad was 60,885 ounces.

Florida Canyon Mining, Inc., was a subsidiary of Rye Patch Gold Corp. In May 2018, Rye Patch Gold Corp. was acquired by Alio Gold, Inc., and ceased to be a reporting issuer in Canada. As a result, Florida Canyon Mining, Inc., became a subsidiary of Alio Gold, Inc. In June, 2020, Alio Gold Corp. merged with Argonaut Gold Corp. The latter continued to be traded as a public company, and the former was delisted. Argonaut Gold Corp. then issued an NI 43-101 technical report on the Florida Canyon Mine, which included updated reserves and resources. The property covers 29,370 acres (11,886 ha) and includes the adjacent Standard Mine Project. Of that, 877 unpatented claims cover 23,875 acres (9,662 ha). The rest is private property including 19 patented claims. (Argonaut Gold Corp., NI 43-101 Technical Report, 7/8/2020; Argonaut Gold Corp., website, https://www.argonautgold.com; Alio Gold, Inc., Management Discussion and Analysis, 3/18/2020; Alio Gold, Inc., news release, 7/1/2020; Alio Gold, Inc., Annual Information Form, 3/20/2020)

Mineral Basin District

Buena Vista. New Tech Lithium Corp. conducted a sampling program on its Buena Vista Cobalt Project in 2018, but reported no exploration was reported for 2019. The property centers on the old Segerstrom-Heizer iron mine, and the deposit is best characterized as an iron-cobalt deposit. The host rocks are part of the Jurassic-aged Humboldt Iron-Oxide-Copper-Gold Mafic Complex. Cobalt mineralization occurs as disseminations and stockwork veins of cobalt-bearing pyrite associated with strong sodic-calcic hydothermal alteration of gabbroic intrusive rocks, co-magmatic basalt-andesite volcanic flow rocks, and massive magnetite replacement bodies. This alteration is albite-actinolite and late chlorite-sericite alteration that variably overprints an earlier scapolite-hornblende alteration. The cobalt mineralization is also associated with very low levels of nickel-sulfide mineralization.

In 2018, signed a letter of intent with Zephyr Minerals, Inc., to lease the mineral rights with an option to purchase to the property which covered 640 acres (259 ha). The lease included $78,000 and 250,000 shares of stock to be paid over a two-year period and a 10-year annual $50,000 premium starting the fourth year. Nevada Land and Resources of Reno, Nevada, owned an underlying 5% nets smelter return royalty on the property. In June, the company entered into an Assignment and Assumption Agreement with Explorex Resources Inc., whereby former assigns to the latter its right to acquire full interest in the project for $10,000 in cash and 400,000 shares of stock in Explorex Resources Inc. The latter will assume all of the former's underlying commitments to the original agreement with Zephyr Minerals, Inc. The company terminated its lease in 2020. (New Tech Minerals Corp., Management Discussion and Analysis, 11/20/2020; NBMG Bulletin 89; New Tech Minerals Corp., news releases, 3/4/2019, 6/25/2019, 4/3/2020)

Rochester District

Rochester (including Lincoln Hill). Coeur Rochester Inc., a subsidiary of Coeur Mining Inc., produced 3,761,060 ounces of silver and 35,400 ounces of gold from its Rochester Mine. The mined ore averaged 0.46 opt (15.8 g/t) silver and 0.003 opt (0.1 g/t) gold. Depending upon operating experience and metallurgical testing, the ultimate recovery from crushed ore for silver was an estimated 70%. Depending upon the ore leached, the ultimate recovery for gold was 92.5%. The total cost applicable to sales per ounce was $14.34 for silver and $1,251 for gold.

The company spent $1,200,000 on capitalized conversion drilling and $700,000 on resource expansion drilling. The conversion drilling consisted of 7,111 feet (2,167 m) of infill core drilling of Rochester pit and East Rochester mineralization during the third and into the fourth quarters. Four holes were drilled in the center of the Rochester pit and rest involved directional drilling to test areas of potential mineralization underneath the Stage I leach pad at East Rochester. The expansion drilling program commenced during the fourth quarter and is expected to continue into 2020. It consisted of 9,250 feet (2,819 m) of reverse circulation drilling testing the Lincoln Hill mineralization. The program mainly focused on infill drilling to validate the resource model of previous owner, Alio Gold, Inc., and collect additional information on the mineralization and host rock. Little detail was released from these

drilling programs. Mineralization is hosted in folded and faulted rhyolitic volcanic rocks of the Rochester Formation and overlying Weaver Formation of the Koipato Group. Silver and gold, consisting of silver sulfosalt minerals, argentite, silver-bearing tetrahedrite and minor native gold, are contained in zones of multiple quartz veins, veinlets, stockworks with variable amounts of pyrite.

The company requested a modification to its Plan of Operations to expand mining at both the Rochester and Packard pits and to move, relocate, or expand heap leach pads, waste rock dumps, processing facilities, and some related infrastructure. Land disturbance would be increased by 435.2 acres (176 ha) on private land and 2380.2 acres (963 ha) on public land. Mining of the Rochester pit would extend below the water table and require dewatering, resulting in a permanent pit lake after closure. The expansion would extend the mine life out to 2033 after which mine closure and reclamation would follow. A draft environmental impact statement was completed by the BLM in 2019. A final environmental impact statement was completed followed by a record of decision approving the project that was issued in early 2020. (BLM, Coeur Rochester and Packard Mines Plan of Operations, Amendment 11, Draft Environmental Impact Statement, DOI-BLM-NV-W010-2019-0008-EIS, 9/2019; BLM, Coeur Rochester and Packard Mines Plan of Operations, Amendment 11, Final Environmental Impact Statement, DOI-BLM-NV-W010-2019-0008-EIS, 2/2020; BLM Record of Decision and Plan of Operations Approval DOI-BLM-NV-W010-2019-008-EIS Plan of Operations Serial Number: NVN-64629 Coeur Rochester and Packard Mines Plan of Operations, Amendment 11, 3/2020; Coeur Mining, Inc., news releases, 5/1/2019, 8/7/2019, 11/4/2019, 12/17/2019, 2/18/2020; Coeur Mining Inc. 10-K Report, 2/19/2020; Coeur Mining Inc. website, https://www.coeur.com)

Spring Valley District

Spring Valley. Waterton Global Resource carried out a major drill program on its Spring Valley project located just north of Coeur Mining's Rochester mine. No results were released.

STOREY COUNTY

Comstock District

Lucerne. Comstock Mining, Inc., ceased mining the Lucerne pit in 2015 and ceased processing ore in 2016. With no mining revenue, the company was forced to curtail exploration activities and concentrate on cost reduction. Early in 2019, Tonogold Resources, Inc., and Comstock Mining, Inc., entered into an agreement whereby the former would eventually acquire full interest in the Lucerne project and a 20-year lease that included the right to use, operate, and manage the latter's processing facilities, infrastructure, and mining claims (collectively known as the American Flats Properties). The lease also included full rights to explore, develop, and mine the latter's claims in Storey County. Through prior agreements, Tonogold Resources, Inc., already owned a 50% interest in Comstock Mining, LLC, the subsidiary controlling the American Flats Properties. The Lucerne property covers 1,200 acres (486 ha). The exploration portion of the lease covers another over 2,800 acres (1,133 ha), which includes past major Comstock Lode producers to the north of Lucerne, such as the Belcher, Crown Point, and Consolidated Imperial deposits, which between 1863 and 1916 produced 1,900,000, 1,800,000, and 1,100,000 gold equivalent ounces respectively. In November, the two companies closed on the agreement, which allows Tonogold Resources, Inc., to acquire the full interest through monthly payments out to June 2020. In 2020, the sale of the Lucerne mine was completed for a nearly $25,900,000 combination of cash, convertible preferred stock, and notes receivable due on September 20, 2021. Tonogold Resources, Inc., then commenced a drilling program, and with the funds from the sale, Comstock Mining, Inc., restarted exploration of its remaining properties. (Comstock Mining, Inc., press releases, 11/19/2019, 9/14/2020, 9/22/2020; Comstock Mining, Inc., website, https://www.comstockmining.com; Tonogold Resources, Inc., Annual Financial Statements, 12/31/2019; Tonogold Resources, Inc., press releases, 1/29/2019, 4/9/2019, 11/19/2019, 9/8/2020; Tonogold Resources, Inc., website, http://tonogold.com)

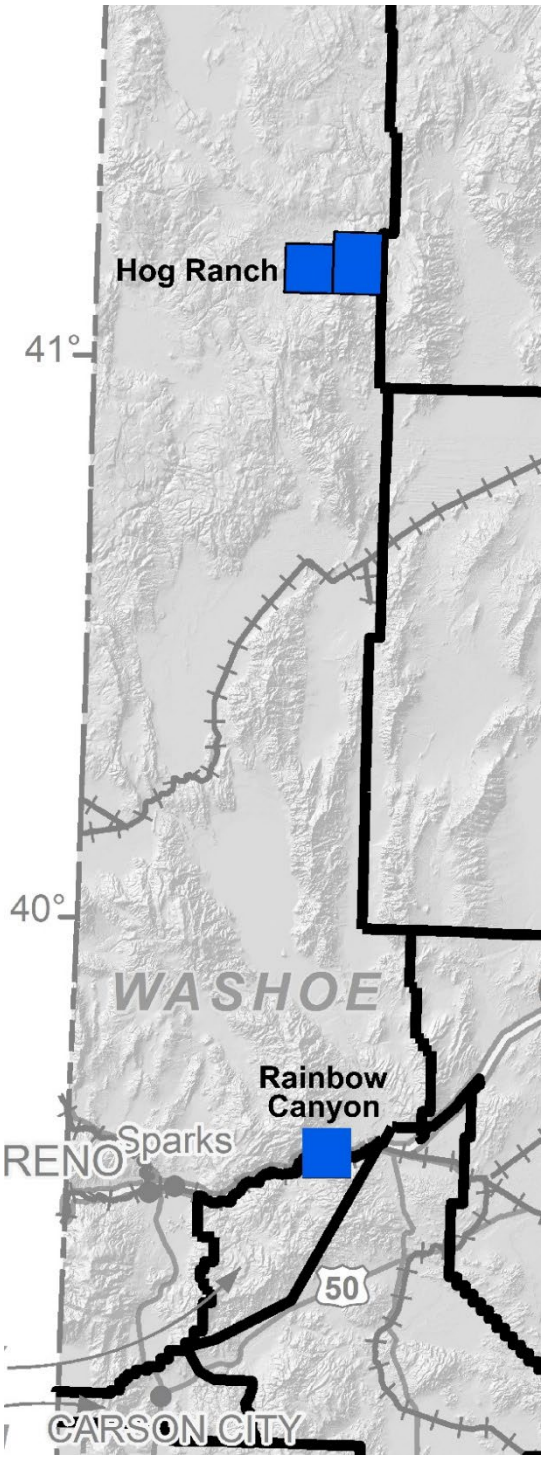
WASHOE COUNTY

Leadville District

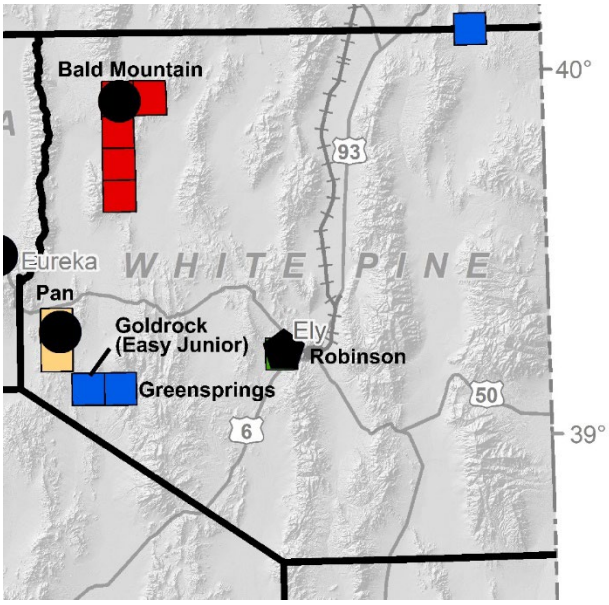
Hog Ranch. Rex Minerals, an Australian company, completed a 10 ten reverse circulation holes at the Bells Zone at the Hog Rach epithermal deposit in northern Washoe County. The holes confirmed a consistent shallow zone of higher-grade gold mineralization and an additional slightly deeper zone of higher grades, within a larger inferred resource zone. The shallow zone of higher grade mineralization is only about 80 ft (25 m) below the surface. The surface is marked by steam-heated alteration characteristic of shallow levels of low-sulfidation epithermal deposits. Significant gold intercepts included 1) 53.3 m grading 2.48 g/t, including 16.8m m grading 6.2 g/t; 2) 59.4 m of 1.2 g/t that included both the shallower and slightly deeper zones; 3) 93 m of 0.52 g/t, including 19.8 m grading 0.88 g/t; 4) 13.7 m grading 1.45 g/t, including 9.1 of 1.95 g/t; and 4) 29 m of 1.38 g/t. (Rex Minerals website, www.rexminerals.com.au)

Olinghouse District

Rainbow Canyon. Acrex Resources Inc. carried out a small drill program at its Rainbow Canyon on its Rainbow Canyon project in the Olinghouse district. No results were released. (BLM LR2000) database (https://reports.blm.gov/reports.cfm?application=LR2000)



WHITE PINE COUNTY



Bald Mountain District

Bald Mountain. Kinross Gold Corp. divided the property into North Operations Area, a Central Zone, and a South Operations Area. Recent production has been from the North Operations Area. In June of 2019, production commenced from the Vantage Complex (Alligator Ridge) in the South Operations Area. Production from the North Operations Area was 123,684 ounces of gold and 21,241 ounces of silver. Production from the South Operations Area was 63,901 ounces of gold and 11,223 ounces of silver.

The company mined 17,423,000 tons (15,806,000 mt) of ore and processed 18,160,000 tons (16,475,000 mt) of ore grading 0.012 opt (0.42 g/t), 35%, 30%, and 2% decreases respectively for ore and grade from 2018. The company spent $12,700,000 on exploration and business development and $220,700,000 on capital expenditures. The decrease in tons mined and processed was mainly due to the focus of mining activities being on the South Operations Area, including the ramping up of production for the Vantage pit and unfavorable weather early in the year.

The Bald Mountain operation mines from a number of different pits with the three main deposits (Top, Saga and Vantage) representing approximately 85% of the known reserves. Based on the 2019 mineral reserves, mining is expected to continue through 2023 with several years of post-mining gold production from the heap leach pads. Exploration continued to be focused on resource addition and included drilling targets proximal to its current operations, delineating other targets, and early stage drill testing of other high potential targets in both Operations Areas. About $4,000,000 of the exploration budget focused on generative exploration, with 13 targets drilled in 2019. Early-stage evaluation work also continued, completing mapping, sampling, and target delineation work on the vast land package. Eleven additional targets were also advanced elsewhere on the property for 2020 drill testing. No details of these projects were released, though the most recently drilled targets included Bida, Poker, Flat, Rat, Redbird and its south extensions, Royale, Saga, South Duke, Top, and Winrock in the North Operations Area; Stageline and Rattlesnake in the Central Zone; and Vantage and Yelland in the South Operations Area. Exploration in 2019 included work on the Juniper Project in the North Operations Area. The Project would potentially increase mine's footprint by 3,700 acres (1,500 ha) and extend the life the mine from 2023 out to 2040.

Construction of the Bald Mountain Vantage Complex project was completed. The Vantage Complex is in the area of the old Alligator Ridge Mine. The project included a new heap leach pad with a total capacity of 75,000,000 tons (68,000,000 mt) of ore, which was completed in September. The project also included a new vertical carbon-in-column plant and associated infrastructure such as the truck shop, warehouse and wash bay, which were completed about mid-year. (Elko Free Press, 9/17/2020; Kinross Gold Corp. Management Discussion and Analysis, 2/12/2020; Kinross Gold Corp. Annual Information Form, 330/2019; Kinross Gold Corp. Annual Report, 4/2/2020; Kinross Gold Corp. website, https://www.kinross.com)

Pancake District

Pan. GRP Pan, LLC, a subsidiary of Fiore Gold, Ltd, produced 40,499 ounces of gold from its Pan Mine, an 8% increase from 2018. Mining was conducted from both the North Pan Zone and the South Pan Zone. During the fiscal year that ended in September, 14,046,689 tons of rock were mined

of which 5,081,729 tons were ore grading 0.015 opt, a 22% increase in rock mined. The strip ratio was 1.8, a 50% increase from 2018. The all-in sustaining cost per ounce of gold was $961.

Of the ore mined, 859,849 tons (780,050 mt) were placed on the leach pad as crushed ore and 4,114,660 tons (3,732,795 tones) were placed and leached as run-of-mine directly on the leach pad. The recoveries of crushed ore was estimated to be 60% on ore from the north pit and north satellite pits and 80% on ore from the south pit and south satellite pits. The recoveries of run-of-mine ore was estimated to be 50% from the north pit and north satellite pits and 75% from the south pit and south satellite pits. Total production costs were $41,080,000, total mining costs were $30,260,000 and total processing costs were $7,080,000.

In the fourth quarter (July through September), the company completed 26 reverse circulation holes totaling 13,685 feet (4,171 m) at several locations around the main North Pan and South Pan pits, as well as the smaller Syncline and Black Stallion satellite pits. The program tested the potential to expand the existing oxide reserves both at depth and laterally beyond the current reserve boundaries. Significant gold intercepts in the North Pan Area included 115 feet (35.1 m) grading 0.019 opt (0.64 g/t), 40 feet (12.2 m) grading 0.034 opt (1.16 g/t), and 125 feet (38.1 m) grading 0.023 opt (0.79 g/t). Significant gold intercepts in the South Pan Area included 120 feet (38.8 m) grading 0.015 opt (0.5 g/t), 160 feet (48.8 m) grading 0.017 (0.57 g/t), and 70 feet (21.3 m) grading 0.018 opt (0.63 g/t). The best gold intercept at Syncline was 15 feet (4.6 m) grading 0.015 opt (0.51 g/t).

The Pan deposit is a Carlin-type, sediment hosted, gold-only system consisting of three main zones of mineralization – North, Central, and South Pan. These zones have been traced over 6,000 feet (1,800 m) along the north-south trending Branham Fault. The mineralization is entirely oxide and outcrops at the surface. North Pan mainly consists of a large body of silicified solution breccia along the western margin of the Branham fault. The mineralization extends westward from the breccia body along the generally flat-lying contact between the Devonian–Mississippian Pilot Shale and Devonian Devils Gate Limestone. Central Pan consists of several smaller pods of mineralization mostly along the Pilot Shale-Devils Gate Limestone contact but also along a series of west-northwest trending open folds and north-south secondary faults. South Pan is mainly hosted in strongly clay altered and mineralized solution breccias within the Branham fault zone and in clay altered sediments along the Pilot Shale-Devils Gate Limestone contact, which dip southeastward away from the Branham fault. (Fiore Gold, Ltd, news releases, 10/23/2019, 12/10/2019; Fiore Gold, Ltd, Management Discussion and Analysis, 1/23/2020, 2/27/2020; Fiore Gold, Ltd, website, http://fioregold.com)

Robinson District

Robinson. The Robinson Nevada Mining Co. produced 113,132,886 pounds of copper (51,316 mt), and 766,699 pounds (348 mt) of molybdenite. Material containing molybdenite is stockpiled, and molybdenum is produced when the stockpiles are large enough to process it in the mill. The mine also produced 51,277 ounces of gold and 67,634 ounces of silver as by-products. Concentrates from the mill are trucked to the Wendover Bulk Transhipment Co. rail yard at Wendover, Utah, and loaded into Union Pacific train cars. Some goes to a smelter in Salt Lake City while the rest is sent to the Port of Vancouver for shipment overseas. Prior to the imposition of tariffs, much of the concentrates were shipped to China with some going to India, Japan, and elsewhere. With the tariffs in place, almost all of the overseas shipments were going to India, Europe, Japan, and elsewhere. All mining at Robinson is on 21,000 acres (8,500 ha) of mostly private and some public land. The Robinson Nevada Mining Co. and the Wendover Bulk Transhipment Co. are subsidiaries of Robinson Holdings (USA), Ltd., which in turn is a subsidiary of KGHM International, Ltd., headquartered in Lubin, Poland.

Mining was from the third layback of the Ruth East pit and the fourth layback of Ruth West. The ore is considered non-refractory. Development of a fifth layback in Ruth West will begin after the start of 2020 and extend the operation out to 2025.

The company inherited the legacy of over a century's worth of mining activities and associated environmental problems and conducts an on-going reclamation program. One such site is the old Keystone Waste Rock Dump with associated acid mine drainage. A recent environmental assessment allowed for an over-dumping program. The

company started over-dumping with non-acid generating waste rock to encapsulate the acid generating rock. This deprives it of water and oxygen needed for the reaction that results in acid mine drainage.

While no details or results were reported, the company has an on-going exploration drilling program to provide information for the geologic model, better define the ore body, and provide metallurgical samples. In 2018 and 2019, drilling, geotechnical, and metallurgical tests and technical and feasibility analyses were conducted on the Liberty pit, at which mining was suspended in 2013. This resulted in the decision to re-include the Liberty pit into the mining plans, which would require an amendment to the plan of operations. The resumption of mining of the Liberty pit would require an amendment to the Robinson Project Plan of Operations be proposed to the BLM. The amendment being considered would also include construction of a new King Waste Rock Dump south of the Liberty and Ruth pits, and expansion of the storage capacity at the Giroux Wash Tailings Storage Facility. These proposed activities would increase surface disturbance within the Project Area Boundary by about 1,227 acres (497 ha), 981 acres (397 ha) of which would be new disturbance on public lands. This would bring the total end of mine life surface disturbance to 10,115 acres (4,093 ha). If approved, these actions would extend the mine life out to 2028 with capital expenditures of $523,000,000 estimated for that period. (Elko Free Press, 9/7/2019; BLM, BLM Seeks Public Input on Proposed Robinson Mine Expansion and Proposed Resource Management Plan Amendment, News Release, 5/28/2020; KGHM International, Annual Report, 2019, 3/17/2020; KGHM International, 3rd Quarter 2018 Consolidated Report, 11/20/2019; KGHM International, website, https://kghm.com/en)

White Pine District

Gold Rock (Easy Junior). Fiore Gold, Ltd, completed 32 reverse circulation holes totaling 28,895 feet (8,807 m) and six core holes totaling 6,198 feet (1,889 m) on its Gold Rock (formerly Easy Junior) property. The deposit is a Carlin-style disseminated gold-only deposit hosted in limestone and siltstone of the Mississippian Joana Limestone and the overlying Chainman Shale. Mineralization is localized in the apex and limbs of the slightly overturned, fault-bounded Easy Junior anticline. The mineralization is mainly in the Joana Limestone and to a lesser extent in the Chainman Shale. Scattered, minor mineralization also occurs in the underlying Devonian Pilot Shale. The known resource to date trends N12E to N15E along a strike length of over 11,000 feet (3,350 m). The mineralization may be open to the north and south. The Easy Junior (a.k.a. Nighthawk Ridge) open pit last produced in 1997. Three Resource pit shells were identified in 2018. The northern shell trends north-northeast over 5,600 feet (1,715 m) and is up to 1,500 feet (460 m) wide. It is centered over the old Easy Junior pit. The central shell trends north-northeast over 2,000 feet (660 m) and is up to 1,100 feet (335 m) wide. The southern shell trends almost north-south over 1,000 feet (330 m) and is up to 345 feet (105 m) wide.

The drilling program was designed to expand the existing resource, upgrade inferred resources to measured and indicated, and collect samples for orebody characterization and metallurgical testing. One of the priority targets was the area between the north and central Resource pit shells, which was not included in the current resource due to limited, widely spaced, vertical drilling that generally stopped in the upper portion of the mineralization. The deposit also remains open to the north and south of the existing resource area, where the drilling density drops off rapidly.

Significant gold intercepts from holes drilled around and in the old Easy Junior pit included 1) 180 feet (54.9 m) grading 0.025 opt (0.85 g/t) including 30 feet (9.1 m) grading 0.055 opt (1.88 g/t); 3) 50 feet (15.2 m) grading 0.036 opt (1.22 g/t), including 25 feet (7.6 m) grading 0.047 opt (1.62 g/t); and 4) 85 feet (25.9 m) grading 0.027 opt (0.91 g/t).

Significant gold intercepts from holes drilled in the northern Resource pit shell just north-northeast of the old Easy Junior Pit included 95 feet (29 m) grading 0.018 opt (0.63 g/t) including 1) 10 feet (3 m) grading 0.048 opt (1.64 g/t); 2) 30 feet (9.1 m) grading 0.026 opt (0.88 g/t); 3) 20 feet (6.1 m) grading 0.031 opt (1.05 g/t); and 4) 65 feet (19.8 m) grading 0.023 opt (0.78 g/t) including 20 feet (6.1 m) grading 0.063 opt (2.16 g/t).

Gold intercepts from holes drilled in the northern Resource pit shell just south-southwest of the old Easy Junior pit included 1) 90 feet (27.4 m)

grading 0.043 opt (1.46 g/t); 2) 30 feet (9.1 m) grading 0.073 opt (2.51 g/t); and 3) 50 feet (15.2 m) grading 0.028 opt (0.97 g/t), including 15 feet (4.6 m) grading 0.038 opt (1.29 g/t).

Gold intercepts from holes drilled in the 1,800-foot (550-meter) space between the northern and central Resource pit shells included 1) 80 feet (24.4 m) grading 0.028 opt (0.96 g/t); and 2) 100 feet (30.5 m) grading 0.014 opt (0.47 g/t).

Gold intercepts from holes drilled in the central Resource pit shell included 1) 40 feet (12.2 m) grading 0.02 opt (0.68 g/t), including 10 feet (3 m) grading 0.035 opt (1.21 g/t); 2) 55 feet (16.8 m) grading 0.022 opt (0.76 g/t), including 10 feet (3 m) grading 0.049 opt (1.68 g/t); and 3) 100 feet (30.5 m) grading 0.03 opt (1.02 g/t);.

Gold intercepts from holes drilled between the central and southern Resource pit shells included 45 feet (13.7 m) grading 0.011 opt (0.36 g/t).

The company was preparing a NI 43-101 preliminary economic assessment report with updated resources. The company proposed expanding an existing open pit and building two waste rock disposal areas, a heap leaching facility, an adsorption/desorption refining plant, a mill, a carbon-in-leach plant, a tailings storage facility, and associated infrastructure as needed. The expanded mining and construction would disturb 3,946 acres (1,597 ha). The proposal also calls for 392 acres (159 ha) of authorized exploration disturbance. The record of decision was in favor of the project. (Fiore Gold, Ltd, news releases, 5/29/2019, 6/19/2019, 8/12/2019, 9/10/2019, 10/23/2019; Fiore Gold, Ltd, NI 43-101 Technical Report, 3/31/2020; Fiore Gold, Ltd, Management Discussion and Analysis, 1/23/2020; Fiore Gold, Ltd, website, http://fioregold.com)

Green Springs. In July, Contact Gold Corp. and its U.S. operating entity, Clover Nevada II, LLC, entered into a purchase option agreement with subsidiaries of Ely Gold Royalties, whereby the former acquired the option to purchase full interest in the Green Springs property minus a 0.5% royalty. The agreement calls for the former to issue 2,000,000 common shares, pay $25,000, and reimburse prepaid claims fees relating to the Green Springs Project to the latter upon entry into the agreement. The former will then pay the latter $50,000 in cash or common shares on the first, second, and third anniversaries of the agreement and $100,000 in cash or common shares on the fourth anniversary.

Contact Gold Corp. then spent $505,328 including $284,842 on exploration including on drilling, assaying, and geochemistry. The company completed ten reverse circulation holes totaling 4,264 feet (1,300 m) across the Alpha, Bravo, Charlie, and Echo Zones, which lie outside of the old producing pits. The pits last produced between 1988 through 1991. One hole was drilled in the Charlie Zone, with the results pending.

Gold intercepts from the six holes drilled in the Alpha Zone included 1) 95 feet (28.96 m) grading 0.039 opt (1.34 g/t), including 50 feet (15.24 m) grading 0.058 opt (2 g/t); 2) 115 feet (35.05 m) grading 0.049 opt (1.68 g/t), including 65 feet (19.81 m) grading 0.074 opt (2.55 g/t); 3) 150 feet (45.72 m) grading 0.025 opt (0.86 g/t), including 30 feet (9.14 m) grading 0.053 opt (1.82 g/t). The Alpha Zone is a zone of shallow, generally less than 300 feet (100 m) in depth, gold mineralization hosted along the lower contact of the Devonian to Mississippian Pilot Shale with the underlying Devonian Guilmette Limestone. The mineralization covers an area of about 1600 feet (500 m) by 800 feet (250 m).

The contact hosting the mineralization surfaces about 1600 feet (500 m) north of the Alpha Zone. Known as the Tango target, it is a 1,600-foot (500-m) by 800-foot (250-m) area of anomalous gold values in the soil that dips shallowly towards the west under cover. The company collected 26 soil samples, which assayed between 0.0029 opt and 0.044 opt (0.1 g/t and 1.52 g/t) gold.

Significant gold intercepts from the hole drilled in the Bravo Zone included 75 feet (22.86 m) grading 0.03 opt (1.02 g/t) oxide including 35 feet (10.67 m) grading 0.052 opt (1.79 g/t). The Bravo Zone lies 2,500 feet (750 m) north of the past-producing Charlie pit and 2,950 feet (900 m southwest of the Alpha Zone. It lies at the northern end of the north-south Green Springs trend at a structural intersection with a major northeast striking fault extending to the Alpha Zone. The core is an elongated east-northeast-striking zone with currently unquantified higher-grade gold values in a 660-foot (200-meter) by 280-foot (85-meter) area.

Gold intercepts of the two holes drilled in the Echo Zone included 1) 230 feet (70.1 m) grading 0.069 opt (2.36 g/t), including 125 feet (38.1 m)

grading 0.12 opt (4.09 g/t) and 40 feet (12.19 m) grading 0.23 opt (8.05 g/t); and 2) 125 feet (38.1 m) grading 0.1 opt (3.53 g/t) oxide including 85 feet (25.91 m) grading 0.14 opt (4.79 g/t) and including 20 feet (6.1 m) grading 0.33 opt (11.19 g/t). The Echo Zone is located 1600 feet (500 m) south of the past-producing Delta Zone and 0.6 miles (1 km) south of the Charlie Zone. The Echo Zone is a zone of shallow, generally less than 500 feet (150 m) in depth, oxide gold mineralization hosted along the lower contact of the Chainman Shale with the underlying Joanna Limestone, both Mississippian in age. The mineralization covers an area of about 1300 feet (400 m) by 300 feet (100 m). The strongest gold mineralization occurs along the main north-south mine trend, where two cross-structures were cut during drilling. The mineralization is open in most directions.

The project covers about 4,450 acres (1,800 ha). (Contact Gold Corp. news releases, 7/24/2019, 9/26/2019, 10/29/2019, 1/7/2020, 1/14/2020, 1/28/2020, 2/12/2020, 3/24/2020; Contact Gold Corp. Annual Information Form, 3/31/2020; Contact Gold Corp. Management Discussion and Analysis, 3/31/2020; Contact Gold Corp. website, http://www.contactgold.com)

Griffon. In December, Fremont Gold, Ltd, entered into a purchase option agreement with Pilot Gold (USA), Inc., a subsidiary of Liberty Gold Corp. whereby the former can acquire full interest in the past-producing Griffon gold project, minus a 1% net smelter return. The terms are Fremont Gold, Ltd, will pay $25,000 upon executing the agreement and pay $25,000 and issue 2,500,000 common shares to Liberty Gold Corp. following TSX Venture Exchange approval of the Agreement. Fremont Gold, Ltd, will then pay $50,000 and issue enough common shares to bring Liberty Gold's ownership of Fremont Gold to 9.9% on the first anniversary of the agreement. Fremont Gold, Ltd, will then pay $50,000 on the second anniversary, $75,000 on the third anniversary, and $100,000 on the fourth anniversary. Fremont Gold, Ltd, commenced drilling the property in 2020.

The property consists of 89 unpatented claims. Between 1997 and 1999, Alta Gold Co. produced about 90,000 ounces of gold at an average grade of 0.03 opt (1.03 g/t) from an oxide heap-leach operation from the Discovery Ridge and Hammer Ridge open pits. Heap leach recovery tests from that time resulted in gold recovery of 87.7% from crushed material and 65% for run of mine material. (Fremont Gold, Ltd, news releases, 12/18/2019, 6/25/2020; Fremont Gold, Ltd., Management Discussion and Analysis, 2/27/2020; Fremont Gold, Ltd, website, https://fremontgold.net)

Major Precious-Metal Deposits

by David A. Davis and John L. Muntean

The information in this compilation was obtained from the Nevada Division of Minerals and from published reports, articles in mining newsletters, and company websites, annual reports, and press releases. Locations of most of these deposits are shown on NBMG Map 149, and most active mines are shown on page 2 of this publication.
opt = troy ounces per short ton.

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
CHURCHILL COUNTY				
Bell Mountain (Bell Mountain district)	1982: 1,000,000 tons, 0.055 opt Au, 1.4 opt Ag 1989: reserves-30,000 oz Au, 125,000 oz Ag 1997: 2,500,000 tons, 0.059 opt Au equiv. oz 2011: 10,760,000 tons, 0.015 opt Au, 0.514 opt Ag (measured and indicated resource) 2,255,000 tons, 0.013 opt Au, 0.387 opt Ag (inferred resource) 2017: East Ridge Pit Shell: 36,100 tons, 0.028 opt Au, 1,016 oz Au, 0.85 opt Ag, 30,598 oz Ag (measured and indicated resource, 0.004 opt, 268,400 tons, 0.023 opt Au, 6,150 oz Au, 0.77 opt Ag, 205,928 oz Ag (inferred resource); Sphinx Pit Shell: 29,100 tons, 0.025 opt Au, 723 oz Au, 0.74 opt Ag, 21,705 oz, Ag (measured and indicated resource); 254,400 tons, 0.019 opt Au, 4,892 oz Au, 0.53 opt Ag, 134,915 oz Ag (inferred resource), Spurr Pit Shell: 856,900 tons, 0.021 opt Au, 18,266 oz Au, 0.79 opt Ag, 676,421 oz Ag (measured and indicated resource) 395,900 tons, 0.008 opt Au, 3,131 oz Au, 0.4 opt Ag, 158,100 oz Ag (inferred resource) Varga Pit Shell: 2,143,000 tons, 0.016 opt Au, 33,740 oz Au, 0.32 opt Ag, 689,423 oz Ag (measured and indicated resource), 1,140,700 tons, 0.013 opt Au, 14,711 oz Au, 0.31 opt Ag, 355,618 oz Ag (inferred resource)	1914: 35 tons, 0.51 opt Au, 16 opt Ag	rhyolitic tuff	Miocene
Buffalo Valley gold property (Eastgate district)	1996: 96,000 oz Au		rhyolitic ash-flow tuff	Tertiary
Dixie Comstock (Dixie Valley district)	1991: 2,400,000 tons, 0.049 opt Au 1995: 100,000 oz Au		Tertiary rhyolite	Miocene?
Fireball Ridge (Truckee district)	1988: 258,000 tons, 0.032 opt Au		sedimentary	
Fondaway Canyon (Shady Run district)	1988: 400,000 tons, 0.06 opt Au 1990: 400,000 tons, 0.06 opt Au 2001: 396,000 tons, 0.428 opt Au (indicated resource) 372,849 tons, 0.409 opt Au (inferred resource) 2017: underground sulfide: 2,260,000 tons, 0.18 opt Au, 409,000 oz Au (indicated resource), 3,530,000 tons, 0.19 opt Au, 660,000 oz Au (inferred resource)	1989: 1,065 oz Au, 87 oz Ag 1990: 12,000 oz Au	Triassic slate and phyllite	

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Jessup (Jessup district)	1998: 8,376,564 tons, 0.024 opt Au, 0.25 opt Ag (global resource) 2007: 5,432,000 tons, 0.022 opt Au, 0.31 opt Ag (indicated resource); 1,265,000 tons, 0.017 opt Au, 0.23 opt Ag (inferred resource) 2009: 8,571,000 tons, 0.015 opt Au, 0.255 opt Ag (measured resource); 13,936,000 tons, 0.012			

MAJOR PRECIOUS-METAL DEPOSITS, CHURCHILL COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	opt Au 0.209 opt Ag (indicated resource); 4,954,000 tons, 0.016 opt Au, 0.231 opt Ag (inferred resource)			
New Pass property (New Pass district)	1994: 3,400,000 tons, 0.042 opt Au 1997: 3,100,000 tons, 0.055 opt Au 2006: 11,500,000 tons, 0.0226 opt Au, 0.0041 opt Ag (inferred resource) 2009: 11,142,000 tons, 0.028 opt Au, 0.24 opt Ag (measured and indicated resource); 15,515,488 tons, 0.022 opt gold, 341,750 oz AuEq, 0.202 opt Ag, 3,134,129 opt Ag (inferred resource) [NI43-101 compliant]		Triassic siltstone	
Pyramid (Holy Cross district)	1998: 62,000 oz Au, 3.5 million oz Ag (drill indicated resource) 2003: 4,000 tons 0.516 opt Au, 74.99 opt Ag, 5.95% Pb, 7.08% Zn (Inferred mineral resource)	1910-1956: ~80,000 oz Au 1977-1987: 17 tons concentrates, 3.302 opt Au, 477.8 opt Ag, 17.5% Pb	welded tuff	
CLARK COUNTY				
Crescent property (Crescent district)	1992: 390,000 tons, 0.05 opt Au; 3,300,000 tons, 0.022 opt Au			
Keystone (Goodsprings district)	1990: 64,000,000 tons, 0.05 opt Au (estimated geologic resource) 1992: 110,000 tons, 0.11 opt Au	1990: ~1,000 oz Au 1993: idle	lower Paleozoic carbonate rocks	Triassic
DOUGLAS COUNTY				
Buckskin (Buckskin district)	1973: 678,400 tons, averaging 0.15 opt Au, 0.45 opt Ag, 1.3% Cu 1978: 561,500 tons, 0.18 opt Au, 0.5 opt Ag, 1.3% Cu	1918-50 intermittent: est. 10,000 tons Au, Cu ore	Triassic andesite and rhyodacite flows	
ELKO COUNTY				
Banshee (Bootstrap district)	2002: 44,000,000 tons, 0.44 opt Au, 1,400,000 oz Au (preliminary resource) 2011 underground: 1,679,000, tons, 0.327 opt Au, 548,000 oz contained Au 2018: underground: 908,500 tons, 0.337 opt Au, 306,600 oz Au (measured and indicated resource); 370,900 tons, 0.285 opt Au, 105,400 oz Au (inferred resource)		Popovich Fm.	
Big Springs (Independence Mountains district)	1987: 3,760,000 tons, 0.148 opt Au 1989: 1,550,000 tons, 0.172 opt Au 2005 (inferred resource,): 15,145,000 tons, 0.078 opt Au 468,000 tons, 0.45 opt Au 2013: North Sammy: 1,430,000, 0.12 opt Au, 167,000 oz Au; North Sammy Contact: 1,430,000 tons, 0.05 Au, 70,000 oz Au; South Sammy: 8,000,000 tons, 0.06 opt Au, 438,000 oz Au; Beadle Creek: 2,310,000 tons, 0.07 opt Au, 70,000 oz Au; Mac Ridge: 1,870,000 tons, 0.04 opt Au, 74,000 oz Au; Dorsey Creek: 330,000 tons, 0.04 opt Au, 12,000 oz Au; Briens Fault: 880,000 tons, 0.05 opt Au, 43,000 oz Au; Big Springs Total: 16,300,000 tons, 0.06 opt Au, 968,000 oz Au (inferred resource,	1987-88: ~106,000 oz Au 1989-92: 274,000 oz Au, 48,000 oz Ag 1993: 52,752 oz Au 1994-95: 30,095 oz Au, 2,877 oz Ag	Mississippian to Permian overlap assemblage clastic and carbonate rocks	Eocene

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Big Springs (con't)	2014: North Sammy: 1,607,000, 0.13 opt Au, 184,100 oz Au; North Sammy Contact: 1,441,000 tons, 0.06 Au, 71,800 oz Au; South Sammy: 8,380,000 tons, 0.06 opt Au, 437,200 oz Au; Beadle Creek: 2,978,000 tons, 0.08 opt Au, 201,700 oz Au; Mac Ridge: 2,080,000 tons, 0.04 opt Au, 81,100 oz Au; Dorsey Creek: 306,000 tons, 0.05 opt Au, 12,900 oz Au; Briens Fault: 881000 tons, 0.05 opt Au, 40,500 oz Au; Big Springs Total: 17,672,000 tons, 0.07 opt Au, 1,029,900 oz Au (combined measured, indicated and inferred resource)			
Bootstrap/Capstone/ Tara (Bootstrap district)	1989: 25,100,000 tons, 0.039 opt Au (geologic resource) 1996: 20,200,000 tons, 0.046 opt Au (proven and probable reserves); 1 million tons, 0.086 opt Au (mineralized material)	1988-90: included in Newmont Gold production at the end of this section 1996: 19,800 oz Au 1999: 147,088 oz Au, 28,395 oz Ag 2000: 131,979 oz Au, 13,402 oz Ag 2001: 92,775 oz Au, 21,093 oz Au 2002: 23,415 oz Au, 4,717 oz Ag 2003: 29,742 oz Au, 5,480 oz Ag 2004: 154,521 oz Au, 43,566 oz Ag 2005: 3,849 oz Au, 322 oz Ag 2006: 2,019 oz Au, 436 oz Ag	dacitic dikes, Paleozoic siltstone and laminated limestone/chert	Eocene
Burns Basin (Jerritt Canyon, Independence Mountains district)	2005-2007: 29,700 tons, 0.134 opt Au (open pit indicated resource) 30,700 tons, 0.194 opt Au (underground indicated resource), 50,600 tons, 0.23 opt Au (underground inferred resource) 2011: 348,800 tons, 0.078 opt Au, 27,200 oz Au (proven and probable reserves, open pit) 344,500 tons, 0.096 opt Au, 33,200 oz Au (measured and indicated resource, includes reserves) 14,000 tons, 0.079 opt Au, 1,100 oz Au (inferred resource) 2012: 423,800 tons, 0.101 opt Au, 42,800 oz Au (proven and probable reserves, open pit) 476,500 tons, 0.097 opt Au, 46,300 oz Au (measured and indicated resource, includes reserves) 5,000 tons, 0.061 opt Au, 300 oz Au (inferred resource)		Hanson Creek and Roberts Mountains Formations	
California Mountain (Jerritt Canyon, Independence Mountains district)	2005-2007: 8,000 tons, 0.11 opt Au (open pit indicated resource) 32,100 tons, 0.38 opt Au (underground indicated resource), 9,400 tons, 0.33 opt Au (underground inferred resource) 2011: 4,500 tons, 0.184 opt Au, 800 oz Au (indicated resource, underground) 29,500 tons, 0.192 opt Au, 5,700 oz Au (inferred resource)		Hanson Creek and Roberts Mountains Formations	
Coyote Zone (Jerritt Canyon, Independence Mountains district)	2005-2007: 45,200 tons, 0.21 opt Au (underground indicated resource) 2,700 tons, 0.18 opt Au (underground inferred resource) 2006-2007: 20,100 tons, 0.104 opt Au (open pit inferred resource)		Hanson Creek and Roberts Mountains Formations	

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Cobb Creek (Mountain City district)	1988: 3,200,000 tons, 0.045 opt Au (geologic resource)			
Cord Ranch (Robinson Mountain district)	1991: 3,500,000 tons, 0.037 opt Au 1994: 350,000 oz Au in 3 deposits (see Piñon)		Webb Formation Devils Gate Formation Tomera Formation	
Dark Star (Robinson Mountain district)	2015: 25,470,000 tons, 0.017 opt Au, 374,000 oz Au (inferred resource, 0.005 opt Au cut-off grade) 2017: oxide: 16,950,000 tons, 0.016 opt Au, 265,100 oz Au (indicated resource, 0.006 opt Au cut-off grade); 18,790,000 tons, 0.038 opt Au, 715,800 oz Au (inferred resource, 0.006 opt Au cut-off grade) 2019: 32,310,000 tons, 0.027 opt Au, 883,000 oz Au (proven and probable reserves) 36,064,000 tons, 0.026 opt Au, 921,000 oz Au (measured and indicated resources inclusive of mineral reserves) 2,733,000 tons, 0.02 opt Au,56,000 oz Au (inferred resource resources inclusive of mineral reserves)		Tomera Formation Moleen Formation	
Dee (Bootstrap district)	1982: 2,500,000 tons, 0.12 opt Au 1990: 4,500,000 tons, 0.059 opt Au 1999: 1,400,000 tons, 0.157 opt Au, (proven and probable reserves)	1985-88: 189,983 oz Au 1989-92: 172,745 oz Au, 142,000 oz Ag 1993-95: 97,860 oz Au 1996: 45,070 oz Au, 50,322 oz Ag 1997-98: 72,595 oz Au 1999: 36,329 oz Au, 68,400 oz Ag 2000: 61,171 oz Au, 110,900 oz Ag 2001: 2,351 oz Au, 6,028 oz Ag	Vinini Formation, Devonian carbonate rocks, dacitic dikes	Eocene
Delano/Cleveland (Delano district)	1990: 240,000 tons, 6.43 opt Ag, 5.6% Pb, 3.8% Zn	1908-1969		
Doby George (Aura district)	1995: 3,700,000 tons, 0.060 opt Au 1997: 250,000 oz Au		Schoonover	
Emigrant (Carlin district)	1989 (Emigrant Springs): 30,300,000 tons 0.021 opt Au 2005 (Emigrant Springs): 1,531,165 oz Au (proven and probable reserves) 2011 low grade oxide: 1,600,000 oz Au (reserves) 2012: 1,240,000 oz Au (reserves) 2019: Rain: 13,200,000 tons, 0.012 opt Au, 160,000 contained oz Au (probable reserve, 0.006 opt to 0.23 opt Au cut-off grade); Rain/Emigrant: 17,600,000 tons, , 0.012 opt Au, 220,000 contained oz Au (indicated resource inclusive of reserves, 0.006 opt to 0.23 opt Au cut-off grade); 440,000 tons, 0.012 opt Au, 5,300 000 contained oz Au (inferred resource, 0.006 opt to 0.23 opt Au cut-off grade) [NI43-101 compliant]	2012: 20,738 oz Au, 2,376 oz Ag 2014-2019: included in Newmont Gold production at the end of this section	Webb Formation	Eocene
Hollister (Ivanhoe district)	1989: oxide-18,400,000 tons, 0.035 opt Au; estimated mineral inventory 83,500,000 tons, 0.034 opt Au, with 52,800,000 tons of oxide and 30.7 million tons of sulfide 1995: 1,300,000 oz Au; 42 million tons of 0.031 opt Au (geologic resource, combined oxide and sulfide) 2001: 719,000 tons, 1.29 opt Au, 7 opt Ag 2007 (May, 0.25 opt Au cut-off grade): 903,000 tons, 1.03 opt Au, 5.71 opt Ag (measured and indicated resource)	1990: 6,000 oz Au 1991: 60,000 oz Au 2007: 4,066 oz Au, 38,885 oz Ag 2008: 41,890 oz Au, 192,000 oz Ag 2009: 31,174 oz Au, 243,148 oz Ag 2010: 105,144 oz Au, 578,855 oz Ag 2011: 86,518 oz Au,	rhyolitic tuff, flows	Miocene

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	805,000, tons, 1.08 opt Au, 3.94 opt Ag 1995: 1,300,000 oz Au; 42 million tons of 0.031 opt Au (geologic resource, combined oxide and sulfide) 2001: 719,000 tons, 1.29 opt Au, 7 opt Ag 2007 (May, 0.25 opt Au cut-off grade): 903,000 tons, 1.03 opt Au, 5.71 opt Ag (measured and indicated resource) (inferred resource) 2008 (June, 0.25 opt Au cut-off grade): 1,615,000 tons, 0.87 opt Au, 4.57 opt Ag (measured and indicated resource) 1,252,000 tons, 0.51 opt Au, 1.43 opt Ag (inferred resource) 2009 (June, 0.25 opt Au cut-off grade): 1,111,200 tons, 1.167 opt Au, 8.59 opt Ag (measured and indicated resource, includes reserves); 1,035,300 tons, 1.340 opt Au, 2.72 opt Ag (inferred resource) 2010 (August, 0.25 opt Au cut-off grade): 1,121,000 tons, 1.305 opt Au, 10.35 opt Ag (measured and indicated resource, includes reserves); 1,487,000 tons, 0.690 opt Au, 11.1 opt Ag (inferred resource) 2012: 516,000 tons, 0.882 opt Au, 455,000 oz Au, 2.9 opt Ag, 1,470,000 oz Ag (proven and probable reserves, Au cut-off grade: 0.25 opt epithermal, 0.15 opt Tertiary mineralization); 1,260,000 tons, 0.595 opt Au, 750,000 oz Au, 2.5 opt Ag, 3,106,000 oz Ag (measured and indicated resource, includes reserves, cut-off 0.1 opt Au); 1,416,000 tons, 0.224 opt Au, 317,000 oz Au, 0.6 opt Ag, 872,000 oz Ag (inferred resource, cut-off 0.1 opt Au) 2016: Oxide: 20,807,000 tons, 0.026 opt Au, 549,000 oz Au, 0.036 opt Ag, 740,000 oz Ag; Mixed: 2,093,000 tons, 0.031 opt Au, 64,000 oz Au, 0.035 opt Ag, 73,000 oz Ag (indicated resource, oxide cut-off grade 0.0044 opt Au, mixed cut-off grade 0.0096 opt Au); Oxide: 36,445,000 tons, 0.012 opt Au, 449,000 oz Au, 0.018 opt Ag, 642,000 oz Ag; Mixed: 1,487,000 tons, 0.022 opt Au, 33,000 oz Au, 0.035 opt Ag, 52,000 oz Ag (inferred resource, cut-off grade 0.0044 opt Au, mixed cut-off grade 0.0096 opt Au); [NI43-101 compliant] 2017: Underground: 199,500,000 tons, 0.553 opt Au, 110,300 oz Au, 3.125 opt Ag, 623,700 oz Ag (proven and probable reserves) 2018: 13,000 tons, 0.67 opt Au, 8,000 oz Au, 7.2 opt Ag, 82,000 oz Ag (proven and probable reserves, cut-off grade 0.396 opt Au equivalent); 239,000 tons, 0.76 opt Au, 182,000 oz Au, 3.2 opt Ag, 770,000 oz Ag (measured and indicated resource, cut-off grade 0.352 opt Au equivalent); 550,000 tons, 0.4 opt Au, 233,000 oz Au, 3.1 opt Ag, 1,716,000 oz Ag (inferred resource, cut-off grade 0.27 opt Au equivalent); [NI43-101 compliant] 2019: 285,000 tons, 0.58 opt Au, 164,200 oz Au; 2.8 opt Ag, 786,000 oz Ag (measured and indicated resource, cut-off grade 0.294 opt Au equivalent, $1,500/oz Au, $21/oz Ag); 466,000 tons, 0.4 opt Au, 185,000 oz Au; 2.7 opt Ag, 1,247,000 oz Ag (inferred resource, cut-off grade 0.294 opt Au equivalent, $1,500/oz Au, $21/oz Ag) [NI43-101 compliant]	711,493 oz Ag 2008: 41,890 oz Au, 192,000 oz Ag 2009: 31,174 oz Au, 243,148 oz Ag 2010: 105,144 oz Au, 578,855 oz Ag 2011: 86,518 oz Au, 2012: 62,423 oz Au, 301,526 oz Ag 2013: 12,359 oz Au, 55,648 oz Ag 2014: 2,342 oz Au, 9,433 oz Ag 2017: 6,751 oz Au, 47,305 oz Ag 2018: 22,588 oz Au, 190,377 oz Ag 2019: 3,264 oz Au, 53,025 oz Ag		
Island Mountain (Island Mountain district)	2012: 32,000 oz Au (indicated resource); 385,000 oz Au (inferred resource)			

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Jasperoid Wash (Robinson Mountain District)	2019:11,650,000 tons, 0.0096 opt Au, 111,000 oz Au, (inferred resource)		Penn-Perm	
Jerritt Canyon (Independence Mountains district)	1981: 12,500,000 tons 0.231 opt Au 1989: 21,600,000 tons, 0.143 opt Au mill ore; 6,500,000 tons, 0.043 opt Au leachable 1999: 1,500,000 oz Au, proven and probable reserves; 3,800,000 oz Au other 2000: 1,300,000 oz Au proven and probable; 3,700,000 oz Au other mineralized material 2001: 2,058,000 oz Au proven and probable; 893,000 oz Au other 2002: 580,913 oz Au, proven and probable reserves; 1,296,000 oz Au measured and indicated resource; 1,035,000 oz Au inferred resource 2003: 820,104 oz Au, proven and probable reserves; 2,295,000 oz Au measured and indicated resource; 1,034,000 oz Au inferred resource 2004: 9,988,000 tons, 0.241 opt Au measured and indicated resource; 4,100,000 tons, 0.219 opt Au inferred resource 2005: 3,723,000 tons, 0.24 opt Au (proven and probable reserves); 8,812,000 tons, 0.24 opt Au (measured and indicated resource, includes proven and probable reserves), 2.646,500 tons, 0.23 opt Au (inferred resource) 2006: 1,984,900 tons, 0.245 opt Au (proven and probable reserves); 8,203,200 tons, 0.232 opt Au (measured and indicated resource, includes proven and probable reserves), 2,414,800 tons, 0.226 opt Au (inferred resource) 2007: 3,155,200 tons, 0.227 opt Au (proven and probable reserves); 8,196,900 tons, 0.239 opt Au (measured and indicated resource, includes proven and probable reserves); 2,319,700 tons, 0.224 opt Au (inferred resource) 2010: 4,365,800 tons, 0.164 opt Au (proven and probable reserves); 11,692,300 tons, 0.217 opt Au (measured and indicated resource, includes proven and probable reserves); 4,490,100 tons, 0.198 opt Au (inferred resource) 2011: 6,056,900 tons, 0.175 opt Au, 1,060,800 oz Au (proven and probable reserves); 12,289,500 tons, 0.189 opt Au, 2,319,200 oz Au (measured and indicated resource, includes reserves); 4,115,700 tons, 0.182 opt Au, 748,400 oz Au (inferred resource) 2012: 7,287,000 tons, 0.157 opt Au, 1,145,000 oz Au (proven and probable reserves); 12,443,000 tons, 0.181 opt Au, 2,251,100 oz Au (measured and indicated resource, includes reserves); 3.845,000 tons, 0.17 opt Au, 653,200 oz Au (inferred resource) 2018: Total: 5,724,911 tons, 0.21 opt Au, 1,201,599 contained oz Au (measured and indicated resource, 0.1 opt Au cut-off grade); 3,870,249 tons, 0.197 opt Au,763,921 contained oz Au (inferred resource, Smith: 2,603,375 tons, 0.212 opt Au, 551,862 oz Au (measured and indicated resource); 55,993 tons, 0.27 opt Au,42,149 contained oz Au (inferred resource,)	1981: ~2.600,000 oz Au 1991: 1,380,000 oz Au, 25,000 oz Ag 1995: 1,296,492 oz Au 1999: 363,000 oz Au 2000: 334,747 oz Au 2001: 295,328 oz Au, 7,752 oz Ag 2002: 338,660 oz Au, 8,154 oz Ag 2003: 302,095 oz Au 2004: 243,333 oz Au 2005: 202,911 oz Au, 6,322 oz Ag 2006: 169,862 oz Au, 7,154 oz Ag 2007: 121,700 oz Au, 17,560 oz Ag 2008: 35,936 oz Au, 4,620 oz Ag 2009: 9,770 oz Au 2010: 65,104 oz Au 2011: 67,453 oz Au 2012: 105,627 oz Au 4,580 oz Ag 2013: 165,000 oz Au (all deposits combined) 2014: 179,329 oz Au (all deposits combined) 2015: 167,683 0z Au, 4,000 oz Ag (all deposits combined) 2016: 140,990 oz Au, (all deposits combined) 2017: 129,439 oz Au, (all deposits combined) 2018: 145,064 oz Au, (all deposits combined) 2019: 117,985 oz Au (all deposits combined)	Hanson Creek and Roberts Mountains Formations	Eocene

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Jerritt Canyon (con't)	grade); SSX: 2,905,194 tons, 0.208 opt Au, 604,074 oz Au (measured and indicated resource); 1,813,776, tons, 0.192 opt Au, 347,974 oz Au (inferred resource); West Mahala: 1,838,131 tons, 0.198 opt Au, 363,386 oz Au (inferred resource);, Saval 4: 216,342 tons, 0.211 opt Au, 45,663 oz Au (measured and indicated resource, 62,350, tons, 0.167 opt Au, 10,412 contained oz Au (inferred resource)			
Kinsley Mountain (Kinsley district)	1988: 2,100,000 tons, 0.048 opt Au 1996: 3,400,000 tons, 0.032 opt Au 1999: (Main NW-trend oxidized): 785,808 tons, 0.037 opt Au, 28,799 oz Au; (SW "off-trend" oxidized): 590,022 tons, 0.024 opt Au, 14,227 oz Au; (Main trend, refractory): 994,162 tons, 0.072 opt Au, 71, 904 oz Au (drill indicated resources) 2015: Secret Canyon Shale sulfide: 1,619,000 tons, 0.17 opt Au, 284,000 oz Au (indicated resource,); 560,000 tons, 0.07 opt Au, 39,000 oz Au (inferred resource); Dunderberg Shale sulfide and transitional: 573,000 tons, 0.078 opt Au, 45,000 oz Au (indicated resource); 518,000 tons, 0.071 opt Au, 37,000 oz Au (inferred resource grade); Oxide: 3,910,000 tons, 0.019 opt Au, 76,000 oz Au (indicated resource); 2,628,000 tons, 0.017 opt Au, 46,000 oz Au (inferred resource); Total: 6.095,000 tons, 0.066 opt Au, 405,000 oz Au (indicated resource); 3,706,000 tons, 0.028 opt Au, 122,000 oz Au (inferred resource) 2020: 5,454,000 tons, 0.077 opt Au, 418,000 oz Au (indicated resource, oxide); 2,687,000 tons, 0.044 opt Au, 117,000 oz (inferred resource, oxide),	1993: evaluation 1995-97: 127,065 oz Au, 24,452 oz Ag 1998: 9,543 oz Au 1999: 1,543 oz Au	upper Paleozoic carbonate rocks	Oligocene?
Long Canyon (Pequop district)	2009 (March, 0.012 opt Au cut-off grade): 5,300,000 tons, 0.069 opt Au (indicated resource); 9,678,000 tons, 0.048 opt Au 9,678,000 tons, 0.048 opt Au (inferred resource) 2010 (May, 0.006 opt Au cut-off grade): 13,492,000 tons, 0.050 opt Au (measured and indicated resource) 11,457,000 tons, 0.048 opt Au (inferred resource) 2010 (year-end, 0.006 opt Au cut-off grade): 20,250,000 tons, 0.069 opt Au (measured and indicated resource) 12,313,000 tons, 0.056 opt au (inferred resource) 2012: 27,900,000 tons, 0.094 opt Au 2,630,000 oz Au (inferred resource) 2013: 15,700,000 tons, 0.065 opt Au, 1,010,000 oz Au (probable reserves); 3,700,000 tons, 0.097 opt Au (mineralized material) 2014: 18,400,000 tons, 0.067 opt Au, 1,230,000 oz Au (probable reserves); 4,900,000 tons, 0.101 opt Au (mineralized material) 2015: 18,000,000 tons, 0.067 opt Au, 1,200,000 oz Au (probable reserves); 9,400,000 tons, 0.093 opt Au (mineralized material) [2016: 19,200,000 tons, 0.061 opt Au, 1,170,000 oz Au (probable reserves); 16,000,000 tons, 0.103 opt Au (mineralized material) 2017: 21,600,000 tons, 0.049 opt Au, 1,070,000 oz Au (prove and probable reserves, 76% metallurgical recovery); 16,000,000 tons, 0.103 opt Au (mineralized material) 2018: 24,600,000 tons, 0.039 opt Au, 970,000 oz Au (prove and probable reserves, 76% metallurgical recovery); 16,000,000 tons, 0.103 opt Au (mineralized material)	2016: 22,500 oz Au 2017: 174,462 oz Au 2018: 170,205 oz Au 2019: 189,965 oz Au	limestone and dolomite	

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	2019: surface: 8,710,000 tons, 0.079 opt Au, 632,500 oz Au (prove and probable reserves, 19,090,000 tons, 0.085 opt Au, 1,540,000 oz Au (measured and indicated resources); 2,870,000 tons, 0.051 opt Au, 135,000 oz Au (inferred resource); underground: 2,120,000 tons, 0.3 opt Au, 637,600 oz Au (measured and indicated resource); 358,000 tons, 0.2 opt Au, 63,000 oz Au (inferred resources)			
Maverick Springs (Maverick Springs area)	2002: 350,000 oz Au, 32,300,000 oz Ag (indicated resource); 747,000 oz Au, 68,800,000 oz Ag (inferred resource) 2004: 69,630,000 tons, 0.01 opt Au (indicated resource); 85,550,000 tons, 0.008 opt Au (inferred resource)			
Meikle (Lynn district)	1992: 7,900,000 tons, 0.613 opt Au (geologic resource) 1999: 5,900,000 tons, 0.647 opt Au (proven and probable reserves); 3,300,000 tons, 0.457 opt Au mineralized material 2000: 4,900,000 tons, 0.540 opt Au (proven and probable reserves); 2,900,000 tons, 0.450 opt Au (mineral resource) 2001: 9,000,000 tons, 0.439 opt Au (proven and probable reserves); 13,500,000 tons, 0.433 opt Au (mineral resource) 2002: 9,800,000 tons, 0.398 opt Au (proven and probable reserves); 12,900,000 tons, 0.396 opt Au (mineral resource) 2003: 3,316,000 tons, 0.467 opt Au (proven Reserves0; 5,862,000 tons, 0.326 opt Au (probable reserves); 1,580,000 tons, 0.435 opt Au (measured resource); 4,261,000 tons, 0.423 opt Au (indicated resource); 7,725,000 tons, 0.366 opt Au (inferred resource) 2004: 7,575,000 tons, 0.392 opt Au (proven and probable reserves); 6,268,000 tons, 0.379 opt Au (mineral resource) 2005 (includes all underground resources at Goldstrike): 7,319,000 tons, 0.379 opt Au (proven and probable reserves); 3,234,000 tons, 0.386 opt Au (measured and indicated resource); 3,034,000 tons, 0.386 opt Au (inferred resource) 2006 (includes all underground resources at Goldstrike): 7,662,000 tons, 0.370 opt Au (proven and probable reserves); 4,143,000 tons, 0.338 opt Au (measured and indicated resource); 2,159,000 tons, 0.301 opt Au (inferred resource) 2007 (includes all underground resources at Goldstrike): 7,423,000 tons, 0.364 opt Au (proven and probable reserves); 4,129,000 tons, 0.329 opt Au (measured and indicated resource); 2,747,000 tons, 0.371 opt Au (inferred resource) 2008 (includes all underground resources at Goldstrike): 6,923,000 tons, 0.368 opt Au proven and probable reserves; 4,467,000 tons, 0.323 opt Au measured and indicated resource; 3,424,000 tons, 0.393 opt Au inferred resource 2009 (includes all underground resources at Goldstrike): 8,998,000 tons, 0.318 opt Au proven and probable reserves; 4,436,000 tons, 0.334 opt Au measured and indicated resource; 1,858,000 tons, 0.341 opt Au inferred resource 2010 (includes all underground resources at Goldstrike): 10,872,000 tons, 0.272 opt Au (proven and probable reserves); 6,771,000 tons, 0.298 opt Au (measured and indicated resource) 3,047,000 tons, 0.298 opt Au (inferred resource) 2011 (includes all underground resources at Goldstrike): 11,895,000 tons, 0.255 opt Au, 3,055,000 contained oz Au (proven and probable	1996: 78,442 oz Au 1997-98: 1,421,621 oz Au, 426,030 oz Ag 1999: 977,356 oz Au, 263,225 oz Ag 2000: 805,718 oz Au, 205,000 oz Ag 2001: 712,688 oz Au, 213,370 oz Ag 2002: 640,337 oz Au, 203,574 oz Ag 2003: 551,664 oz Au, 99,614 oz Ag 2004: 561,345 oz Au, 129,520 oz Ag 2005 (includes all underground production at Goldstrike): 509,568 oz Au, 133,979 oz Ag 2006 (includes all underground production at Goldstrike): 477,035 oz Au, 58,345 oz Ag 2007 (includes all underground production at Goldstrike): 413,186 oz Au, 74,000 oz Ag 2008 (includes all underground production at Goldstrike): 424,687 oz Au, 51,434 oz Ag 2009 (includes all underground production at Goldstrike): 388,548 oz Au, 30,198 oz Ag 2010 (includes all underground production at Goldstrike): 281,308 oz Au, 22,628 oz Ag 2011 (includes all underground production at Goldstrike): 279,348 oz Au, 16,345 oz Ag 2012: 327,203 oz Au, 41,775 oz Ag 2013: 360,578 oz Au, 58,352 oz Ag 2014: 386,679 oz Au, 15,707 oz Ag 2015: 411,003 oz Au, 17,749 oz Ag 2016: 417,438 oz Au, 37,615 oz Ag 2017: 332,315 oz Au, 20,632 oz Ag 2018: 337,376 oz Au, 15,918 oz Ag 2019: 331,271 oz Au 12,606 oz Ag	Popovich and Roberts Mountains Formations	Eocene

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Meikle (cont.)	reserves); 6,077,000 tons, 0.325 opt Au, 1,828,000 contained oz Au (measured and indicated resource); 2,698,000 tons, 0.298 opt Au, 805,000 oz Au (inferred resource) 2012 (includes all underground resources at Goldstrike): 14,632,000 tons, 0.233 opt Au, 3,405,000 contained oz Au (proven and probable reserves); 6,144,000 tons, 0.303 opt Au, 1,864,000 contained oz Au (measured and indicated resource); 2,387,000 tons, 0.265 opt Au, contained 633,000 oz Au (inferred resource) 2013 (includes all underground resources at Goldstrike): 10,474,000 tons, 0.247 opt Au, 2,585,000 oz Au (proven and probable reserves); 5,985,000 tons, 0.302 opt Au, 1,810,000 oz Au (measured and indicated resource); 1,302,000 tons, 0.311 opt Au, 405,000 oz Au (inferred resource) 2014 (includes all underground resources at Goldstrike): 7,342,000 tons, 0.3 opt Au, 1,890,000 contained oz Au (proven and probable reserves); 4,123,000 tons, 0.338 opt Au, 1,395,000 oz Au (measured and indicated resource); 1,827,000 tons, 0.351 opt Au, 405,000 oz Au (inferred resource0 2015 (includes all underground resources at Goldstrike): 5,459,000 tons, 0.3 opt Au, 1,628,000 contained oz Au (proven and probable reserves,; 4,527,000 tons, 0.31 opt Au, 1,382,000 oz Au (measured and indicated resource, various cut-off grades); 1,362,000 tons, 0.3 opt Au, contained 409,000 oz Au (inferred resource) 2016 (includes all underground resources at Goldstrike): 6,267,000 tons, 0.29 opt Au, 1,806,000 oz Au (proven and probable reserves; 3,314,000 tons, 0.3 opt Au, 1,009,000 oz Au (measured and indicated resource); 1,173,000 tons, 0.29 opt Au, 344,000 oz Au (inferred resource, 2017 (includes all underground resources at Goldstrike): 9,459,000 tons, 0.29 opt Au, 2,765,000 contained oz Au (proven and probable reserves, metallurgical recovery 89.2%, cut-off grade 0.15-0.19 opt Au); 4,297,000 tons, 0.25 opt Au, 1,077,000 contained oz Au (measured and indicated resource, various cut-off grades plus $1,500/oz Au and $20.50/oz Ag); 1,314,000 tons, 0.27 opt Au, 359,000 contained oz Au (inferred resource, various cut-off grades plus $1,500/oz Au and $20.50/oz Ag) [NI43-101 compliant] 2018 (includes all underground resources at Goldstrike): 9,819,300 tons, 0.29 opt Au, 2,838,000 contained oz Au (proven and probable reserves, 5,153,000 tons, 0.24 opt Au, 1,517,000 oz Au (measured and indicated resource); 1,767,000 tons, 0.26 opt Au, 459,000 oz Au (inferred resource); Main and East Meikle: 320,700 tons, 0.329 opt Au, 105,600 oz Au (measured and indicated resource); 41,900 tons, 0.203 opt Au, 8,500 oz Au (inferred resource) Meikle Extension: 563,200 tons, 0.316 opt Au, 178,300 oz Au (measured and indicated resource); 533,600 tons 0.25 opt Au, 133,200 oz Au (inferred resource) South Meikle: 125,100 tons, 0.351 opt Au, 43,900 oz Au (measured and indicated resource); 65,800 tons, 0.321 opt Au, 21,100 oz Au (inferred resource) 2019 (includes all underground resources at Goldstrike): 14,300,000 tons, 0.275 opt Au, 3,900,000 oz Au (proven and probable reserves); 26,400,000 tons, 0.22 opt Au, 5,900,000 oz Au (measured and indicated resource inclusive of reserves); 2,800,000 tons, 0.26 opt Au, 710,000 oz Au (inferred resource); Underground Stockpile: 23,000 tons, 0.27 opt Au, 6,200 oz Au (proven reserves)			

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Midas (Ken Snyder) Mine (Gold Circle district)	1995: 13,000,000 tons, 0.16 opt Au, 2.7 opt Ag, announced resource, proven Au reserves<500,000 oz 1996: 1,100,000 tons, 1.324 opt Au, 14.95 opt Ag 1999: 3,000,000 tons, 0.816 opt Au, 9.835 opt Ag (proven and probable reserves) 2000: 3,400,000 tons, 0.63 opt Au, 7.77 opt Ag (proven and probable reserves) 2002: 3,400,000 tons, 0.65 opt Au (proven and probable reserves); 400,000 tons 0.46 opt Au (measured and indicated mineralized material); 200,000 tons 0.55 opt Au (inferred mineralized material) 2003: 700,000 tons, 0.83 opt Au (proven reserves); 2,700,000 tons, 0.51 opt Au (probable reserves); 900,000 tons 0.42 opt Au (indicated material) 2004: 2,900,000 tons, 0.510 opt Au (proven and probable reserves); 200,000 tons, 0.58 opt Au (indicated resource); 700,000 tons, 0.31 opt Au (inferred resource) 2005: 1,500,000 tons, 0.58 opt Au (proven and probable reserves); 600,000 tons, 0.42 opt Au, (inferred resource) 2006: 1,200,000 tons, 0.47 opt Au (proven and probable reserves which includes 6,800,000 oz Ag); 800,000 tons, 0.33 opt Au, (inferred resource) 2007: 1,000,000 tons, 0.493 opt Au, (proven and probable reserves which includes 7,500,000 oz Ag); 200,000 tons, 0.345 opt Au (measured and indicated resource); 100,000 tons, 0.3013 opt Au (inferred resource) 2008: 900,000 tons, 0.436 opt Au, (proven and probable reserves); 200,000 tons, 0.186 opt Au, (measured and indicated resource); 100,000 tons, 0.321 opt Au (inferred resource) 2009: 700,000 tons, 0.425 opt Au, (proven and probable reserves, also includes 4,600,000 oz Ag); 100,000 tons, 0.193 opt Au, measured and indicated resource); 100,000 tons, 0.248 opt Au (inferred resource) 2010: 500,000 tons, 0.319 opt Au (proven and probable reserves, 95% recovery, also includes 2,800,000 oz Ag); 120,000 tons, 0.167 opt Au (measured and indicated resource) 2011: 800,000 tons, 0.226 opt Au, 7.201 opt Ag, 160,000 Au, 5,250,000 oz Ag (proven and probable reserves); 110,000 tons, 0.070 opt Au; 100,000 tons 4.352 opt Ag (measured and indicated resource); 100,000 tons, 0.049 opt Au, 9.56 opt Ag (inferred resource) 2012: 600,000 tons, 0.095 opt Au, 7.791 opt Ag, 50,000 Au, 4,410,000 oz Ag (proven and probable reserves,); 100,000 tons, 0.056 opt Au, 6.879 opt Ag, N/A oz Au, 740,000 oz Ag (measured and indicated resource); 300,000 tons, 0.07 opt Au, 7.156 opt, Ag, 20,000 oz Au, 2,500,000 oz Ag (inferred resource) 2013: 250,000 tons, 0.093 opt Au, 30,000 oz Au, 11.48 opt Ag, 2,820,000 oz Ag (proven and probable reserve, 85% Au, 100,000 tons, 0.04 opt Au, 7.25 opt Ag (mineralized material) 2014: 242,100 tons, 0.378 opt Au, 91,600 oz Au, 10.93 opt Ag, 2,646,000 oz Ag (proven and probable reserve, 1,117,000 tons, 0.377 opt Au, 421,000 oz Au, 6.085 opt Ag, 6,765,000 oz Ag (measure and indicated resource); 858,000 tons, 0.28 opt Au, 241,000 oz Au, 3.48 opt Ag, 2,988,000 oz Ag (inferred resource); 2015: 309,000 tons, 0.233 opt Au, 72,000 oz Au, 10.686 opt Ag, 3,304,700 oz Ag (proven and probable reserve,); 1,154,900 tons, 0.356 opt Au, 411,300 oz Au; 8.4 opt Ag, 9,700,900 oz Ag (measured and indicated resource); 856,800 tons, 0.238 opt gold, 203,500 oz Au; 4.814 opt Ag, 4,124,900 oz Ag (inferred resource) 2016: 449,000 tons, 0.311 opt Au, 4140,000 oz Au,	1998: 4,357 oz Au, 55,329 oz Ag 1999: 189,081 oz Au, 1,938,470 oz Ag 2000: 197,800 oz Au, 1,941,989 oz Ag 2001: 198,518 oz Au, 2,393,246 oz Ag 2002: 232,949 oz Au, 2,870,164 oz Ag 2003: 218,966 oz Au, 2,647,374 oz Ag 2004: 219,778 oz Au, 2,471,135 oz Ag 2005: 167,297 oz Au, 2,166,396 oz Ag 2006: 140,884 oz Au, 1,694,060 oz Ag 2007: 79,133 oz Au, 1,040,059 oz Ag 2008: 150,608 oz Au 1,872,883 oz Ag 2009: 123,621 oz Au, 1,634,601 oz Ag 2010: 127,196 oz Au, 1,710,318 oz Ag 2011: 111,476 oz Au, 1,512,287 oz Ag 2012: 82,922 oz Au, 1,247,994 oz Ag 2013: 52,195 oz Au, 1,368,896 oz Ag 2014: 21,984 oz Au, 1,489,149 oz Ag 2015: 28,838 oz Au, 1,513,112 oz Ag 2016: 29,577 oz Au, 1,345,990 oz Ag 2017: 34,343 oz Au 780,316 oz Ag 2018: 9,368 oz Au 62,055 oz Ag 2019: 6,096 oz Au, 42,439 oz Ag	Tertiary volcanic rocks	Miocene

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Midas (con't)	5.52 opt Ag, 2,475,000 oz Ag (proven and probable reserve,); 1,114,000 tons, 0.376 opt Au, 419,000 oz Au; 5.54 opt Ag, 6,620,000 oz Ag (measured and indicated resource); 671,800 tons, 0.303 opt gold, 203,000 oz Au; 2.93 opt Ag, 1,966,000 oz Ag (inferred resource) 2018: 905,000 tons, 0.39 opt Au, 349,000 oz Au, 4.9 opt Ag, 4.463,000 oz Ag (measured and indicated resource); 573,000 tons, 0.34 opt Au, 98,000 oz Au; 3 opt Ag, 1,723,000 oz Ag (inferred resource) 2019: 750,000 tons, 0.38 opt Au, 288,200 oz Au; 5.3 opt Ag, 3,990,000 oz Ag (measured and indicated resource, 552,000 tons, 0.33 opt Au, 183,000 oz Au; 2.7 opt Ag, 1,489,000 oz Ag (inferred resource)			
Mill Creek (Jerritt Canyon, Independence Mountains district)	2005-2007: 78,400 tons, 0.12 opt Au (measured and indicated resource) 2011: 186,000 tons, 0.09 opt Au, 16,800 oz Au (proven and probable reserves, open pit) 276,200 tons, 0.094 opt Au, 26,100 oz Au (measured and indicated resource, includes reserves) 3,400 tons, 0.154 opt Au, 500 oz Au (inferred resource) 2012: 197,000 tons, 0.09 opt Au, 17,700 oz Au (proven and probable reserves, open pit) 302,000 tons, 0.094 opt Au, 28,300 oz Au (measured and indicated resource, includes reserves) 4,000 tons, 0.153 opt Au, 600 oz Au (inferred resource)		Hanson Creek and Roberts Mountains Formations	
Murray (Jerritt Canyon, Independence Mountains district)	2005: 243,300 tons, 0.26 opt Au (proven and probable reserves) 789,200 tons, 0.29 opt Au (measured and indicated resource, includes reserves) 2006: 18,400 tons, 0.266 opt Au (proven and probable reserves); 393,300 tons, 0.290 opt Au (measured and indicated resource, includes reserves); 152,000 tons, 0.220 opt Au (inferred resource) 2007: 393,300 tons, 0.290 opt Au (measured and indicated resource); 152,000 tons, 0.220 opt Au (inferred resource) 2011: 412,400 tons, 0.221 opt Au, 91,100 oz Au (proven and probable reserves, underground) 590,200 tons, 0.213 opt Au, 125,900 oz Au (measured and indicated resource, includes reserves) 86,000 tons, 0.215 opt Au, 18,500 oz Au (inferred resource) 2012: 495,400 tons, 0.165 opt Au, 81,700 oz Au (proven and probable reserves); 545,000 tons, 0.165 opt Au, 89,900 oz Au (measured and indicated resource, includes reserves); 61,000 tons, 0.162 opt Au, 10,000 oz Au (inferred resource)		Hanson Creek and Roberts Mountains Formations	
North Bullion (Railroad district)	2019: 3,219,000 tons, 0.028 opt Au,90,100 oz Au (indicated resource, 0.0041 opt Au cut-off grade); 12,092,000 tons, 0.067 opt Au, 805,800 oz (inferred resource variable cut-off grades) [NI43-101 compliant]			
Pie Creek (Jerritt Canyon, Independence Mountains district)	2005-2007: 190,200 tons, 0.16 opt Au (measured and indicated resource) 28,300 tons, 0.14 opt Au (inferred resource) 2011: 205,400 tons, 0.087 opt Au, 17,900 oz Au (indicated resource, open pit); 4,900 tons, 0.09 opt Au, 400 oz Au (inferred resource) 2012: 225,000 tons, 0.086 opt Au, 19,200 oz Au (indicated resource, open pit); 5,000 tons, 0.089 opt Au, 500 oz Au (inferred resource)		Hanson Creek and Roberts Mountains Formations	

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Pinion (Piñon; South Bullion) (Robinson Mountain district)	1996: 38,300,000 tons, 0.026 opt Au geologic mineral inventory 2002: 30,600,000 tons, 0.026 opt Au, measured, indicated, and inferred resource 2014: Piñon: 22,970,000 tons, 0.018 opt Au, 423,000 oz Au (indicated resource); 61,650,000 tons, 0.017 opt Au, 1,022,000 oz Au, 84,620,000 tons, 0.13 opt Ag, 9,430,000 oz Ag (inferred resource) 2016: Piñon: 34,840,000 tons, 0.018 opt Au, 630,300 oz Au (indicated resource); 67,330,000 tons, 0.016 opt Au, 1,081,300 oz Au, 102,170,000 tons, 0.12 opt Ag, 12,401,600 oz Ag (inferred resource) 2019: 19,717,000 tons, 0.018 opt Au, 364,000 oz Au, 0.14 opt Ag 2,705,000 oz Ag (proven and probable reserves, 31,549,000 tons, 0.017 opt Au, 544,000 oz Au, 0.12 opt Ag, 3,929,000 oz Ag (measured and indicated resources inclusive of mineral reserves); 11,916,000 tons, 0.019 opt Au, 224,000 oz Au, 0.11 opt Ag, 1,322,000 oz Ag (inferred resources inclusive of mineral reserves)		Webb Formation siltstone Devils Gate Limestone	
Pony Creek (Robinson Mountain district)	1994:1,100,000 tons, 0.057 opt Au (geologic resource) 2004: 32,410,000 tons, 0.044 opt Au (inferred resource)			
Railroad Property (Railroad district)	1997: POD Zone: 1,500,000 tons, 0.085 opt Au drill-indicated resource 2017: Oxide (Sweet Hollow and POD): 3,220,000 tons, 0.028 opt Au, 90,100 oz Au (indicated resource); 3,700,000 tons, 0.013 opt Au, 46,600 oz Au (inferred resource, 0.004 opt Au cut-off grade): Sulfide (North Bullion, Sweet Hollow, and POD): 2,260,000 tons, 0.076 opt Au, 171,400 oz Au (inferred near surface resource, 0.037 opt Au cut-off grade); 6,120,000 tons, 0.096 opt Au, 46,600 oz Au (inferred underground resource)			
Rain Property (Carlin district)	1982: 3,400,000 tons, 0.147 opt Au and 8,300,000 tons, 0.083 opt Au			
Gnome	1988: 2,700,000 tons, 0.048 opt Au		Webb Formation	Eocene
Rain	1989: 22,600,000 tons, 0.052 opt Au (geologic resource) 1996 (Rain/Emigrant Springs): 16,000,000 tons, 0.028 opt Au (proven and probable reserves); 10,400,000 tons, 0.021 opt Au (mineralized material) 1999: 13,467,000 tons, 0.026 opt Au proven and probable open-pit ore, 411,000 tons, 0.316 proven and probable underground ore 2019: See Emigrant	1988: 29,000 oz Au 1991: 135,000 oz Au 1994: 79,000 oz Au 1995: 32,100 oz Au 1996: 48,900 oz Au 1997-1998: included in Newmont Gold production at the end of this section 1999: 23,477 oz Au 2000: 25,004 oz Au, 2,539 oz Ag 2001: 43,488 oz Au, 9,887 oz Ag 2002: 20,065 oz Au, 4,042 oz Ag 2003: 5,039 oz Au, 928 oz Ag 2004: 1,956 oz Au, 551 oz Ag 2005: 404 oz Au, 90 oz Ag		
Saddle	2000: 2,000,000 tons, 0.5 opt Au			
SMZ	1989: 1,600,000 tons, 0.019 opt Au (geologic resource)			
Rain district	2000: 13,500,000 tons, 0.026 opt Au proven and probable open-pit ore; 308,000 tons, 0.267 opt Au (proven and probable underground ore)			

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Rain district (cont.)	2001: 13,500,000 tons, 0.026 opt Au (proven and probable open-pit ore); 21,000 tons, 0.024 opt Au (proven and probable underground ore); 1,300,000 tons, 0.048 opt Au (mineralized material)			
REN (Bootstrap district)	2003: 2,100,000 tons, 0.43 opt Au (inferred resource) 2005: 2,100,000 tons, 0.38 opt Au (indicated resource); 1,400,000 tons, 0.37 opt Au (inferred resource) 2006: 2,713,000 tons, 0.37 opt Au (indicated resource); 758,000 tons, 0.47 opt Au (inferred resource) 2007: 2,991,000 tons, 0.37 opt Au (indicated resource); 835,000 tons, 0.47 opt Au (inferred resource)			
Road Canyon (Jerritt Canyon, Independence Mountains district)	2005-2007: 148,600 tons, 0.14 opt Au (measured and indicated resource); 74,300 tons, 0.13 opt Au (inferred resource) 2011: 17,500 tons, 0.069 opt Au, 1,200 oz Au (indicated resource, open pit) 185,100 tons, 0.082 opt Au, 15,100 oz Au (inferred resource) 2012: 17,000 tons, 0.07 opt Au, 1,200 oz Au (indicated resource, open pit) 187,000 tons, 0.081 opt Au, 15,200 oz Au (inferred resource)		Hanson Creek and Roberts Mountains Formations	
Saval (Jerritt Canyon, Independence Mountains district)	2005: 104,400 tons, 0.23 opt Au (proven and probable reserves); 460,500 tons, 0.25 opt Au (measured and indicated resource, includes reserves); 270,000 tons, 0.25 opt Au (inferred resource) 2006: 120,200 tons, 0.246 opt Au (proven and probable reserves); 369,300 tons, 0.254 opt Au (measured and indicated resource, includes reserves); 191,200 tons, 0.238 opt Au (inferred resource) 2007: 120,200 tons, 0.246 opt Au (proven and probable reserves); 379,800 tons, 0.252 opt Au (measured and indicated resource, includes reserves); 107,400 tons, 0.206 opt Au (inferred resource) 2010: 169,100 tons, 0.210 opt Au (proven and probable reserves, underground) 656,000 tons, 0.227 opt Au (measured and indicated resource, includes reserves); 201,700 tons, 0.209 opt Au (inferred resource) 2011 underground: 169,100 tons, 0.210 opt Au, 35,500 oz Au (proven and probable reserves) 333,600 tons, 0.224 opt Au, 74,800 oz Au (measured and indicated resource, includes reserves); 95,400 tons, 0.2 opt Au, 19,100 oz Au (inferred resource); open pit: 144,900 tons, 0.092 opt Au, 13,400 oz Au (proven and probable reserves)654,300 tons, 0.074 opt Au, 48,600 oz Au (measured and indicated resource,includes reserves); 222,200 tons, 0.142 opt Au, 31,600 oz Au (inferred resource) 2012 underground: 168,000 tons, 0.207 opt Au, 34,800 oz Au (proven and probable reserves) 177,600 tons, 0.25 opt Au, 44,200 oz Au (measured and indicated resource, includes reserves); 51,000 tons, 0.238 opt Au, 12,200 oz Au (inferred resource); open pit: 83,000 tons, 0.129 opt Au, 10,800 oz Au (proven and probable reserves); 367,000 tons, 0.093 opt Au, 34,300 oz Au (measured and indicated resource, includes reserves);10,000 tons 0.083 opt Au, 800 oz Au (inferred resource)	2014: 2,732 oz Au 2015-2019: Jerritt Canyon combined	Hanson Creek and Roberts Mountains Formations	

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Smith (Jerritt Canyon, Independence Mountains district)	2005: 949,300 tons, 0.29 opt Au (proven and probable reserves) 1,863,300 tons, 0.28 opt Au (measured and indicated resource, includes reserves) 677,000 tons, 0.24 opt Au (inferred resource) 2006: 269,000 tons, 0.332 opt Au (proven and probable reserves); 1,064,400 tons, 0.290 opt Au (measured and indicated resource, includes reserves); 541,600 tons, 0.231 opt Au (inferred resource) 2007: 954,100 tons, 0.282 opt Au (proven and probable reserves); 1,236,900 tons, 0.278 opt Au (measured and indicated resource, includes reserves); 534,000 tons, 0.221 opt Au (inferred resource) 2010: 1,631,700 tons, 0.172 opt Au (proven and probable reserves, underground) 4,186,200 tons, 0.235 opt Au (measured and indicated resource, includes reserves) 1,157,300 tons, 0.195 opt Au (inferred resource) 2011: 2,056,600 tons, 0.212 opt Au, 435,700 oz Au (proven and probable reserves, underground) 4,231,500 tons, 0.22 opt Au, 928,800 oz Au (measured and indicated resource, includes reserves) 979,500 tons, 0.196 opt Au, 191,800 oz Au (inferred resource) 2012: 3,012,000 tons, 0.164 opt Au, 495,300 oz Au (proven and probable reserves); 5,193,000 tons, 0.202 opt Au, 1,049,400 oz Au (measured and indicated resource, includes reserves); 977,000 tons, 0.179 opt Au, 174,600 oz Au (inferred resource)	<2013: Jerritt Canyon combined 2013: 82,309 oz Au 2014: 80,198 oz Au 2015-2019: Jerritt Canyon combined	Hanson Creek and Roberts Mountains Formations	
Smith East (Jerritt Canyon, Independence Mountains district)	2006: 997,400 tons, 0.281 opt Au (measured and indicated resource, includes reserves) 120,400 tons, 0.264 opt Au (inferred resource) 2007: 1,065,500 tons, 0.287 opt Au (measured and indicated resource); 125,200 tons, 0.280 opt Au (inferred resource)		Hanson Creek and Roberts Mountains Formations	
South Arturo (Bootstrap district)	2006: 21,073,000 tons, 0.060 opt Au (indicated resource); 1,310,000 tons, 0.053 opt Au (inferred resource) 2007: 29,880,000 tons, 0.070 opt Au (indicated resource); 1,020,000 tons, 0.022 opt Au (inferred resource) 2008: 36,857,000 tons, 0.045 opt Au (indicated resource); 3,253,000 tons, 0.013 opt Au (inferred resource) 2009: 43,857,000 tons, 0.051 opt Au (proven and probable reserve) 5,628,000 tons, 0.048 opt Au (indicated resource); 4,232,000 tons, 0.018 opt Au (inferred resource) 2010: 45,597,000 tons, 0.051 opt Au (proven and probable reserve) 26,735,000 tons, 0.043 opt Au (indicated resource); 11,623,000 tons, 0.018 opt Au (inferred resource) 2011: 47,062,000 tons, 0.05 opt Au 2,330,000 oz Au (probable reserve); 35,803,000 tons, 0.039 opt Au,1,380,000 contained oz Au (indicated resource) 7,430,000 tons, 0.023 opt Au, 472,000 oz Au (inferred resource) 2012: 56,280,000 tons, 0.042 opt Au, 0.227 opt Ag, 2,368,000 oz Au 11,600,000 oz Ag (probable reserve); 27,295,000 tons, 0.045 opt Au, 0.339 opt Ag, 731,000 oz Au, 5,900,000 contained oz Ag (indicated resource); 28,123,000 tons, 0.015 opt Au, 0.077 opt Ag, 422,000 oz Au, 3,250,000 contained oz Ag (inferred resource) 2	2016: 223,145 oz Au 2017: 142,810 oz Au 2018: 52,451 oz Au, 31,623 oz Ag 2019 (includes El Nino): 21,029 oz Au, ~3,800 oz Ag	Popovich Formation Bootstrap Limestone Rodeo Creek Formation	

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
South Arturo (cont.)	2013: 34,208,000 tons, 0.049 opt Au, 1,678,000 oz Au (proven and probable reserve); 54,378,000 tons, 0.044 opt Au, 2,400,000 oz Au (measured and indicated resource); 25,802,000 tons, 0.014 opt Au, 367,000 oz Au, (inferred resource) 2014: 3,143,000 tons, 0.15 opt Au, 403,000 oz Au (probable reserve); 39,552,000 tons, 0.049 opt Au, 2,542,000 oz Au (measured and indicated resource); 9,665,000 tons, 0.023 opt Au, 210,000 oz Au, (inferred resource) 2015: 2,368,000 tons, 0.16 opt Au, 388,000 oz Au (probable reserve) 290,000 tons, 0.04 opt Au, 11,600 oz Au (measured and indicated resource, 13,000 tons, 0.07 opt Au, 1,000 oz Au, (inferred resource) 2016: 1,800,000 tons, 0.11 opt Au, 203,000 oz Au (probable reserve); 53,000 tons, 0.034 opt Au, 1,800 oz Au (measured and indicated resource); 11,000 tons, 0.15 opt Au, 1,800 oz Au, (inferred resource)] 2017: 7,262,000 tons, 0.093 opt Au, 674,500 oz Au, 6,009,600 tons, 0.46 opt Ag, 2,787,700 oz Ag (proven and probable reserve; 20,849,500 tons, 0.0434 opt Au, 77,700 oz Au, 20,575,900 tons, 0.19 opt Ag, 3,841,500 oz Ag (measured and indicated resource); 1,593,200 tons, 0.048 opt Au, 77,700 oz Au, 1,376,800 tons, 0.11 opt Ag, 153,700 oz Ag, (inferred resource) 2018: 7,832,000 tons, 0.088 opt Au, 687,000 oz Au, (proven and probable reserve) 25,399,000 tons, 0.031 opt Au, 775,000 oz Au, (measured and indicated resource); 2,094,000 tons, 0.038 opt Au, 80,000 oz Au, (inferred resource) 2019: 3,990,000 tons, 0.087 opt Au, 347,000 oz Au, (proven and probable reserve): 9,350,000 tons, 0.035 opt Au, 345,000 oz Au, (measured and indicated resource); 2,830,000 tons, 0.037 opt Au, 104,000 oz Au, (inferred resource)			
SSX-Steer (Jerritt Canyon, Independence Mountains district)	2005: 1,333,300 tons, 0.25 opt Au (proven and probable reserves); 2,597,500 tons, 0.28 opt Au (measured and indicated resource, includes reserves); 1,052,200 tons, 0.23 opt Au (inferred resource) 2006: 739,400 tons, 0.266 opt Au (proven and probable reserves); 2,332,500 tons, 0.266 opt Au (measured and indicated resource, includes reserves); 929,700 tons, 0.23 opt Au (inferred resource) 2007: 900,000 tons, 0.226 opt Au (proven and probable reserves); 2,561,400 tons, 0.259 opt Au (measured and indicated resource, includes reserves); 959,200 tons, 0.236 opt Au (inferred resource) 2010: 1,215,400 tons, 0.189 opt Au (proven and probable reserves, underground) 4,012,200 tons, 0.224 opt Au (measured and indicated resource, includes reserves); 479,100 tons, 0.194 opt Au (inferred resource) 2011: 1,280,900 tons, 0.191 opt Au, 244,400 oz Au (proven and probable reserves, underground) 3,699,200 tons, 0.209 opt Au, 772,200 oz Au (measured and indicated resource, includes reserves) 371,700 tons, 0.198 opt Au, 73,700 oz Au (inferred resource) 2012 (including West Mahala): 1,621,000 tons, 0.163 opt Au, 272,000 oz Au (proven and probable reserves); 3,643,000 tons, 0.199 opt Au, 724,300 oz Au (measured and indicated resource, includes reserves); 2,508,000 tons, 0.173 opt Au, 433,600 oz Au (inferred resource)	<2013: Jerritt Canyon combined 2013: 48,930oz Au 2014: 34,486 oz Au	Hanson Creek and Roberts Mountains Formations	

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Starvation Canyon (Jerritt Canyon, Independence Mountains district)	2005: 400,500 tons, 0.30 opt Au (probable reserves); 676,400 tons, 0.28 opt Au (measured and indicated resource, includes reserves); 51,400 tons, 0.31 opt Au (inferred resource) 2006: 369,600 tons, 0.305 opt Au (probable reserves); 636,500 tons, 0.290 opt Au (measured and indicated resource, includes reserves); 51,200 tons, 0.278 opt Au (inferred resource) 2007: 571,600 tons, 0.282 opt Au (probable reserves); 697,300 tons, 0.287 opt Au (measured and indicated resource, includes reserves) 25,500 tons, 0.252 opt Au (inferred resource) 2010: 363,000 tons, 0.264 opt Au (proven and probable reserves, underground) 502,400 tons, 0.285 opt Au (measured and indicated resource, includes reserves) 256,300 tons, 0.276 opt Au (inferred resource) 2011: 343,400 tons, 0.265 opt Au, 90,900 oz Au (proven and probable reserves, underground) 525,200 tons, 0.251 opt Au, 131,800 oz Au (measured and indicated resource, includes reserves) 244,400 tons, 0.253 opt Au, 64,600 oz Au (inferred resource) 2012: 970,000 tons, 0.178 opt Au, 172,600 oz Au (proven and probable reserves); 970,000 tons, 0.178 opt Au, 172,600 oz Au; (measured and indicated resource, includes reserves); 21,000 tons, 0.17 opt Au, 3,600 oz Au (inferred resource)	2013: 15,750 oz Au 2014: 61,913 oz Au	Hanson Creek and Roberts Mountains Formations	
Storm Mine (Rossi) (Bootstrap district) **Storm Mine (con't)**	1998: 3,100,000 tons, 0.371 opt Au (resource) 2000: 2,700,000 tons, 0.345 opt Au (resource) 2002: 1,900,000 tons, 0.335 opt Au (measured and indicated resource); 1,000,000 tons, 0.0335 opt Au (inferred resource) 2005 and 2006: 500,000 tons, 0.449 opt Au (measured and indicated resource) 800,000 tons, 0.376 opt Au, (inferred resource)	2008: 52,000 oz Au 2009: 64,558 oz Au, 50,069 oz Ag 2010: 74,429 oz Au, 63,309 oz Ag 2011: 86,508 oz Au, 73,588 oz Ag 2012: 33,802 oz Au, 18,875 oz Ag 2013: 9,503 oz Au, 15,575 oz Ag	Popovich Formation Bootstrap Limestone Rodeo Creek Formation	
Trout Creek (Contact district)	1988: 1,500,000 tons, 0.04 opt Au	1988: exploration	Miocene sedimentary rocks	
Tuscarora (Dexter) (Tuscarora district)	1987: 2,000,000 tons, 0.039 opt Au, 1.9 opt Ag 1988: 1,800,000 tons, 0.037 opt Au, 0.74 opt Ag	1896-1902: 29,940 oz Au, 28,543 oz Ag 1987-90: 34,163 oz Au, 189,865 oz Ag	Eocene rhyolitic ignimbrite and andesite	Eocene
Twelvemile Ranch (Tecoma district)	1986: 4,000,000 tons, 0.01 opt Au, (resource)		volcanic and sedimentary rocks	
Waterpipe II (Jerritt Canyon, Independence Mountains district)	2005-2007: 37,400 tons, 0.21 opt Au (underground inferred resource)		Roberts Mountains Formation	
West Mahala (Jerritt Canyon, Independence Mountains district)	2005 and 2006: 368,100 tons, 0.22 opt Au (underground measured and indicated resource); 141,900 tons, 0.21 opt Au (underground inferred resource) 2007: 197,500 tons, 0.218 opt Au (underground indicated resource); 129,600 tons, 0.206 opt Au (inferred resource) 2010: 225,800 tons, 0.189 opt Au(measured and indicated resource, underground); 1,956,900 tons, 0.191 opt Au (inferred resource) 2011: 199,300 tons, 0.188 opt Au, 37,500 oz Au (proven and probable reserves, underground) 388,700 tons, 0.19 opt Au, 73,900 oz Au (measured and indicated resource, includes reserves) 1,854,600 tons, 0.175 opt Au, 324,000 oz Au (inferred resource) 2012: Included with SSX		Hanson Creek and Roberts Mountains Formations	

MAJOR PRECIOUS-METAL DEPOSITS, ELKO COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
West Pequop (Pequop district)	2010: 1,349,700 tons, 0.0475 opt Au (measured and indicated resource); 6,055,500 tons, 0.0411 opt Au (inferred resource)			
Winters Creek (Jerritt Canyon, Independence Mountains district) **Winters Creek**	1986: 1,400,000 tons, 0.146 opt Au 2005-2007: 148,900 tons, 0.22 opt Au (measured and indicated resource); underground 37,200 tons, 0.2 opt Au, (underground inferred resource) 2011: 90,300 tons, 0.162 opt Au, 14,600 oz Au (indicated resource, underground); 9,200 tons, 0.186 opt Au, 1,700 oz Au (inferred resource) 2012: 117,000 tons, 0.112 opt Au, 13,100 oz Au (indicated resource); 10,000 tons, 0.145 opt Au, 1,500 oz Au (inferred resource)		lower Paleozoic carbonate rocks	Eocene
Wright Window (Jerritt Canyon, Independence Mountains district)	1986: 1,300,000 tons, 0.095 opt Au 2005-2007: 32,600 tons, 0.226 opt Au, (probable reserves); 97,800 tons, 0.16 opt Au, (measured and indicated resource, includes reserves); 19,000 tons, 0.23 opt Au (inferred resource) 2010: 84,500 tons, 0.127 opt Au (probable reserve, open pit); 97,800 tons, 0.156 opt Au (measured and indicated resource, includes reserves); 19,000 tons, 0.229 opt Au (inferred resource) 2011: 112,900 tons, 0.096 opt Au, 10,900 oz Au (proven and probable reserves, open pit); 125,800 tons, 0.094 opt Au, 11,800 oz Au (measured and indicated resource, includes reserves) 4,800 tons, 0.093 opt Au, 400 oz Au (inferred resource) 2012: 114,000 tons, 0.096 opt Au, 11,000 oz Au (proven and probable reserves, open pit);	1992: 3,500 oz Au	lower Paleozoic carbonate rocks	Eocene
Wright Window (con't)	120,000 tons, 0.094 opt Au, 11,200 oz Au (measured and indicated resource, includes reserves) 5,000 tons, 0.089 opt Au, 500 oz Au (inferred resource)			

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Boss (Gilbert district)	1987: 500,000 tons, 0.07 opt Au 1990: 637,500 tons, 0.023 opt Au (reserves); 31,000 oz Au (geologic resource) 1996: see Castle		Ordovician sedimentary rocks	Miocene?
Castle Black Rock (includes Castle and Boss) (Gilbert district)	1996: 3.7 million tons, 0.03 opt Au 1997: 10 million tons, 0.03 opt Au resource 2000: 215,000 oz Au indicated resource and 93,000 oz Au inferred resource 2012: Castle Zone: 16,185,000 tons, 0.013 opt Au (inferred resource) 2016: 13,646,000 tons, 0.015 opt Au, 93,000 oz Au (measured and indicated; 0.007 opt Au cut-off grade); 8,763,000 tons, 0.011 opt Au, 93,000 oz (inferred resource)		Ordovician Palmetto Formation	
Eastside (Gilbert district)	2016: 39,440,000 tons, 0.017 opt Au, 654,000 oz Au, 0.1 opt Ag, 3,999,000 oz Ag (inferred resource, 0.0004 opt Au cut-off grade) 2019: 62,890,000 tons, 0.016 opt Au, 996,000 oz Au, 0.13 opt Ag, 7,838,000 oz Ag (inferred resource)		Miocene rhyolite dome complexes	
Gemfield (Goldfield district)	1996: 9,500,000 tons, 0.04 opt Au 1998: 500,000 oz, 0.04 opt Au 2003: see Goldfield project 2004: 16,853,000 tons, 0.032 opt Au (measured		Sandstorm Rhyolite	21 Ma?

MAJOR PRECIOUS-METAL DEPOSITS, ESMERALDA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	and indicated resource); 1,001,000 tons, 0.022 opt Au (inferred resource) 2006: 12,459,000 tons, 0.031 opt Au (measured and indicated resource); 88,000 tons, 0.116 opt Au (inferred resource) 2011: 15,748,000 tons, 0.0325 opt Au, 511,000 oz Au; (proven and probable reserves); 18,772,000 tons, 0.031 opt Au, 438,000 oz Au, 0.098 opt Ag, 1,846,000 oz Ag (measured and indicated resource 4,596,000 tons, 0.016 opt Au, 74,000 oz Au, 0.059 opt Ag, 272,000 oz Ag (inferred resource) 2013: 19,7026,000 tons, 0.0298 opt Au, 567,000 oz Au; (proven and probable reserves); 27,070,000 tons, 0.025 opt Au, 681,000 oz (measured and indicated resource); 1,190,000 tons, 0.015 opt Au, 18,000 oz Au (inferred resource)			
Goldfield Project (Goldfield district)	1983: 1,750,000 tons, 0.087 opt Au 1994: 3,480,000 tons, 0.071 opt Au 2003: 23,410,200 tons, 0.031 opt Au (measured and indicated resource); 10,239,100 tons 0.024 opt Au inferred resource (includes Goldfield Main, McMahon Ridge, and Gemfield) 2006: 16,856,000 tons, 0.034 opt Au (measured, indicated, and inferred resource, includes McMahon Ridge and Gemfield) 2013: 42,615,000 tons, 0.032 opt Au 1,340,000 oz Au (measured and indicated resource); 8,756,000 tons, 0.044 opt Au, 382,000 oz Au (inferred resource) (includes Goldfield Main, McMahon Ridge, and Gemfield)	1903-45: 4.19 million oz Au, 1.45 million oz Ag 1989-97: 28,373 oz Au	andesite, rhyodacite, rhyolite	21 Ma
Goldfield Main (Goldfield district)	2004: 6,651,000 tons, 0.036 opt Au measured and indicated resource; 2,129,000 tons, 0.038 opt Au inferred resource 2010 (Goldfield Main, 0.012 opt cut-off grade) 9,424,000 tons, 0.044 opt Au (indicated resource) 7,267,000 tons, 0.050 opt Au (inferred resource) 2011: 9,425,000 tons, 0.045 opt Au, 421,000 oz Au, (indicated resource); 7,264,000 tons, 0.05 opt Au, 360,000 oz Au (inferred resourcee)			
Goldfield West (Goldfield district)	2011: 5,042,444 tons, 0.015 opt Au, 76,080 oz Au, 0.12 opt Ag, 589,078 oz Ag (inferred resource)		rhyolite tuff	
Hasbrouck (Divide district)	1982: 5,000,000 tons 0.06 opt Au, 1.5 opt Ag 1986: 12,900,000 tons, 0.0291 opt Au, 0.59 opt Ag 1998: 7,700,000 tons, 0.036 opt Au, 0.7 opt Ag 2003: 26,036,00 tons, 0.023 opt Au (indicated resource); 8,200,000 tons, 0.021 opt Au (inferred resource) 2011: 128,608,197 tons, 0.009 opt Au, 0.228 Ag, 1,157,474 oz Au, 29,322,699 oz Ag (inferred resource), 2014: 14,686,000 tons, 0.014 opt Au, 0.307 opt Ag, 206,000 oz, 4,509,000 oz Ag Au (measured resource, 0.005 opt AuEq cut-off grade); 55,002,000 tons, 0.011 opt Au, 0.248 opt Ag, 605,000 oz Au, 13,640,000 oz Ag (indicated resource) 2015: 35,617,000 tons, 0.017 opt Au, 588,000 oz Au, 0.297 opt Ag, 10,569,000 oz Ag (proven and probable; Upper Siebert 0.008 opt Au, Lower Siebert 0.007 opt Au Cut-off grades); 54,185,000 tons, 0.014 opt Au, 738,000 oz Au, 0.26 opt Ag, 14,096,000 oz Ag (measured and indicated resource; 11,772,000 tons, 0.009 opt Au, 104,000 oz Au, 0.191 opt Ag, 2,249,000 oz Ag (inferred resource		Siebert Formation tuff and volcaniclastic rocks	16 Ma
Hill of Gold (Divide district)	1988: 500,000 tons, 0.04 opt Au, 0.40 opt Ag; 1996: 1,600,000 tons, 0.026 opt Au		Miocene silicic tuff	16 Ma

MAJOR PRECIOUS-METAL DEPOSITS, ESMERALDA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Imperial (Railroad Springs district)	1985: 769,000 tons, 0.029 opt Au (probable geologic inventory); 2,091,000 tons 0.029 opt Au (possible geologic inventory)	1930s: 2,000-3,000 oz Au, 1934-39: 3,241 tons ore valued at $15,926	Cambrian Campito Formation	
Mary-Drinkwater (Silver Peak district)	1991: 531,300 tons, 0.124 opt Au 2010 (May): 4,697,000 tons, 0.047 opt Au (measured and indicated resource, Drinkwater and Mary deposits); 3,793,000 tons, 0.036 opt Au (inferred resource, Drinkwater and Mary deposits) [See Mineral Ridge] 2014: Mary/LC: 1,502,560 tons, 0.061 opt Au, 91,510 oz Au (probable reserves); 1,534,500 tons, 0.063 opt Au, 96,670 oz Au (indicated resources); 50,900 tons, 0.061 opt Au, 3,100 oz Au (inferred Resources), Drinkwater: 170,680 tons, 0.056 opt Au, 9,630 oz Au (probable reserves); 537,900 tons, 0.047 opt Au, 25,280 oz Au (indicated resource); 11,100 tons, 0.035 opt Au, 390 oz Au (inferred resources)	1991: 25,000 oz Au, 8,000 oz Ag See Mineral Ridge	Wyman Formation	Mesozoic?
McMahon Ridge (Goldfield district)	2004: 8,200,000 tons, 0.035 opt Au (measured and indicated resource); 171,000 tons, 0.019 opt Au (inferred resource) 2006: 4,138,000 tons, 0.042 opt Au (measured and indicated resource); 172,000 tons, 0.038 opt Au (inferred resource) 2011: 6,074,000 tons, 0.039 opt Au, 238,000 oz Au (indicated resource); 121,000 tons, oz, 0.032 opt Au, 4,000 oz Au (inferred resource,)			
Mineral Ridge (Silver Peak district)	1995: 5,200,000 tons, 0.068 opt Au (proven and probable reserves, includes Mary-Drinkwater) 1998: 4,000,000 tons, 0.06 opt Au; 241,000 oz Au 2000: 2,840,000 tons, 0.074 opt Au (minable reserves) 2002: 2,660,000 tons, 0.079 opt Au (total Reserves) 2003: 8,300,000 tons, 0.061 opt Au resource (includes 2,660,000 tons, 0.079 opt Au reserves) 2010 (May): 4,697,000 tons, 0.047 opt Au (measured and indicated resource, Drinkwater and Mary deposits); 3,793,000 tons, 0.036 opt Au (inferred resource, Drinkwater and Mary deposits) 2012: 3,231,000 tons, 0.059 opt Au, 190,800 oz Au (indicated resource, 0.02 opt Au cut-off grade, Drinkwater, Mary, and Last Chance deposits) 89,000 tons, 0.043 opt Au, 3,800 oz (inferred resource), Drinkwater, Mary, and Last Chance deposits) 2014: (incudes Mary/LC and Drinkwater): 2,137,120 tons, 0.061 opt Au, 131,190 oz Au (probable reserves, 0.02 opt Au cut-off grade); 2,697,500 tons, 0.050 opt Au,160,300 oz contained Au (indicated resources, 0.02 opt Au cut-off grade); 72,730 tons, 0.055 opt Au 3,970 oz Au (inferred resources, 2017: (incudes Mary/LC and Drinkwater): 3,713,020 tons, 0.042 opt Au, 156,3000 oz Au (probable reserves); 3,182,800 tons, 0.072 opt Au, 227,800 oz Au (indicated resource) 182,900 tons, 0.059 opt Au, 10,730 oz Au (inferred resource)	1997: 13,793 oz Au, 7,907 oz Ag 1998: 8,582 oz Au, 4,877 oz Ag 1999: 27,145 oz Au, 19,915 oz Ag 2000: 2,200 oz Au, 1,000 oz Ag 2001: 1,399 oz Au, 424 oz Ag 2002: 397 oz Au, 396 oz Ag 2003: 675 oz Au, 704 oz Ag 2004: 3,638 oz Au, 3,062 oz Ag 2005: 1,589 oz Au, 1,073 oz Ag 2011: 11,932 oz Au, 6,918 oz Ag 2012: 32,871 oz Au, 13,871 oz Ag 2013: 39,160 oz Au, 14,975 oz Au 2014: 40,814 oz Au, 18,182 oz Ag 2015: 39,690 oz Au, 19,742 oz Ag 2016: 36,879 oz Au, 16,950 oz Ag 2017: 19.045 oz Au, 10,203 oz Ag 2018: 7,767 oz Au, 3,614 oz Ag 2019: 3,863 oz Au, 2,324 oz Ag	Wyman Formation	Mesozoic?
Monte Cristo (Gilbert district)	2006: 363,760 tons, 0.190 opt Au, 0.583 opt Ag (inferred resource) 2010: 2,545,980 tons, 0.11 opt Au (inferred resource, McLean Lode); 888,685 tons, 0.04 opt Au (inferred resource); Upper Zone: 999,966 tons, 1.27 opt Ag (inferred resource), McLean Lode: 123,948 tons, 0.78 opt Ag (inferred resource) 2015: 913,000 tons, 0.014 opt Au, 131,000 oz Au, 0.3 opt Ag, 271,000 oz Ag (inferred resource)	late 1980s: 300,000 tons, 0.072 opt Au	Tertiary andesite, lithic tuff	Tertiary

MAJOR PRECIOUS-METAL DEPOSITS, ESMERALDA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Palmetto (Palmetto district)	2018: Pit: 11,171,000 tons, 0.028 opt Au, 310,360 oz Au, 0.21 opt Ag, 2,374,120 oz Ag (inferred resource); Underground: 108,000 tons, 0.11 opt Au, 11,310 oz Au, 0.32 opt Ag, 33,910 oz Ag (inferred resource) 2020: Pit: 10,358,000 tons, 0.027 opt Au, 281,581 oz Au, 0.19 opt Ag, 1,926,652 oz Ag (inferred resource); Underground: 187,000 tons, 0.081 opt Au, 11,114 oz Au, 0.51 opt Ag, 95,026 oz Ag (inferred resource)			
Nivloc (Red Mtn. district)	2011: 1,807,000 tons, 0.023 opt Au, 41,000 oz Au, 3.11 opt Ag, 5,633,000 oz Ag (inferred resource)	1937-43: 4,675,408 oz Ag, 18,794 oz Au	Alaskite Complex, rhyolite, and metasediments	Late Cenozoic
Three Hills (Tonopah district)	1996: 3,200,000 tons, 0.036 opt Au 1997: 6,300,000 tons, 0.023 opt Au 2003: 5,736,000 tons, 0.023 opt Au (indicated resource) 2014: 1,091,000 tons, 0.023 opt Au, 25,000 oz Au (measured resource, 7,413,000 tons, 0.017 opt Au, 126,000 oz Au (indicated resource, 2015: 9,653,000 tons, 0.018 opt Au, 176,000 oz Au (probable reserve); 10,897,000 tons, 0.017 opt Au, 189,000 oz Au (indicated resource); 2,568,000 tons, 0.013 opt Au, 32,000 oz Au (inferred resource)		Miocene Siebert Formation and Oddie Rhyolite	
Tip Top (Fish Lake Valley district)	1997: 109,000 tons, 0.103 opt Au, 0.88 opt Ag (indicated resource) 1998: 168,000 tons, 0.088 opt Au (inferred geologic resource) 2009: 388,920 tons, 0.096 opt Au (indicated resource) 323,230 tons, 0.072 opt Au (inferred resource)		Tertiary quartz latite	
Tonopah Divide (Divide district)	1988: 500,000 tons, 0.04 opt Au, 0.4 opt Ag 1997: 1,800,000 tons, 0.55 opt Au 2005: 400,000 tons, 0.348 opt Au (open pit reserve)	1982-86: 429,876 oz Au 1983-84: 3,759 oz Ag	Siebert Formation	16 ma
Weepah (Weepah district)	1986: 200,000 tons, 0.1 opt Au, 0.4 opt Ag	1930s: N/A 1986-87: 58,000 oz Au	Wyman Formation	Cretaceous

EUREKA COUNTY

Afgan (Antelope district)	1996: 80,000 oz Au drill-indicated resource 1999: 2,800,000 tons, 0.037 opt Au oxide resource 2004: 1,850,000 tons, 0.027 opt Au (indicated resource) 1,290,000 tons, 0.026 opt Au (inferred resource) 2011 (oxide): 3,206,000 tons, 0.021 opt Au, 66,000 oz Au (indicated resource) 3,972,000 tons, 0.014 opt Au, 55,000 oz Au (inferred resource)		Webb Formation	
Antimony Hill (Lynn district)	2002: 20,000 oz at 0.05 opt Au (pre-mine resource)		Vinini Formation	
Barrel (Lynn district)	1998 (Barrel and Goldbug): 2,917,000 tons, 0.391 oz Au, 1,140,000 oz Au (proven and probable reserve); 1,170,000 tons, 0.337 opt Au (material not in reserve) 2002: 200,000 oz at 0.2 opt Au (pre-mine resource) 2011 underground: 383,000 tons, 0.217 opt Au,		Popovich Fm. Rodeo Creek Fm.	

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Barrel (con't)	83,000 oz contained Au 2018: underground: 444,700 tons, 0.212 opt Au, 94,400 oz Au (measured and indicated resource); 55,900 tons, 0.227 opt Au, 12,700 oz Au (inferred resource) (			
Beast (Lynn district)	2002: 50,000 oz at 0.02 opt Au (pre-mine resource)	1994-1999: 8,000,000 tons, 0.02 opt Au	Roberts Mountains Fm., Eocene rhyolite dikes	Eocene
Betze-Post (Lynn district)	1988: 128,400,000 tons, 0.095 opt Au 1999: 135,600,000 tons, 0.153 opt Au (proven and probable reserves); 23,300,000 tons, 0.099 opt Au (mineralized material) 2000: 116,400,000 tons, 0.155 opt Au (proven and probable); 55,900,000 tons, 0.063 opt Au (mineral resource) 2001: 108,900,000 tons, 0.151 opt Au (proven and probable); 49,900,000 tons, 0.069 opt Au (mineral resource) 2002: 107,100,000 tons, 0.150 opt Au (proven and probable reserves); 47.6 million tons, 0.070 opt Au (mineral resource) 2003: 61,551,000 tons, 0.128 opt Au (proven Reserves); 48,191,000 tons, 0.162 opt Au (probable reserves); 14,077,000 tons, 0.059 opt Au (measured resource); 23,326,000 tons, 0.061 opt Au (indicated resource); 323,000 tons, 0.065 opt Au (inferred resource) 2004: 123,334,000 tons, 0.131 opt Au (proven and probable reserves); 22,318,000 tons, 0.050 opt Au (mineral resource) 2005: 114,512,000 tons, 0.128 opt Au (proven and probable reserves); 21,115,000 tons, 0.050 opt Au (measured and indicated resource); 417,000 tons, 0.089 opt Au (inferred resource) 2006: 105,206,000 tons, 0.125 opt Au (proven and probable reserves); 20,184,000 tons, 0.050 opt Au (measured and indicated resource); 489,000 tons, 0.078 opt Au (inferred resource) 2007: 94,914,000 tons, 0.128 opt Au (proven and probable reserves); 34,532,000 tons, 0.052 opt Au (measured and indicated resource); 5,014,000 tons, 0.064 opt Au (inferred resource) 2008: 86,254,000 tons, 0.119 opt Au (proven and probable reserves); 15,751,000 tons, 0.055 opt Au (measured and indicated resource); 479,000 tons, 0.092 opt Au (inferred resource) 2009: 82,902,000 tons, 0.112 opt Au (proven and probable reserves); 16,687,000 tons, 0.052 opt Au (measured and indicated resource); 3,568,000 tons, 0.116 opt Au (inferred resource) 2010: 95,865,000 tons, 0.101 opt Au (proven and probable reserves); 4,694,000 tons, 0.037 opt Au (measured and indicated resource) 1,344,000 tons, 0.065 opt Au (inferred resource) 2011: 97,325,000 tons, 0.096 opt Au, 9,342,000 contained oz Au (proven and probable reserves); 4,612,000 tons, 0.032 opt Au, 147,000 contained oz Au (measured and indicated resource); 564,000 tons, 0.055 opt Au, 31,000 oz Au (inferred resource) 2012 (includes all open pit resources at Goldstrike): 94,541,000 tons, 0.094 opt Au, 8,933,000 oz Au (proven and probable reserves); 3,621,000 tons, 0.033 opt Au, 103,000 oz Au (measured and indicated resource); 3,049,000 tons, 0.066 opt Au, 201,000 contained oz Au (inferred resource) 2013 (includes all open pit resources at Goldstrike): 84,255,000 tons, 0.096 opt Au, 8,122,000 oz Au (proven and probable	1974: 302,807 oz Au 1980-88: 440,000 oz Au 1989-92: 2,214,508 oz Au, 92,347 oz Ag 1993: 1,439,929 oz Au 1994-98: 8,920,871 oz Au, 372,403 oz Ag 1999: 1,130,094 oz Au, 65,804 oz Ag 2000: 1,646,640 oz Au, 52,000 oz Ag 2001: 1,549,975 oz Au, 261,261 oz Ag 2002: 1,409,984 oz Au, 135,716 oz Ag 2003: 1,559,401 oz Au, 115,473 oz Ag 2004: 1,381,315 oz Au, 130,609 oz Ag 2005: 1,514,320 oz Au, 114,248 oz Ag 2006: 1,432,698 oz Au, 121,032 oz Ag 2007: 1,215,447 oz Au, 140,923 oz Ag 2008: 1,281,450 oz Au, 152,886 oz Ag 2009: 901,002 oz Au, 120,736 oz Ag 2010: 884,200 oz Au, 138,931 oz Ag 2011: 721,534 oz Au, 94,572 oz Ag 2012: 812,707 oz Au, 102,700 oz Ag 2013: 521,489 oz Au, 86,124 oz Ag 2014: 515,641 oz Au, 17,993 oz Ag 2015: 642,493 oz Au, 67,223 oz Ag 2016: 544,736 oz Au, 134,283 oz Ag 2017: 433,422 oz Au, 96,541 oz Ag 2018: 458,287 oz Au, 70,621 oz Ag 2019: 493,546 oz Au, 18,781 oz Ag	Popovich Fm. Rodeo Creek Fm.	Eocene

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Betze-Post (cont.)	reserves); 5,909,000 tons, 0.07 opt Au, 413,000 oz Au (measured and indicated resource); 1,081,000 tons, 0.071 opt Au, 77,000 oz Au (inferred resource) 2014 (includes all open pit resources at Goldstrike): 81,782,000 tons, 0.11 opt Au, 7,724,000 contained oz Au (proven and probable reserves, recovery rate 76.5%, cut-off grade 0.045-0.06 opt Au); 4,956,000 tons, 0.055 opt Au, 274,000 oz Au (measured and indicated resource, recovery rate 76.5%, cut-off grade 0.045-0.06 opt Au); 516,000 tons, 0.09 opt Au, 40,000 oz Au (inferred resource, recovery rate 76.5%, cut-off grade 0.045-0.06 opt Au) 2015 (includes all open pit resources at Goldstrike): 76,139,000 tons, 0.091 opt Au, 6,911,000 oz Au (proven and probable reserves, recovery rate 76.8%, cut-off grade 0.046-0.072 opt Au); 5,639,000 tons, 0.072 opt Au, 404,000 oz Au (measured and indicated resource, various cut-off grades); 505,000 tons, 0.081 opt Au, 41,000 oz Au (inferred resource, various cut-off grades) [NI43-101 compliant] 2016 Goldstrike Open Pit: 71,650,000 tons, 0.088 opt Au, 6,271,000 contained oz Au (proven and probable reserves); 5,760,000 tons, 0.078 opt Au, 447,000 oz Au (measured and indicated resource); 89,300 tons, 0.056 opt Au, 5,000 oz Au (inferred resource) 2017 Goldstrike Open Pit: 65,268,000 tons, 0.087 opt Au, 5,654,000 contained oz Au (proven and probable reserves; 177,000 tons, 0.082 opt Au, 505,000 oz Au (measured and indicated resource); 304,000 ons, 0.082 opt Au, 24,000 oz Au (inferred resource); 2018 Goldstrike Open Pit: 59,712,500 tons, 0.087 opt Au, 5,667,000 oz Au (proven and probable reserves); 03,319,000 tons, 0.035 opt Au, 115,000 oz Au (measured and indicated resource; ; 235,900tons, 0.064 opt Au, 15,000 oz Au (inferred resource) 2019 Goldstrike Open Pit: 9,900,000 tons, 0.11 opt Au, 1,100,000 oz Au (proven and probable reserves); 11,000,000 tons, 0.1 opt Au, 1,100,000 oz Au (measured and indicated resource, includes reserves); 716,000 tons, 0.07 opt Au, 46,000 oz Au (inferred resource); Open Pit Stockpile: 10,600,000 tons, 0.1 opt Au, 630,000 contained oz Au (proven reserves, cut-off grade 0.006-0.23 opt Au); 52,900,000 tons, 0.078 opt Au, 4,100,000 oz Au (measured resource, includes reserves) tons, 0.078 opt Au, 4,100,000 oz Au (measured resource, includes reserves)			
Buckhorn property (Buckhorn district)	1984: 5,000,000 tons, 0.044 opt Au, 0.585 opt Ag 1990: 700,000 tons, 0.05 opt Au; *geologic resource*-200,350 oz Au 1993: 1,100,000, 0.11 opt Au (geologic resource)	1988-93: 109,422 oz Au, 409,887 oz Ag	basaltic andesite, sinter, silicified sedimentary rocks	14.6 Ma
Buckhorn South/ Zeke deposit (Buckhorn district)	1989: 2,000,000 tons, 0.056 opt Au, 0.224 opt Ag 1998: 2,400,000 tons, 0.046 opt Au		lower Paleozoic rocks	
Cabin Creek (Antelope district)	2009-2010: 3,200,000 tons, 0.024 opt Au (indicated resource); 100,000 tons, 0.015 opt Au (inferred resource); 2011: 2,348,000 tons, 0.026 opt Au, 60,005 oz Au (measured and indicated resource), 0.009 opt Au cut-off grade), 1,117,000 tons, 0.023 opt Au, 25,391 oz Au (inferred resource)	2019: See Gold Bar	Devonian McColley Canyon Formation	

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Cabin Creek (cont.) (Antelope District)	2015: 1,651,000 tons, 0.025 opt Au, 41,000 oz Au (proven and probable reserve); 2,616,000 tons, 0.025 opt Au, 66,000 oz Au (measured and indicated resource); 754,000 tons, 0.019 opt Au, 14,000 oz Au (inferred resource) 2017: Reserves part of Gold Bar combined; 2,473,000 tons, 0.028 opt Au, 64,000 oz Au (measured and indicated resource); 695,000 tons, 0.019 opt Au, 13,000 oz Au ((inferred resource)			
Carlin North, Newmont (Lynn district)				
Blue Star	1987: 1,950,000 tons, 0.066 opt Au 1989: 22,200,000 tons, 0.030 opt Au (geologic resource)	1974-84: intermittent 1988-2010: included in Newmont Gold production at the end of this section	lower Paleozoic sandy siltstone and carbonate rocks, granodiorite	Eocene
Bobcat (Bobstar)	1988: 17,700,000 tons, 0.029 opt Au (geologic resource)		lower Paleozoic rocks	Eocene
Bullion Monarch	1987: 1,000,000 tons, 0.10 opt Au	1977-84: 17,779 oz Au	lower Paleozoic sedimentary rocks	Eocene
Deep Post	2000: 3,100,000 tons, 0.814 opt Au (proven and probable underground reserves) 2004 (includes Deep Star) 1,462,000 oz Au (proven and probable reserves) 2005 (includes Deep Star) 942,000 oz Au (proven and probable reserves)	included in Newmont Gold production at the end of this section		
Deep Star	1996: 1,400,000 tons, 0.8765 opt Au (proven and probable reserves)	1995: 2,800 oz Au 1996: 93,400 oz Au 1997-2011: included in Newmont Gold production at the end of this section	Popovich Formation	Eocene
Exodus	2017: 1,540,000 tons, 0.27 opt Au, 400,000 oz oz Au (reserves); 880,000 tons 0.21 opt Au, 400,000 oz Au (measured and indicated resource); 990,000 tons, 0.25 opt Au, 200,000 oz Au (inferred resource)			
Fence/Full House/ Rita K/Pete Bajo	2015: 992,000 tons, 0.26 opt Au, 300,000 oz Au (reserve); 1,650,000 tons, 0.27 opt Au, 400,000 oz Au (resource) 2016: 2,200,000 tons, 0.23 opt Au, 400,000 oz Au (reserve); 2,200,000, 0.22 opt Au, 500,000 oz Au (resource) 2017: 1,540,000 tons, 0.27 opt Au, 400,000 oz oz Au (reserves); 880,000 tons 0.21 opt Au, 400,000 oz Au (measured and indicated resource); 990,000 tons, 0.25 opt Au, 200,000 oz Au (inferred resource)		Roberts Mountain Formation	
Genesis (Silverstar)	1989: 35,800,000 tons, 0.044 opt Au (geologic resource) 1990: 32,000,000 tons, 0.047 opt (includes Blue Star) 2004: 1,065,000 oz Au (proven and probable reserves) 2012: 3,000,000 oz Au (reserves) 2019: See Tri-Star (Genesis)	1986: production commenced 1988-2019: included in Newmont Gold production at the end of this section	Ordovician-Devonian limestone, argillite, chert	Eocene

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Genesis Complex	2000:14,100,000 tons, 0.026 opt Au (proven and probable open-pit reserves) 2004: 1,065,000 oz Au (proven and probable reserves) 2019: See Tri-Star (Genesis)			
Lantern	2019 22,000 tons, 0.027 opt Au, 590,000 contained oz Au (indicated resource); 3,300,000 tons, 0.026 opt Au, 90,000 oz Au (inferred resource)			
Leeville	2004: 2,612,000 oz Au (proven and probable reserves) 2005: 2,433,000 oz Au (proven and probable reserves) 2017: 13,200,000 tons, 0.3 opt Au, 3,900,000 oz Au (reserves); 550,000 tons 0.2 opt Au, 100,000 oz Au (measured resource); 660,000 tons, 0.35 opt Au, 100,000 oz Au (indicated resource); 1,200,000 tons, 0.32 opt Au, 400,000 oz Au (inferred resource) 2019: 14,300,000 tons, 0.3 opt Au, 4,300,000 contained oz Au (proven and probable reserves, cut-off grade 0.006-0.23 opt Au); 20,900,000 tons, 0.26 opt Au, 5,400,000 contained oz Au (measured and indicated resource, includes reserves) 816,000 tons, 0.27 opt Au, 220,000 oz Au (inferred resource,	2005-2019: included in Newmont Gold production at the end of this section	Roberts Mountains Formation	Eocene
Liberty	2018: 136,500 tons, 0.223 opt Au, 31,400 oz Au (measured and indicated resource); 12,300 tons, 0.225 opt Au, 2,800 oz Au (inferred resource)			
North Lantern	2004: 199,940 oz Au			
North Post	2011 underground: 3,348,000 tons, 0.244 opt Au, 816,000 contained oz Au 2018: underground: 498,300 tons, 0.212 opt Au, 105,600 oz Au (measured and indicated resource); 15,500 tons, 0.179 opt Au, 2,800 oz Au (inferred resource) Joint Venture (Barrick only): underground: 59,000 tons, 0.201 opt Au, 11,900 oz Au (measured and indicated resource)			
North Star	1989: 6,900,000 tons, 0.052 opt Au (geologic resources) 1990: 3,900,000 tons, 0.052 opt Au	1988: 4,250 oz Au 1989-2010 included in Newmont Gold production at the end of this section	lower Paleozoic sedimentary rocks	Eocene
Northwest Exodus	2015: 770,000 tons, 0.18 opt Au, 100,000 oz Au (reserves); 2,800,000 tons, 2,800,000 tons, 0.27 opt Au, 700,000 oz Au (resources) 2016: 3,300,000 tons, 0.24 opt Au, 800,000 oz Au (reserves); 2,200,000 tons, 0.18 opt Au, 300,000 oz Au (resource)			
Portal Mines (Pete Bajo/Exodus/ Exodus Northwest)	2019: 5,700,000 tons, 0.23 opt Au, 1,300,000 contained oz Au (proven and probable reserves, 0.006 opt to 0.23 opt Au cut-off grade); 9,300,000 tons, 0.2 opt Au, 1,800,000 contained oz Au (measured and indicated resource inclusive of reserves, 0.006 opt to 0.23 opt Au cut-off grade) 2,000,000 tons, 0.19 opt Au, 370,000 contained oz Au (inferred resource)			

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Post/Goldbug	1996: 25,600,000 tons, 0.190 opt Au (proven and probable reserves); 43,600,000 tons, 0.079 opt Au (mineralized material)	1999-2010: included in Newmont Gold production at the end of this section	lower Paleozoic sedimentary rocks	Eocene
Tri-Star (Genesis)	2019: Open Pit: 23,200,000 tons, 0.038 opt Au, 890,000 oz Au (proven and probable reserves; 30,900,000 tons, 0.041 opt Au, 1,300,000 oz Au (measured and indicated resource, includes reserves) 5,000,000 tons, 0.026 opt Au, 130,000 oz Au (inferred resource), Stockpile: 1,300,000 tons, 0.085 opt Au, 110,000 oz Au (proven reserves), 1,300,000 tons, 0.085 opt Au, 110,000 oz Au (measured resource, includes reserves)	1988-2019: included in Newmont Gold production at the end of this section		
Turf	1996: 2,500,000 tons, 0.367 opt Au (mineralized material)	included in Newmont Gold production at the end of this section	Roberts Mountains Formation	Eocene
West Leeville (Newmont)	1996: 2,000,000 tons, 0.377 opt Au (proven and probable reserves; 581,000 tons, 0.354 opt Au (mineralized material)	1995-96: 272,000 oz Au 1997-2010: included in Newmont Gold production at the end of this section	Roberts Mountains Formation	Eocene
West Leeville (Newmont-Barrick)	1996: 7,100,000 tons, 0.425 opt Au (proven and probable reserves); 500,000 tons, 0.328 opt Au (mineralized material)		Roberts Mountains Formation	Eocene
Carlin Mine	1965: 11,000,000 tons, 0.32 opt Au	1965-86: 3,800,000 oz Au		
Carlin/Pete/Lantern	1995: 14,800,000 tons, 0.031 opt Au 1996: 13,700,000 tons, 0.046 opt Au (proven and probable reserves); 14,700,000 tons, 0.046 opt Au (mineralized material) 2004: 940,040 oz Au (proven and probable reserves) 2005: 1,044,841 oz Au (proven and probable reserves)	1994-96: 68,700 oz Au 1997-2014: included in Newmont Gold production at the end of this section	Roberts Mountains Formation	Eocene
Carlin Underground	2004: 163,000 oz Au 2005: 123,000 oz Au (proven and probable reserves)			
Carlin North-other	2000: 19,800,000 tons, 0.052 opt Au, proven and probable open-pit reserves			
Carlin North area total	2000: 8,200,000 tons, 0.495 opt Au (proven and probable underground reserves)			
Carlin North area, total open-pit	2001: 32,600,000 tons, 0.044 opt Au, (proven and probable reserves); 13,000,000 tons, 0.039 opt Au (mineralized material)			
Carlin North area, total underground	2001: 10,900,000 tons, 0.56 opt Au, (proven and probable reserves); 2,100,000 tons, 0.55 opt Au (mineralized material)			
Carlin South, Newmont (Maggie Creek district)				
Chukar Footwall underground	2001: 278,000 tons, 0.49 opt Au (proven and probable reserves); 115,000 tons, 0.46 opt Au (mineralized material) 2004: 172,000 oz Au (proven and probable reserves) 2005: 256,000 oz Au (proven and probable reserves)	2002-2014: included in Newmont Gold production at the end of this section		

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Gold Quarry/Mac/ Tusc	1982: 25,100,000 tons, 0.106 opt Au and 150,000,000 tons, 0.036 opt Au 1987: 197,800,000 tons, 0.042 opt Au 1990: 212,600,000 tons, 0.042 opt Au, *geologic resource*-534,300,000 tons, 0.037 opt Au 1996: 174,800,000 tons, 0.046 opt Au (proven and probable reserves); 51,900,000 tons, 0.058 opt Au (mineralized material) 2004: 5,984,000 oz (proven and probable reserves) 2005: 6,554,297 oz (proven and probable reserves) 2019: Gold Quarry Open Pit: 65,000,000 tons, 0.06 opt Au, 3,900,000 contained oz Au (proven and probable reserves); 154,300,000 tons, 0.049 opt Au, 7,600,000 oz Au (measured and indicated resource, i Includes reserves) 5,200,000 tons, 0.047 opt Au, 240,000 oz Au (inferred resource); Gold Quarry Stockpile: 10,600,000 tons, 0.06 opt Au, 630,000 oz Au (proven reserves); 10,600,000 tons, 0.06 opt Au, 630,000 oz Au (measured resource, includes reserves)	1981: 6,000 oz Au 1982: 19,000 oz Au 1983: 74,000 oz Au 1984: 68,200 oz Au 1985: 136,200 oz Au 1986: 309,800 oz Au 1987: 446,600 oz Au 1988-93: included in Newmont Gold production 1994-96: 2,978,000 oz Au 1997-2019: included in Newmont Gold production at the end of this section	See below Ordovician to Devonian chert, shale, siltstone, and impure carbonate rocks; in part, *Vinini Formation*	Eocene Eocene
Mike	1999: 408,000,00 tons, 0.006 opt Au, 151,000,000 tons, 0.10 % Cu 19,000,000 tons, 1.00 % Zn (drill-indicated mineral inventory)			
Tusc	1988: *geologic resource*-15.8 million tons, 0.059 opt Au 1990: 13,300,000 tons, 0.062 opt Au	included in Newmont Gold production at the end of this section	lower Paleozoic sedimentary rocks	Eocene
Carlin South area	2000: 75,200,000 tons, 0.059 opt Au (proven and probable open-pit reserves)			
Carlin South open-pit	2001: 61,300,000 tons, 0.062 opt Au proven and probable reserves; 24,600,000 tons, 0.028 opt Au (mineralized material)			
Carlin North and South combined (includes all Newmont's Carlin properties)				
Carlin open pit	2002: 181,800,000 tons, 0.042 opt Au (proven and probable reserves); 9,500,000 tons, 0.028 opt Au (measured and indicated mineralized) material; 9,300,000 tons, 0.035 opt Au (inferred mineralized material) 2003: 17,500,000 tons, 0.052 opt Au (proven reserves); 203,300,000 tons, 0.044 (probable reserves); 1,000,000 tons 0.035 (measured material); 11,200,000 tons 0.024 (indicated material); 10,400,000 tons 0.034 opt Au (inferred material) 2004: 201,600,000 tons, 0.047 opt Au (proven and probable reserves); 13,200,000 tons, 0.022 opt Au (indicated material); 7,700,000 tons, 0.034 opt Au (inferred material) 2005: 238,300,000 tons, 0.043 opt Au (proven and probable reserves); 28,100,000 tons, 0.04 opt Au (measured and indicated resource); 4,200,000 tons, 0.024 opt Au (inferred resource) 2006: 271,600,000 tons, 0.042 opt Au (proven and probable reserves); 35,100,000 tons, 0.035 opt Au (measured and indicated resource); 6,300,000 tons, 0.022 opt Au (inferred resource) 2007: 213,500,000 tons, 0.045 opt Au (proven and probable reserves); 14,600,000 tons, 0.020 opt Au (measured and indicated resource); 3,700,000 tons, 0.037 opt Au (inferred resource) 2008: 202,400,000 tons, 0.045 opt Au (proven and probable reserves); 88,400,000 tons, 0.040 opt Au (measured and indicated resource); 21,100,000 tons, 0.023 opt Au (inferred resource)	2004-2018: included in Newmont Gold production at the end of this section		Eocene

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Carlin open pit (cont.)	2009: 259,300,000 tons, 0.044 opt Au (proven and probable reserves); 28,800,000 tons, 0.021 opt Au (measured and indicated resource); 10,400,000 tons, 0.034 opt Au (inferred resource) 2010: 263,500,000 tons, 0.043 opt Au (proven and probable reserve, 75% recovery); 91,800,000 tons, 0.020 opt Au (measured and indicated resource) 22,100,000 tons, 0.034 opt Au (inferred resource) 2011: 331,700,000 tons, 0.038 opt Au (proven and probable reserve, 77% recovery); 112,600,000 tons, 0.026 opt Au (measured and indicated resource) 15,300,000 tons, 0.02 opt Au (inferred resource) 2012: 313,200,000 tons, 0.037 opt Au, 11,650,000 oz Au (proven and probable reserve, 74% recovery); 88,900,000 tons, 0.027 opt Au, 2,370,000 oz Au (measured and indicated resource); 18,900,000 tons, 0.018 opt Au, 350,000 oz Au (inferred resource) 2013: 271,600,000 tons, 0.036 opt Au, 9,730,000 oz Au (proven and probable reserve); 83,800,000 tons, 0.019 opt Au (mineralized material) 2014: 244,300,000 tons, 0.037 opt Au, 9,090,000 oz Au (proven and probable reserve, 81,900,000 tons, 0.027 opt Au (mineralized material)] 2015: 226,100,000 tons, 0.039 opt Au, 8,860,000 oz Au (proven and probable reserve); 89,100,000 tons, 0.028 opt Au (mineralized material); Stockpiles: 22,800,000 tons, 0.059 opt Au, ,330,000 oz Au 2016: 255,300,000 tons, 0.033 opt Au, 8,500,000 oz Au (proven and probable reserve); 100,300,000 tons, 0.036 opt Au (mineralized material); Stockpiles: 21,200,000 tons, 0.063 opt Au, 1,330,000 oz Au (proven reserves) 2017: 258,000,000 tons, 0.032 opt Au, 8,340,000 oz Au (proven and probable reserve); 91,400,000 tons, 0.041 opt Au (mineralized material); Stockpiles: 18,900,000 tons, 0.062 opt Au, 1,180,000 oz Au (proven reserves) 2018: 119,900,000 tons, 0.048 opt Au, 5,690,000 oz Au (proven and probable reserve), Stockpiles: 18,700,000 tons, 0.067 opt Au, 1,250,000 oz Au (proven reserves)			
Carlin underground	2002: 10,000,000 tons, 0.57 opt Au (proven and probable reserves); 2,600,000 tons, 0.50 opt Au (measured and indicated mineralized material); 200,000 tons, 0.53 opt Au (inferred mineralized material) 2003: 2,700,000 tons, 0.670 opt Au (proven reserves); reserves); 6,100,000 tons, 0.500 opt Au (probable 3,700,000 tons 0.480 opt Au (inferred material) 2004: 8,700,000 tons, 0.510 opt Au (proven and probable reserves); 100,000 tons, 0.260 opt Au (indicated material); 3,900,000 tons, 0.470 opt Au (inferred material) 2005: 7,700,000 tons, 0.49 opt Au (proven and probable reserves); 300,000 tons, 0.33 opt Au (measured and indicated resource); 3,700,000 tons, 0.46 opt Au (inferred resource) 2006: 7,400,000 tons, 0.44 opt Au (proven and probable reserves); 1,100,000 tons, 0.28 opt Au (measured and indicated resource); 3,000,000 tons, 0.47 opt Au (inferred resource) 2007: 7,200,000 tons, 0.388 opt Au (proven and probable reserves); 110,000 tons, 0.482 opt Au (measured and indicated resource); 2,600,000 tons, 0.480 opt Au (inferred resource) 2008: 11,700,000 tons, 0.313 opt Au (proven and probable reserves); 340,000 tons, 0.330 opt Au (measured and indicated resource); 3,100,000 tons, 0.327 opt Au (inferred resource) 2009: 9,700,000 tons, 0.311 opt Au (proven and probable reserves); 810,000 tons, 0.180 opt Au (measured and indicated resource); 7,400,000	2004-2019: included in Newmont Gold gold production at the end of this section		Eocene

tons, 0.289 opt Au (inferred resource)

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	2010: 14,600,000 tons, 0.307 opt Au, 12,620,000 oz Au (proven and probable reserve); 4,200,000 tons, 0.290 opt Au (measured and indicated resource); 1,300,000 tons, 0.345 opt Au (inferred resource) 2011: 18,000,000 tons, 0.282 opt Au, 5,090,000 oz Au (proven and probable reserve); 7,600,000 tons, 0.241 opt Au (measured and indicated resource); 1,300,000 tons, 0.264 opt Au (inferred resource) 2012: 23,500,000 tons, 0.265 opt Au, 6,230,000 oz Au (proven and probable reserve); 1,300,000 tons, 0.18 opt Au, 240,000 oz Au (measured and indicated resource); 4,000,000 tons, 0.26 opt Au, 1,020,000 oz Au (inferred resource) 2013: 23,900,000 tons, 0.252 opt Au, 6,010,000 oz Au (proven and probable reserve); 2,900,000 tons, 0.235 opt Au (mineralized material) 2014: 23,300,000 tons, 0.258 opt Au, 6,030,000 oz Au (proven and probable reserve); 1,900,000 tons, 0.195 opt Au (mineralized material) 2015: 23,000,000 tons, 0.266 opt Au, 6,100,000 oz Au (proven and probable reserve); 1,800,000 tons, 0.192 opt Au (mineralized material) 2016: 18,600,000 tons, 0.278 opt Au, 5,170,000 oz Au (proven and probable reserve, 3,200,000 tons, 0.223 opt Au (mineralized material) 2017: 18,400,000 tons, 0.291 opt Au, 5,310,000 oz Au (proven and probable reserve); 2,600,000 tons, 0.214 opt Au (mineralized material) 2018: 16,300,000 tons, 0.3 opt Au, 4,870,000 oz Au (proven and probable reserve, 83% metallurgical recovery); 3,600,000 tons, 0.176 opt Au (mineralized material) [NI43-101 compliant]			
Fourmile (Cortez district)	2018: 1,290,000 tons, 0.54 opt Au, 697,000 contained oz Au (inferred resource) 2019: 5,950,000 tons, 0.32 opt Au, 1,900,000 contained oz Au (inferred resource)			
Gold Bar (Antelope district)	1984: 2,800,000 tons, 0.09 opt Au 1990: mined out in December 1994: 240,000 oz Au 1995: 190,000 oz Au 2001: 473,000 oz Au in 6 deposits 2002: 3,600,00 tons, 0.100 opt Au (resource) 2009 (Feb.): 21,500,000 tons, 0.032 opt Au (measured and indicated resource, 0.012 opt Au cut-off grade, Gold Pick and Gold Ridge deposits); 8,700,000 tons, 0.021 opt Au (inferred resources, 0.012 opt Au cut-off grade, Gold Pick and Gold Ridge deposits) 2010: 33,300,000 tons, 0.027 opt Au (measured and indicated and resource, 0.012 opt Au cut-off grade, Gold Pick and Gold Ridge deposits); 1,200,000 tons, 0.016 opt Au (inferred resource, 0.012 opt Au cut-off grade, Gold Pick and Gold Ridge deposits) 2011: 21,486,000 tons, 0.028 opt Au, 592,928 oz Au (measured and indicated resource, Cabin Creek, Gold Pick, and Gold Ridge deposits); 7,758,000 tons, 0.027 opt Au, 212,168 oz Au (inferred resources, Cabin Creek, Gold Pick, and Gold Ridge deposits) 2015: 13,099,000 tons, 0.032 opt Au, 419,000 oz Au (proven and probable reserve, , Cabin Creek, Gold Pick, and Gold Ridge deposits); 22,112,000 tons, 0.028 opt Au, 611,000 oz Au (measured and indicated resource, 0.008 opt Au cut-off grade, Cabin Creek, Gold Pick, and Gold Ridge deposits); 4,792,000 tons, 0.024 opt Au, 111,000 oz Au (inferred resource, Cabin Creek, Gold Pick, and Gold Ridge deposits)	1987-90: 238,262 oz Au 1991: 80,727 oz Au, 3,000 oz Ag 1992-94: 155,080 oz Au, 2019: 30,709 oz Au, 614 oz Ag	Devonian Nevada Formation	Eocene?

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Gold Bar (cont.) Antelope district	2017: (Cabin Creek, Gold Bar South, Gold Pick, and Gold Ridge combined): 16,497,000 tons, 0.029 opt Au, 485,000 oz Au (proven and probable reserve, 0.008 opt Au cut-off grade); 23,527,000 tons, 0.028 opt Au, 730,000 oz Au (measured and indicated resource, 0.008 opt Au cut-off grade); 4,900,000 tons, 0.025 opt Au, 111,000 oz Au (inferred resource) 2018: 18,235,000 tons, 0.029 opt Au, 524,000 oz Au (proven and probable reserve); 27,006,000 tons, 0.027 opt Au, 731,000 oz Au (measured and indicated resource); 7,510,000 tons, 0.026 opt Au, 197,000 oz Au (inferred resource) (Resources do not include Gold Bar South; Au cut-off grades for all resources: 0.007 opt for Gold Pick and 0.008 opt for Gold Ridge)			
Gold Bar South **(Antelope district)**	2017: Reserves part of Gold Bar combined; 3,488,000 tons, 0.029 opt Au, 101,000 contained oz Au (measured and indicated resource, 0.008 opt Au cut-off grade); 123,000 tons, 0.042 opt Au, 5,000 contained oz Au (inferred resource, 0.008 opt Au cut-off grade) [NI43-101 compliant]		Mississippian Webb Formation Devonian Devils Gate Limestone	Eocene?
Gold Canyon **(Antelope district)**	1992: reserves-86,500 oz Au, *geologic resource*-131,000 oz Au	reported with Gold Bar	Devonian Upper Denay Limestone	Eocene?
Gold Canyon (con't)	1993: 770,000 tons, 0.080 opt Au 2001: *see* Gold Bar 2002: 2,500,000 tons, 0.056 opt Au resource			
Gold Pick **(Antelope district)**	1988: 10,000,000 tons, 0.06 opt Au 1993: 1,400,000 tons, 0.079 opt Au 2001: *see* Gold Bar 2002: 5,000,000 tons, 0.057 opt Au measured mineral resource 2005: 7,874,000 tons, 0.041 opt Au (indicated resource) 2011: 16,553,000 tons, 0.028 opt Au, 459,165 oz Au (measured and indicated resource); 5,649,000 tons, 0.029 opt Au, 161,761 oz Au (inferred resource) 2015: 10,145,000 tons, 0.033 opt Au, 335,000 oz Au (proven and probable reserve); 17,069,000 tons, 0.028 opt Au, 479,000 oz Au (measured and indicated resource); 3,046,000 tons, 0.025 opt Au, 77,000 oz Au (inferred resource) 2017: Reserves part of Gold Bar combined; 17,603,000 tons, 0.028 opt Au, 489,000 oz Au (measured and indicated resource, 0.008 opt Au cut-off grade); 3,227,000 tons, 0.025 opt Au, 80,000 oz Au (inferred resource, 0.008 opt Au cut-off grade)	reported with Gold Bar	Devonian McColley Canyon Formation	Eocene?
Gold Ridge **(Antelope district)**	1988: 400,000 tons, 0.06 opt Au 1993: 426,000 tons, 0.059 opt Au 2001: *see* Gold Bar 2002: 584,164 tons, 0.046 opt Au resource 2011: 2,585,000 tons, 0.028 opt Au, 73,100 oz Au (measured and indicated resource); 992,000 tons, 0.025 opt Au 25,016 oz Au (inferred resource) 2015: 1,303,000 tons, 0.033 opt Au, 43,000 oz Au (proven and probable reserve); 2,427,000 tons, 0.028 opt Au, 67,000 oz Au (measured and indicated resource); 824,000 tons, 0.024 opt Au, 20,000 oz Au (inferred resource)	reported with Gold Bar	Devonian McColley Canyon Formation	Eocene?

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Gold Ridge (cont.) (Antelope district)	2017: Reserves part of Gold Bar combined; 2,726,000 tons, 0.028 opt Au, 76,000 oz Au (measured and indicated resource, 0.008 opt Au cut-off grade); 854,000 tons, 0.025 opt Au, 22,000 oz Au (inferred resource)			
Goldrush (Cortez district)	2011 (Red Hill/Goldrush): 11,221,000 tons, 0.113 opt Au, 1,273,000 contained oz Au (indicated resource); 41,290,000 tons 0.139 opt Au, 5,748,000 oz Au (inferred resource) 2012: 65,914,000 tons, 0.127 opt Au, 8,367,000 oz Au (measured and indicated resource); 43,183,000 tons, 0.132 opt Au, 5,679,000 oz Au (inferred resource) 2013: 75,540,000 tons, 0.132 opt Au, 9,960,000 oz Au (measured and indicated resource); 39,472,000 tons, 0.134 opt Au, 5,555,000 oz Au (inferred resource) 2014: 75,091,000 tons, 0.141 opt Au, 10,574,000 oz Au (measured and indicated resource); 30,776,000 tons, 0.184 opt Au, 4,868,000 oz Au (inferred resource) 2015: 146,000 tons, 0.33 opt Au, 48,000 oz Au (measured resource); 25,595,000 tons, 0.31 opt Au, 8,509,000 oz Au (indicated resource); 6,278,000 tons, 0.26 opt Au, 1,647,000 oz Au (inferred resource) [2016: 34,169,000 tons, 0.28 opt Au, 9,522,000 oz Au (measured and indicated resource,); 8,094,000 tons, 0.24 opt Au, 1,931,000 oz Au (inferred resource) 2017: 6,251,000 tons, 0.24 opt Au, 1,481,000 contained oz Au (probable reserves, metallurgical recovery 63-91%, cut-off grade 0.006-0.15 opt Au); 34,743,000 tons, 0.27 opt Au, 9,398,000 oz Au (measured and indicated resource); 9,719,000 tons, 0.24 opt Au, 2,335,000 oz Au (inferred resource) 2018: 7,054,000 tons, 0.28 opt Au, 1,993,000 contained oz Au (probable reserves, $1,200 per oz Au cut-off grade); 34,107,000 tons, 0.27 opt Au, 9,353,000 contained oz Au (indicated resource, $1,200 per oz Au and various cut-off grades); 13,081,000 tons, 0.27 opt Au, 3,552,000 contained oz Au (inferred resource)		Devonian Wenban Formation; Ordovician Vinini Formation	
Goldstone (Antelope district)	1988: 1,700,000 tons, 0.08 opt Au 1993: 130,928 tons, 0.104 opt Au 2001: *see* Gold Bar	reported with Gold Bar	Devonian Upper Denay Limestone Formation	Eocene?
Griffin (Lynn District)	2002: 500,000 oz at 0.4 opt Au (pre-mine resource) 2018: Griffin: 253,600 tons, 0.257 opt Au, 65,100 oz Au (measured and indicated resource); 45,700 tons, 0.255 opt Au, 11,700 oz Au (inferred resource); West Griffin: 115,200 tons, 0.271 opt Au, 31,200 (measured and indicated resource); 38,000 tons, 0.259 opt Au, 9,800 oz Au (inferred resource)		Devonian Rodeo Creek Fm.	Eocene
Horse Canyon (Cortez district)	1984: 3,940,000 tons, 0.055 opt Au 1988: included in Cortez Joint Venture figures	1984: 40,000 oz Au 1988-93: included with Cortez Joint Venture	Wenban Limestone	35 Ma?
Hunter (Antelope district)	2009 (Feb., 0.013 opt Au cut-off grade) 500,000 tons, 0.031 opt Au (indicated resource); 100,000 tons, 0.015 opt Au (inferred resource)			

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Lookout Mountain (Eureka district)	2011: 20,745,000 tons, 0.019 opt Au 390,000 oz Au (measured and indicated resource);18,385,000, 0.012 opt Au, 221,000 oz Au (inferred resource) 2013: 28,940,000 tons, 0.018 opt Au 508,000 oz Au (measured and indicated resource); 11,790,000, 0.012 opt Au, 141,000 oz Au (inferred resource)	1987: 180,000 tons, 0.12 opt Au, 81% recovery	Hamburg Dolomite	
Millsite (Antelope district)	1995: 1,790,000 tons, 0.075 opt Au, 147,000 oz Au, (resource)			
Mineral Ridge (Eureka district)	1988: 3,000,000 tons, 0.03 opt Au 1995: mined out	1908-16: 24,000 oz Au 1975-84: 90,000 oz Au 1988: 6,380 oz Au, 59 oz Ag	Hamburg Dolomite	Eocene or Oligocene
Ratto Canyon (Lookout Mountain) (Eureka district)	1984: ~200,000 oz Au (entire Ratto Ridge area) 2006: 836,000 tons, 0.24 opt Au (measured and indicated resource) 2010: 13,640,000 tons, 0.021 opt Au (measured and indicated resource) 16,420,000 tons, 0.012 opt Au (inferred resource)	1987-88: 17,000 oz Au	Dunderberg Shale, Hamburg Dolomite	Eocene
Rock Creek (Eureka-Lander Co. line)	1997: 800,000 tons, 0.045 opt Au		Tertiary latite tuff	
Rodeo (Lynn district)	2018: Upper Rodeo: 1,525,400 tons, 0.223 opt Au 339,900 oz Au (measured and indicated resource); 242,000 tons, 0.226 opt Au, 54,700 oz Au (inferred resource); Lower Rodeo: 729,400 tons, 0.279 opt Au, 203,200 oz Au (measured and indicated resource); 346,800 tons, 0.278 opt Au, 96,400 oz Au (inferred resource)	included with Meikle production, Elko County		
Rodeo Projects (Rodeo, Griffin, Goldbug, North Betze) (Lynn district)	1998: 2,900,000 tons, 0.487 opt Au proven and probable reserves; 5,800,000 tons, 0.302 opt Au (mineralized material) 1999: 5,800,000 tons, 0.466 opt Au, (proven and probable reserves); 13,000,000 tons, 0.270 opt Au (mineralized material) 2000: 9,200,000 tons, 0.414 opt Au (proven and probable reserves); 7,400,000 tons, 0.333 opt Au (mineral resource) 2005-2019: reserves are combined with Meikle reserves	included with Meikle production, Elko County		Eocene
Ruby Hill (Eureka district)	1994: *geologic resource*-20,000,000 tons, 0.08 opt Au 0.08 opt Au 1995: 7,620,000 tons, 0.099 opt Au 1999: 3,770,000 tons, 0.110 opt Au (proven and probable); 7,330,000 tons, 0.072 opt Au (mineralized material) 2000: 2,700,000 tons, 0.105 opt Au (proven and probable reserves); 7,300,000 tons, 0.072 opt Au (mineralized material) 2004: (East Archimedes) 17,093,000 tons, 0.059 opt Au proven and probable reserves; 3,049,000 tons, 0.061 opt Au mineral resource 2006: (East Archimedes) 19,479,000 tons, 0.055 opt Au (proven and probable reserves); 601,000 tons, 0.088 opt Au (measured and indicated resource) 2007: (East Archimedes) 18,763,000 tons, 0.055 opt Au (proven and probable reserves); 3,202,000 tons, 0.076 opt Au (measured and indicated resource); 6,000 tons, 0.333 opt Au (inferred resource) 2008: (East Archimedes) 18,844,000 tons, 0.044 opt Au (proven and probable reserves); 111,919,000 tons, 0.04 opt Au (measured and (indicated resource); 3,495,000 tons, 0.037 opt Au (inferred resource)	1997-98: 133,100 oz Au, 8,686 oz Ag 2000: 125,193 oz Au, 7,984 oz Ag 1999: 123,841 oz Au, 7,688 oz Ag 2001: 134,737 oz Au, 9,315 oz Ag 2002: 135,448 oz Au, 9,750 oz Ag 2003: 18,134 oz Au, 2,441 oz Ag 2004: 6,057 oz Au, 1,868 oz Ag 2007:142,856 oz Au, 8,368 oz Ag 2008: 102,553 oz Au, 7,572 oz Ag 2009: 103,523 oz Au, 39,110 oz Ag 2010: 81,382 oz Au, 43,276 oz Ag 2011: 127,089 oz Au, 42,754 oz Ag 2012: 41,242 oz Au, 32,124 oz Ag 32,124 oz Ag	Goodwin Limestone	

MAJOR PRECIOUS-METAL DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	2008: (East Archimedes) 18,844,000 tons, 0.044 opt Au (proven and probable reserves); 111,919,000 tons, 0.04 opt Au measured and (indicated resource); 3,495,000 tons, 0.037 opt Au (inferred resource) 2009: 13,933,000 tons, 0.050 opt Au (proven and probable reserves); 8,960,000 tons, 0.057 opt Au (measured and indicated resource); 2,928,000 tons, 0.051 opt Au, (inferred resource) 2010: 17,182,000 tons, 0.065 opt Au (proven and probable reserves); 61,530,000 tons, 0.023 opt Au (measured and indicated resource); 12,885,000 tons, 0.024 opt Au (inferred resource) 2011: 16,778,000 tons, 0.058 opt Au, 978,000 contained oz Au (proven and probable reserves); 107,626,000 tons, 0.021 opt Au, 2,245,000 contained oz Au (measured and indicated resource); 5,779,000 tons, 0.034 opt Au 196,000 contained oz Au (inferred resource) 2012: 7,823,000 tons, 0.042 opt Au, 326,000 contained oz Au (proven and probable reserves); 172,646,000 tons, 0.02 opt Au, 3,463,000 contained oz Au (measured and indicated resource); 5,152,000 tons, 0.043 opt Au, 220,000 contained oz Au (inferred resource) 2013: 4,963,000 tons, 0.028 opt Au, 140,000 contained oz Au (proven and probable reserves); 178,428,000 tons, 0.02 opt Au 3,612,000 contained oz Au (measured and indicated resource); 8,343,000 tons, 0.04 opt Au, 220,000 contained oz Au (inferred resource) 2014: 1,762,000 tons, 0.016 opt Au, 24,000 contained oz Au (proven and probable reserves) 2017,613,000 tons, 0.019 opt Au 3,923,000 contained oz Au (measured and indicated resource); 24,410,000 tons, 0.047 opt Au, 1,010,000 oz Au (inferred resource)	2013: 91,074 oz Au, 76,283 oz Ag 2014: 33,124 oz Au, 65,020 oz Ag 2015: 10,673 oz Au, 24,842 oz Ag 2016: 6,471.6 oz Au, 7,791 oz Ag 2017: 4,463 oz Au, 4,263 oz Ag 2018: 4,648 oz Au, 3,584 oz Ag 2019: 3,356 oz Au, 2,540 oz Ag		
Tonkin Springs (Antelope district)	1983: 1,840,000 tons, 0.089 opt Au, 0.204 opt Ag 1987: oxide:1,500,000 tons, 0.05 opt Au; Sulfide: 2,500,000 tons, 0.09 opt Au 1991: 9,000,000, 0.05 opt Au 1999: 30,700,000 tons, 0.045 opt Au (resource) 2006: 29,672,000 tons, 0.043 opt Au (measured and indicated resource); 3,466,000 tons, 0.044 opt Au, (inferred resource) 2008: 35,584,000 tons, 0.041 opt Au 1,447,000 oz Au (measured and indicated resource), 9,290,000 tons, 0.033 opt Au, 311,000 oz Au (inferred resource)	1987-88: 10,265 oz Au 1989-90: 3,821 oz Au, 1,872 oz Ag	Vinini Formation	Eocene?

HUMBOLDT COUNTY

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Adelaide Crown (Gold Run district)	1989: south pit-585,000 tons, 1.313 opt Ag, 0.043 opt Au; additional area: 165,000 tons, 0.015 opt Au, 1.10 opt Ag	1990-91: 4,917 oz Au, 53,474 oz Ag	Preble Formation	Tertiary
Ashdown (Vicksburg district)	1987: 1,160,000 tons, 0.125 opt Au 1992: 1,100,000 tons, 0.12 opt Au 2002: 100,000 oz Au	See Other Metallic Deposits	Mesozoic granite	Mesozoic
Buckskin (National district)	1997: 50,221 oz Au, 466,243 oz Ag estimated resource		Miocene rhyolite flows and flow breccias	16 Ma
Chimney Creek	1988: proven, probable-26,900,000 tons,	1987-88: 300,000 oz Au	upper Paleozoic	

MAJOR PRECIOUS-METAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
(Potosi district)	0.068 opt Au; inferred in south pit- 2,100,000 oz Au 1993: *see* Twin Creeks	1989: 222,556 oz Au, 55,953 oz Ag 1990: 220,000 oz Au 1991-92: 476,034 oz Au, 213,463 oz Ag 1993: *see* Twin Creeks	sedimentary rocks	
Converse/Redline (Buffalo Valley district)	2003: 77,459,000 tons, 0.020 opt Au (measured and indicated resource) 2004: 263,000,000 tons, 0.0150 opt Au, 0.0582 opt Ag (measured and indicated resource) 35,000,000 tons, 0.0143 opt Au, 0.0524 opt Ag 2011: 352,990,000 tons, 0.015 opt Au, 0.108 opt Ag, containing 5,170,000 oz Au, 37,950,000 oz Ag (measured and indicated resource, 0.008 opt cut-off grade); 34,440,000 tons, 0.015 opt Au, 0.087 opt Ag, 510,000 oz Au, 3,010,000 oz Ag (inferred resource) 2014: 400,000,000 tons, 0.017 opt Au, 6,120,000 oz Au; 0.11 opt Ag, 38,100,000 oz Ag (measured and indicated resource); 0,800,000 tons, 0.017 opt Au, 600,000 oz Au; 0.099 opt Ag, 3,500,000 oz Ag (inferred resource)		Havallah Formation, granodiorite	Tertiary
Getchell/Turquoise Ridge (Potosi district)	1989: 8,100,000 tons, 0.154 opt Au mill grade and 1,430,000 tons, 0.049 opt Au heap-leach ore; additional geologic resource: 5,700,000 tons, 0.092 opt Au sulfide and 2,600,000 tons, 0.055 opt Au oxide 1999: 18,100,000 tons, 0.359 opt Au 2000: 2,800,000 oz Au (measured resource); 5,500,000 oz Au (indicated resource); 6,700,000 oz (inferred resource) 2002: 2,690,000 oz Au (proven and probable reserves); 1,510,000 oz Au (measured and indicated mineral resource) 2003: (Turquoise Ridge) 6,000,000 tons, 0.57 opt Au (proven reserves); 2,400,000 tons, 0.62 opt Au (probable reserves); 4,400,000 tons, 0.3 opt Au (indicated material); 2,800,000 tons, Au 0.4 opt Au (indicated material); 4,800,000 tons, 0.49 opt Au (inferred material) 2005: (Turquoise Ridge and Getchell Footwall deposits) 7,600,000 tons, 0.56 opt Au (proven and probable reserves); 5.600,000 tons, 0.42 opt Au (measured and indicated resource); 400,000 tons, 0.54 opt (inferred resource) 2006: (Turquoise Ridge and Getchell Footwall deposits) 8,436,000 tons, 0.544 opt Au (proven and probable reserves); 4,801,000 tons, 0.432 opt Au (measured and indicated resource); 1,961,000 tons, 0.493 opt (inferred resource) 2007: (Turquoise Ridge and Getchell Footwall deposits) 11,239,000 tons, 0.458 opt Au (proven and probable reserves); 3,291,000 tons, 0.409 opt Au (measured and indicated resource); 2,000,000 tons, 0.444 opt (inferred resource) 2008: (Turquoise Ridge) 10,614,000 tons, 0.501 opt Au (proven and probable reserves); 3,289,000 tons, 0.435 opt Au (measured and indicated resource); 4,440,000 tons, 0.505 opt (inferred resource) 2009: (Turquoise Ridge) 10,680,000 tons, 0.507 opt Au (proven and probable reserves); 2,307,000 tons, 0.431 opt Au (measured and indicated resource); 5,033,000 tons, 0.456 opt (inferred resource) 2010 (Turquoise Ridge): 12,339,000 tons, 0.456 opt Au (proven and probable reserve); 85,625,000 tons, 0.131 opt Au (measured and indicated resource); 43,427,000 tons, 0.160 opt Au (inferred resource)	1938-50, 1962-67: 788,875 oz Au 1987-88: ~35,000 oz Au 1989: 120,730 oz Au, 9,407 oz Ag 1990-91: 372,987 oz Au 1992-95: 790,600 oz Au, 258,700 oz Ag 1996-97: 348,517 oz Au 1998: 175,302 oz Au, 52,490 oz Ag 1999: 111,000 oz Au 2002: 54,600 oz Au, 5,400 oz Ag 2003: 93,337 oz Au 2004: 162,637 oz AU 2005: 208,492 oz Au, 54,419 oz Ag 2006: 233,127 oz Au, 30,473 oz Ag 2007: 251,133 oz Au 2008: 168,808 oz Au 2009: 177,333 oz Au 2010: 161,579 oz Au 2011: 178,283 oz Au 2012: 191,754 oz Au 2013: 223,189 oz Au 2014: 259,345 oz Au 2015: 289,421 oz Au 2016: 354,580.16 oz Au 2017: 369,000 oz Au 2018: 357,300 oz Au 2019: 406,066 oz Au, 56,817 oz Ag	Comus and Preble Formations, dikes, granodiorite	37-41 Ma

MAJOR PRECIOUS-METAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Getchell/Turquoise Ridge (cont.)	2011 (Turquoise Ridge): 15,981,000 tons, 0.442 opt Au, 7,054,000 oz Au, (proven and probable reserve); 83,192,000 tons; 0.122 opt Au, 10,188,000 oz Au (measured and indicated resource); 33,992,000 tons, 0.13 opt Au, 4,404,000 oz Au (inferred resource) 2012 (Turquoise Ridge) 20,358,000 tons, 0.381 opt Au, 7,755,000 oz Au, (proven and probable reserve); 80,690,000 tons, 0.123 opt Au, 9,912,000 oz Au (measured and ndicated resource); 39,014,000 tons, 0.131 opt Au, 5,089,000 oz Au (inferred resource) 2013 (Turquoise Ridge): 13,337,000 tons, 0.51 opt Au, 6,760,000 oz Au, (proven and probable reserve); 120,695,000 tons, 0.127 opt Au, 15,317,000 oz Au (measured and indicated resource); 49,508,000 tons, 0.15 opt Au, 7,421,000 oz Au (inferred resource) 2014 (Turquoise Ridge): 12,050,000 tons, 0.57 opt Au, 5,944,000 oz Au, (proven and probable reserve); 119,351,000 tons, 0.135 opt Au, 16,148,000 oz Au (measured and indicated resource); 43,170,000 tons, 0.184 opt Au, 6,931,000 oz Au (inferred resource) 2015 (Turquoise Ridge): 12,587,000 tons, 0.45 opt Au, 5,619,000 oz Au, (proven and probable reserve); 110,214,000 tons, 0.138 opt Au, 15,235,000 oz Au (measured and indicated resource, recovery rate 92%, cut-off grade 0.16-0.37 opt Au); 26,417,000 tons, 0.147 opt Au, 5,163,000 oz Au (inferred resource) 2016 (Turquoise Ridge): 22,210,000 tons, 0.44 opt Au, 5,372,000 oz Au, (proven and probable reserve); 74,648,000 tons, 0.169 opt Au, 12,647,000 oz Au (measured and indicated resource); 23,485,000 tons, 0.185 opt Au, 3,257,000 oz Au (inferred resource) 2017 (Turquoise Ridge): 17,375,000 tons, 0.454 opt Au, 7,858,000 oz Au, (proven and probable reserve); 7,504,000 tons, 0.27 opt Au, 2,008,000 oz Au (measured and indicated resource); 2,262,000 tons, 0.38 opt Au, 948,000 oz Au (inferred resource) 2018 (Turquoise Ridge): 24,090,000 tons, 0.38 opt Au, 9,110,000 oz Au, (proven and probable reserve) 5,977,000 tons, 0.23 opt Au, 1,844,000 oz Au (measured and indicated resource); 2,751,000 tons, 0.35 opt Au, 957,000 oz Au (inferred resource, 2019 (Turquoise Ridge Underground): 39,900,000 tons, 0.32 opt Au, 9,800,000 oz Au, (proven and probable reserve); 41,900,000 tons, 0.28 opt Au, 12,000,000 oz Au (measured and indicated resource); 3,100,000 tons, 0.27 opt Au, 820,000 oz Au (inferred resource)			
Hycroft (Sulphur district)	1988: 25,000,000 tons, 0.025 opt Au 1999: 23,800,000 tons, 0.0204 opt Au (proven and probable reserves); 2,300,000 tons, 0.0177 opt Au (indicated reserves) 2000: 41,900,000 tons, 0.0196 opt Au (measured and indicated resource); 14,100,000 tons, 0.0152 opt Au (inferred resource) 2004: 47,479,000 tons, 0.016 opt Au (measured and indicated); 12,029,000 tons, 0.011 opt Au (inferred resource) 2005: 33,320,000 tons, 0.02 opt Au (proven and probable reserves); 52,700,000 tons 0.019 opt Au (measured and indicated resource); 8.700,000 tons, 0.015 opt Au (inferred resource) 2007: 33,320,000 tons, 0.020 opt Au (proven and probable reserves); 19,780,000 tons, 0.018 opt Au (measured and indicated resource, 8); 283,392,000 tons, 0.019 opt Au (inferred resource) 2008: 73,159,508 tons, 0.016 opt Au (proven and probable reserves; 141,300,000	1988: 75,800 oz Au 1989-98: 868,544 oz Au, 2,717,170 oz Ag 1999: 40,075 oz Au, 183,190 oz Ag 2000: 13,493 oz Au, 38,418 oz Ag 2001: 3,232 oz Au, 2,000 oz Ag 2002: 1,771 oz Au, 217 oz Ag 2003: 644 oz Au, 100 oz Ag 2004: 61 oz Au 2008: 1,000 oz Au, 3,000 oz Ag 2009: 53,189 oz Au, 65,753 oz Ag 2010: 102,483 oz Au, 233,974 oz Ag 2011: 104,002 oz Au,	Camel conglomerate, rhyolite dikes	1-2 Ma

MAJOR PRECIOUS-METAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	tons, 0.014 opt Au (measured and indicated resource); 180,200,000 tons, 0.012 opt Au (oxide inferred resource); 199,400,000 tons, 0.20 opt Au (sulfide inferred resource); 2010: 177,228,000 tons, 0.014 opt Au, 0.18 opt Ag (proven and probable oxide reserves); 366,991,000 tons, 0.013 opt Au, 0.22 opt Ag (measured and indicated oxide resource) 143,927,000 tons, 0.018 opt Au, 0.72 opt Ag (measured and indicated sulfide resource); 95,510,000 tons, 0.011 opt Au, 0.33 opt Ag (inferred oxide resource); 148,804,000 tons, 0.017 opt Au, 0.85 opt Ag (inferred sulfide resource) 2010 (year-end): 196,000,000 tons, 0.013 opt Au, 0.25 opt Ag (proven and probable oxide heap leach reserves); 720,000,000 tons, 0.007 opt Au, 0.15 opt Ag (measured and indicated oxide and transitional heap leach resource); 620,000,000 tons, 0.014 opt Au, 0.71 opt Ag (measured and indicated oxide, transitional and sulfide mill resource); 181,000,000 tons, 0.015 opt Au, 0.56 opt Ag (inferred oxide, transitional and sulfide resource) 2011: 1,134,669,000 tons, 0.011 opt Au, 12,651,000 oz Au, 0.42 opt Ag, 481,881,000 oz Ag (proven and probable reserves, 0.004 opt Au heap leach cut-off grade, 0.01 opt Au mill cut-off grade); 939,619,000 tons, 0.009 opt Au, 8,170,000 oz Au, 0.25 opt Ag, 236,851,000 oz Ag (measured and indicated resource, 534,938,000 tons, 0.01 opt Au, 0.253 opt Ag (inferred resource) 2012: 1,108,078,000 tons, 0.011 opt Au, 11,875,000 oz Au, 0.46 opt Ag, 509,559,000 oz Ag (proven and probable reserves):; 1,596,780,000 tons, 0.008 opt Au, 12,429,000 oz Au, 0.23 opt Ag, 360,148,000 oz Ag (measured and indicated resource), 628,251,000 tons, 0.01 opt Au, 0.26 opt Ag (inferred resource, 0.004 opt Au 2013: 951,001,000 tons, 0.011 opt Au, 10,556,000 oz Au, 0.49 opt Ag, 467,146,000 oz Ag (proven and probable reserves); 1,587,969,000 tons, 0.008 opt Au, 12,375,000 oz Au, 0.23 opt Ag, 369,911,000 oz Ag (measured and indicated resource); 627,093,000 tons, 0.01 opt Au, 0.26 opt Ag (inferred resource) 2014: 949,201,000 tons, 0.011 opt Au, 11,996,000 oz Au, 0.425 opt Ag, 481,399,000 oz Ag (proven and probable reserves); 1,357,064,000 tons, 0.008 opt Au, 11,057,000 oz Au, 0.24 opt Ag, 324,251,000 oz Ag (measured and indicated resource); 620,059,000 tons, 0.01 opt Au, 0.26 opt Ag (inferred resource) 2019: 1,133,061,000 tons, 0.011 opt Au, 10,550,000 oz Au, 0.49 opt Ag, 465,275,000 oz Ag (proven and probable reserves); 393,922,000 tons, 0.009 opt Au, 3,699,000 oz Au, 0.277 opt Ag, 108,922,000 oz Ag (measured and indicated resource); 599,062,000 tons, 0.01 opt Au,5,769,000 oz Au, 0.217 opt Ag 129,754 oz Ag (inferred resource)	479,440 oz Ag 2012: 114,705 oz Au, 696,114 oz Ag 2013: 181,941 oz Au, 858,073 oz Ag 2014: 214,345 oz Au, 1,818,637 oz Ag 2015: 107,998 oz Au, 621,788 oz Ag 2016: 32,265 oz Au, 235,934 oz Ag 2017: 1,866 oz Au, 6,067 oz Ag 2018: 0 oz Au, Ag 2019: 53,025 oz Au		
Lewis (Battle Mountain district)	2020: Virgin Area: 8,530,000,000 tons, 0.024 opt Au, 205,800 contained oz Au, 0.415 opt Ag 3,537,000 contained oz Ag (inferred resource)			
Lone Tree (Buffalo Mountain district)	1990: 5,400,000 tons oxide mill ore, 0.159 opt Au, 5.700,000 tons heap-leach ore, 0.025 opt Au and 1.200,000 oz Au in sulfide ore 1994: 4,000,000 oz Au	1991-99: 546,335 oz Au 1995: 240,000 oz Au, 11,000 oz Ag 1996-97: 536,820 oz Au 1998: 257,702 oz Au,	Havallah Formation, Antler sequence, and dacite porphyry	38 Ma

MAJOR PRECIOUS-METAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Lone Tree (cont.) **Buffalo Mountain district**	2000: 40,800,000 tons, 0.060 opt Au proven and probable reserves (Lone Tree Complex) 2001: 29,200,000 tons, 0.065 opt Au (proven and probable reserves); 7,900,000 tons, 0.032 opt Au (mineralized material) 2002: 21,000,000 tons, 0.069 opt Au (proven and probable reserves); 2,000,000 tons, 0.057 opt Au (measured and indicated mineralized material); 1,000,000 tons, 0.047 opt Au inferred mineralized material 2003: 3,300,000 tons, 0.092 opt Au (proven reserves); 13,000,000 tons, 0.084 opt Au (probable reserves); 2,100,000 tons, 0.054 opt Au (indicated material); 600,000 tons, 0.054 opt Au (inferred material) 2004: 14,000,000 tons, 0.063 opt Au (proven and probable reserves); 3,400,000 tons, 0.044 opt Au (indicated material); 200,000 tons, 0.116 opt Au (inferred material) 2005: 4,000,000 tons, 0.080 opt Au (proven and probable reserves); 3,000,000 tons, 0.032 opt Au (measured and indicated resource) 2007: 4,200,000 tons, 0.022 opt Au (measured and indicated resource) 2012: 2,200,000 tons, 0.023 opt Au, 50,000 oz Au (indicated resource); 5,000,000 tons, 0.032 opt Au, 80,000 oz Au (inferred resource) 2013: 2,500,000 tons, 0.023 opt Au (mineralized material); stockpiles: 4,20,000 tons, 0.017 opt Au, 70,000 oz Au (proven reserve) [NI43-101 compliant] 2014: 2,200,000 tons, 0.023 opt Au (mineralized material); leach pad: 1,600,000 tons, 0.005 opt Au, 10,000 oz Au; stockpiles: 500,000 tons, 0.017 opt Au, 10,000 oz Au (proven reserve) 2015: 2,200,000 tons, 0.023 opt Au (mineralized material); leach pad: 1,100,000 tons, 0.007 opt Au, 10,000 oz Au; stockpiles: 2,700,000 tons, 0.007 opt Au, 20,000 oz Au (proven reserve) 2016: 3,800,000 tons, 0.011 opt Au, 40,000 oz Au (proven and probable reserves) 2017: 3,700,000 tons, 0.007 opt Au, 20,000 oz Au (proven reserves) 2018: 3,900,000 tons, 0.008 opt Au, 30,000 oz Au (proven reserves)	27,484 oz Ag 1999: 191,975 oz Au, 35,617 oz Ag 2000: 281,022 oz Au, 38,346 oz Ag 2001: 260,518 oz Au, 29,974 oz Ag 2002: 327,160 oz Au, 65,905 oz Ag 2003: 434,704 oz Au, 80,094 oz Ag 2004: 497,065 oz Au, 140,144 oz Ag 2005: 339,187 oz Au, 46,934 oz Ag 2006: 357,787 oz Au, 26,601 oz Ag 2007: 182,768 oz Au, 37,172 oz Ag 2008: 16,775 oz Au, 1,897 oz Ag 2009: 12,011 oz Au 2,309 oz Ag 2010: 1,313 oz Au, 2011: 19,619 oz Au, 28 oz Ag 2012: 29,738 oz Au, 5,789 oz Ag 2013: 22,931 oz Au, 4,970 oz Ag 2014: 21,702 oz Au, 920 oz Ag 2015: 21,349 oz Au 2016: 31,854 oz Au 0 oz Ag 2017: 41,784 oz Au, 936 oz Ag 2018: 24,253 oz Au 2019: 17,483 oz Au		
Marigold (Battle Mountain district)	1987: 8,000,000 tons, 0.0935 opt Au 1990: 4,300,000 tons, 0.105 opt Au mill ore, 7,600,000 tons, 0.026 opt Au heap-leach ore 1999: 19,090,000 tons, 0.032 opt Au 2000: 30,200,000 tons, 0.035 opt Au (proven and probable reserves); 20,700,000 tons, 0.029 opt Au measured and (indicated resource) 2001: 75,500,000 tons, 0.027 opt Au (proven and probable reserves); 109,900,000 tons, 0.014 opt Au (measured and indicated resource) 2002: 79,100,000 tons, 0.026 opt Au (proven and probable reserves); 129,700,000 tons, 0.014 opt Au (mineral resource) 2003: 9,366,000 tons, 0.031 opt Au (proven Reserves); 83,909,000 tons, 0.023 opt Au (probable reserves); 19,937,000 tons, 0.020 opt Au (measured reserves); 20,069,000 tons, 0.020 opt Au (indicated resource); 177,450,000 tons, 0.014 opt Au (inferred resource) 2004: 71,218,500 tons, 0.023 opt Au (proven and probable reserves); 18,043,500 tons, 0.022 opt Au (measured and indicated resource); 21,000,000 tons, 0.014 opt Au (inferred resource)	1989-93: 322,219 oz Au, 9,784 oz Ag 1994-98: 363,771 oz Au 1999: 74,000 oz Au 2000: 68,000 oz Au 2001: 84,784 oz Au, 401 oz Ag 2002: 83,321 oz Au, 1,281 oz Ag 2003: 142,100 oz Au, 2,080 oz Ag 2004: 141,304 oz Au, 2,354 oz Ag 2005: 205,663 oz Au, 1,723 oz Ag 2006: 149,805 oz Au, 1,986 oz Ag 2007: 140,840 oz Au, 2,233 oz Ag 2008: 144,106 oz Au, 5,037 oz Ag 2009: 146,842 oz Au, 4,239 oz Ag 2010: 136,754 oz Au, 3,729 oz Ag	Paleozoic chert, argillite, and carbonate rocks	

MAJOR PRECIOUS-METAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Marigold (cont.) **Battle Mtn. district**	2005: 98,210,000 tons, 0.021 opt Au (proven and probable reserves); 157,480,000 tons, 0.020 opt Au (measured and indicated resource, includes reserves); 163,230,000 tons, 0.013 opt Au (inferred resource) 2006: 102,870,000 tons, 0.021 opt Au (proven and probable reserves); 94,587,000 tons, 0.018 opt Au (measured and indicated resource); 88,212,000 tons, 0.011 opt Au (inferred resource) 2007: 84,660,000 tons, 0.020 opt Au (proven and probable reserves); 46,410,000 tons, 0.020 opt Au (measured and indicated resource); 122,530,000 tons, 0.013 opt Au (inferred resource) 2008: 69,600,000 tons, 0.020 opt Au (proven and probable reserves); 42,660,000 tons, 0.016 opt Au (measured and indicated resource); 44,810,000 tons, 0.013 opt Au (inferred resource) 2009: 150,000,000 tons, 0.016 opt Au (proven and probable reserves) 42,190,000 tons, 0.015 opt Au (indicated resource); 75,000,000 tons, 0.015 opt Au (inferred resource) 2010: 143,529,000 tons, 0.016 opt Au (proven and probable reserves); 80,526,000 tons, 0.014 opt Au (indicated resource); 46,638,000 tons, 0.014 opt Au (inferred resource) 2011: 226,889,000 tons, 0.015 opt Au (proven and probable reserves); 32,935,000 tons, 0.012 opt Au (measured and indicated resource); 11,037,000 tons, 0.013 opt Au (inferred resource) 2012: 324,770,000 tons, 0.015 opt Au 4,920,000 oz Au (proven and probable reserves); 50,130,000 tons, 0.012 opt Au, 621,000 contained oz Au (measured and indicated resource); 89,559,000 tons, 0.012 opt Au, 1,113,000 contained oz Au (inferred resource) 2013: 264,585,000 tons, 0.016 opt Au 4,167,000 oz Au (proven and probable reserves); 37,000,000 tons, 0.013 opt Au, 474,000 contained oz Au (measured and indicated resource); 25,014,000 tons, 0.013 opt Au, 324,000 contained oz Au (inferred resource) [NI43-101 compliant] 2014: 143,970,000 tons, 0.017 opt Au 2,120,000 contained oz Au (probable reserves, 0.0022 opt Au cut-off grade); 268,630,000 tons, 0.017 opt Au, 4,000,000 oz Au (indicated resource, 0.0022 opt Au cut-off grade); 14,770,000 tons, 0.016 opt Au, 200,000 oz Au (inferred resource) 2015: 154,650,000 tons, 0.013 opt Au 2,040,000 oz Au (probable reserves, 0.0019 opt Au cut-off grade); 332,560,000 tons, 0.013 opt Au, 4,450,000 oz Au (indicated resource, includes probable reserves); 42,770,000 tons, 0.013 opt Au, 550,000 oz Au (inferred resource) 2016: 204,000,000 tons, 0.013 opt Au 2,670,000 oz Au (probable reserves,383,900,000 tons, 0.013 opt Au, 4,450,000 oz Au (indicated resource, includes probable reserves); 65,400,000 tons, 0.012 opt Au, 700,000 oz Au (inferred resource, Leach pad inventory: 170,000 oz Au 2017: 226,100,000 tons, 0.013 opt Au 3,000,000 oz contained Au (probable reserves); 408,100,000 tons, 0.013 opt Au, 5,470,000 oz Au (indicated resource, includes probable reserves); 54,800,000 tons, 0.012 opt Au, 630,000 oz Au (inferred resource); Leach pad inventory: 190,000 oz Au 2018: 222,100,000 tons, 0.014 opt Au 3,060,000 oz Au (probable reserves); 390,800,000 tons, 0.014 opt Au, 5,320,000 oz Au (indicated resource, includes probable reserves) 37,000,000 tons, 0.011 opt Au, 40,000 oz Au (inferred resource, 0.0019 opt Au cut-off grade); Leach pad inventory: 240,000 oz Au [NI43-101 compliant] 2019: 252,165,000 tons, 0.014 opt Au 3,610,000 oz Au (probable reserves, $1,250 per oz Au, 0.0019 opt Au cut-off grade); 332,630,000 tons, 0.014 opt Au, 4,665,000 oz Au (indicated resource	2011: 153,741 oz Au, 4,162 oz Ag 2012: 144,382 oz Au, 2,729 oz Ag 2013: 161,062 oz Au, 3,394 oz Ag 2014: 162,382 oz Au, 3,085 oz Ag 2015: 207,005 oz Au, 2,841 oz Ag 2016: 205,116 oz Au, 2,349 oz Ag 2017: 202,230 oz Au, 3,216 oz Ag 2018: 205,161 oz Au, 4,315 oz Ag 2019: 220,227 oz Au, 4,223 oz Ag		

MAJOR PRECIOUS-METAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Marigold (cont.) Batte Mtn district	inclusive of probable reserves, $1,250 per oz Au, 0.0019 opt Au cut-off grade); 17,848,000 tons, 0.01 opt Au, 182,000 oz Au (inferred resource, $1,250 per oz Au, 0.0019 opt Au cut-off grade); Leach pad inventory: 277,000 oz Au [NI43-101 compliant]			
North Stonehouse (Buffalo Mountain district)	1991: 2,500,000 tons, 0.103 oz Au mill ore		Havallah Formation and porphyry dikes	39 Ma
Pinson (Potosi district)	1980: 3,245,000 tons, 0.119 opt Au 1989: 480,000 oz Au 1996: 2,600,000 tons, 0.072 opt Au 2005: 1,692,000 tons, 0.421 opt Au (measured and indicated resource); 3,097,000 tons, 0.34 opt Au (inferred resource) 2006: (includes Range Front, Ogee and CX-West zones); 2,505,000 tons, 0.454 opt Au (measured and indicated resource); 3,374,500 tons, 0.340 opt Au (inferred resource) 2012: 1,738,738 tons, 0.369 opt Au, 642,236 contained oz Au (proven and probable, cut-off grade, 0.2 opt Au); Open pit: 25,466,300 tons, 0.039 opt Au, 981,700 oz Au (measured and indicated resource, Mag Pit and South Zone deposits) 824,000 tons, 0.034 opt Au, 28,300 oz Au2012: 1,378 oz Au (inferred resource, Mag Pit and South Zone), deposits); Underground: 2,919,800 tons, 0.368 opt Au, 1,078,000 oz Au (measured and indicated resource 2,236,200 tons, 0.378 opt Au, 845,000 oz Au (inferred resource) 2014: Underground: 389,000 tons, 0.402 opt Au, 156,000 Au (proven and probable reserves); 798,000 tons, 0.43 opt Au, 343,000 oz Au (measured and indicated resource) 1,672,000 tons 0.419 opt Au, 700,000 oz Au (inferred resource); Mag Pit: 7,170,000 tons, 0.0451 opt Au, 322,644 oz Au (proven and probable reserves); 25,466,000 tons. 0.039 opt Au, 982,000 oz Au (measured and indicated resource,); 824,000 tons. 0.034 opt Au, 25,000 oz Au (measured and indicated resource) 2015: Mag pit: 7,160,000 tons, 0.0451 opt Au, 322,644 Au (proven and probable reserves); 23,335,000 tons, 0.039 opt Au, 912,000 oz Au (measured and indicated resource); 533,000 tons 0.038 opt Au, 20,000 oz Au (inferred resource) South Zone: 2,131,000 tons, 0.033 opt Au, 70,000 oz (measured and indicated resource); 291,000 tons. 0.028 opt Au, 8,000 oz Au (inferred resource,	1980: 56,000 oz Au 1986-88: 189,864 oz Au 1989: 72,489 oz Au (includes Preble) 1990-91: 112,022 oz Au 1992-94: 145,210 oz Au, 12,700 oz Ag 1995: 44,854 oz Au 1996-98: 128,935 oz Au, 7,990 oz Ag 1999: 11,975 oz Au, 442 oz Ag 2000: 1,116 oz Au, 31 oz Ag 2001: 679 oz Au 2013: 5,183 oz Au 2014: 3,780 oz Au 2015: 16,898 oz Au	Comus Formation	Eocene?
Preble (Potosi district)	1985: 1,800,000 tons, 0.062 opt Au 1986: 3,160,000 tons, 0.093 opt Au heap leach, 80,000 tons, 0.242 opt Au mill grade 1989: 15,110 oz Au	1985: 17,000 oz Au 1987: 28,000 oz Au 1988: 18,828 oz Au 1989: included with Pinson 1990: 1,161 oz Au	Preble Formation	Eocene?
Rabbit Creek (Potosi district)	1989: 4,100,000 oz Au (additional geologic resource of 100,000 Au in refractory material) 1992: reserves-3,260,000 oz Au 1993: *see* Twin Creeks	1990-92: 296,000 oz Au 1993: *see* Twin Creeks	Ordovician	Eocene?
Sandman (Tenmile district)	2007: 8,033,000 tons, 0.034 opt Au (measured and indicated resource); 1,418,000 tons, 0.027 opt Au (inferred resource) 2012: 1,300,000 tons, 0.036 opt Au, 0.199			

MAJOR PRECIOUS-METAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Sandman (con't)	opt Ag, 50,000 oz Au, 300,000 oz Ag (indicated resource) 1,100,000 tons, 0.063 opt Au, 0.167 opt Ag, 70,000 oz Au, 200,000 oz Ag (inferred resource) 2013: 1,300,000 tons, 0.036 opt Au, 0.2 opt Ag (mineralized material)			
Sleeper (Awakening district)	1985: 4,200,000 tons, 0.13 opt Au, 0.73 opt Ag 1989: 1,975,000 oz Au 1990: 44,100,000 tons, 0.038 opt Au, 0.152 opt Ag 1999: 2,100,000 oz Au, 0.25 opt Au, 100,00o oz Ag 0.208 opt Ag 2008: 29,718,000 tons, 0.025 opt Au (indicated resource) 22,046,000 tons, 0.017 opt Au 2011(oxide): 47,167,350 tons, 0.011 opt Au, 511,872 oz Au, 0.12 opt Ag, 5,781,121 oz Ag (measured and indicated resource); 14,541,139 tons, 0.009 opt Au,136,145 oz Au, 0.1 opt Ag, 1,450,516 oz Ag (inferred resource); 2011 (sulfide): 143,269,803 tons, 0.015 opt Au, 2,113,527 oz Au, 0.14 opt Ag, 19,556,454 oz Ag (measured and indicated resource) 75,409,000 tons, 0.013 opt Au, 0.09 opt Ag (inferred resource) 2012 (oxide): 79,798,000 tons, 0.008 opt Au, 659,000 oz Au, 0.11 opt Ag, 8,588,000 oz Ag (measured and indicated resource); 32,667,000 tons, 0.007 opt Au, 214,000 oz Au, 0.093 opt Ag, 3,030,000 oz Ag (inferred resource 2012 (sulfide): 280,614,000 tons, 0.01 opt Au, 2,820,000 oz Au, 0.11 opt Ag, 32,018,000 oz Ag (measured and indicated resource) 188,960,000 tons, 0.008 opt Au, 1,532,000 oz Au, 0.083 opt Ag, 15,708,000 oz Ag (inferred resource) 2012 (alluvial): 168,000 tons, 0.059 opt Au 10,000 oz Au; (mine dumps): 24,707,000 tons, 0.009 opt Au, 216,000 oz Au, 0.07 opt Ag, 1,712,000 oz Ag (inferred resource) 2015: Global: 324,517,000 tons, 0.011 opt Au, 3,421,000 oz Au, 0.096 opt Ag, 30,794,000 oz Ag (measured and indicated resource) 266,540,000 tons, 0.0093 opt Au, 2,472,000 oz Au, 0.055 opt Ag, 15,004,000 oz Ag (inferred resource) In-pit and mineralized dumps: 47,052,000 tons, 0.011 opt Au, 511,000 oz Au, 0.095 opt Ag, 4,458,000 oz Ag (measured and indicated resource); 38,500,000 tons, 0.013 opt Au, 511,000 oz Au, 0.017 opt Ag, 640,000 oz Ag (inferred resource)	1986: 128,000 oz Au, 94,000 oz Ag 1987-88: 389,106 oz Au 1989-96: 1,149,054 oz Au, 1,838,791 oz Ag 2001: 90 oz Au, 197 oz Ag	Miocene "latite" flows and dikes, silicic ash-flow tuff, Triassic slate and phyllite	16.1 Ma
Trenton Canyon (includes Valmy and North Peak) (Buffalo Valley district)	1994 oxide resource: 14,600,000 tons, 0.035 opt Au, (517,000 oz Au) 1999: 995,000 tons, 0.021 opt Au (North Peak); 10,800,000 tons, 0.022 opt Au (Valmy) 2015: Valmy: 350,000 oz Au (inferred mineral resource)	2002: 130 oz Au, 263 oz Ag 2000: included with Lone Tree 2001: 24,228 oz Au, 2,996 oz Ag 2002: 3,685 oz Au, 742 oz Ag 2006: 1,937 oz Au, 38 oz Ag 2007: 1,768 oz Au, 360 oz Ag		
Trout Creek (Battle Mountain district)	1989: 50,000 oz Au			
Twin Creeks (Chimney and Rabbit Creeks) (Potosi district)	1993: 5,700,000 oz Au 1999: 87,100,000 tons, 0.079 opt Au (proven and probable) 2000: 75,200,000 tons, 0.086 opt Au (proven and probable) 2002: 47,600,000 tons, 0.081 opt Au (proven and probable reserves); 55,000,000 tons, 0.057 opt Au (measured and indicated mineralized material); 1,800,000 tons, 0.046 opt Au (inferred mineralized material)	1993-98: 3,338,026 oz Au, 1,317,456 oz Ag 1999: 879,453 oz Au, 119,191 oz Ag 2000: 779,075 oz Au, 103,909 oz Ag 2001: 831,962 oz Au, 95,721 oz Ag 2002: 786,313 oz Au, 158,401 oz Ag	Paleozoic	41-43 Ma

MAJOR PRECIOUS-METAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Twin Creeks (cont.) **Potosi District**	2003: 14,000,000 tons, 0.085 opt Au (proven reserves); 48,200,000 tons, 0.074 opt Au (probable reserves); 8,000,000 tons, 0.051 opt Au (measured material); 34,800,000 tons, 0.051 opt Au (indicated material); 1,700,000 tons, 0.041 opt Au (inferred material) 2004: 61,800,000 tons, 0.075 opt Au (proven and probable reserves); 15,300,000 tons, 0.077 opt Au (indicated material); 800,000 tons, 0.043 opt Au (inferred material) 2005: 61,200,000 tons, 0.074 opt Au (proven and probable reserves); 19,900,000 tons, 0.049 opt Au (measured and indicated resource); 3,100,000 tons, 0.033 opt Au (inferred resource) 2006: 64,800,000 tons, 0.077 opt Au (proven and probable reserves); 25,000,000 tons, 0.058 opt Au (measured and indicated resource); 3,100,000 tons, 0.033 opt Au (inferred resource) 2007: 52,100,000 tons, 0.078 opt Au (proven and probable reserves); 21,000,000 tons, 0.063 opt Au (measured and indicated resource); 2,600,000 tons, 0.030 opt Au (inferred resource) 2008: 51,700,000 tons, 0.077 opt Au (proven and probable reserves); 31,100,000 tons, 0.051 opt Au (measured and indicated resource); 10,800,000 tons, 0.018 opt Au (inferred resource) 2009: 50,200,000 tons, 0.077 opt Au (proven and probable reserves); 35,000,000 tons, 0.050 opt Au (measured and indicated resource); 11,300,000 tons, 0.018 opt Au (inferred resource) 2010: 57,800,000 tons, 0.076 opt Au (proven and probable reserve,); 37,900,000 tons, 0.039 opt Au (measured and indicated resource); 12,000,000 tons, 0.0194 opt Au (inferred resource 2011: 48,700,000 tons, 0.078 opt Au (proven and probable reserve); 46,000,000 tons, 0.045 opt Au (measured and indicated resource); 13,500,000 tons, 0.026 opt Au (inferred resource) 2012: 58,300,000 tons, 0.058 opt Au, 3,400,000 oz Au (proven and probable reserve,); 41,900,000 tons, 0.059 opt Au, 2,470,000 oz Au (measured and indicated resource); 3,900,000 tons, 0.061 opt Au 240,000 oz Au (inferred resource) 2013: 39,400,000 tons, 0.06 opt Au, 2,360,000 oz Au (proven and probable reserve); 32,000,000 tons, 0.069 opt Au (mineralized material; Stockpiles: 33,900,000 tons, 0.067 opt Au, 2,280,000 oz Au (proven reserve) 2014: 33,600,000 tons, 0.064 opt Au, 2,150,000 oz Au (proven and probable reserve, 38,500,000 tons, 0.059 opt Au (mineralized material); Stockpiles: 36,100,000 tons, 0.065 opt Au, 2,340,000 oz Au (proven reserve) 2015: 29,200,000 tons, 0.058 opt Au, 1,710,000 oz Au (proven and probable reserve); 39,400,000 tons, 0.057 opt Au (mineralized material); Stockpiles: 35,600,000 tons, 0.064 opt Au, 2,280,000 oz Au (proven reserve) 2016: 29,900,000 tons, 0.053 opt Au, 1,590,000 oz Au (proven and probable reserve, 77% metallurgical recovery); 31,600,000 tons, 0.062 opt Au (mineralized material); stockpiles: 32,000,000 tons, 0.063 opt Au, 2,000,000 oz Au (proven reserve, 74% metallurgical recovery); 7,700,000 tons, 0.059 opt Au (mineralized material) [NI43-101 compliant] 2017: 31,900,000 tons, 0.044 opt Au, 1,400,000 oz Au (proven and probable reserve, cut-off grades 0.007-0.038 opt Au, 75% metallurgical recovery); 36,600,000 tons, 0.059 opt Au (mineralized material); Stockpiles: 31,900,000 tons, 0.063 opt Au, 2,010,000 oz Au (proven	2003: 697,607 oz Au, 128,535 oz Ag 2004: 352,810 oz Au, 99,472 oz Ag 2005: 267,620 oz Au, 144,172 oz Ag 2006: 354,484 oz Au, 43,467 oz Ag 2007: 488,457 oz Au, 99,344 oz Ag 2008: 512,190 oz Au, 57,913 oz Ag 2009: 437,830 oz Au, 84,159 oz Ag 2010: 452,744 oz Au, 211,935 oz Ag 2011: 484,449 oz Au, 290,802 oz Ag 2012: 408,751 oz Au, 79,574 oz Ag 2013: 406,847 oz Au, 88,184 oz Ag 2014: 385,169 oz Au, 252,836 oz Ag 2015: 470,759 oz Au, 143,631 oz Ag 2016: 367,528 oz Au, 227,814 oz Ag 2017: 374,740 oz Au, 181,104 oz Ag 2018: 359,042 oz Au, 206,161 oz Ag 2019: 237,644 oz Au, 108,342 oz Ag		

MAJOR PRECIOUS-METAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Twin Creeks (cont.) Potosi District	reserve, 72% metallurgical recovery); 8,500,000 tons, 0.059 opt Au (mineralized material); Underground: 880,000 tons, 0.2 opt Au, 200,000 oz Au (proven reserve); 330,000 tons, 0.16 opt Au (mineralized material) 2018: 27,400,000 tons, 0.049 opt Au, 1,330,000 oz Au (proven and probable reserve, cut-off grades 0.016-0.046 opt Au); 36,500,000 tons, 0.063 opt Au (mineralized material); Stockpiles: 31,900,000 tons, 0.061 opt Au, 1,910,000 oz Au (proven reserve,); 9,000,000 tons, 0.059 opt Au (mineralized material) 2019 (Mega Pit): 22,100,000 tons, 0.064 opt Au, 1,500,000 oz Au, (Vista Pit): 6,800,000 tons, 0.025 opt Au, 200,000 oz Au, (Total): 30,000,000 tons, 0.056 opt Au, 1,700,000 oz Au (proven and probable reserve, (Mega Pit): 43,000,000 tons, 0.067 opt Au, 2,900,000 oz Au, (Vista Pit, indicated resource): 16,500,000 tons, 0.036 opt Au, 610,000 oz Au, (Total): 60,600,000 tons, 0.058 opt Au, 3,500,000 oz Au (measured and indicated resource); (inferred resource), (Mega Pit): 17,600,000 tons, 0.05 opt Au, 850,000 oz Au, (Vista Pit): 2,200,000 tons, 0.035 opt Au, 80,000 oz Au, (Total): 19,800,000 tons, 0.047 opt Au, 930,000 oz Au (inferred resource); Stockpile: 29,800,000 tons, 0.058 opt Au (proven reserve; 39,700,000 tons, 0.058 opt Au, 2,300,000 oz Au (measured resource)			
Winnemucca Mountain (Winnemucca district)	1998: 130,000 to 140,000 oz Au proven, 300,000 oz Au indicated			

LANDER COUNTY

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Austin Gold Venture (Birch Creek district)	1986: 1,750,000 tons, 0.16 opt Au 1989: mined out 1999: 154,000 oz Au resource	1986-88: 141,000 oz Au 1989: 50,000 oz Au	Antelope Valley Limestone	Cretaceous or Tertiary
Battle Mountain Complex (Battle Mountain district)	1992: 500,000 oz Au 1995: resource (overall Battle Mountain complex)-60,200,000 tons, 0.036 opt Au, including reserves-46,600,000 tons, 0.040 opt Au 1999 (Phoenix): 5,680,000 oz Au (proven and probable); 1.500,000 oz Au (additional mineralization) 2000: 175.200,000 tons, 0.034 opt Au proven and probable reserves	1994-98: 274,741 oz Au, 632,739 oz Ag 1999: 8,322 oz Au, 19,526 oz Ag 2000: 1,509 oz Au, 1,756 oz Ag 2001: *see* Phoenix		Eocene
Battle Mountain Ridge (Battle Mountain district)	2011: 2,900,000 tons, 0.023 opt Au (resource)			
Blossom (Battle Mountain district)	1985: 42,500 tons, 0.039 opt Au, 9.12 opt Ag (probable reserve); 50,000 tons, 0.039 opt Au, 9.12 opt Ag (potential reserve)			
Buena Vista (Battle Mountain district)	1985: 200,000 tons, 0.059 opt Au, 1.83 opt Ag (potential reserve)			
Buffalo Valley Gold Project (Buffalo Valley district)	1988: 1,500,000 tons, 0.05 opt Au 1994: 4,800,000 tons, 0.07 opt Au 1997: 600,106 oz Au resource; 100,797 oz Au, other mineralized material 2010: 18,300,000 tons, 0.020 opt Au (indicated resource); 900,000 tons, 0.017 opt Au (inferred resource)	1988-90: 39,668 oz Au		Eocene?

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Buffalo Valley Gold Project (cont.) Buffalo Valley District	2011: 16,500,000 tons, 0.019 opt Au (indicated resource); 2,900,000 tons, 0.014 opt Au (inferred resource) 2012: 23,100,000 tons, 0.063 opt Au 470,000 oz Au (indicated resource); 715,000 tons, 0.035 opt Au 14,300 oz Au (inferred resource) 2013: 22,100,000 tons, 0.019 opt Au (mineralized material)			
Chem (Iowa Canyon district)	2004: 2,500,000 tons, 0.013 opt Au, 32,500 oz Au (resource)		Tertiary rhyolite tuff	
Colorback (Bullion district)	1996: 297,000 tons, 0.038 opt Au (geologic resource)		Sedimentary	
Copper Basin (Battle Mountain district)	1996: 638,000 oz Au, 1,228,000 oz Ag, 164,000,000 lbs Cu (estimated endowment) 2012: 1,200,000 oz Au, 2,300,000 oz Ag, 164,000,000 lbs Cu (resource)	1870-1987: Intermittent N/A		
Cortez Joint Venture (Bullion and Cortez districts) CJV includes original Cortez Mine, Pipeline, South Pipeline, Gold Acres (2007 and on includes Cortez Hills)	1968: 3,600,000 tons, 0.279 opt Au (Cortez deposit) 1987: 4,800,000 tons, 0.105 opt Au 1999: 189,400,000 tons, 0.050 opt Au (proven and probable); 119,100,000 tons, 0.035 opt Au mineralized material 2000: 151,300,000 tons, 0.047 opt Au (proven and probable); 60,000,000 tons, 0.047 opt Au (mineralized material) 2001: 191,100,000 tons, 0.044 opt Au (proven and probable); 76,600,000 tons, 0.040 opt Au (resource) 2002: 229,300,000 tons, 0.034 opt Au (proven and probable reserves); 281,700,000 tons, 0.025 opt Au (measured and indicated mineral resource) 2003: 88,131,000 tons, 0.061 opt Au (proven reserves); 49,623,000 tons, 0.045 opt Au (probable reserves); 44,617,000 tons, 0.046 opt (measured resource); 130,580,000 tons, 0.027 opt Au indicated resource; 18,023,000 tons, 0.047 opt Au (inferred resource) 2004: 193,560,000 tons, 0.046 opt Au (proven and probable reserves); 188,860,000 tons, 0.028 opt Au (measured and indicated); 20,500,000 tons, 0.024 opt Au inferred resource 2005 (Sept 1): 275,800,000 tons, 0.040 opt Au (proven and probable reserves); 309,000,000 tons, 0.033 opt Au (measured and indicated resource); 39,200,000 tons, 0.058 opt Au (inferred resource) 2006: 184,000,000 tons, 0.061 opt Au (proven and probable reserves); 44,470,000 tons, 0.041 opt Au (measured and indicated resource); 6,540,000 tons, 0.131 opt Au (inferred resource) 2007: 144,090,000 tons, 0.080 opt Au (proven and probable reserves); 76,240,000 tons, 0.045 opt Au (measured and indicated resource); 19,340,000 tons, 0.153 opt Au (inferred resource) 2008: 222,125,000 tons, 0.060 opt Au (proven and probable reserves); 81,088,000 tons, 0.046 opt Au (measured and indicated resource); 29,912,000 tons, 0.129 opt Au (inferred resource) 2009: 243,669,000 tons, 0.058 opt Au (proven and probable reserves); 46,622,000 tons, 0.074 opt Au (measured and indicated resource); 30,128,000 tons, 0.144 opt Au (inferred resource) 2010: 317,081,000 tons, 0.046 opt Au (proven and probable reserves); 60.463,000 tons, 0.072 opt Au (measured and indicated resource); 50,337,000 tons, 0.103 opt Au (inferred resource)	1942-84: 2.400,000 tons, 0.13 opt Au; 2,000,000 tons, 0.041opt Au leached. Little Gold Acres: 800,000 tons, 0.124 opt Au 1988: 42,322 oz Au (includes Horse Canyon) 1989: 39,993 oz Au, 12,234 oz Ag (includes Horse Canyon) 1990-91: 107,445 oz Au, 16,750 oz Ag 1992-93: 141,850 oz Au 1995-98: 1,817,273 oz Au 31,332 oz Ag 1999: 1,328,525 oz Au 2000: 1,009,992 oz Au 2001: 1,184,732 oz Au 2002: 1,081,677 oz Au 2003: 1,065,402 oz Au 2004: 1,051,197 oz Au 2005: 915,889 oz Au, 52,160 oz Ag 2006: 408,255 oz Au, 25,065 oz Ag 2007: 534,173 oz Au, 47,240 oz Ag 2008: 464,253 oz Au (6,804 oz Au from Cortez Hills), 69,278 oz Ag 2009: 517,512 oz Au, 74,080 oz Ag 2010 (open pit): 791,978 oz Au, 45,477 oz Ag 2010 (underground): 47,988 oz Au 2011 (open pit): 1,119,910 oz Au, 19,721 oz Ag 2011 (underground): 301,129 oz Au, 4,775 oz Ag 2012 (open pit): 939,004 oz Au, 25,155 oz Ag 2012 (underground): 430,962 oz Au, 9,986 oz Ag 2013 (open pit, includes Pipeline): 825,196 oz Au, 22,187 oz Ag 2013 (underground): 545,852 oz Au, 13,666 oz Ag 2014 (Cortez Hills and Pipeline open pit): 506,274 oz Au, 17,739 oz Ag 2014 (Cortez Hills underground): 395,093 oz Au, 13,464 oz Ag 2015: (Cortez Hills and Pipeline open pit): 520,060 oz Au, 17,602 oz Ag 2015 (Cortez Hills underground): 478,940 oz Au, 16,210 oz Ag 2016: (Cortez Hills and Pipeline open pit): 850,312 oz Au, 22,565 oz Ag 2016 (Cortez Hills underground): 338,275 oz Au, 6,294 oz Ag	Roberts Mountains Formation, Wenban Limestone, Valmy Formation, quartz porphyry dikes	

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	2010: 317,081,000 tons, 0.046 opt Au (proven and probable reserves); 60.463,000 tons, 0.072 opt Au (measured and indicated resource); 50,337,000 tons, 0.103 opt Au (inferred resource) 2010: 317,081,000 tons, 0.046 opt Au (proven and probable reserves); 60.463,000 tons, 0.072 opt Au (measured and indicated resource); 50,337,000 tons, 0.103 opt Au (inferred resource) 2011: 306,879,000 tons, 0.047 opt Au, 14,488,000 oz Au (proven and probable reserves); 54,391,000,000 tons, 0.069 opt Au, 3,757,000 oz Au (measured and indicated resource); 21,881,00000,000 tons, 0.074 opt Au, 1,615,000 oz Au (inferred resource) 2012: 306,190,000 tons, 0.049 opt Au 15,058,000 oz Au (proven and probable reserves); 50,943,000 tons, 0.053 opt Au, 2,701,000 oz Au (measured and indicated resource); 25,174,000 tons, 0.065 opt Au, 1,633,000 oz Au (inferred resource) 2013: 207,710,000 tons, 0.053 opt Au 11,024,000 oz Au (proven and probable reserves); 100,465,000 tons, 0.049 opt Au, 4,914,000 oz Au (measured and indicated resource); 17,344,000 tons, 0.054 opt Au, 939,000 oz Au (inferred resource) 2014: 169,557,000 tons, 0.068 opt Au 9,851,000 oz Au (proven and probable reserves); 42,907,000 tons, 0.082 opt Au, 3,513,000 oz Au (measured and indicated resource,); 26,047,000 tons, 0.052 opt Au, 1,156,000 oz Au (inferred resource) 2015: 168,908,000 tons, 0.067 opt Au 11,169,000 oz Au (proven and probable reserves); 48,180,000 tons, 0.045 opt Au, 2,150,000 oz Au (measured and indicated resource) 20,700,000 tons, 0.042 opt Au, 861,000 oz Au (inferred resource); Stockpiles: 3,814,000 tons, 0.115 opt Au, 438,000 oz Au (proven reserves) 2016: 166,450,000 tons, 0.062 opt Au, 10,220,000 oz Au (proven and probable reserves); 34,542,000 tons, 0.062 opt Au, 2,143,000 oz Au (measured and indicated resource); 15,990,000 tons, 0.048 opt Au, 763,000 oz Au (inferred resource) 2017: 185,098,000 tons, 0.055 opt Au, 10,086,000 oz Au (proven and probable reserves); 34,638,000 tons, 0.054 opt Au, 1,712,000 oz Au (measured and indicated resource)); 10,884,000 tons, 0.059 opt Au, 638,000 oz Au (inferred resource) 2018: 159,893,000 tons, 0.055 opt Au, 8,737,000 oz Au (proven and probable reserves) 62,729,000 tons, 0.051 opt Au, 1,712,000 oz Au (measured and indicated resource); 14,504,000 tons, 0.049 opt Au, 705,000 oz Au (inferred resource) 2019 Open pit): 102,200,000,000 tons, 0.039 opt Au, 4,100,000 oz Au (proven and probable reserve); 143,400,000 tons, 0.041 opt gold, 5,900,000 oz Au (measured and indicated resource, 0.004-0.22 opt Au; 77,100,000 tons, 0.018 opt Au, 1,450,000 oz Au (inferred resource) Underground: 19,800,000 tons, 0.29 opt Au, 9,600,000 oz Au (proven and probable reserve); 36,900,000 tons, 0.24 opt Au, 15,400,000 oz Au (measured and indicated resource,); 9,900,000 tons, 0.22 opt gold, 2,300,000 oz Au (inferred resource), Stockpile: 30,500,000 tons, 0.058 opt Au, 1,790,000 oz Au	2017: (Cortez Hills and Pipeline open pit): 902,887 oz Au, 28,690 oz Ag 2017: (Cortez Hills underground): 336,063 oz Au, 55,284 oz Ag 2018: (Cortez Hills and Pipeline open pit): 974,381 oz Au, 9,049 oz Ag 2018: (Cortez Hills underground): 290,457 oz Au, 9,772 oz Ag 2019: (Cortez Hills and Pipeline open pit): 543,335 oz Au, 35,754 oz Ag 2019: (Cortez Hills underground): 400,389 oz Au, 26,056 oz Ag		

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Cortez Hills (Cortez district)	2005: 71,300,000 tons, 0.079 opt Au 5,545,000 oz Au (proven and probable reserves); 5.7500,000 tons, 0.42 opt Au, 2,421,667 oz Au (measured and indicated resource, underground); 13,800,000 tons, 0.13 opt Au, 1,856,667 oz Au (inferred resource, open pit and underground) 2006: 8.500,000 oz Au (proven and probable reserves) 2008: 15,620,000 tons, 0.127 opt Au, 1,983,740 oz Au (proven reserve); 128,150,000 tons, 0.074 opt Au, 9,483,000 oz Au (probable reserve) 2010 (open pit): 31,531,000 tons, 0.139 opt Au (proven and probable reserve) 2010 (underground, breccia zone): 2,251,000 tons, 0.595 opt Au (proven and probable reserve) 2010 (underground, middle zone): 3,173,000 tons, 0.370 opt Au (proven and probable reserve) 2011 (open pit): 32,591,000 tons, 0.131 opt Au, 4,275,000 oz Au (proven and probable reserve, 0.004-0.075 opt Au cut-off grade); 237,000 tons, 0.08 opt Au, 19,000 oz Au (measured and indicated resource); 1,351,000 tons, 0.025 opt gold, 33,000 oz Au (inferred resource) (underground): 6,516,000 tons, 0.446 opt Au, 2,908,000 oz Au (proven and probable reserve);, 6,476,000 tons, 0.379 opt Au, 2,456,000 oz Au (measured and indicated resource); 3,197,000 tons, 0.337 opt gold, 1,078,000 oz Au (inferred resource) 2015 (open pit): 18,702,000 tons, 0.117 opt Au, 2,182,000 oz Au (proven and probable reserve); 3,440,000 tons, 0.04 opt gold, 122,000 oz Au (Breccia Zone inferred resource); Underground: 12,912,000 tons, 0.347 opt Au, 4,476,000 oz Au (proven and probable reserve); 3,172,000 tons, 0.297 opt Au, 943,000 oz Au (measured and indicated resource; 1,341,000 tons, 0.035 opt gold, 466,000 oz Au (inferred resource) 2018 (open pit): 17,210,000 tons, 0.059 opt Au, 102,000 oz Au (probable reserve); 3, 000 tons, 0.008 opt gold, 0 oz Au (Breccia Zone inferred resource) Underground): 12,554,000 tons, 0.31 opt Au, 3,892,000 oz Au (probable reserve) 3,341,000 tons, 0.286 opt Au, 957,000 oz Au (measured and indicated resource), , 2,417,000 tons, 0.197 opt gold, 477,000 oz Au (inferred resource)	2010-2019: Production combined with Cortez Joint Venture	Roberts Mountains Formation, Wenban Limestone	
Cortez NW Deeps (Cortez district)	2011: 4,689,000 tons, 0.047 opt Au, 218,000 oz Au (measured and indicated resource); 3,951,000 tons, 0.065 opt gold, 259,000 oz Au (inferred resource)		Roberts Mountains Formation, Hanson Creek Formation	
Cortez Pits (Cortez district)	Pre-2015: See Cortez Joint Venture 2015: 4,083,000 tons, 0.056 opt Au, 227,000 oz Au (measured and indicated resource, 0.004-0.061 opt Au cut-off grade); 1,283,000 tons, 0.02 opt Au, 27,000 oz Au (inferred resource)	1968-1993: See Cortez Joint Venture		
Crescent Pit (Bullion district)	1994: 1,970,000 tons mill grade, 0.125 opt Au, 2.200,000 tons heap-leach, 0.029 opt Au 1997: included in Cortez Joint Venture			
Crescent Valley (Bullion district)	1994: placer reserves-8,000,000 cu yd, 0.031 oz Au/cu yd 1995: placer resource-6,000,000 cu yd, 0.03 oz Au/cu yd			
Crossroads (Bullion district)	2010: 125,842,000 tons, 0.027 opt Au (proven and probable reserve)			

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
	2011:129,391,000 tons, 0.03 opt Au, 3,937,000 oz Au (proven and probable reserve, 0.004-0.075 opt Au cut-off grade); 23,895,000 tons, 0.015 opt Au, 370,000 oz Au (measured and indicated resource); 7,273,000 tons, 0.015 opt gold, 112,000 oz Au (inferred resource) 2015: 94,749,000 tons, 0.033 opt Au, 3,167,000 Oz Au (proven and probable reserve, 0.004-0.205 opt Au cut-off grade); 19,030,000 tons, 0.014 opt Au, 259,000 oz Au (measured and indicated resource) 2018: 122,690,000 tons, 0.03 opt Au, 3,634,000 oz Au (proven and probable reserve); 33,982,000 tons, 0.03 opt Au, 1,020,000 oz Au (measured and indicated resource); 7,423,000 tons, 0.01 opt Au, 75,000 oz (inferred resource)			
Dean (Lewis district)	1995: proven reserves-11,000 oz Au possible to probable resource-240,000 oz Au			
Deep South (Cortez district)	2018: 6,591,000 tons, 0.312 opt Au, 2,054,000 oz Au (probable reserve, 60% oxide); 1,015,000 tons, 0.273 opt Au, 278,000 oz Au (measured and indicated resource); 1,057,000 tons, 0.19 opt Au, 201,000 oz (inferred resource)			
Elder Creek Project/Shoshone (Lewis district)	1989: 91,500 oz Au 1990: 1,500,000 tons, 0.041 opt Au	1990-91: 20,102 oz Au	Valmy Formation	Cretaceous or Eocene
Fire Creek (northeast of Bullion district)	1982: 350,000 tons, 0.06 opt Au 2005 (May): 1,779,196 tons, 0.328 opt Au (indicated resource) 2006: 1,961,195 tons, 0.576 opt Au (indicated resource) 2008 (April): 2,654,650 tons, 0.479 opt Au (indicated resource, 0.233 opt Au cut-off grade); 1,184,202 tons, 0.396 opt Au (inferred resource) 2011: 2,364,745 tons, 0.513 opt Au, 1,215,019 oz Au (indicated resource, 0.204 opt Au cut-off grade); 611,824 tons, 0.366 opt Au, 223,794 oz Au (inferred resource, 0.204 opt Au cut-off grade) 2011: 5,705,560 tons, 0.289 opt Au, 1,647,052 oz Au (indicated resource); 1,910,008 tons, 0.240 opt Au, 458,084 oz Au (inferred resource) 2014 (Joyce, Karen, Vonnie Veins): 158,800 tons, 1.285 opt Au, 138,700 oz Au; 0.927 opt Ag, 172,200 oz Ag (proven and probable reserve); (Far North, Main, North, South, West Zones): 377,400 tons, 1.1 opt Au, 415,500 oz Au; 0.86 opt Ag, 324,200 oz Ag (measured and indicated resource); 840,000 tons, 0.43 opt gold, 358,300 oz Au; 0.38 opt Ag, 320,800 oz Ag (inferred resource 2015: 240,000 tons, 1.311 opt Au, 314,600 oz Au, 0.972 opt Ag, 233,300 oz Ag (proven and probable reserve); 462,500 tons, 1.011 opt Au, 467,700 oz Au; 0.783 opt Ag, 362,400 oz Ag (measured and indicated resource); 1,064,900 tons, 0.41 opt gold, 436,200 oz Au; 0.319 opt Ag, 339,500 oz Ag (inferred resource) 2016: 240,000 tons, 1.213 opt Au, 291,000 oz Au, 0.94 opt Ag, 224,000 oz Ag (proven and probable reserve); 526,000 tons, 0.948 opt Au, 499,000 oz Au; 0.78 opt Ag, 411,000 oz Ag (measured and indicated resource); 931,000 tons, 0.538 opt gold, 501,000 oz Au; 0.48 opt Ag, 446,000 oz Ag (inferred resource), 2017: 319,000 tons, 0.708 opt Au, 226,000 oz Au, 0.69 opt Ag, 220,200 oz Ag (proven and probable reserve, $1,200/oz Au, $17/oz Ag); 42,877,000 tons,	1983-84: 767 oz Au 2012: 191 oz Au, 286 oz Ag 2014: 65,655 oz Au, 62,911 oz Ag 2015: 77,055 oz Au, 92,114 oz Ag 2016: 101,284 oz Au, 80,593 oz Ag 2017: 107,143 oz Au, 72,283 oz Ag 2018: 42,073 oz Au, 52,612 oz Ag 2019: 52,616 oz Au, 63,279 oz Ag	basaltic andesite	Miocene

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Fire Creek (con't)	0.025 opt Au, 1,093,000 oz Au; 0.055 opt Ag, 2,330,400 oz Ag (indicated resource, 0.01 opt Au equivalent cut-off); 31,707,900 tons, 0.034 opt Au, 1,085,000 oz Au; 0.091 opt Ag, 2,882,000 oz Ag (inferred resource) 2018: Underground: 116,000 tons, 0.6 opt Au, 69,300 oz Au, 0.5 opt Ag, 56,900 oz Ag (proven and probable reserve); 371,000 tons, 0.6 opt Au, 215,200 oz Au; 0.6 opt Ag, 197,900 oz Ag (measured and indicated resource); 565,000 tons, 0.53 opt Au, 298,700 oz Au; 0.5 opt Ag, 288,400 oz Ag (inferred resource); 2019: Underground: 59,000 tons, 0.92 opt Au, 54,000 oz Au, 0.9 opt Ag, 51,000 oz Ag (proven and probable reserve); 257,000 tons, 0.71 opt Au, 182,000 oz Au; 0.7 opt Ag, 176,000 oz Ag (measured and indicated resource); 543,000 tons, 0.51 opt Au, 278,000 oz Au; 0.5 opt Ag, 295,000 oz Ag inferred resource); Open Pit: 74,684,000 tons, 0.03 opt Au, 2,178,000 oz Au; 0.1 opt Ag, 5,232,000 oz Ag (inferred resource)			
Fortitude Complex (Battle Mountain district)	1984: 16,000,000 tons, 0.15 opt Au, 0.57 opt Ag	1986: 253,000 oz Au, 902,000 oz Ag 1987: 255,000 oz Au 1988-93: 985,616 oz Au, 1,707,992 oz Ag (includes Surprise) 1994: 50,000 oz Au, 95,000 Ag (Reona Mine) 1995: *see* Battle Mountain Complex 2001: *see* Phoenix	Battle Formation, Antler Peak Limestone Pumpernickel Formation	37 Ma
Fortitude Extension (Battle Mountain district)	1992: 500,000 oz Au 1993: *geologic resource*-900,000 oz Au 1996: included in Battle Mountain Complex			
Gap (Bullion district)	2010: 53,571,000 tons, 0.015 opt Au (proven and probable reserve) 2011: 48,151,000 tons, 0.016 opt Au, 772,000 oz Au (proven and probable reserve, 0.004-0.075 opt Au cut-off grade); 9,259,000 tons, 0.013 opt Au, 124,000 oz Au (measured and indicated resource); 2,504,000 tons, 0.013 opt gold, 32,000 oz Au (inferred resource) 2015: 2,569,000 tons, 0.02 opt Au, 51,000 oz Au (measured and indicated resource, 0.004-0.065 opt Au cut-off grade); See Pipeline for inferred resource	2011: Production combined with Cortez Joint Venture	Wenban Limestone	
Gold Acres (Bullion district)	2011: 5,032,000 tons, 0.097 opt Au, 487,000 oz Au (measured and indicated resource); 778,000 tons, 0.092 opt Au, 72,000 oz Au (inferred resource) 2015: 3,479,000 tons, 0.105 opt Au, 367,000 oz Au (measured and indicate refractory resource, 0.062 opt Au cut-off grade); 305,000 tons, 0.103 opt Au, 32,000 oz Au (inferred refractory resource, 0.062 opt Au cut-off grade) [NI43-101 compliant] 2018: 8,896,000 tons, 0.084 opt Au, 748,000 oz Au (measured and indicate refractory resource, cut-off grade 0.043 opt Au, $1,500 per oz Au); 1,002,000 tons, 0.077 opt Au, 77,000 oz Au (inferred refractory resource)	1942-1993: Production included with Cortez Joint Venture	Roberts Mountains Formation, Wenban Limestone, Valmy Formation	
Hider (Battle Mountain district)	1985:296,500 tons, 0.022 opt Au, 6.57 opt Ag (proven reserve); 185,000 tons, 0.022 opt Au, 6.57 opt Ag (probable reserve); 315,000 tons, 0.022 opt Au, 6.57 opt Ag (potential reserve)			

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Hilltop (Hilltop district)	1984: 10,300,000 tons, 0.073 opt Au 1989: 10,000,000 tons, 0.049 opt Au 2005: 121,000,000 tons, 0.019 opt Au (measured and indicated resource)		Valmy Formation	Oligocene?
Independence (Battle Mountain district)	2010: 14,802,000 tons, 0.014 opt Au, 0.27 opt Ag (measured and indicated oxide resource) 5,997,000 tons, 0.011 opt Au, 0.066 opt Ag (inferred oxide resource); 4,182,000 tons, 0.19 opt Au (inferred sulfide resource) 2011 Shallow Deposit: 16,056,000 tons, 0.014 opt Au, 223,300 oz Au; 0.236 opt Ag, 3,784,000 oz Ag (proven and probable reserve); 4,592,000 tons, 0.01 opt Au, 46,400 oz Au, 0.046 opt Ag, 211, 200 oz Ag (inferred resource); Deep Skarn Deposit: 4,182,000 tons, 0.19 opt gold, 796,200 oz Au (inferred resource)			
Iron Butte (South of Warm Springs district)	2009: 21,180,858 tons, 0.014 opt Au, 326,780 oz Au, 0.26 opt Ag, 6,173,156 oz Ag (resource, 0.0097 opt Au cut-off grade) 2010 Red Ridge Zone: Oxide: 14,072,175 tons, 0.019 opt Au, 300, 376 oz Au; Sulfide: 9,661,356 tons, 0.015 opt Au, 160,410 oz Au; Total: 23,733,531 tons, 0.018 opt Au, 460,786 oz Au; North Zone: Oxide: 641,179 tons, 0.019 opt Au, 13,523 oz Au; Sulfide: 6,182,878 tons, 0.019 opt Au, 131,877 oz Au; Total: 6,824,057 tons, 0.019 opt Au, 145,000 oz Au; Total Resource: Oxide: 14,713,354 tons 0.019 opt Au, 313, 899 oz Au; Sulfide: 15,844,234 tons, 0.017 opt Au, 292,287 oz Au; Total: 30,557,588 tons, 0.018 opt Au, 606,186 oz Au (resource)			
Klondike (Kingston district)	1989: 100,000 oz Au equivalent			
McCoy/Cove (McCoy district)	1981: 2,500,000 tons, 0.08 opt Au, 1 opt Ag (McCoy) 1987: 14,000,000 tons, 0.05 opt Au (McCoy); 4,000,000 oz Au, 25,000,000 oz Ag (Cove) 1989: proven and probable reserves 2,900,000 oz Au, 128,000,000 oz Ag *geologic resource*-3,500,000 oz Au, 1,500,000 oz Ag 1999: 11,800,000 tons, 0.043 opt Au, 2.387 opt Ag proven and probable reserves; 100,000 tons, 0.350 opt Au, 2.0 opt Ag other mineralization 2000: 4,700,000 tons, 0.034 opt Au, 2.309 opt Ag proven and probable reserves 2001: 430,000 tons, 0.031 opt Au, 2.624 opt Ag proven and probable reserves 2010 (Helen Zone): 684,855 tons, 0.77 opt Au (inferred resource) 2011 (Helen Zone): 391,600 tons, 0.59 opt Au (inferred resource) 2013 (Helen Zone): 468,600 tons, 0.31 opt Au, 143,100 oz Au (indicated resource, 0.17 opt Au cut-off grade); 973,600 tons, 0.29 opt Au, 278,700 oz Au (inferred resource) 2017: 676,800 tons, 0.338 opt Au, 228,000 oz Au (indicated mineral resource); 3,723,600 tons, 0.355 opt Au (inferred mineral resource);, 2018 (Cove):1,045,000 tons, 0.327 opt Au, 242,000 oz Au, 0.861 opt Ag, 900,000 oz Ag (indicated mineral resource, $1,400 per oz, 4,037,000 tons, 0.327 opt Au, 1,322,000 oz Au, 0.609 opt Ag, 2,457,000 oz Ag (inferred mineral resource),	1986: 50,000 oz Au 1987-98: 3,046,660 oz Au, 85,790,000 oz Ag 1999: 124,500 oz Au, 8,430,000 oz Ag 2000: 162,784 oz Au, 12,328,297 oz Ag 2001: 94,633 oz Au 6,451,425 oz Ag 2002: 33,142 oz Au, 1,987,421 oz Ag 2003: 4,699 oz Au, 706 oz Ag 2004: 8,454 oz Au, 64,335 oz Ag 2005: 2,740 oz Au, 776 oz Ag 2006: 2,939 oz Au, 596 oz Ag	Panther Canyon Formation (conglomerate, sandstone), Augusta Mountain Formation (limestone), granodiorite	39.5 Ma

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Mud Springs (Bald Mtn. Zone) (Bullion district)	1993: 42,000 oz Au (geologic resource)			
Mule Canyon (Argenta district)	1992: 8,500,000 tons, 0.136 opt Au 1996: 9,000,000 tons, 0.112 opt Au	1996: 6,743 oz Au 1999: 55,392 oz Au, 10,022 oz Ag 2000: 40,027 oz Au, 5,856 oz Ag 2001: 33,616 oz Au, 3,100 oz Ag 2002: 13,444 oz Au, 2,708 oz Ag 2003: 8,086 oz Au, 1,490 oz Ag 2004: 2,289 oz Au, 645 oz Ag 2005: 47,896 oz Au, 5,449 oz Ag 2006: 30,732 oz Au, 3,248 oz Ag 2007: 22,466 oz Au, 4,565 oz Ag	basalt and basaltic andesite	15-16 Ma
Pediment (Cortez district)	2010: 47,316,000 tons, 0.024 opt Au (proven and probable reserve) 2011: 49,469,000 tons, 0.024 opt Au, 1,163,000 oz Au (proven and probable reserve, 0.004-0.075 opt Au cut-off grade); 805,000 tons, 0.008 opt Au, 6,000 oz Au (inferred resource) 2015: 21,268,000 tons, 0.027 opt Au, 571,000 oz Au (proven and probable reserve) 3,851,000 tons, 0.03 opt Au, 125,000 oz Au (inferred resource)			
Phoenix (Battle Mountain district)	2001: 174,200,000 tons, 0.034 opt Au (proven and probable reserves); 156.300,000 tons, 0.17% Cu (proven and probable reserves); 73,800,000 tons, 0.026 opt Au mineralized material; 99,600,000 tons, 0.14% Cu (mineralized material) 2002: 174,200,000 tons, 0.034 opt Au (probable reserves); 156,300,000 tons, 0.16 % Cu (probable reserves); 1,.500,000 tons, 0.033 opt Au (measured and indicated mineralized material); 72,300,000 tons, 0.026 opt Au (inferred mineralized material); 63.500,000 tons, 0.14 % Cu (inferred mineralized material) 2003: 175,700,000 tons, 0.035 opt Au (probable reserves); 94,700,000 tons, 0.022 opt Au (indicated material); 18,900,000 tons, 0.029 opt Au (inferred material); 85,200 tons, 0.12% Cu (indicated material); 14,300 tons, 0.11% Cu (inferred material) 2004: 248,000,000 tons, 0.034 opt Au (proven and probable reserves); 33,900,000 tons, 0.022 opt Au (indicated material); 34,900,000 tons, 0.028 opt Au (inferred material); 216,700,000 tons, 0.15% Cu probable; 32,000,000 tons, 0.21% Cu (indicated); 29,800,000 tons, 0.17% Cu (inferred) 2005: 308,.400,000 tons, 0.029 opt Au (proven and probable reserves); 22,200,000 tons, 0.023 opt Au (measured and indicated resource); 16.500,000 tons, 0.026 opt Au (inferred resource) 2006: 295,200,000 tons, 0.027 opt Au (proven and probable reserves); 92,800,000 tons, 0.017 opt Au (measured and indicated resource) 23,200,000 tons, 0.022 opt Au (inferred resource) 2007: 278,100,000 tons, 0.027 opt Au (proven and probable reserves); 92,800,000 tons, 0.017 opt Au (measured and indicated resource);	2001: 5,641 oz Au, 6,468 oz Ag 2002: 6,134 oz Au, 1,236 oz Ag 2003: 5,444 oz Au, 1,003 oz Ag 2004: 7,887 oz Au, 2,224 oz Ag 2005: 6,406 oz Au, 1,156 oz Ag 2006: 67,394 oz Au, 38,112 oz Ag, 6,235,096 lbs Cu 2007: 181,313 oz Au, 664,787 oz Ag, 10,808,206 lbs Cu 2008: 175,259 oz Au, 1,040,563 oz Ag 15,853,706 lbs Cu 2009: 218,732 oz Au 1,212,153 oz Ag 23,733,389 lbs Cu 2010: 214,142 oz Au 921,350 oz Ag 19,008,818 lbs Cu 2011: 205,658 oz Au 1,152,312 oz Ag 23,897,865 ibs Cu. 2012: 158,843 oz Au 1,325,200 oz Au 27,809,189 lbs Cu 2013: 202,055 oz Au 1,550,346 oz Ag 29,815,908 lbs Cu 2014: 189,474 oz Au 1,653,459 oz Ag 46,014,331 lbs Cu 2015: 183,371 oz Au 986,159 oz Ag 46,330,821 lbs Cu 2016: 176,758 oz Au; 1,175,126 oz Ag, 41,806,950 lbs Cu		Eocene

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Phoenix (cont.) **Battle Mtn district**	22,900,000 tons, 0.022 opt Au (inferred resource) 2008: 299,800,000 tons, 0.021 opt Au (proven and probable reserves); 61,600,000 tons, 0.015 opt Au (indicated resource); 34,000,000 tons, 0.019 opt Au (inferred resource) 2009: 285,000,000 tons, 0.020 opt Au (probable reserves); 158,400,000 tons, 0.013 opt Au (indicated resource); 35,400,000 tons, 0.015 opt Au (inferred resource) 2010: 329,800,000 tons, 0.018 opt Au (probable reserve, 73% recovery); 150,900,000 tons, 0.013 opt Au (indicated resource); 54,300,000 tons, 0.015 opt Au (inferred resource) 2011: 447,100,000 tons, 0.016 opt Au, 7,250,000 oz Au; 450,300,000 tons, 0.244 opt Ag, 109,980,000 oz Ag (proven and probable reserve 36% recovery: Au 72%, Ag 36%); 216,400,000 tons, 0.012 opt Au, 0.173 opt Ag (indicated resource); 132,300,000 tons, 0.012 opt Au, 0.197 opt Ag (inferred resource) 2012: 439,900,000 tons, 0.017 opt Au, 7,430,000 oz Au, 443,200,000 tons, 0.254 opt Ag, 112,580,000 oz Ag (proven and probable reserve, recovery: Au 73%, Ag 36%); 198,100,000 tons, 0.013 opt Au, 0.186 opt Ag, 2,520,000 oz Au, 36,900,000 oz Ag (measured and indicated resource); 117,200,000 tons, 0.012 opt Au, 0.202 opt Ag, 1,390,000 oz Au, 23,700,000 oz Ag (inferred resource); stockpiles: 2,300,000 tons, 0.089 opt Ag, 200,000 oz Ag (inferred resource) 2013: 335,800,000 tons, 0.017 opt Au, 5,660,000 oz Au, 339,100,000 tons, 0.24 opt Ag, 80,280,000 oz Ag (proven and probable reserve, recovery: Au 73%, Ag 36%); 174,800,000 tons, 0.011 opt Au, 0.21 opt Ag (mineralized material) 2014: 322,700,000 tons, 0.017 opt Au, 5,510,000 oz Au, 324,900,000 tons, 0.24 opt Ag, 78,680,000 oz Ag (proven and probable reserve, metallurgical recovery: Au 72%, Ag 34%); 49,500,000 tons, 0.019 opt Au, 0.22 opt Ag (mineralized material); stockpiles: 3,300,000 tons, 0.027 opt Au, 90,000 oz Au (probable reserve) 2015: 288,300,000 tons, 0.017 opt Au, 5,010,000 oz Au, 289,500,000 tons, 0.25 opt Ag, 73,510,000 oz Ag (proven and probable reserve; 153,700,000 tons, 0.012 opt Au, 0.21 opt Ag (mineralized material); Stockpiles: 3,200,000 tons, 0.028 opt Au, 90,000 oz Au (proven reserve)] 2016: 256,600,000 tons, 0.017 opt Au, 4,340,000 oz Au, 0.24 opt Ag, 60,910,000 oz Ag (proven and probable reserve, metallurgical recovery: Au 76%, Ag 38%); 178,100,000 tons, 0.021 opt Au, 0.21 opt Ag (mineralized material) [NI43-101 compliant] 2017: 249,900,000 tons, 0.016 opt Au, 4,030,000 oz Au, 0.24 opt Ag, 60,880,000 oz Ag (proven and probable reserve), 213,100,000 tons, 0.013 opt Au, 0.21 opt Ag (mineralized material) 2018: 146,400,000 tons, 0.019 opt Au, 2,820,000 oz Au, 0.22 opt Ag, 31,910,000 oz Ag (proven and probable reserve); 113,700,000 tons, 0.014 opt Au, 0.19 opt Ag (mineralized material) 2019: 179,200,000 tons, 0.017 opt Au, 3,300,000 oz Au, 2,500,000 oz Ag (proven and probable reserve); 3	2017: 197,026 oz Au, 1,191,630 oz Ag, 33,178,523 lbs Cu 2018: 217,015 oz Au, 826,838 oz Ag, 32,102979 lbs Cu 2019: 160,700 oz Au, 754,270 oz Ag, 30,585,072 lbs Cu		
Pipeline **(Bullion district)**	1991: *geologic resource*-11,300,000 tons, 0.237 opt Au 1996: 136,700,000 tons, 8,700,000 oz Au (measured resource, includes South Pipeline) 1997: included in Cortez Joint Venture 2010: 41,453,000 tons, 0.017 opt Au (proven and probable reserve) 2011: 35,704,000 tons, 0.02 opt Au, 707,000 oz Au (proven and probable reserve, Pipeline/South Pipeline); 4,803,000 tons, 0.018 opt Au, 84,000 oz Au (measured and indicated resource); 2,022,000 tons, 0.012 opt gold, 24,000 oz Au (inferred	1996-2009, 2013-19: included in Cortez Joint Venture	Roberts Mountains Formation	Eocene?

MAJOR PRECIOUS-METAL DEPOSITS, LANDER COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Pipeline (cont.) **Bullion district**	resource) 2015: 17,455,000 tons, 0.017 opt Au, 294,000 oz Au (proven and probable reserve, 0.004-0.205 opt Au cut-off grade); 15,848,000 tons, 0.019 opt Au, 302,000 oz Au (measured and indicated resource, 0.004-0.065 opt Au cut-off grade); Combined Pipeline, Crossroads, Gap: 13,918,000 tons, 0.02 opt Au, 211,000 oz (inferred resource) 2018: 14,479,000 tons, 0.021 opt Au, 302,000 oz Au (proven and probable reserve, cut-off grade 0.004-0.142 opt Au, $1,200 per oz Au); 9,149,000 tons, 0.013 opt Au, 118,000 oz Au (measured and indicated resource, Au cut-off grade 0.003-0.045 opt $1,500 per oz Au); 359,000 tons, 0.007 opt Au, 2,000 oz (inferred resource)			
Robertson **(Bullion district)**	1988: 11,000,000 tons, 0.04 opt Au 1999: Porphyry zone, 254,678 oz Au (proven and probable reserves); Lucky Boy, 33,000 oz Au (measured); Altenburg Hill, 21,300 oz Au (measured); Widows Mine, 37,300 oz Au (inferred); Gold Pan, 91,400 oz Au (measured) 2005-2006: 22,900,000 tons, 0.031 opt Au (measured and indicated resource) 9,408,000 tons, 0.046 opt Au (inferred resource) 2007: 91,300,000 tons, 0.025 opt Au (inferred resource) 2009: 178,924,188 tons, 0.0189 opt Au (inferred resource) 2011: 191,725,418 tons, 0.0143 opt Au, 2,741,673 oz Au (inferred resource))	1989: 3,700 oz Au	Valmy Formation	early Oligocene
Slaven Canyon property **(Bateman Canyon district)**	1994: 50,000 oz Au 2002: 1,600,000 tons, 0.043 opt Au			
SOS **(Battle Mountain district)**	1985: 240,000 tons, 0.061 opt Au, 0.98 opt Ag (proven reserve); 185,000 tons, 0.061 opt Au, 0.98 opt Ag (probable reserve); 480,000 tons, 0.061 opt Au, 0.98 opt Ag (potential reserve)			
South Pipeline **(Bullion district)**	1992: 900,000 tons, 0.082 opt Au 1994: *geologic resource*-76.500,000 tons, 0.048 opt Au 1996: *see* Pipeline 1997: included in Cortez Joint Venture 2011: see Pipeline		Roberts Mountains Formation	Eocene?
Surprise **(Battle Mountain district)**	1987: 225,000 oz Au 1988-91: production and reserves included in Fortitude figures 1994: mined out	1987: 2,000 oz Au	skarn	37 Ma
Toiyabe	1988: 813,400 tons, 0.066 opt Au 2009: 4,975,000 tons, 0.035 opt Au (indicated resource)	1988: 32,000 oz Au, 10,300 oz Ag 1990-91: 20,480 oz Au, 15,125 oz Ag	lower Paleozoic calcareous siltstone	Eocene?
Victorine (Kingston) **(Kingston district)**	1987: 1,480,000 tons, 0.208 opt Au (ore reserves) 1992: 915,000 tons, 0.304 opt Au 1995: 256,000 tons, 0.36 opt Au (proven and probable reserves); 31,160 oz Au (geologic resource) 2000: 120,000 oz Au (proven and probable reserves); 200,000 oz Au (possible reserves)	1987-88: 39,247 oz Au, 88,207 oz Ag 1988-89: 25,131 oz Au	Cambrian to Ordovician Broad Canyon sequence	

LINCOLN COUNTY

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Atlanta (Atlanta district)	1980: 1,100,000 tons, 0.08 opt Au, 1.6 opt Ag 1996: 300,000 oz Au, 3,000,000 oz Ag 2011 Main Zone: 6,391,000 tons, 0.047 opt Au, 302,797 oz Au, 0.25 opt Ag, 1,569,689 oz Ag (indicated resource), 4,330,227 tons, 0.031 opt Au, 133,662 oz Au, 0.56 opt Ag, 2,404,717 oz Ag (inferred resource); East-West Zones: 1,610,800 tons, 0.046 opt Au, 73,072 oz Au, 0.13 opt Ag, 212,154 oz Ag (indicated resource); 830,783 tons, 0.039 opt Au, 32,479 oz Au, 0.23 opt Ag, 190,083 oz Ag (inferred resource); 2012: 15,503,000 tons, 0.035 opt Au, 572,100 oz, Au, 0.38 opt Ag, 5,893,500 oz Ag (measured and indicated resources); 18,538,000 tons, 0.029 opt Au, 544,300 oz Au, 0.213 opt Ag, 3,955,400 oz Ag (inferred resources); 2018: Global Resoure: 13,867,000 tons, 0.038 opt Au, 525,100 oz Au, 0.34 opt Ag, 4,690,000 oz Ag (measured and indicated resources, 0.012 opt Au cut-off grade); 15,112,000 tons, 0.027 opt Au, 401,000 oz Au, 0.22 opt Ag, 3,240,000 oz Ag (inferred resources, 0.012 opt Au cut-off grade) In pit Resoure: 6,007,000 tons, 0.041 opt Au, 243,100 oz Au, 0.37 opt Ag, 2,180,000 oz Ag (measured and indicated resources); 1,389,000 tons, 0.022 opt Au, 31,000 oz Au, 0.17 opt Ag, 240,000 oz Ag (inferred resources)t]	1954: 22,000 tons ore 1960s: 27,000 tons ore 1975-1985: 1,500,000 tons, 0.09 opt Au, 1.25 opt Ag 1980: 88,000 oz Au, 1,710,000 oz Ag	Pogonip Group, Ely Springs and Laketown Dolomites, Oligocene silicic tuff, dacite dikes	early Miocene
Caliente (Pennsylvania district)	1997: 50,000 tons, 0.03 opt Au, 0.80 opt Ag; (geologic reserves); 700,000 tons, 0.039 opt Au (geologic resource)		Tertiary diorite Tertiary andesite	
Easter and Delamar Project (Delamar district)	1994: 3,360,000 tons, 0.069 opt Au (geologic resource) 1995: 1,500,000 tons, 0.069 opt Au 2010 (Easter project): 2,640,000 tons, 0.0386 opt Au, 0.408 opt Ag (indicated resource) 200,000 tons, 0.0333 opt Au, 0.350 opt Ag (inferred resource)		Cambrian quartzite	Miocene
Gold Springs (Eagle Valley district)	2012: (Grey Eagle Zone): 3,196,276 tons, 0.02 opt Au 62,482 Au, 0.02 opt Ag, 632,617 oz Ag (inferred resource, 0.009 opt Au equivalent cut-off grade) 2014: (Grey Eagle Zone): 8,450,000 tons, 0.018 opt Au, 150,000 oz Au, 0.2 opt Ag, 1,695,000 oz Ag (measured and indicated resource, 0.006 opt Au cut-off grade); 3,557,000 tons, 0.017 opt Au 65,000 Au, 0.198 opt Ag, 78,000 oz Ag (inferred resource, 0.006 opt Au equivalent cut-off grade) [NI43-101 compliant] 2015 (early): (Grey Eagle Zone): 7,359,000 tons, 0.022 opt Au, 140,000 oz Au, 0.24 opt Ag, 1,554,000 oz Ag (measured and indicated resource, 0.01 opt Au cut-off grade); 1,474,000 tons, 0.015 opt Au, 19,000 oz Au, 0.177 opt Ag, 223,000 oz Ag (inferred resource, 0.01 opt Au equivalent cut-off grade) [NI43-101 compliant] 2015 (August): (Grey Eagle Zone): 10,052,000 tons, 0.016 opt Au, 159,000 oz Au, 0.19 opt Ag, 1,901,000 oz Ag (measured and indicated resource, 0.006 opt Au cut-off grade); 2,417,000 tons, 0.01 opt Au, 25,000 oz Au, 0.14 opt Ag, 339,000 oz Ag (inferred resource, 0.006 opt Au equivalent cut-off grade) [NI43-101 compliant] 2017: (Grey Eagle): 7,909,000 tons, 0.018 opt Au, 142,000 oz Au, 0.21 opt Ag, 1,654,000 oz Ag (measured and indicated resource, 0.007 opt Au cut-off grade); 965,000 tons, 0.013 opt Au, 12,000 oz Au, 0.19 opt Ag, 179,000 oz Ag		Miocene latite to andesite	

MAJOR PRECIOUS-METAL DEPOSITS, LINCOLN COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Gold Springs (cont.) Eagle Valley district	(inferred resource, 0.007 opt Au cut-off grade); (Thor): 391,000 tons, 0.028 opt Au, 11,000 oz Au, 0.53 opt Ag, 207,000 oz Ag (measured and indicated resource, 0.007 opt Au cut-off grade); 25,000 tons, 0.018 opt Au, 400 oz Au, 0.32 opt Ag, 8,000 oz Ag (inferred resource, 0.007 opt Au cut-off grade) [NI43-101 compliant]			
Groom Mine (Groom district)	1963: Reserve: 30,000 tons, 0.5 opt Ag, 4-5% Pb (reserve)	1915-26: Concentrates: 6,145 tons, 100,341 oz Ag, 5,926,371 lbs. Pb 1915-37: 5,737 tons ore valued at $367,325	Sedimentary	

LYON COUNTY

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Dayton Resource Area (Comstock Mine Project) (Silver City District)	2010: 4,970,000 tons, 0.034 opt Au, 0.244 opt Ag (measured and indicated resource) 1,210,000 tons, 0.026 opt Au, 0.298 opt Ag (inferred resource) 2011 (Alhambra, Dayton, and Kossuth Mines): 8,330,000 tons, 0.029 opt Au, 0.213 opt Ag (measured and indicated resource); 8,590,000 tons, 0.024 opt Au, 0.131 opt Ag (inferred resource)		Santiago Canyon tuff; Alta Formation	
Fire Angel (Como district)	1989: 5,600 oz Au, *geologic resource*– 148,500 oz Au			
Hercules (Como district)	1997 (Hydra-Hercules): 259,329 oz Au, 1,956,511 oz Ag 2012: 7,703,522 tons, 0.0125 opt Au, 96,525 oz Au, 0.107 opt Ag, 821,581 oz Ag (indicated resource) 31,121,649 tons, 0.0121 opt Au, 377,506 oz Au, 0.135 opt Ag, 4,211,693 oz Ag (inferred resource)		Tertiary andesite	
Pine Grove (Wilson district)	1994: 2,500,000 tons, 0.061 opt Au 2008 (0.010 opt Au cut-off grade): 2,738,000 tons, 0.25 opt Au (inferred resource, Wilson deposit) 3,321,000 tons, 0.075 opt Au) (inferred resource, Wheeler deposit) 2011 Wilson and Wheeler deposits: 5,316,000 tons, 0.033 opt Au (indicated resource); 4,136,000 tons, 0.028 opt Au (inferred resource) 2012 Wheeler: 2,867,000 tons, 0.038 opt Au, 109,900 oz Au (measured and indicated resource, 0.007 opt Au cut-off grade) 96,000 tons, 0.027 opt Au, 7,500 oz Au (inferred resource); Wilson: 3,189,000 tons, 0.03 opt Au, 96,100 oz Au (measured and indicated resource); 732,000 tons, 0.026 opt Au, 34,300 oz Au (inferred resource) 2015 Wheeler: 1,268,000 tons, 0.06 opt Au, 75,700 oz Au (measured and indicated Resource, 0.014 opt Au cut-off grade) 3,000 tons, 0.032 opt Au, 100 oz Au (inferred resource) Wilson: 959,000 tons, 0.05 opt Au, 47,600 oz Au (measured and indicated resource, 0.014 opt Au cut-off grade) 85,000 tons, 0.068 opt Au, 5,800 oz Au			
Rockland Mine (Wilson district)	1965: 100,000 tons, $40 per ton (proven and indicated reserves)	1870-1934 intermittently: 45,787 tons at $380,611	Rhyolite and diorite	

MAJOR PRECIOUS-METAL DEPOSITS, LYON COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
South Comstock Joint Venture (Silver City district)	1994: 3,000,000 tons, 0.05 opt Au 1995: 100,000 oz Au			
Talapoosa (Talapoosa district)	1988 oxide: 2,500,000 tons, 0.041 opt Au, 0.53 opt Ag; sulfide: 14,900,000 tons, 0.03 opt Au, 0.49 opt Ag sulfide 1995 geologic resource: 45,000,000 tons, 0.025 opt Au and 0.33 opt Ag, including proven and probable reserves of 29,900,000 tons, 0.026 opt Au and 0.4 opt Ag 2010 Bear Creek Zone (sulfide): 20,130,000 tons, 0.027 opt Au, 549,000 oz Au, 0.35 opt Ag, 7,053,000 oz Ag (measured and indicated resource) 10,401,000 tons, 0.027 opt Au, 277,000 oz Au, 0.326 opt Ag, 3,391,000 oz Ag (inferred resource); Main Zone (oxide): 2,921,000 tons, 0.028 opt Au, 83,000 oz Au, 0.4 opt Ag, 1,169,000 oz Ag (measured and indicated resource); 2,194,000 tons, 0.03 opt Au, 49,000 oz Au, 0.391 opt Ag, 858,000 oz Ag (inferred resource), 2013: 31,264,470 tons, 0.032 opt Au, 1,012,802 oz Au, 0.437 opt Ag, 13,649,358 oz Ag (measured and indicated resource, 0.013 opt); 11,198,000 tons, 0.021 opt Au, 233,532 oz Au, 0.194 opt Ag, 10,158,000 oz Ag (inferred resource); 2015 Oxide: 4,538,050 tons, 0.036 opt Au, 162,581 oz Au, 0.51 opt Ag, 2,315,322 oz Ag; sulfide: 26,726,420 tons, 0.032 opt Au, 850,220 oz Au, 0.31 opt Ag, 11,332,037 oz Ag (measured and indicated resource, 0.013 opt Au cut-off grade); Oxide:1,762,000 tons, 0.027 opt Au, 47,745 oz Au, 0.065 opt Ag, 115,115 oz Ag; sulfide; 9,436,000 tons, 0.02 opt Au, 185,787 oz Au, 0.218 opt Ag, 2,057,651 oz Ag (inferred resource)		Kate Peak Formation	Miocene

MINERAL COUNTY

Aurora Mine (Aurora district)	1989: 347,000 tons, 0.253 opt Au 1996: 900,000 tons, 0.1 opt Au 2003: *see* Esmeralda	1989-90: 25,656 oz Au, 34,562 oz Ag 1991: 15,000 oz Au 1992-93: 23,600 oz Au, 52,200 oz Ag 1995: 15,000 oz Au, 35,000 oz Ag 1996: 10,374 oz Au 1997-98: 15,414 oz Au, 7,287 oz Ag 2017: 922 oz Au, 4,854 oz Ag 2018: 826oz Au, 15,240 oz Ag 2019: 4,190 oz Au, 22,998 oz Ag	andesite, rhyolite	10 Ma
Aurora Partnership (Aurora district)	1983: 1,500,000 tons, 0.129 opt Au, 0.3 opt Ag 1995: 230,000 tons, 0.208 opt Au (in portion of Humboldt vein system)	1930s: 100,000 oz Au 1983: 10,000 oz Au 1988: 10,302 oz Au 1989: 27,825 oz Au,	andesite, rhyolite	10 Ma
Aurora Partnership (con't)	2003: *see* Esmeralda	26,000 oz Ag 1991-96: 157,796 oz Au, 318,933 oz Ag		
Borealis (Borealis district)	1981: 2,100,000 tons, 0.08 opt Au, 0.5 opt Ag 1988: 1,792,000 tons, 0.046 oz Au/ton 2000: 33,400,000 tons, 0.044 opt Au, 0.22 opt Ag cumulative resource 2005 (May): 44,700,000 tons, 0.03 opt Au (measured and indicated resource) 34,800,000 tons, 0.02 opt Au (inferred resource) 2006: 8,235,000 tons, 0.022 opt Au, 0.158 opt Ag (measured and indicated resource, oxide) 35,157,000 tons, 0.032 opt Au, 0.164 opt Ag	1981-84: 170,000 oz Au 1986-88: 116,256 oz Au 1989-90: 107,495 oz Au 52,401 oz Ag 2011: 3,171 oz Au 1,992 oz Ag 2012: 32,066 oz Au 13,871 oz Ag 2013: 10,556 oz Au 21,187 oz Ag 2014: 10,589 oz Au,	rhyolite flow dome, andesite flows, breccias, volcaniclastic rocks	5 Ma

MAJOR PRECIOUS-METAL DEPOSITS, MINERAL COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Borealis (con't)	(measured and indicated resource, oxide, partially oxidized, sulfides) 16,909,000 tons, 0.028 opt Au, 0.106 opt Ag (inferred resource, oxide, partially oxidized, and sulfides) 2008: 29,560,000 tons, 0.045 opt Au, 0.273 opt Ag (measured and indicated resource, combined sulfide, partially oxidized and oxide); 36,161,000 tons, 0.027 opt Au, 0.196 opt Ag (inferred resource) resource, combined sulfide, partially oxidized and oxide); 8,546,000, 0.028 opt Au, 0.222 opt Ag (measured and indicated resource, oxide and partially oxidized); 13,706,000 tons, 0.018 opt Au, 0.096 opt Ag (inferred resource, oxide and partially oxidized) 2009: 16,650,000 tons, 0.023 opt Au, 0.19 opt Ag (measured and indicated resource, oxide, partially oxidized) 2010: 14,294,000 tons, 0.023 Au (proven and probable reserve, in situ, oxide, partially oxidized); 16,650,000 tons, 0.023 Au (proven and probable reserve, in situ leach pads and dumps, oxide, partially oxidized); 35,643,000 tons, 0.040 opt Au (measured and indicated resource, in situ leach pads and dumps, oxide, partially oxidized, and sulfide); 50,225,000 tons, 0.022 opt Au (inferred resource, in situ leach pads and dumps, oxide, partially oxidized, and sulfide)	35,133 oz Ag 2015: 7,998 oz Au, 29,321 oz Ag 2016: 617.9 oz Au, 1,510.54 oz Ag 2017: 299.7 oz Au, 508.3 oz Ag 2018: 419.6 oz Au, 393.8 oz Ag 2019: 605.4 oz Au, 387 oz Ag		
Candelaria Mine (Candelaria district)	1982: 18,500,000 tons, 1.09 opt Ag, 0.009 opt Au 1988: 24,000,000 tons, 1.267 opt Ag, 0.011 opt Au 1999: 27,300,000 tons, 3.4 opt Ag unmined resource; additional 800,000 oz Ag in low-grade stockpile 2000: 48,000 oz Au and 45.400,000 oz Ag indicated reserves 2001: 13,623,000 tons, 0.003 Au, 3.23 opt Ag, 44,060,000 oz Ag (measured and indicated resources), Northern Belle, leach pads, stockpiles combined: 55,681,000 tons, 0.002 opt Au, 1.49 opt Ag, 82,829,000 oz Ag (inferred resource)	1982: 1.700,000 oz Ag, 9,000 oz Au 1987: total production was 1000,000 oz Ag as of June 1987 1988-98: 30.6700,000 oz Ag, 95,218 oz Au 1999: 96,896 oz Ag, 237 oz Au	Candelaria Formation serpentinite, granitic dikes	Cretaceous
Denton-Rawhide (Rawhide district) **Denton-Rawhide (con't)**	1986: 24,100,000 tons 0.045 opt Au, 0.47 opt Ag 1989: reserves-29,400,000 tons, 0.040 oz Au and 0.368 opt Ag; *geologic resource*-59,300,000 tons, 0.0274 opt Au, 0.298 opt Ag 1997: 447,000 oz Au, 3,900,000 oz Ag	1990-98: 916,800 oz Au, 7,438,000 oz Ag 1999: 115,900 oz Au, 665,000 oz Ag 2000: 104,349 oz Au, 817,787 oz Ag 2001: 100,747 oz Au, 727,095 oz Ag 2002: 82,584 oz Au, 695,248 oz Ag 2003: 63,283 oz Au, 525,809 oz Ag 2004: 43,390 oz Au, 446,000 oz Ag 2005: 33,820 oz Au, 311,760 oz Ag 2006: 26,334 oz Au, 235,870 oz Ag 2007: 19,597 oz Au, 160,964 oz Ag 2008: 17,731 oz Au, 150,493 oz Ag 2009: 19,370 oz Au, 209,528 oz Ag 2010: 20,159 oz Au, 342,382 oz Ag 2011: 24,828 oz Au, 438,023 oz Ag 2012: 24,052 oz Au, 339,044 oz Ag 2013: 23,900 oz Au, 305,000 oz Ag 2014: 28,446 oz Au, 256,138 oz Ag 2015: 23,334 oz Au, 147,316 oz Ag 2016: 17,972 oz Au, 105,413 oz Ag 2017: 18,379 oz Au, 213,481 oz Ag 2018: 15,444 oz Au, 208,875 oz Ag 2019: 14,381 oz Au, 140,187 oz Ag	rhyolite plugs, flows, tuffs, breccias	16 Ma
Esmeralda (Aurora district)	2003: 30,710,500 tons, 0.031 opt Au (bulk-minable measured and indicated resource), 9,206,300 tons, 0.025 opt Au (bulk-minable inferred resource)	2009: 5,212 oz Au, 24,980 oz Ag	andesite rhyolite	10 Ma

MAJOR PRECIOUS-METAL DEPOSITS, MINERAL COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Esmeralda (con't)	192,152 tons, 0.50 opt Au (underground-minable resource)			
Golden Mile (Bell district)	2007: 2,409,805 tons, 0.064 opt Au, 154,227 oz Au		Luning Formation	
Isabella Pearl (Santa Fe district)	2013: 3,013,100 tons, 0.064 opt Au, 191,400 oz Au (probable and probable reserves) 2017: 2,970,000 tons, 0.065 opt Au, 192,600 oz Au; 0.38 opt Ag, 1,129,100 oz Ag (proven and probable reserves), 2018: 3,234,600 tons, 0.067 opt Au, 214,800 oz Au; 0.35 opt Ag, 1,176,700 oz Ag (proven and probable, 0.018 opt Au and 0.011 opt Au) 2019: 2,476,900 tons, 0.089 opt Au, 202,100 oz Au; 0.53 opt Ag, 1,310,700 oz Ag (proven and probable reserves)	2019: 10,810 oz Au, 9,574 oz Ag	Tertiary lava flows and ignimbrites	19 Ma
Marietta (Marietta district)	1990s Silver Glance: 853,000 tons, 0.036 opt Au, 1.07 opt Ag; Sultana Zone: 176,000 tons, 0.02 opt Au, 3.0 opt Ag; Endowment Mine: 45,000 tons, 0.15 opt Au, 20 opt Ag (estimated resources)			
Mina Gold (Bell district)	1986: 6 areas: 2,750,000 tons, 0.09 opt Au, 250,000 oz Au, 0.13 opt Ag, 367,000 oz Ag (indicated reserve) 1997: Monster Zone: 1,770,000 tons, 0.055 opt Au		Tertiary feldspar porphyry	
Mindora (Garfield district)	1988: 1,000,000 tons, 0.037 opt Au and 1.78 opt Ag	1988: exploration		
Pamlico (Pamlico district)	1996: 900,000 tons, 0.05 opt Au, 45,000 oz Ag (resource)		Sedimentary	
Santa Fe (Santa Fe district)	1984: 8,000,000 tons, 0.032 opt Au, 0.26 opt Ag 1990: 6,800,000 tons, 0.035 opt Au, 0.241 opt Ag	1989-95: 345,499 oz Au, 710,629 oz Ag	Luning Formation	Miocene
Silver Gulch (Marietta district)	2006: 853,000 tons, 0.036 opt Au, 1.09 opt Ag (calculated resource)		Dunlap Formation	Tertiary
Sultan Group (Marietta district)	1990: 176,000 tons, 0.02 opt Au, 3 opt Ag (resource)			

NYE COUNTY

Baxter Springs (Manhattan district)	1988: 1,000,000 tons, 0.05 opt Au 1990: 5,000,000 tons, 0.05 opt Au (geologic resource)			
Bruner (Bruner district)	1992: Duluth Zone: 15,000,000 tons, 0.026 opt Au (geologic resource) 2015: Total: 11,350,000 tons, 0.024 opt Au, 239,000 oz Au, 0.2 opt Ag, 1,950,000 oz Ag (indicated resource, cut-off grade 0.212 opt Au); 2,700,000 tons, 0.026 opt Au, 61,000 oz Au, 0.12 opt Ag, 270,000 oz Ag (inferred resource) Historic Resource Area: 3,860,000 tons, Penalas Zone: 7,500,000 tons, 0.024 opt Au, 153,000 oz Au, 0.16 opt Ag, 1,030,000 oz Ag (indicated resource); 1,540,000 tons, 0.024 opt Au, 32,000 oz Au, 0.092 opt Ag, 120,000 oz Ag (inferred resource) Paymaster Zone: 770,000 tons, 0.037 opt Au, 125,000 oz Au, 0.16 opt Ag, 110,000 oz Ag (inferred resource)	1931-1942 (Penalas): 80,100 tons ore, 26,000 1993: exploration	Tertiary volcanic rocks	Miocene

MAJOR PRECIOUS-METAL DEPOSITS, NYE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Bruner (con't)	2016: Total: 13,120,000 tons, 0.019 opt Au, 249,000 oz Au, 0.17 opt Ag, 2,264,000 oz Ag (indicated resource); 2,870,000 tons, 0.021 opt Au, 61,000 oz Au, 0.087 opt Ag, 249,000 oz Ag (inferred resource, Historic Resource Area: 4,460,000 tons, 0.02 opt Au, 87,000 oz Au, 0.23 opt Ag, 1,017,000 oz Ag (indicated resource); 441,000 tons, 0.01 opt Au, 4,000 oz Au, 0.1 opt Ag, 46,000 oz Ag (inferred resource); Penalas Zone: 8,650,000 tons, 0.019 opt Au, 162,000 oz Au, 0.14 opt Ag, 1,247,000 oz Ag (indicated resource); 1,710,000 tons, 0.02 opt Au, 34,000 oz Au, 0.071 opt Ag, 138,000 oz Ag (inferred resource); Paymaster Zone: 716,500 tons, 0.032 opt Au, 23,000 oz Au, 0.086 opt Ag, 249,000 oz Ag (inferred resource) 2017: Total: 21,550,000 tons, 0.016 opt Au, 353,000 oz Au, 0.24 opt Ag, 3,342,000 oz Ag (indicated resource);); 2,480,000 tons, 0.015 opt Au, 38,000 oz Au, 0.12 opt Ag, 299,000 oz Ag (inferred resource); Historic Resource Area: 5,015,000 tons, 0.018 opt Au, 89,000 oz Au, 0.23 opt Ag, 1,135,000 oz Ag (indicated resource);; 276,000 tons, 0.011 opt Au, 3,000 oz Au, 0.16 opt Ag, 43,000 oz Ag (inferred resource); Penalas Zone: 13,613,000 tons, 0.017 opt Au, 234,000 oz Au, 0.14 opt Ag, 1,866,000 oz Ag (indicated resource); 1,819,000 tons, 0.017 opt Au, 31,000 oz Au, 0.13 opt Ag, 235,000 oz Ag (inferred resource); Paymaster Zone: 661,000 tons, 0.029 opt Au, 19,000 oz Au, 0.13 opt Ag, 85,000 oz Ag (indicated resource); 220,000 tons, 0.016 opt Au, 3,000 oz Au, 0.033 opt Ag, 7,000 oz Ag (inferred resource)			
Bullfrog (Bullfrog district)	1989: 18,600,000 tons, 0.097 opt Au 1996: 10,200,000 tons, 0.062 opt Au proven and probable reserves; 3,700,000 tons, 0.040 opt Au mineralized material 2016: Bullfrog North: 14,700,000 tons, 0.026 opt Au, 375,051 oz Au; Bullfrog Northeast/ Mystery Hill: 990,000 tons, 0.023 opt Au, 26,813 oz Au (mineral inventory) 2017: 29,100,000 tons, 0.02 opt Au, 585,000 oz Au; 0.054 opt Ag, 1,569,000 oz Ag (measured and indicated resourcegrade); (Montgomery-Shoshone and Bullfrog combined: 6,200,000 tons, 0.023 opt Au, 129,000 oz Au; 0.057 opt Ag, 285,000 oz Ag (inferred resource)	1989-98: 2,237,484 oz Au, 2,935,484 oz Ag 1999: 76,159 oz Au, 90,967 oz Ag	rhyolitic ash-flow tuff	9.5 Ma
Cimmaron (San Antone district)	2004: 1,730,600 tons, 0.035 opt Au inferred material			
Corcoran Canyon (Barcelona district)	2004: 1,774,700 tons, 0.025 opt Au, 5.11 opt Ag indicated and inferred material		rhyolitic ash-flow tuff	
Daisy (Bare Mountain district)	1993: 4,700,000 tons, 0.024 opt Au *geologic resource*-430,000 oz Au 1998: 4,200,000 tons, 0.033 opt Au proven and probable reserves	1997-98: 64,504 oz Au 1999: 30,660 oz Au 2000: 8,740 oz Au 2001: 347 oz Au	Cambrian Bonanza King, Nopah, and Carrara Formations	11-13 Ma(?)
Gold Bar (Bullfrog district)	1987: 1,230,000 tons Au ore 1993: idle	1989-1991: Withheld	silicic volcanic rocks	Miocene

MAJOR PRECIOUS-METAL DEPOSITS, NYE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Golden Arrow	1997: 12,400,000 tons, 0.039 opt Au ("resource") 2009: 12,172,000 tons, 0.024 opt oz Au, 296,500 oz Au, 0.33 opt Ag, 4,008,000 oz Ag (measured and indicated resource); 3,790,000 tons, 0.013 opt Au, 50,500 oz Au, 0.33 opt Ag, 1,249,000 oz Ag (inferred resource)		Tertiary rhyolite	
Gold Hill property (Round Mt. district)	1998: 306,620 oz Au, 4,871,890 oz Ag potential resource 2003: (included in Round Mt.)	2012-18: included with Round Mountain	rhyolite ash-flow tuff	26 Ma(?)
Gold Wedge property (Manhattan district)	2002: 104,706 oz Au, 0.494 opt Au measured resource; 47,052 oz Au, 0.583 opt Au indicated resource; 394,626 oz Au, 0.494 opt Au inferred resource 2005: 333,000 tons, 0.310 opt Au (measured and indicated resource)	2008: 406 oz dore		
Longstreet property (Longstreet district)	1989: 400,000 tons, 0.024 opt Au, *geologic resource*-9.600,000 tons, 0.024 opt Au 2011: 4,369,836 tons, 0.024 opt Au, 103,969 oz Au, 0.66 opt Ag, 2,879,683 oz Ag (indicated resource); 867,050 tons, 0.024 opt Au, 20,809 oz Au, 0.66 opt Ag, 606,935 oz Ag (inferred resource) 2013: 4,844,000 tons, 0.019 opt Au, 90,900 oz Au, 0.456 opt Ag, 2,210,000 oz Ag (in-pit (indicated resource); 336,000 tons, 0.014 opt Au, 4,750 oz Au, 0.425 opt Ag, 142,700 oz Ag (in-pit inferred resource)		rhyolitic volcanic rocks	Oligocene
Manhattan property (Manhattan district)	1989: 100,000 tons, 0.50 opt Au (geologic resource) 1997: 1,700,000 tons, 0.13 opt Au ("proven and probable reserve(?)		Cambrian Gold Hill Formation	
Montgomery Shoshone (Bullfrog district)	1988: 3,100,000 tons, 0.072 opt Au, 0.240 opt Ag 2015: 1,590,000 tons, 0.028 opt Au, 41,000 oz Au ("resource" 2016: Shallow: 1,130,000 tons, 0.031 opt Au, 38,612 oz Au; Deeper: 990,000 tons, 0.027 opt Au, 26,813 oz Au (mineral inventory) 2017: 1,500,000 tons, 0.025 opt Au, 39,000 oz Au; 0.1 opt Ag, 162,000 oz Ag (measured and indicated resource); Montgomery-Shoshone and Bullfrog combined: 6,200,000 tons, 0.023 opt Au, 129,000 oz Au; 0.057 opt Ag, 285,000 oz Ag (inferred resource)	Early 1900s: 70,000 oz Au Late 1990s: 220,000 oz Au	rhyolitic ash-flow tuff	9.5 Ma
Mother Lode (Bare Mountain district)	1989: 4,900,000 tons, 0.054 opt Au, of which 1,800,000 tons, 0.048 opt Au are in the Sunday Night Anomaly (proven and probable reserves) 1990: Sunday Night Anomaly oxide reserves: 927,372 tons, 0.047 opt Au; sulfide ore reserves: 65,217 tons, 0.042 opt Au 1996: 8,500,000 tons, 1.6 g/t, 430,000 oz Au 2018: Total: 58,844,000 tons, 0.02 opt Au, 1,159,000 oz Au (measured and indicated resource); 17,902,000 tons, 0.013 opt Au, 241,000 oz Au (inferred resource); Mill (sulfide): 14,579,000 tons, 0.05 opt Au, 733,000 oz Au (measured and indicated resource, 0.018 opt Au cut-off grade); 2,390,000 tons, 0.047 opt Au, 112,000 oz Au (inferred resource); Heap Leach (oxide): 44,266,000 tons, 0.0096 opt Au, 427,000 oz Au (measured and indicated resource); 15,513,000 tons, 0.0085 opt Au, 129,000 oz Au (inferred resource),	1989: 1,000 oz Au, 150 oz Ag 1990: 30,000 oz Au, 3,100 oz Ag 1991: W	Lower Paleozoic rocks, Tertiary dacite porphyry	14 Ma

MAJOR PRECIOUS-METAL DEPOSITS, NYE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Mother Lode (cont.) (Bare Mountain district)	2020: Mill Resource (sulfide): 23,130,000 tons, 0.043 opt Au, 1,002,000 oz Au, 0.018 opt Ag 402,000 oz Ag (measured and indicated resource, 0.012 opt cut-off grade); 3,170,000 tons, 0.026 opt Au, 83,000 oz Au, 0.052 opt Ag, 164,000 Ag (inferred resource, 0.012 opt cut-off grade); Run of Mine Heap Leach:44,090,000 tons, 0.013 opt Au, 550,000 oz Au, 0.023 opt Ag, 1,509,000 Ag (measured and indicated resource, 0.0018 opt cut-off grade); 7,690,000 tons, 0.012 opt Au, 90,000 oz Au, 0.037 opt Ag, 399,000 Ag (inferred resource, 0.0018 opt cut-off grade) [NI43-101 compliant]			
Nevada Mercury (Bare Mountain district)	1994: 50,000 oz Au (geologic resource)			
North Bullfrog (Bullfrog district)	2008: 2,226,600 tons, 0.026 opt Au (indicated resource); 1,047,200 tons, 0.023 opt Au (inferred resource) 2011: 26,268,000 tons, 0.0085 opt Au, 223,880 oz Au, 0.011 opt Ag, 300,460 oz Ag (Jolly Jane and Mayflower oxide indicated resource, 0.003 opt Au cut-off grade) 515,380,000 tons, 0.0055 opt Au, 2,834,566 oz Au, 0.023 opt Ag, 12,007,678 oz Ag (Connection oxide and Mayflower and Sierra Blanca oxide and unoxidized inferred resource, 0.003 opt Au cut-off grade) 2012: 40,465,000 tons, 0.008 opt Au, 307,860 oz Au, 0.011 opt Ag, 443,230 oz Ag (Jolly Jane and Mayflower oxide indicated resource, 0.003 opt Au cut-off grade) 243,230,000 tons, 0.0053 opt Au, 1,288,970 oz Au, 0.023 opt Ag, 5,760,000 oz Ag (Connection Jolly Jane, Mayflower, and Sierra Blanca oxide inferred resource, 0.003 opt Au cut-off grade) 2014: Total: 28,352,000 tons, 0.008 opt Au, 240,000 oz Au, 0.013 opt Ag, 372,000 oz Ag (indicated resource); 205,011,000 tons, 0.006 opt Au,1,120,000 oz Au, 0.019 opt Ag, 4,092,000 oz Ag (inferred resource); Yellowjacket: 4,070,000 tons, 0.03 opt Au, 123,000 oz Au, 0.16 opt Ag, 655,000 oz Ag (indicated resource, 0.008 opt Au cut-off grade, 84% Au recovery); 20,287,000 tons, 0.027 opt Au, 555,000 oz Au, 0.18 opt 3,648,000 oz Ag (inferred resource, 0.008 opt Au cut-off grade, 84% Au recovery); Sierra Blanca: 1,019,000 tons, 0.006 opt Au, 6,000 oz Au, 0.038 opt Ag, 39,000 oz Ag, (indicated resource, 0.004 opt Au cut-off grade, 80% Au recovery); 195,904,000 tons, 0.006 opt Au,1,066,000 oz Au, 0.02 opt Ag, 3,943,000 oz Ag (inferred resource, 0.004 opt Au cut-off grade, 80% Au recovery); Mayflower: 6,024,000 tons, 0.013 opt Au, 81,000 oz Au, 0.012 opt Ag, 71,000 oz Ag (indicated resource, 0.006 opt Au cut-off grade, 85.1% Au recovery); 34,000 tons, 0.006 opt Au, 0.007 opt Ag (inferred resource, 0.006 opt Au cut-off grade, 85.1% Au recovery); Jolly Jane: 21,310,000 tons, 0.007 opt Au, 150,000 oz Au, 0.012 opt Ag, 262,000 oz Ag (indicated resource, 0.004 opt Au cut-off grade, 72% Au recovery); 9,073,000 tons, 0.006 opt Au, 54,000 oz Au, 0.016 opt Ag, 149,000 oz Ag (inferred resource, 0.004 opt Au cut-off grade, 72% Au recovery) 2015: Total Mill: 6,250,000 tons, 0.075 opt Au,		Miocene Crater Flat Tuff	

MAJOR PRECIOUS-METAL DEPOSITS, NYE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Noth Bullfrog (con't.) Bullfrog district	0.57 opt Ag, (measured and indicated resource resource); 1,630,000 tons, 0.028 opt Au, 0.14 opt Ag, (inferred resource); Total Heap Leach: 25,518,000 tons, 0.01 opt Au, 0.16 opt Ag, (measured and indicated resource); 194,400,000 tons, 0.0065 opt Au, 0.023 opt Ag, (inferred resource); Yellowjacket Mill: 4,250,000 tons, 0.087 opt Au, 316,510 oz Au, 0.67 opt Ag, 2,445,230 oz Ag (measured resource); 2,000,000 tons, 0.052 opt Au, 89,090 oz Au, 0.35 opt Ag, 593,250 oz Ag (indicated resource) 1,630,000 tons, 0.028 opt Au, 39,360 oz Au, 0.14 opt Ag, 203,350 oz Ag, (inferred resource); Sierra Blanca and Yellowjacket Heap Leach: 340,000 tons, 0.0085 opt Au, 2,340 oz Au, 0.093 opt Ag, 26,280 oz Ag (measured resource); 14,000 tons, 0.0085 opt Au, 1,070 oz Au, 0.068 opt Ag, 8,560 oz Ag (indicated resource); 185,600,000 tons, 0.0064 opt Au, 1,041,800 oz Au, 0.023 opt Ag, 3,664,420 oz Ag (inferred resource) Jolly Jane Heap Leach: 19,400,000 tons, 0.0085 opt Au, 141,440 oz Au, 0.015 opt Ag, 240,990 oz Ag (indicated resource); 8,760,000 tons, 0.007 opt Au, 51,000 oz Au, 0.018 opt Ag, 137,330 oz Ag (inferred resource); Mayflower Heap Leach: 5,650,000 tons, 0.016 opt Au,77,260 oz Au, 0.014 opt Ag, 68,270 oz Ag (inferred resource); 2017: Total: 135,735,000 tons, 0.006 opt Au, 855,000 oz Au, 0.019 opt Ag, 2,565,000 oz Ag (measured and indicated resource); 64,900,000 tons, 0.006 opt Au, 367,000 oz Au, 0.014 opt Ag, 902,000 oz Ag (inferred resource); Mill Mineral Resource (oxide and sulfide): 3,531,000 tons, 0.03 opt Au, 117,000 oz Au, 0.088 opt Ag, 344,000 oz Ag (measured and indicated resource) 73,800 tons, 0.041 opt Au, 3,000 oz Au, 0.068 opt Ag, (inferred resource, $1,250 per oz Au, $16.50 per oz Ag); Mill Mineral Resource (oxide): 1,987,000 tons, 0.035 opt Au, 69,000 oz Au, 0.058 opt Ag, 114,000 oz Ag (measured and indicated resource, $1,250 per oz Au, $16.50 per oz Ag); Heap Leach Mineral Resource: 131,842,000 tons, 0.006 opt Au, 738,000 oz Au, 0.017 opt Ag, 2,221,000 oz Ag (measured and indicated resource, $1,250 per oz Au, $16.50 per oz Ag); 64,827,000 tons, 0.006 opt Au, 364,000 oz Au, 0.14 opt Ag, 897,000 oz Ag, (inferred resource, $1,250 per oz Au, $16.50 per oz Ag) [NI43-101 compliant] 2018: Total: 174,285,000 tons, 0.01 opt Au, 1,760,000 oz Au, 0.046 opt Ag, 8,024,000 oz Ag (measured and indicated resource); 71,412,000,000 tons, 0.0058 opt Au, 426,000 oz Au, 0.015 opt Ag, 1,042,000 oz Ag (inferred resource); Sierra Blanca: Milling: 11,726,000 tons, 0.0049 opt Au, 0.35 opt Ag, (measured and indicated resource, 0.01 opt Au cut-off grade); 44,000 tons, 0.05 opt Au, 0.5 opt Ag (inferred resource, 0.01 opt Au cut-off grade); Heap Leach: 132,040,000 tons, 0.006 opt Au, 0.23 opt Ag (measured and indicated resource, 0.0044 opt Au cut-off grade); 62,578,000 tons, 0.0059 opt Au, 0.014 opt Ag (inferred resource, 0.0044 opt Au cut-off grade); Sulfide Leach: 4,074,000 tons, 0.039 opt Au, 0.11 opt Ag, (measured and indicated resource, 0.021 opt Au cut-off grade); 84,000 tons, 0.048 opt Au, 0.14 opt Ag (inferred resource, 0.021 opt Au cut-off grade); Total: 1,535,000 oz Au, 7,701,000 oz Ag (measured and indicated resource);			

MAJOR PRECIOUS-METAL DEPOSITS, NYE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
North Bullfrog (cont.) Bullfrog district	363,000 oz Au, 900,000 oz Ag (inferred resource); Mayflower: 5,775,000 tons, 0.013 opt Au, 78,000 oz Au, 0.012 opt Ag, 69,000 oz Ag (indicated resource); Jolly Jane: 20,471,000 tons, 0.007 opt Au, 146,000 oz Au, 0.012 opt Ag, 254,000 oz Ag (indicated resource); 8,676,000 tons, 0.0061 opt Au, 53,000 oz Au, 0.016 opt Ag, 42,000 oz Ag (inferred resource)			
Northumberland (Northumberland district)	1988: 12,000,000 tons, 0.06 opt Au 2005 (July): 30,910,000 tons, 0.067 opt Au (measured and indicated resource) 4,381,000 tons, 0.091 opt Au (inferred resource) 2008 (June): 36,518,000 tons, 0.06 opt Au (measured and indicated resource); Au (measured and indicated resource); 7,418,000 tons, 0.10 opt Au (inferred resource)	1939-42: 32,700 oz Au 1981-84: 950,000 tons/year 1988: 29,667 oz Au, 130,394 oz Ag 1981-1990: ~230,000 oz Au, 485,000 oz Ag	Roberts Mountains and Hanson Creek Formations, granodiorite, tonalite, quartz porphyry dikes	
Paradise Peak/ Ketchup Flats pit (Fairplay district)	1984: 10,000,000 tons, 0.1 opt Au, 3 opt Ag 1989: 5,220,000 tons, 0.09 opt Au, 3.62 opt Ag, mill ore; 11.5200,000 tons, 0.036 opt Au, 0.445 opt Ag, leachable 1996: 5,000,000 tons, 0.022 opt Au, 0.2 opt Ag (Ketchup Flats)	1986-88: 560,000 oz Au, 8,500,000 oz Ag 1989-94: 1,054,084 oz Au, 15,600,000 oz Ag	rhyolite and andesite flows, ash-flow and air-fall tuffs	Miocene
Reveille (Reveille district)	1980: 20,000 tons, ore containing chloride Ag	1874-91: Gila Mine: 6,128 tons valued at $531,315 1979-80: New Reveille Mine: 60,000 tons low grade ore	Silurain-Devonian dolomite	
Reward property (Bare Mountain district)	1998: 77,500 oz Au 2007: 5,181,340 tons, 0.0266 opt Au (proven and probable reserves); 6,423,571 tons, 0.0245 opt Au (measured and indicated resource) 2009: 7,147,721 tons, 0.0243 opt Au (proven and probable reserves) 2010: 7,709,000 tons, 0.023 opt Au (proven and probable reserves) 2011: 11,856,200 tons, 0.0224 opt Au, 265,800 oz Au (proven and probable reserves) 18,055,000 tons, 0.0201 opt Au, 362,000 oz Au (measured and indicated resource) 4,757,000 tons, 0.0138 opt Au, 65,600 oz Au (inferred resource) 2012: 12,347,000 tons, 0.022 opt Au, 269,248 oz Au (proven and probable reserves) 18,055,000 tons, 0.02 opt Au, 362,600 oz Au (measured and indicated resource) 4,757,000 tons, 0.014 opt Au, 65,600 oz Au (inferred resource) 2013: 10,731,000 tons, 0.023 opt Au, 249,516 oz Au (proven and probable reserves) 20,294,000 tons, 0.019 opt Au, 387,900 oz Au (measured and indicated resource) 7,071,000 tons, 0.015 opt Au, 106,400 oz Au (inferred resource)		Cambrian Wood Canyon Formation	
Round Mountain (Smoky Valley) (Round Mountain district)	1977: 12,000,000 tons, 0.061 opt Au, 0.07 opt Ag 1989: *geologic resource*-27100,000 tons, 0.032 opt Au 1999: 320,000,000 tons, 0.018 opt Au (proven and probable reserves); 126,000,000 tons, 0.016 opt Au (mineralized material) 2000: 273,200,000 tons, 0.019 opt Au (proven and probable reserves); 18,700,000 tons, 0.022 opt Au (mineralized material) 2002: 192,100,000 tons, 0.020 opt Au (proven and probable reserves); 54.600,000 tons, 0.012 opt Au (mineral resource)	1977-84: 313,480 oz Ag, 160,419 oz Ag 1987-88: 424,300 oz Au 1989: 386,227 oz Au, 211,297 oz Ag 1990: 483,192 oz Au, 236,600 oz Ag (includes Manhattan) 1991-98: 3,248,946 oz Au, 2,607,892 oz Ag 1999: 541,808 oz Au, 464,415 oz Ag 2000: 640,133 oz Au, 424,530 oz Ag	rhyolite ash-flow tuff	26 Ma

MAJOR PRECIOUS-METAL DEPOSITS, NYE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Round Mountain (cont.)	2003: 129,866,000 tons, 0.017 opt Au (proven reserves); 49,838,000 tons, 0.020 opt Au (probable reserves); 21,000,000 tons, 0.013 opt Au (measured resource); 54,440,000 tons, 0.018 opt Au (indicated resource); 19,580,000 tons, 0.018 opt Au (inferred resource, includes Gold Hill) 2004: 433,400,000 tons, 0.018 opt Au (proven and probable reserves); 64,000,000 tons, 0.015 opt Au (mineral resource) 2005: 275,608,000 tons, 0.017 opt Au (proven and probable reserves); 35,412,000 tons, 0.017 opt Au (measured and indicated resource); 35,374,000 tons, 0.013 opt Au (inferred resource) 2006: 226,084,000 tons, 0.017 opt Au (proven and probable reserves); 26,134,000 tons, 0.019 opt Au (measured and indicated resource); 32,898,000 tons, 0.013 opt Au (inferred resource) 2007: 141,736,000 tons, 0.018 opt Au (proven and probable reserves); 30,632,000 tons, 0.022 opt Au (measured and indicated resource); no released inferred resource 2008: 185,162,000 tons, 0.018 opt Au (proven and probable reserves); 57,140,000 tons, 0.019 opt Au (measured and indicated resource); 12,982,000 tons, 0.012 opt Au (inferred resource) 2009: 157,614,000 tons, 0.019 opt Au (proven and probable reserves); 87,824,000 tons, 0.021 opt Au (measured and indicated resource); 57,208,000 tons, 0.017 opt Au (inferred resource) 2010: 146,034,000 tons, 0.018 opt Au (proven and probable reserves); 101,736,000 tons, 0.022 opt Au (measured and indicated resource); 49,740,000 tons, 0.018 opt Au (inferred resource) 2011: 165,376,000 tons, 0.017 opt Au, 2,822,000 oz Au (proven and probable reserves); 166,840,000 tons, 0.016 opt Au 2,672,000 oz Au (measured and indicated resource); 77,694,000 tons, 0.012 opt Au 928,000 oz Au (inferred resource) 2012: 141,356,000 tons, 0.018 opt Au, 2,485,000 contained oz Au (proven and probable reserves); 88,586,000 tons, 0.021 opt Au, 1,850,000 oz Au (measured and indicated resource); 56,246,000 tons, 0.015 opt Au 310,000 oz Au (inferred resource) 2013: 92,917,000 tons, 0.02 opt Au, 1,838,000 oz Au; 13,481,000 tons, 0.25 opt Ag, 3,412,000 oz Ag (proven and probable reserves); 84,028,000 tons, 0.022 opt Au, 1,806,000 oz Au; 6,433,000 tons, 0.2 opt Ag, 1,258,000 oz Ag (measured and indicated resource); 54,048,000 tons, 0.016 opt Au, 866,000 oz Au; 278,000 tons, 0.09 opt Ag, 24,000 oz Ag (inferred resource) 2014: 60,186,000 tons, 0.027 opt Au, 1,378,000 oz Au; 6,892,000 tons, 0.32 opt Ag, 1,870,000 oz Ag (proven and probable reserves); 52,399,000 tons, 0.02 opt Au, 880,000 oz Au; 2,414,000 tons, 0.29 opt Ag, 598,000 oz Ag (measured and indicated resource); 17,330,000 tons, 0.017 opt Au, 260,000 oz Au; 1,426,000 tons, 0.2 opt Ag, 242,000 oz Ag (inferred resource) 2015: 72,910,000 tons, 0.02 opt Au, 1,472,000 oz Au; 2,612,000 tons, 0.33 opt Ag, 870,000 oz Ag (proven and probable reserves, 76.8% metallurgical recovery, 0.007-0.53 opt Au cut-off grade); 44,975,000 tons, 0.015 opt Au, 684,000 oz Au; 12,389,000 tons, 0.22 opt Ag, 2,687,000	2001: 746,949 oz Au, 509,121 oz Ag 2002: 755,493 oz Au, 627,579 oz Ag 2003: 784,587 oz Au, 761,333 oz Ag 2004: 762,966 oz Au, 773,950 oz Ag 2005: 736,886 oz Au, 636,361 oz Ag 2006: 657,911 oz Au, 644,017 oz Ag 2007: 587,445 oz Au, 955,681 oz Ag 2008: 477,499 oz Au, 931,368 oz Ag 2009: 414,941 oz Au, 850,878 oz Ag 2010: 358,614 oz Au, 651,457 oz Ag 2011: 360,020 oz Au, 644,329 oz Ag 2012: 367,595 oz Au, 926,284 oz Ag 2013: 314,886 oz Au, 636,564 oz Ag 2014: 330,071 oz Au, 580,685 oz Ag 2015: 385,159 oz Au, 775,025 oz Ag 2016: 371,484 oz Au, 721,465 oz Ag 2017: 425,324 oz Au, 868,402 oz Ag 2018: 375,741 oz Au 798,249 oz Ag 2019: 350,943 oz Au 921,881 oz Ag		

MAJOR PRECIOUS-METAL DEPOSITS, NYE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Round Mountain (con't)	oz Ag (measured and indicated resource); 17,864,000 tons, 0.013 opt Au, 234,000 oz Au; 2,620,000 tons, 0.17 opt Ag, 454,000 oz Ag (inferred resource) 2016: 62,947,000 tons, 0.02 opt Au, 1,267,000 oz Au; 4,904,000 tons, 0.25 opt Ag, 1,232,000 oz Ag (proven and probable reserves); 83,812,000 tons, 0.023 opt Au, 1,932,000 oz Au; 7,173,000 tons, 0.2 opt Ag, 1,424,000 oz Ag (measured and indicated resource); 109,992,000 tons, 0.018 opt Au, 1,863,000 oz Au; 2,536,000 tons, 0.17 opt Ag, 428,000 oz Ag (inferred resource) 2017: 37,106,000 tons, 0.02 opt Au, 2,884,000 oz Au; 8,039,000 tons, 0.17 opt Ag, 1,371,000 oz Ag (proven and probable reserves); 115,809,000 tons, 0.02 opt Au, 2,393,000 oz Au; 8,473,000 tons, 0.22 opt Ag, 1,827,000 oz Ag (measured and indicated resource); 98,191,000 tons, 0.02 opt Au, 2,115,000 oz Au; 1,058,000 tons, 0.05 opt Ag, 54,000 oz Ag (inferred resource); 28,388,000 tons, 0.015 opt Au, 378,000 oz Au (proven stockpile) 2018: 125,544,000 tons, 0.02 opt Au, 2,668,000 oz Au; (proven and probable reserves); 9,078,000 tons, 0.18 opt Ag, 1,669,000 oz Ag (probable reserves); 105,635,000 tons, 0.02 opt Au, 2,287,000 oz Au; 5,991,000 tons, 0.23 opt Ag, 1,359,000 oz Ag (indicated resource); 90,483,000 tons, 0.02 opt Au, 2,058,000 oz Au; 835,000 tons, 0.08 opt Ag, 72,000 oz Ag (inferred resource); 20,415,000 tons, 0.01 opt Au, 270,000 oz Au (proven stockpile reserves) 2019: 111,153,000 tons, 0.02 opt Au, 2,421,000 oz Au; (proven and probable reserves); 31,692,000 tons, 0.02 opt Au, 2,834,000 oz Au (indicated resource); 54,763,000 tons, 0.018 opt Au, 2,058,000 oz Au; (inferred resource); 12,237,000 tons, 0.012 opt Au, 159,000 oz Au (proven stockpile reserves)			
Sterling (Bare Mountain district)	1983: 200,000 tons, 0.20 opt Au 1989: 469,000 tons, 0.21 opt Au 1996: 129,000 tons, 0.245 opt Au 2006: 214,554 tons, 0.216 opt Au 2012: 144 Zone: 509,712 tons, 0.133 opt Au, 67,792 oz Au (measured and indicated resource, 0.07 opt Au cut-off grade); Panama Zone: 103,040 tons, 0.082 opt Au, 8,449 oz Au (measured and Indicated resource) 2017: Surface Total: 10,536,000 tons, 0.064 opt Au, 671,000 oz Au; Sterling: 2,158,000 tons, 0.107 opt Au, 231,000 Au; 2,818,000 tons, 0.062 opt Au; Secret Pass: 3,896,000 tons, 0.048 opt Au, 188,000 oz Au; SNA: 1,664,000 tons, 0.047 opt Au, 78,000 oz Au (surface inferred resource)	1983-88: 75,900 oz Au 1990-91: 24,841 oz Au 1995-98: 36,811 oz Au 1999: 3,093 oz Au 2012: 12,000 oz Au 2013: 7,500 oz Au 2014: 5,721 oz Au 2015: 1,740 oz Au 2016: 350 oz Au 2017: 0 oz Au 2018: 280 oz Au 2019: 0 oz Au	Wood Canyon and Bonanza King Formations	14 Ma
South Monitor (west of Ellendale district)	1996: 250,000 oz Au 1997: 14,000,000 tons, 0.026 opt Au, 0.12 opt Ag		Tertiary volcanic rock	
Sullivan (Fairplay district)	1987: 10,200,000 tons, 0.039 opt Au, 0.086 opt Ag and 0.37% Cu 1995: proven and possible-17,000,000 tons of 0.34% Cu, 0.0255 opt Au, + 8,500,000 tons of 0.32% Cu		Mesozoic granodiorite and metavolcanic rocks	Mesozoic

MAJOR PRECIOUS-METAL DEPOSITS, NYE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Summit (Union district)	1996: 100,000 tons, 0.07 opt Au, 2012: 200,000 tons, 0.035 opt Au (open pit resource)	1990: 8,800 oz Au	Triassic dolomite and limestone	
Tonopah (Midway) (Rye Patch district)	1997: 270,000 oz Au (preliminary resource) 2005: 5,526,000 tons, 0.039 opt Au (inferred resource) 2011: 114,000 tons, 0.3017 opt Au, 34,394 oz Au (inferred resource) 2018: 7,385,000 tons, 0.028 opt Au, 186,000 oz Au (measured and indicated resource); 10,580,000 tons, 0.022 opt Au, 238,000 oz Au (inferred resource) 2019: 9,700,000 tons, 0.026 opt Au, 253,000 oz Au (measured and indicated resource); 6,600,000 tons, 0.016 opt Au, 123,000 oz Au (inferred resource, 2020: 14,140,000 tons, 0.023 opt Au, 326,000 contained oz Au (measured and indicated resource); 9,260,000 tons, 0.02 opt Au, 181,000 oz Au (inferred resource)		Ordovician Palmetto Formation Tertiary volcanic rocks	

PERSHING COUNTY

Bunce (Velvet district)	1989: 600,000 tons, 0.04 opt Au (geologic reserves) 1990: 500,000 tons, 0.04 opt Au		rhyolite	Miocene?
Colado Gold (Willard district)	1997: 15,000,000 tons, 0.022 opt Au resource 2007 (May 2008): 22,707,000 tons, 0.012 opt Au (oxide, measured and indicated resource); 594,000 tons, 0.070 opt Au (sulfide, measured and indicated resource); 79,129,000 tons, 0.015 opt Au (inferred resource)		Triassic-Jurassic metasedimentary rocks	
Florida Canyon (Imlay district)	1987: 22,000,000 tons, 0.023 opt Au 1988: 37,000,000 tons, 0.023 opt Au 1997: reserves-45,500,000 tons, 0.024 opt Au proven and probable mineralized material-122,800,000 tons, 0.022 opt Au 2002: 20,000,000 tons, 0.017 opt Au (proven and probable reserves) 2003: 374,393 oz Au (proven and probable reserves) 2004: 16,792,000 tons, 0.016 opt Au (proven and probable reserves) 2010 reserve: 832,000 oz Au; resource: 746,700 oz Au 746,700 oz Au (“resource”) 2012: 1,124,800 oz Au (reserves) 761,000 oz Au (resources) 2016: 84,202,100 tons, 0.013 opt, 1,126,600 oz Au (measured and indicated resource); 350,800 tons, 0.015 opt; Au 5,300 oz Au , (inferred material); 2018: Total: 94,634,100 tons, 0.011 opt) 1,013,600 oz Au (proven and probable reserve) 146,800,000 tons, 0.012 opt Au 1,711,000 oz Au (measured and indicated resource) 1,550,000 tons 0.014 opt Au, 22,000 oz (inferred resource): Central Zone: 31,188,000 tons, 0.01 opt, 358,600 oz Au (proven and probable reserve) 61,956,000 tons, 0.011 opt Au 712,000 oz Au (measured and indicated resource); 560,000 tons 0.011 opt Au, 100 oz Au (inferred resource,	1987-88: 109,300 oz Au 1989-98: 1,146,148 oz Au, 610,326 oz Ag 1999: 139,590 oz Au, 111,232 oz Ag 2000: 173,623 oz Au, 129,361 oz Ag 2001: 121,206 oz Au, 98,645 oz Ag 2002: 121,516 oz Au, 72,567 oz Ag 2003: 101,811 oz Au, 60,065 oz Ag 2004: 73,082 oz Au, 60,405 oz Ag (includes Standard) 2005: (Florida Canyon): 29,186 oz Au, 7,571 oz Ag 2005: (Standard): 21,522 oz Au, 51,751 oz Ag 2006: (Florida Canyon): 16,061 oz Au, 12,423 oz Ag 2006: (Standard): 46,070 oz Au, 64,497 oz Ag 2007: (Florida Canyon): 31,916 oz Au, 28,152 oz Ag 2007: (Standard): 11,814 oz Au, 24,735 oz Ag 2008: (Florida Canyon): 47,095 oz Au, 40,745 oz Ag 2008: (Standard): 2,625 oz Au, 3,644 oz Ag 2009: (Florida Canyon): 44,814 oz Au, 39,760 oz Ag 2009: (Standard): 1,510 oz Au, 3,270 oz Ag 2010: (Florida Canyon): 54,975 oz Au, 39,903 oz Ag 2016: (Florida Canyon and Standard): 10,873.28 oz Au; 21,898.26 oz Ag 2017: 28,157 oz Au, 21,128 oz Ag 2018: 46,878 oz Au, 31,775 oz Ag 2019: 43,305 oz Au, 30,877 oz Ag	Grass Valley Formation	2 Ma

MAJOR PRECIOUS-METAL DEPOSITS, PERSHING COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Florida Canyon (cont.) (Imlay distric)	Main Zone: 28,029,000 tons, 0.01 opt, 267,600 oz Au (proven and probable reserve; 40,877,000 tons, 0.011 opt Au 431,000 oz Au (measured and indicated resource); 521,000 tons 0.019 opt Au, 10,000 oz Au (inferred resource) Jasperoid Hill: 3,120,000 tons, 0.011 opt, 267,600 oz Au (proven and probable reserve); 8,200,000 tons, 0.011 opt Au, 89,000 oz Au (measured and indicated resource); 170,000 tons 0.01 opt Au, 2,000 oz Au (inferred resource); Radio Towers: 20,889,000 tons, 0.013 opt 263,600 oz Au (proven and probable reserve); 35,436,000 tons, 0.013 opt Au 478,000 oz Au (measured and indicated resource); 299,000 tons 0.016 opt Au, 5,000 oz Au (inferred resource)			
Goldbanks (Goldbanks district)	1994: 900,000 oz Au 1996: 80,800,000 tons, 0.019 opt Au (proven and probable reserves); 7.400,000 tons, 0.014 opt Au (possible reserves); 106.800,000 tons, 0.028 opt (Au drill indicated resource) 2000: 569,000 oz Au and 1,700,000 oz Ag indicated reserves 2006: 28,310,000 tons, 0.02 opt Au (inferred resource, Main and KW zones)			
Lincoln Hill (Rochester district)	2010: 17,215,000 tons, 0.02 opt Au, 0.5 opt Ag 2012: Oxide: 3,846,000 tons, 0.012 opt Au, 47,000 oz Au, 0.34 opt Ag, 1,292,000 oz Ag (measured resource); 19,985,000 tons, 0.011 opt Au, 221,000 oz Au, 0.29 opt Ag, 5,648,000 oz Ag (indicated resource); Sulfide: 395,000 tons, 0.015 opt Au 6,000 oz Au, 0.56 opt Ag, 219,000 oz Ag (measured resource grade); 4,878,000 tons, 0.012 opt Au, 60,000 oz Au, 0.5 opt Ag, 2,457,000 oz Ag (indicated resource); Oxide: 8,412,000 tons, 0.008 opt Au, 66,000 oz Au, 0.24 opt Ag, 2,017,000 oz Ag (inferred resource) Sulfide: 7,227,000 tons, 0.014 opt Au, 99,000 oz Au, 0.57 opt Ag, 4,138,000 oz Ag (inferred resource) 2014: Oxide: 4,194,000 tons, 0.014 opt Au, 51,000 oz Au, 0.37 opt Ag, 1,347,000 oz Ag (measured resource); 1,686,000 tons, 0.013 opt Au, 234,000 oz Au, 0.32 opt Ag, 5,914,000 oz Ag (indicated resource); Sulfide: 448,000 tons, 0.017 opt Au 7,000 oz Au, 0.64 opt Ag, 246,000 oz Ag (measured resource) 5,982,000 tons, 0.014 opt Au, 72,000 oz Au, 0.53 opt Ag, 2,741,000 oz Ag (indicated resource); Oxide: 9,702,000 tons, 0.009 opt Au, 74,000 oz Au, 0.27 opt Ag, 2,227,000 oz Ag (inferred resource); Sulfide: 13,250,000 tons, 0.016 opt Au, 182,000 oz Au, 0.52 opt Ag, 5,936,000 oz Ag (inferred resource); 2018: 32,310,000 tons, 0.32 opt Ag, 0.011 opt Au (mineralized material)			
Nevada Packard (Rochester district)	2000: 9,500,000 equivalent oz Ag (reserve) 2013: 35,372,000 tons, 0.56 opt Ag, 19,633,000 oz Ag, 0.002 opt Au, 88,000 oz Au (measured and indicated resource); 6,806,000 tons, 0.47 opt Ag, 3,228,000 oz Ag, 0.003 opt Au, 20,000 oz Au (inferred resource) [NI43-101 compliant] 2017: 36,879,000 tons, 0.53 opt Ag, 19,499,000 oz Ag, 0.003 opt Au, 93,000 oz Au (measured and indicated resource, $1400/oz Au, $20/oz Ag with an NSR Cutoff grade of $2.5/ton oxide and 9,744,000 tons, 0.46 opt Ag, 4,451,000 oz Ag, 0.003 opt Au, 26,000 oz Au (inferred resource)	1913-23: 241,266 tons ore valued at $1,559,319 1981-83: 100,000 oz Ag 2002-2007: 9,400,000 oz Ag 28,700 oz Au	Weaver Rhyolite	

MAJOR PRECIOUS-METAL DEPOSITS, PERSHING COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Relief Canyon (Antelope Springs district)	1983: 9,000,000 tons, 0.032 opt Au 1988: ~ 1,300,000 tons, 0.03 opt Au 1996: 8,600,000 tons, 0.022 opt Au 2013: 32,541,000 tons, 0.017 opt Au (mineralized material) 2014 oxide: 26,698,000 tons, 0.022 opt Au, 534,000 oz Au (measured and indicated resources); 10,124,000 tons, 0.015 opt Au, 157,000 oz Au (inferred resource); Sulfide: 250,000 tons, 0.071 opt Au, 18,000 oz Au (indicated resource); 163,000 tons, 0.048 opt Au, 8,000 oz Au (inferred resource) 2015 Oxide: 36,918,000 tons, 0.02 opt Au, 716,000 oz Au (measured and indicated resources); 6,928,000 tons, 0.01 opt Au,70,000 oz Au (inferred resource); Sulfide: 417,000 tons, 0.054 opt Au, 23,000 oz Au (indicated resource); 2,000 tons, 0.025 opt Au, 40 oz Au (inferred resource); 2016 Oxide: 37,855,000 tons, 0.02 opt Au, 743,000 oz Au (measured and indicated resources); 5,267,000 tons, 0.009 opt Au, 47,000 oz Au (inferred resource); Sulfide: 613,000 tons, 0.057 opt Au, 35,000 oz Au (indicated resource); 16,000 tons, 0.029 opt Au, 500 oz Au (inferred resource) 2017: 30,529,700 tons, 0.021 opt Au, 634,900 oz Au; 14,392,500 tons, 0.113 opt Ag, 1,632,600 oz Ag (proven and probably reserves);, Oxide: 41,086,000 tons, 0.018 opt Au, 751,000 oz Au; 16,786,000 tons, 0.11 opt Ag, ,844,000 oz Ag; (measured and indicated resources); 5,238,000 tons, 0.009 opt Au, 25,000 oz Au; 781,000 tons, 0.066 opt Ag, 52,000 oz Ag (inferred resource); Mixed: 421,000 tons, 0.048 opt Au, 20,000 oz Au; 421,000 tons, 0.234 opt Ag, 98,000 oz Ag (measured and indicated resources); 4,000 tons, 0.018 opt Au, 100 oz Au; 4,000 tons, 0.125 opt Ag, 1,000 oz Ag (inferred resource, 0.01 opt Au cut-off grade); Sulfide: 369,000 tons, 0.02 opt Au, 18,000 oz Au; 369,000 tons, 0.313 opt Ag, 115,000 oz Ag (indicated resource, 0.02 opt Au cut-off grade); 4,000 tons, 0.028 opt Au, 100 oz Au; 4,000 tons, 0.164 opt Ag, 1,000 oz Ag (inferred resource, 0.02 opt Au cut-off grade) [NI43-101 compliant] 2019: 29,949,000 tons, 0.022 opt Au, 653,000 oz Au; 0.038 opt Ag, 1,101,000 oz Ag (proven and probably reserves, $1,300 per oz Au, 0.005 opt Au cut-off grade); 2,482,000 tons, 0.019 opt Au, 47,000 oz Au; 0.035 opt Ag, , 90,000 oz Ag; (measured and indicated resources, $1,300 per oz Au, 0.005 opt Au cut-off grade); 3,412,000 tons, 0.0079 opt Au, 27,000 oz Au; 0.00089 opt Ag, 3,000 oz Ag (inferred resource, $1,300 per oz Au, 0.005 opt Au cut-off grade)	1984: 24,500 oz Au 1987-88: 82,000 oz Au 1989-90: 34,266 oz Au, 39,235 oz Ag 2009: 92 oz Au, 342 oz Ag	Cane Spring Formation, Grass Valley Formation	Tertiary
Rochester (Rochester district)	1981: 75,000,000 tons, 1.5 opt Ag 1989: *geologic resource*-94,500,000 tons, 0.012 opt Au, 1.40 opt Ag 1997: 74,200,000 oz Ag, 603,000 oz Au 2000: 50,000,000 oz Ag, 410,000 oz Au (includes Nevada Packard) 2001: 51,400,000 tons, 0.85 opt Ag, 0.007 opt Au (proven and probable reserves); 61,800,000 tons, 0.75 opt Ag, 0.005 opt Au (mineralized material) 2002: 46,900,000 tons, 0.008 opt Au, 0.85 opt Ag (proven and probable reserves); 33,800,000 tons,	1986-98: 810,329 oz Au, 59,300,000 oz Ag 1999: 70,396 oz Au, 6.200,000 oz Ag 2000: 75,886 oz Au, 6,678,274 oz Ag 2001: 81,200 oz Au, 6,478,916 oz Ag 2002: 71,905 oz Au, 6,417,792 oz Ag 2003: 52,363 oz Au, 5,585,385 oz Ag 2004: 69,456 oz Au,	Koipato Group, Weaver Rhyolite, Rochester Rhyolite	Late Cretaceous

MAJOR PRECIOUS-METAL DEPOSITS, PERSHING COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Rochester (cont.)	0.009 opt Au, 0.77 opt Ag (mineralized material) (includes Nevada Packard) 2003: 32,700,000 tons, 0.01 opt Au, 0.91 opt Ag proven and probable reserves; 40,300,000 tons, 0.01 opt Au, 0.77 opt Ag (mineralized material) 2004: 21,453,000 tons, 0.010 opt Au, 0.87 opt Ag proven reserves; 2,545,000 tons, 0.010 opt Au, 0.81 opt Ag probable reserves; 26,205,000 tons, 0.010 opt Au, 0.81 opt Ag measured resource; 8,551,000 tons, 0.010 opt Au, 0.96 opt Ag indicated resource; 308,000 tons, 0.003 opt Au, 1.73 opt Ag inferred resources 2005: 10,168,000 tons, 0.011 opt Au, 0.86 opt Ag (probable reserves); 15,646,000 tons, 0.010 opt Au, 1.03 opt Ag (measured and indicated resource) 2006: 3,720,000 tons, 0.007 opt Au, 0.66 opt Ag (proven reserves); 15,235,000 tons, 0.010 opt Au, 0.94 opt Ag (measured and indicated resource) 2007: 32,664,000 tons, 0.010 opt Au, 0.86 opt Ag (measured and indicated resource) 2008: 114,058,000 tons, 0.005 opt Au, 0.54 opt Ag (measured and indicated resource) 2010: 48,271,000 tons, 0.005 opt Au, 0.57 opt Ag (proven and probable reserve); 215,602,900 tons, 0.003 opt Au, 0.44 opt Ag (measured and Indicated resource); 21,984,300 tons, 0.003 opt Au, 0.65 opt Ag (inferred resource) 2012: 79,923,000 tons, 0.56 opt Ag, 44,896,000 oz Ag, 0.004 opt Au, 308,000 oz Au (proven and probable reserve); 264,283,000 tons, 0.46 opt Ag, 120,717,000 oz Ag, 0.003 opt Au, 865,000 oz Au (measured and indicated resource) 45,643,300 tons, 0.6 opt Ag, 27,201,000 oz Ag, 0.003 opt Au, 123,000 oz Au (inferred resource) 2013: 187,234,000 tons, 0.54 opt Ag, 101,368,000 oz Ag, 0.004 opt Au, 681,000 oz Au (proven and probable reserve); 141,722,000 tons, 0.44 opt Ag, 61,753, 000 oz Ag, 0.003 opt Au 454,000 oz Au (measured and indicated resource, includes Nevada Packard); 37,365,300 tons, 0.62 opt Ag, 23,295,000 oz Ag,0.003 opt Au, 101,000 oz Au (inferred resource, includes Nevada Packard) 2014: 145,235,000 tons, 0.55 opt Ag, 80,204,000 oz Ag, 0.004 opt Au, 518,000 oz Au (proven and probable reserve, 0.123 opt Au cut-off grade); 173,201,000 tons, 0.44 opt Ag, 0.003 opt Au (mineralized material, 0.41 opt equivalent Ag cut-off grade) NI43-101 compliant] 2015: 150,691,000 tons, 0.53 opt Ag, 79,342,000 oz Ag, (61% metallurgical recovery), 0.003 opt Au, 477,000 oz Au (proven and probable reserve); 140,951,000 tons, 0.48 opt Ag, 0.003 opt Au (mineralized material) 2016: 244,804,000 tons, 0.46 opt Ag, 112,405,000 oz Ag, 0.003 opt Au, 803,000 oz Au (proven and probable reserve); 69,461,000 tons, 0.56 opt Ag, 0.003 opt Au (mineralized material); 2017: 273,427,000 tons, 0.43 opt Ag, 117,623,000 oz Ag, 0.003 opt Au, 757,000 oz Au (proven and probable reserve);); 311,455,000 tons, 0.39 opt Ag, 0.002 opt Au (mineralized material) 2018: 241,579,000 tons, 0.44 opt Ag, 106,199,000 oz Ag, (70% metallurgical recovery), 0.003 opt Au, 684,000 oz Au (92% metallurgical recovery) (proven and probable reserve), 198,994,000 tons, 0.35 opt Ag, 0.002 opt Au (mineralized material) 2019: 263,392,000 tons, 0.45 opt Ag, 117,472,000 oz Ag, 0.003 opt Au, 737,000 oz Au (proven and probable reserve); 236,342,000 tons, 0.35 opt Ag, 0.002 opt Au (mineralized material)	5,669,073 oz Ag 2005: 70,298 oz Au, 5,720,489 oz Ag 2006: 71,891 oz Au, 5,113,504 oz Ag 2007: 50,408 oz Au, 4,614,779 oz Ag 2008: 21,041 oz Au, 3,033,720 oz Ag 2009: 12,633 oz Au, 2,181,788 oz Ag 2010: 9,641 oz Au, 2,023,423 oz Ag 2011: 6,276 oz Au, 1,392,433 oz Ag 2012: 38,071 oz Au, 2,801,501 oz Ag 2013: 30,860 oz Au, 2,798,937 oz Ag 2014: 44,887 oz Au, 4,189,071 oz Ag 2015: 52,588 oz Au, 4,630,739 oz Ag 2016: 50,750 oz Au, 4,564,139 oz Ag 2017: 51,051 oz Au, 4,713,574 oz Ag 2018: 54,388 oz Au, 5,037,983 oz Ag 2019: 35,401 oz Au, 3,761,060 oz Ag		

MAJOR PRECIOUS-METAL DEPOSITS, PERSHING COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Rosebud Project (Rosebud district)	1992: 570,000 oz Au (0.362 opt), 5.500,000 oz Ag (5.5 opt) 1999: 216,000 tons, 0.323 opt Au	1997-98: 225,651 oz Au, 815,123 oz Ag 1999: 112,652 oz Au, 247,900 oz Ag 2000: 47,944 oz Au, 191,919 oz Ag	Tertiary volcanic rocks	Miocene
Spring Valley (Spring Valley district)	2005-2006: 10,030,000 tons, 0.024 opt Au (measured and indicated resource) 7,753,000 tons, 0.025 opt Au (inferred resource) 2007: 50,600,000 tons, 0.0196 opt Au (inferred resource) 2008: 87,750,000 tons, 0.021 opt Au (inferred resource) 2011: 159,641,000 tons, 0.013 opt Au (measured and indicated resource) 114,567,000 tons, 0.017 opt Au (inferred resource) 2014: 222,600,000 tons, 0.019 opt Au, 4,120,000 oz Au (measured and indicated resource, 0.006 opt Au cut-off grade), 62,100,000 tons, 0.016 opt Au, 990,000 oz Au (inferred resource, 0.006 opt Au cut-off grade) [NI43-101 compliant]		Permo-Triassic Koipato Group	
Standard (Imlay district)	2002: 17,200,000 tons, 0.019 opt Au (proven and probable reserves) 2003: 404,100 oz Au (proven and probable reserves) 2004: 25,776,000 tons, 0.017 opt Au (proven and probable reserves) 2010 reserve: 292,000 oz Au; resource: 14,300 oz Au	1939-42, 1946-49: 45,743 oz Au, 127,451 oz Ag 2004-2010: included with Florida Canyon 2011: 41,161 oz Au, 46,896 oz Ag 2012: 43,575 oz Au, 50,983 oz Ag 2013: 46,152 oz Au, 58,333 oz Ag 2014: 40,311 oz Au, 79,231 oz Ag 2015: 21,716 oz Au, 67,687 oz Ag 2016: combined with Florida Canyon 2017: combined with Florida Canyon 2018: combined with Florida Canyon	Natchez Pass Limestone, Grass Valley Formation argillite	
Tag-Wildcat (Farrel district)	1989: 416,000 tons, 0.076 opt Au opt Au (reserves); 1,500,000 tons, 0.043 opt Au (geologic resource) 2003: see Wildcat		Tertiary volcanic rocks	Miocene
Trinity (Trinity district)	1987: 1,000,000 tons, 5.25 opt Ag Sulfide resource: ~4,000,000 tons, 2.5 opt Ag 2012: 19,790,000 tons, 1.07 opt Ag, 21,265,000 oz Ag, 0.217% Pb, 85,987,000 lbs, Pb, 0.354% Zn, 140,253,000 lbs. Zn (inferred resource)	1987-89: ~5-600,000 oz Ag	rhyolite porphyry, rhyolite tuff	26 Ma
Wildcat (Farrel district)	2003: 38,108,000 tons, 0.018 opt Au (indicated resource); 28,355,000 tons, 0.015 opt Au (inferred resource)		Tertiary volcanic	Miocene
Wilco –Colado (Willard district)	2012: Oxide: 6,399,000 tons, 0.009 opt Au 58,000 oz Au, 0.047 opt Ag, 300,000 oz Ag (measured resource, 0.003 opt Au cut-off grade); 37,571,000 tons, 0.008 opt Au, 285,000 oz Au, 0.047 opt Ag, 1,753,000 oz Ag (indicated resource, 0.003 opt Au cut-off grade); Sulfide: 3,449,000		Jurassic-Triassic Auld Lang Syne Group	

MAJOR PRECIOUS-METAL DEPOSITS, PERSHING COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Wilco-Colado (cont.) Willard district	tons, 0.014 opt Au 49,000 oz Au, 0.195 opt Ag, 672,000 oz Ag (measured resource, 0.006 opt Au cut-off grade); 16,864,000 tons, 0.012 opt Au, 197,000 oz Au, 0.162 opt Ag, 2,735,000 oz Ag (indicated resource, 0.006 opt Au cut-off grade); 39,032,000 tons, 0.007 opt gold, 541,000 oz Au, 0.082 opt Ag, 6,100,000 oz Ag (inferred resources)			
Wilco –Section Line (Willard district)	2012: Oxide: 12,279,000 tons, 0.011 opt Au 140,000 oz Au, 0.113 opt Ag, 1,393,000 oz Ag (measured resource, 0.003 opt Au cut-off grade); 23,676,000 tons, 0.008 opt Au, 193,000 oz Au, 0.081 opt Ag, 1,906,000 oz Ag (indicated resource, 0.003 opt Au cut-off grade); Sulfide: 5,558,000 tons, 0.015 opt Au 81,000 oz Au, 0.128 opt Ag, 710,000 oz Ag (measured resource); 20,024,000 tons, 0.014 opt Au, 274,000 oz Au, 0.126 opt Ag, 2,517,000 oz Ag (indicated resource);18,947,000 tons, 0.014 opt gold, 258,000 oz Au,0.154 opt Ag, 2,917,000 oz Ag (inferred resources)		Jurassic-Triassic Auld Lang Syne Group	
Willard (Willard district)	2007: 17,295,000 tons, 0.016 opt Au (oxide, measured and indicated resource) 448,000 tons, 0.070 opt Au (sulfide, measured and indicated resource) 20,849,000 tons, 0.015 opt Au (inferred resource)	Late 1980s to early 1990s: ~90,000 oz Au	Jurassic-Triassic Grass Valley Formation	6 Ma

STOREY COUNTY

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Comstock heap leach project (Comstock district)	1992: 475,000 tons, 0.072 opt Au, 0.60 opt Ag 1996: 100,000 oz Au, 1.200,000 oz Ag			
Comstock Lode (Comstock district)	1980: 10,000,000 tons, 0.08 opt Au, 3.1 opt Ag			
Comstock Mine Project (Comstock/Silver City districts)	2011 (Lucerne and Dayton Resource Areas): 51,260,000 tons, 0.029 opt Au, 1,508,000 oz Au, 0.28 opt Ag, 14,360,000 oz Ag (measured and indicated resource, 0.007 opt Au, cut-off grade) 33,580,000 tons, 0.026 opt Au, 881,000 oz Au, 0.179 opt Ag, 6,030,000 oz Ag (inferred resource); 2013: 61,880,000 tons, 0.029 opt Au, 1,824,000 oz Au, 0.276 opt Ag, 17,100,000 oz Ag (measured and indicated resource); 34,890,000 tons, 0.022 opt Au 758,000 oz Au, 0.166 opt Ag, 5,790,000 oz Ag (inferred resource)	2004-2016: Production under Lucerne Resource Area	Santiago Canyon tuff; Alta Formation	
Flowery (Golden Eagle) (Comstock district)	1989: 100,000 tons, 0.037 opt Au 1993: 362,000 tons, 0.064 opt Au, 0.97 opt Ag, *geologic resource*-88,128 oz Au and 100,000 oz Ag	1988: 836 oz Au, 9,473 oz Ag 1990: 6,000 oz Au, 70,000 oz Ag 1992-97: 16,949 oz Au, 195,701 oz Ag	Alta Formation	12 Ma
Gooseberry (Ramsey district)	1985: 216,505 tons, 0.209 opt Au, 8.08 opt Ag	1978-81: Ore: 235,000 tons, 0.14 opt Au, 7.18 opt Ag 1985: 5,000 oz Au, 225,000 oz Ag	Kate Peak Formation	
Lucerne Resource Area (Comstock Mine Project/Hartford Hill Complex) (Comstock district)	2010 (Billy the Kid and Lucerne Mines: 26,540,000 tons, 0.028 opt Au, 0.354 opt Ag (measured and indicated resource) 12,660,000 tons, 0.023 opt Au, 0.252 opt Ag (inferred resource) 2011 (Billy the Kid, Hartford, and Lucerne Mines): 42,930,000 tons, 0.03 opt Au, 0.293 opt Ag (measured and indicated resource), 26,990,000 tons, 0.027 opt Au, 0.196 opt Ag (inferred resource)	2004: 2,836 oz Au, 12,695 oz Ag 2005: 5,715 oz Au, 26,488 oz Ag 2006: 5,000 oz Au, 20,000 oz Ag (estimated) 2012: 2,588 oz Au, 26,738 oz Ag 2013: 17,739 oz Au, 186,482 oz Ag	Santiago Canyon tuff; Alta Formation	

MAJOR PRECIOUS-METAL DEPOSITS, STOREY COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
		2014: 19,601 oz Au, 222,416 oz Ag 2015: 15,451 oz Au, 221,723 oz Ag 2016: 4,086 oz Au, 75,657 oz Ag		
Oliver Hills (Comstock district)	1990: 3,370,000 tons, 0.054 opt Au, 1.2 opt Ag 1993: 400,000 tons, 0.05 opt Au, 225,000 oz Au, 0.5 opt Ag, 2.2500,000 oz Ag (geologic resource)	1991: 573 oz Au, 6,947 oz Ag		

WASHOE COUNTY

Mountain View Gold Project (Deephole district)	1995: 19,500,000 tons, 0.027 opt Au 1998: 10,700,000 tons, 0.055 opt Au 2002: 23,219,000 tons, 0.013 opt Au indicated resource; 4..46600,000 tons, 0.039 opt Au inferred resource		rhyolite	Miocene
Olinghouse (Olinghouse district)	1994: *geologic resource*-500,000 opt Au, 0.057 opt Au 1997: 512,800 oz Au proven and probable reserves, 0.042 opt Au	1998: 2,912 oz Au, 1,879 oz Ag 1999: 28,655 oz Au, 17,598 oz Ag	Miocene andesite	Miocene
Hog Ranch (Leadville district)	1984: 2,500,000 tons, 0.085 opt Au 1988: 5,500,000 tons, 0.064 opt Au (proven and probable reserves); 20,100,000 tons, 0.029 opt Au (geologic resource) 2003: 1,598,350 tons, 0.033 opt Au (indicated); 440,924 tons, 0.054 opt Au (inferred)	1986-87: 80,000 oz Au 1988-95: 118,045 oz Au, 25,400 oz Ag	rhyolite, explosion breccia sinter	15-16 Ma
Wind Mountain (San Emidio)	1988: 15,000,000 tons, 0.021 opt Au, 0.42 opt Ag 2007: 33,657,553 tons, 0.012 opt Au (measured and indicated resource) 9,758,547 tons, 0.009 opt Au (inferred resource) 2011 Oxide: 58,816,000 tons, 0.1 opt Au, 564,000 oz Au, 0.25 opt Ag, 14,539,000 oz Ag (indicated resource); 19,866,000 tons 0.006 opt Au 125,200 oz Au, 0.17 opt Ag, 3,443,000 oz Ag (inferred resource); Mixed and unoxidized: 498,000 tons, 0.12 opt Au, 5,900 oz Au, 0.4 opt Ag, 197,000 oz Ag (indicated resource); 14,595,000 tons, 0.016 opt Au, 229,100 oz Au, 0.16 opt Ag, 6,672,000 oz Ag (inferred resource)	1989: 30,900 oz Au, 335,000 oz Ag 1991: 91,000 oz Au, 405,000 oz Ag 1992: 54,690 oz Au, 297,403 oz Ag 1993: 19,570 oz Au, 92,630 oz Ag	Tertiary sedimentary rocks	late Tertiary or Quaternary

WHITE PINE COUNTY

Alligator Ridge (Bald Mountain district)	1983: 500,000 tons, 0.09 opt Au 1989: 100,000 tons, 0.064 opt Au 1992: (includes Casino/Winrock) 11.500,000 tons, 0.046 opt Au; 661,888 oz Au (geologic resource)	1981-90: 632,057 oz Au, 84,188 oz Ag 1991-92: 27,450 oz Au 1993: included with Bald Mountain 1994: 40,000 oz Au 1995: idle 1996: included with Bald Mountain	Pilot Shale	Mesozoic or early Tertiary
Bald Mountain (Bald Mountain district)	1989: 6,700,000 tons, 0.069 opt Au 1999: 32,600,000 tons, 0.041 opt Au, (proven and probable reserves); 31,700,000 tons, 0.044 opt Au, (mineralized material) 2000: 509,000 oz Au (proven and probable); 2,030,000 oz Au (measured and indicated resource) 2002: 508,000 oz Au (proven and probable reserves); 2.0300,000 oz Au (measured mineral resource) 2003: 10,143,000 tons, 0.033 opt Au (proven reserves; 8,549,000 tons, 0.040 opt Au (probable	1986: 50,000 oz Au 1988-89: 103,731 oz Au 1990-93: 287,110 oz Au, 76,745 oz Ag 1994: 80,000 oz Au 1995-96: 221,908 oz Au, 62,460 oz Ag 1997-98: 243,500 oz Au, 63,416 oz Ag 1999: 105,475 oz Au, 18,058 oz Ag 2000: 134,469 oz Au,	quartz porphyry, Cambrian shale and limestone	Jurassic?

MAJOR PRECIOUS-METAL DEPOSITS, WHITE PINE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Bald Mountain (cont.) (Bald Mountain district)	reserves; 10,371,000 tons, 0.027 opt Au (measured resource); 10,836,000 tons, 0.043 opt Au indicated resource; 19,224,000 tons, 0.029 opt Au inferred resource 2004: 21,530,000 tons, 0.044 opt Au proven and probable reserves; 53,586,000 tons, 0.027 opt Au measured and indicated resource; 10,808,000 tons, 0.018 opt Au inferred resource 2005 (includes Alligator Ridge): 105,050,700 tons 0.032 opt Au (proven and probable reserves) 35,000,000 tons 0.023 opt Au (measured and indicated resource); 14,868,000 tons, 0.026 opt Au (inferred resource) 2006 (includes Alligator Ridge): 109,922,000 tons, 0.031 opt Au (proven and probable reserves); 23,289,000 tons, 0.035 opt Au (measured and and indicated resource); 17,290,000 tons, 0.023 opt Au (inferred resource) 2007 (includes Alligator Ridge): 128,093,000 tons, 0.024 opt Au (proven and probable reserves); 36,493,000 tons, 0.024 opt Au (measured and indicated resource); 24,648,000 tons, 0.017 opt Au (inferred resource) 2008 (includes Alligator Ridge): 57,675,000 tons, 0.018 opt Au (proven and probable reserves) 90,374,000 tons, 0.019 opt Au (measured and indicated resource); 71,004,000 tons, 0.021 opt Au (inferred resource) 2009 (includes Alligator Ridge): 227,346,000 tons, 0.020 opt Au (proven and probable reserves); 99,338,000 tons, 0.012 opt Au (measured and indicated resource); 40,184,000 tons, 0.012 opt Au (inferred resource) 2010 (includes Alligator Ridge): 246,711,000 tons, 0.019 opt Au (proven and probable reserves); 151,944,000 tons, 0.011 opt Au (measured and indicated resource); 60,636,000 tons, 0.011 opt Au (inferred resource) 2011 (includes Alligator Ridge): 307,162,000 tons, 0.017 opt Au, 5,102,000 contained oz Au (proven and probable reserves); 123,191,000 tons, 0.013 opt Au 1,623,000 oz Au (measured and indicated resource); 72,491,000 tons, 0.011 opt Au, 787,000 oz Au (inferred resource) 2012: 295,559,000 tons, 0.017 opt Au, 5,815,000 contained oz Au (proven and probable reserves); 125,190,000 tons, 0.012 opt Au, 1,472,000 oz Au (measured and indicated resource); 88,864,000 tons, 0.009 opt Au, 762,000 oz Au (inferred resource) 2013: 135,051,000 tons, 0.018 opt Au, 2,460,000 oz Au (proven and probable reserves); 206,436,000 tons, 0.018 opt Au, 3,579,000 contained oz Au (measured and indicated resource); 57,515,000 tons, 0.013 opt Au, 758,000 oz Au (inferred resource) 2014: 66,664,000 tons, 0.024opt Au, 1,361,000 oz Au (proven and probable reserves), 224,118,000 tons, 0.019 opt Au, 4,160,000 oz Au (measured and indicated resource); 32,724,000 tons, 0.016 opt Au, 461,000 oz Au (inferred resourcee) 2015: 54,104,000 tons, 0.021opt Au, 1,142,000 contained oz Au (proven and probable reserves); 190,116,000 tons, 0.019 opt Au, 3,698,000 oz Au (measured and indicated resource); 23,532,000 tons, 0.015 opt Au, 345,000 oz Au (inferred resource) 2016: 121,789,000 tons, 0.018opt Au, 2,133,000 oz Au (proven and probable reserves, cut-off grade $1,200 per oz Au); 221,493,000 tons, 0.015 opt Au, 3,548,000 oz Au (measured and indicated resource); 54,533,000 tons, 0.012 opt Au, 648,000 oz Au (inferred resource); 2017: 104,957,000 tons, 0.018 opt Au, 1,698,000 oz Au (proven and probable reserves, 198,787,000 tons, 0.018 opt Au, 3,349,000 oz Au (measured and indicated resource) 47,735,000 tons, 0.012 opt Au, 597,000 oz Au (inferred resource	14,400 oz Ag 2001: 108,392 oz Au, 18,321 oz Ag 2002: 172,328 oz Au, 21,547 oz Ag 2003: 90,602 oz Au, 26,810 oz Ag 2004: 46,685 oz Au, 27,635 oz Ag 2005: 77,767 oz Au, 32,652 oz Ag 2006: 277,615 oz Au, 32,121 oz Ag 2007: 125,998 oz Au, 21,702 oz Ag 2008: 103,610 oz Au, 15,352 oz Ag 2009: 75,037 oz Au, 12,389 oz Ag 2010: 60,333 oz Au, 15,000 oz Ag 2011: 92,818 oz Au, 14,615 oz Ag 2012: 171,154 oz Au, 40,954 oz Ag 2013: 95,497 oz Au, 29,479 oz Ag 2014: 161,036 oz Au, 48,240 oz Ag 2015: 191,088 oz Au, 26,164 oz Ag 2016: 129,282 oz Au, 864 oz Ag 2017: 281,597 oz Au, 61,728 oz Ag 2018: 284,359 oz Au, 21,793 oz Ag 2019 NOA: 123,684 oz Au, 21,241 oz Ag SOA: 63,901 oz Au, 11,223 oz Ag		

MAJOR PRECIOUS-METAL DEPOSITS, WHITE PINE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Bald Mountain (cont.)	2018: 294,946,000 tons, 0.012 opt Au, 3,036,000 oz Au (proven and probable reserves, cut-off grade 0.005-0.011 opt Au, $1,200 per oz Au); 194,995,000 tons, 0.018 opt Au, 3,294,000 oz Au (measured and indicated resource, cut-off grade $1,400 per oz Au); 69,425,000 tons, 0.012 opt Au, 845,000 oz Au (inferred resource) 2019:70,546,000 tons, 0.018 opt Au, 1,277,000 oz Au (probable reserves, cut-off grade 0.005-0.013 opt Au, 36%-81% recovery); 218,379,000 tons, 0.018 opt Au, 3,862,000 oz Au (measured and indicated resource,); 53,840,000 tons, 0.015 opt Au, 808,000 oz Au (inferred resource)			
Bellview (White Pine district)	1988: 277,000 tons, 0.04 opt Au, *geologic resource*-1,000,000 tons, 0.036 opt Au			
Casino/Winrock (Bald Mountain district)	1989: **Casino**-804,000 tons, 0.054 opt Au; **Winrock** 1,300,000 tons, 0.037 opt Au 1990: **Winrock**-993,000 tons, 39,000 oz Au 1992: *see* Alligator Ridge	1990-92: 46,800 oz Au	late Paleozoic sedimentary rocks	Eocene
Golden Butte (Cherry Creek district)	1989: 4,230,000 tons, 0.031 opt Au	1989-91: 43,519 oz Au, 16,911 oz Ag	Chainman Shale	Cretaceous or Eocene
Gold Rock (Easy Junior/ Nighthawk Ridge) (White Pine district)	1989: 5,680,000 tons, 0.031 opt Au 1991: 137,000 oz Au 1997: 510 oz Au, 76 oz Ag 2011: 14,294,000 tons, 0.022 opt Au, 310,000 oz Au (indicated resource); 19,724,000 tons, 0.017 opt Au, 331,000 oz Au (inferred resource) 2014: 26,241,000 tons, 0.021 opt Au, 540,000 oz Au (measured and indicated resource); 35,416,000 tons, 0.017 opt Au, 596,000 oz Au (inferred resource); 2018: 9,928,000 tons, 0.024 opt Au, 238,700 oz Au (indicated resource, grade); 8,584,000 tons, 0.021 opt Au, 180,900 oz Au (inferred resource) 2020: 20,940,000 tons, 0.019 opt Au, 403,000 oz Au (indicated resource); 3,336,000 tons, 0.025 opt Au, 84,300 oz Au (inferred resource)	1990: 11,500 oz Au, 900 oz Ag 1995-1996: 17,330 oz Au 1997: 510 oz Au, 70 oz Ag	Devonian and Mississippian rocks	Eocene
Green Springs (White Pine district)	1988: 1,250,000 tons, 0.06 opt Au (resource); 500,000 tons, 0.039 opt Au, (additional resource)	1988-91: 63,000 oz Au, 1989-90: 9,000 oz Ag	Upper Joana Limestone	
Griffon (White Pine district)	1993: 60,000 oz Au (geologic resource) 1994: 50,454 oz Au, 0.039 opt Au (geologic resource) 1995: 2,737,000 tons, 0.025 opt Au (proven and probable reserves) 1997: 100,000 oz Au	1998: 37,921 oz Au, 269 oz Ag 1999: 24,740 oz Au	Mississippian Chainman Shale	
Horseshoe (Bald Mountain district)	1991: 1,500,000 tons, 0.039 opt Au		Pilot Shale and intrusive quartz porphyry	36-38 Ma
Illipah (Illipah district)	1987: 57,000 oz Au	1987: ~25,000 oz Au/year 1988: 25,324 oz Au, mining ended 1989: 3,874 oz Au, heap-leached	Paleozoic sedimentary rocks	Eocene?
Limousine Butte (Butte Valley district)	1987: 57,000 oz Au 2009: 10,600,000 tons, 0.023 opt Au, 241,000 oz	1987: ~25,000 oz Au/year 1988: 25,324 oz Au,	Paleozoic sedimentary rocks	Eocene?

MAJOR PRECIOUS-METAL DEPOSITS, WHITE PINE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Limousine Butte (cont.)	Au (measured and indicated resources) 2,500,000 tons, 0.020 opt Au, 51,000 oz Au (inferred resource)	1989: 3,874 oz Au,		
Little Bald Mtn. (Bald Mountain district)	1986: 1,000,000 tons, 0.10 opt Au 1989: 200,000 tons, 0.13 opt Au; *geologic resource*-260,000 tons, 0.127 opt Au 1993: 140,000 tons, 0.13 opt Au, 21,800 oz Au (geologic resource)	1985-88: 21,700 oz Au 1989: 5,500 oz Au, 1,500 oz Ag	Antelope Valley Formation	35-38 Ma
Mt. Hamilton (White Pine district)	1988: 7,700,000 tons, 0.05 opt Au, 0.5 opt Ag 1994: reserve-9,040,000 tons, 0.052 opt Au, 0.38 opt Ag 1996: 10,800,000 tons, 0.038 opt Au, 0.24 opt Ag 1997: 7,720,000 tons, 0.035 opt Au 2009: 12,617,000 tons, 0.031 opt Au, 0.144 opt Ag (measured and indicated resource); 1,491,000 tons, 0.012 opt Au, 0.122 opt Ag (inferred resource) 2011 (Centennial deposit): 22,527,000 tons, 0.022 opt Au, 487,100 oz Au, 0.134 opt Ag, 3,028,200 oz Ag (proven and probable reserves), 23,650,000 tons, 0.022 opt Au, 526,854 oz Au, 0.133 opt Ag,3,152,624 oz Ag (measured and indicated resource); 3,454,000 tons, 0.018 opt Au, 60,859 oz Au, 0.079 opt Ag, 273,457 oz Ag (inferred resource) 2012 (Seligman deposit): 6,960,000 tons, 0.022 opt Au, 154,388 oz Au, 0.097 opt Ag, 676,665 oz Ag (indicated resource); 3,770,000 tons, 0.021 opt Au, 78,044 oz Au, 0.144 opt Ag, 543,671 oz Ag (inferred resource) 2013: 31,880,000 tons, 0.022 opt Au, 687,700 oz Au, 0.19 opt Ag, 6,187,900 oz Ag (measured and indicated resource); 0,330,000 tons, 0.017 opt Au, 178,800 oz Au, 0.16 opt Ag, 1,685,900 oz Ag (inferred resource) 2014: 22,500,000 tons, 0.024 opt Au, 545,400 oz Au, 0.198 opt Ag, 4,459,600 oz Ag (proven and probable reserves); 33,710,000 tons, 0.022 opt Au, 727,000 oz Au, 0.195 opt Ag, 6,569,000 oz Ag (measured and indicated resource); 6,721,000 tons, 0.018 opt Au, 119,000 oz Au, 0.171 opt Ag, 1,153,000 oz Ag (inferred resource)	1995-97: 99,500 oz Au, 207,500 oz Ag	Dunderberg Shale	Cretaceous
Pan (Pancake district)	1989: 241,000 oz Au 1998: 10,860,000 tons, 0.022 opt Au Drill-indicated and inferred 2003: 17,890,000 tons, 0.019 opt Au indicated resource; 7,986,000 tons, 0.016 opt Au inferred resource 2009 (34,650,000 tons, 0.018 opt Au (measured and indicated resource) 1,600,000 tons, 0.017 opt Au (inferred resource) 2010 (42,750,352 tons, 0.016 opt Au (measured and indicated resource); 1,600,000 tons, 0.017 opt Au (inferred resource) 2011: 53,253,000 tons, 0.016 opt gold, 864,220 oz Au (proven and probable reserves); 88,226,224 tons, 0.128 opt Au, 1,129,809 oz Au (measured and indicated resource,); 4,330,080 tons, 0.105 opt Au, 45, 261 oz Au (inferred resource) 2015: Total: 21,196,000 tons, 0.0143 opt gold, 302,400 oz Au (proven and probable reserves,); North Pan: 10,685,000 tons, 0.0148 opt gold, 158,300 oz Au (proven and probable reserves, 0.005 opt Au cut-off grade); Red Hill: 337,000 tons, 0.0337 opt gold, 11,400 oz Au (proven and probable reserves, 0.005 opt Au cut-off grade); Central Pan: 335,000 tons, 0.0132 opt gold, 4,700 oz Au (proven and probable reserves, South Pan: 9,273,000 tons, 0.0131 opt gold, 121,600 oz Au (proven and probable reserves,);	2015: 21,216 oz Au, 680 oz Ag 2016: 8,713,814 Au 2017: 15,652 oz Au 2018: 37,403 oz Au 2019: 40,499 oz Au		

MAJOR PRECIOUS-METAL DEPOSITS, WHITE PINE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Pan (con't)	South Satellite: 546,000 tons, 0.0119 opt gold, 6,500 oz Au (proven and probable reserves, 0.005 opt Au cut-off grade); Pan Mine: 34,157,000 tons, 0.014 opt Au, 477,100 oz Au, (measured and indicated resource, 0.006 opt Au cut-off grade); 9,517,080 tons, 0.012 opt Au, 112,500 oz Au (inferred resource, 0.006 opt Au cut-off grade) [NI43-101 compliant] 2018: 30,434,000 tons, 0.014 opt Au, 432,000 oz contained Au (measured and indicated resource); 8,355,000 tons, 0.013 opt Au, 110,000 oz contained Au (inferred resource)			
Robinson (Robinson district)	1989: 46,000,000 tons, 0.019 opt Au; *geologic resource*-100,000 oz Au 1991: *geologic resource*-20000,000 tons 0.012 opt Au 1999: 194,000,000 tons, 0.59% Cu, 0.007opt Au, proven and probable reserves 2003: 146.300,000 tons, 0.687% Cu, 0.008 opt Au, proven and probable reserves 2005: 160,400,000 tons, 0.69% Cu, 0.073 opt Au (proven and probable reserves) 610,979,000 tons, 0.55% Cu, 0.0064 opt Au (measured resource) 171,858,000 tons, 0.44% Cu, 0.0041 opt Au (indicated resource) 98,166,000 tons, 0.32% Cu, 0.0015 opt Au (inferred resource) 2006: 122,401,000 tons, 0.69% Cu, 0.0076 opt Au (proven and probable reserves) 2007: 103,788,000 tons, 0.68% Cu, 0.0067 opt Au (proven and probable reserves) 2008: 121,693,000 tons, 0.54% Cu, 0.0067 opt Au (proven and probable reserves) 2009: 103,059,000 tons, 0.53% Cu, 0.0062 opt Au (proven and probable reserves) 2010: 121,250,000 tons, 0.50%Cu, 0.0053 opt Au (proven and probable reserves) 716,490,000 tons, 0.33% Cu, 0.0044 opt Au (measured and indicated resource) 154,320,000 tons, 0.29% Cu, 0.0041 opt Au (inferred resource) 2014: 131,586,000 tons, 0.41 % Cu, 1,078,869,000 contained lbs. Cu, 0.005 opt Au, 579,227 contained oz Au (proven and probable reserves); 394,750,000 tons, 0.45 % Cu, 3,565,945,000 contained lbs. Cu, 0.006 opt Au, 2,050,027 contained oz Au (measured and indicated resource); 13,164,000 tons, 0.38% Cu, 100,025,000 contained lbs. Cu, 0.006 opt Au, 389,056 contained oz Au (inferred resource) 2015: Ruth/Ruth East: 124,000,000 tons, 0.416% Cu, 0.0048 opt Au, 0.0238% Mo (remaining reserves 2015-2022)	1986: 48,000 oz Au, 96,000 oz Ag 1987-88: 88,957 oz Au 1989-90: 153,828 oz Au, 121,340 oz Ag 1991: 21,674 oz Au 1992: 35,581 oz Au, 55,000 oz Ag 1993: 13,432 oz Au 1996-98: 196,000 oz Au, 783,500 oz Ag, 370,000,000 lbs Cu 1999: 26,250 oz Au, 153,104 oz Ag, 6,200,000 lbs Cu 2004: 12,228 oz Au, 27,000,000 lbs Cu 2005: 80,941 oz Au, 191,479 oz Ag, 126,000,000 lbs Cu 2006: 75,074 oz Au, 156,839 oz Ag, 121,319,197 lbs Cu, 260,000 lbs Mo 2007: 108,118 oz Au, 179,238 oz Ag, 131,986,134 lbs Cu, 62,033 lbs Mo 2008: 137,628 oz Au, 183,903 oz Ag, 159,684,092 lbs Cu, 78,855 lbs Mo 2009: 99,000 oz Au, 200,819 oz Ag, 122,000,000 lbs Cu, 88,711 lbs Mo 2010: 72,998 oz Au, 245,746 oz Ag, 108,967,015 lbs Cu, 226,688 lbs Mo 2011: 31,969 oz Au, 116,774 oz Ag, 88,893,372 lbs Cu, 1,261,309 lbs Mo 2012: 30,948 oz Au, 225,421 oz Ag, 117,509,548 lbs Cu, 449,001 lbs Mo 2013: 47,452 oz Au, 161,638 oz Ag, 107,898,857 lbs Cu, 1,384,649 lbs Mo 2014: 26,303 oz Au, 86,601,987 lbs Cu 741,717 lbs Mo	Rib Hill Sandstone, Riepe Spring Limestone, intrusions	Cretaceous

MAJOR PRECIOUS-METAL DEPOSITS, WHITE PINE COUNTY (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
Robinson (con't)		86,601,987 lbs Cu 741,717 lbs Mo 2015: 60,360 oz Au, 131,307,031 lbs Cu, 905,061 lbs Mo 2016: 49,217 oz Au, 118,411,099 lbs Cu, 823,659 lbs Mo 2017: 37,897 oz Au, 112,633,426 lbs Cu, 652,763 lbs Mo 2018: 38,990 oz Au, 171, 679 oz Ag, 112,502,784 lbs Cu, 459,959 lbs Mo 2019: 51,277 oz Au, 67,634 oz Ag, 113,132,886 lbs Cu, 786,699 lbs Mo		
Taylor **(Taylor district)**	1980: 10,000,000 tons, 3 opt Ag 1988: 5,920,000 tons, 2.7 opt Ag (resource) 2007: 6,433,000 tons, 2.31 opt Ag (measured and indicated resource) 757,000 tons, 2.54 opt Ag (inferred resource) 2013: 8,894,000 tons, 1.89 opt Ag, 16,820,000 oz Ag (measured and indicated resource, 1 opt Ag cut-off grade); 1,716,000 tons, 2.3 opt Ag 3,941,000 oz Ag (inferred resource) 2018: 3,789,000 tons, 2.89 opt Ag, 10,995,000 oz Ag (measured and indicated resource, 1.6 opt Ag); 180,000 tons, 2.91 opt Ag, 603,000 oz Ag (inferred resource)	1981-1984: 3,800,000 oz Ag, 3,000 oz Au	Guilmette and Joana Limestones, rhyolite dikes	Eocene or Oligocene
White Pine **(White Pine district)**	1989: 63,000 oz Au, 0.04 opt Au	1989: 20,654 oz Au	Pilot Shale	Oligocene?
Yankee **(Bald Mountain district)**	1992: 683,000 oz Au 1993: *see* Bald Mountain	1990: ~15,000 oz Au 1992: 10,800 oz Au	Pilot Shale	36-38 Ma?

Newmont Gold and Silver Production in the Carlin Trend

Production data for individual mines owned by Newmont Gold Co. in the Carlin trend are not available in many cases. Annual production of Newmont operations in the Carlin trend is as follows:

Year		Gold (oz)	Silver (oz)
1988		895,500	NA
1989		1,467,800	117,400
1990		1,676,000	NA
1991		1,575,700	NA
1992		1,588,000	98,000
1993		1,666,400	175,000
1994		1,554,000	158,000
1995		1,634,500	188,000
1996		1,700,000	322,000
1997		1,819,000	118,000
1998		1,575,391	150,400
1999		1,536,401	255,011
2000		1,865,648	108,111
2001		1,547,247	292,241
2002		1,378,782	277,753
2003		1,122,208	206,767
2004		1,287,674	363,052
2005		1,397,583	227,158
2006		1,310,258	169,212
2007		1,322,001	268,875
2008		1,320,019	149,254
2009		1,172,790	225,431
2010		934,282	69,430
2011		917,973	76,938
2012		987,959	192,333
2013	1,020,791	221,256	
2014	907,282		76,614
2015	885,242		92,173
2016	943,823	101,475	
2017	971,613	74,594	
2018	926,789	74,494	
2019	880,615	57,551	

OTHER METALLIC DEPOSITS

by David A. Davis and John L. Muntean

This is a compilation, in progress, of metallic deposits other than gold and silver. Initially, active projects with recently released reserves, resources, and production were included and earlier published data are included as found. The information in this compilation was obtained from the Nevada Division of Minerals and from published reports, articles in mining newsletters, and company websites, annual reports, and press releases. Locations of active mines are shown on page 2, and contact information is listed in the Directory of Mining and Milling Operations.

Deposit name	Metals	Reserves/resources	Production
CHURCHILL COUNTY			
Buena Vista (Mineral Basin district)	Fe	1945: 350,000 tons ore, 30% Fe (reserves); 2013: 111,200,000 tons, 18.6% Fe 20,700,000 contained tons Fe (probable reserve); 148,700,000 tons, 18.8% Fe (indicated resource, 3.1 tons/meter^3); 61,000,000 tons, 19.9% Fe (inferred resource)	1943-52: 563,000 tons ore >57% Fe 1958: 150,000 tons >56% Fe
Segerstrom-Heizer (Mineral Basin district)	Fe	1977: open pit: 35,000,000 tons ore, 54% Fe (reserves); dump: 560,000 tons, 21.5% Fe	1942-55: 650,000 tons 1957-66: >500,000 tons
CLARK COUNTY			
Boulder City (Las Vegas district)	Mn	1949: 1,000,000 tons, 7.5% Mn or 15,000,000 tons, 3% Mn (resource)	
Silver Leaf (Tri-State) (Bunkerville district)	W	1963: 21,000 tons (inferred reserve) 1981: 44,000 tons, 0.35% WO_3, 96,000 tons, 0.3% WO_3 (indicated and inferred resource)	1953-71, 1980: 165 units
Virgin River (Black Mountain district)	Mn	1949: 320,000 tons, 10% Mn (resource, 5% Mn cut-off grade)	
DOUGLAS COUNTY			
Buckskin (Buckskin district)	Cu, Au	1973: 678,400 tons, averaging 0.15 opt Au, 0.45 opt Ag, 1.3% Cu 1978: 561,500 tons, 0.18 opt Au, 0.5 opt Ag, 1.3% Cu	1918-50 intermittent: est 10,000 tons Au, Cu ore
Pine Nut (Gardnerville district)	Mo	2007: 82,000,000 tones, 0.06% Mo	
ELKO COUNTY			
Carlin Vanadium (Carlin district)	V	2010: 28,000,000 tons, 0.515% V_2O_5 (inferred resource) 2019: 24,640,000 tons, 0.615% V_2O_5, 303,000,000 lbs. V_2O_5 (indicated resource, 0.3% V_2O_5 cut-off); 7,190,000 tons, 0.52% V_2O_5, 75,000,000 lbs. V_2O_5 (indicated resource, 0.3% V_2O_5 cut-off)	
Contact (Contact district)	Cu	2009: 33,578,000 tons, 0.293% Cu (proven and probable reserve); 89,551,000 tons, 0.268% Cu (measured and indicated resource); 50,520,000 tons, 0.302% Cu (inferred resource) 2012: 215,710,000,000 tons, 0.25% Cu 1,058,998,000 lbs. Cu (measured and indicated	

OTHER METALLIC DEPOSITS, ELKO COUNTY (continued)

Deposit name	Metals	Reserves/resources	Production
Contact (cont.)		resource, 0.1% Cu cut-off grade); 70,921,000,000 tons, 0.24% Cu, 340,421,000,000 lbs. Cu (inferred resource, 0.1% Cu cut-off grade) 2013: 141,094,000 tons, 0.22% Cu, 611,748,000 lbs. Cu (proven and probable reserve, 0.07% Cu cut-off grade); 3,340,000 tons, 0.18%, 11,905,000 lbs. Cu (inferred resource 2016: 141,094,000 tons, 0.22% Cu, 611,748,000 lbs. Cu (proven and probable reserve); 213,113,000 tons, 0.2% Cu 831,484,000 lbs.Cu (measured and indicated resource), 12,982,000 tons, 0.2%, 52,982,000 lbs. Cu (inferred resource)	
Delano/Cleveland (Delano district)	Pb, Zn	1990: 240,000 tons, 6.43 opt Ag, 5.6% Pb, 3.8% Zn	1908-1969
Hot Spot No. 1 (Mountain City district)	U	1956: 13,200 tons, 0.137% U_3O_8 in eight small deposits (indicated ore)	
Indian Springs (Delano district)	W	1969: 17,400,000 tons, 0.19% WO_3 2007: 10,800,000 tons, 0.171% (indicated resource); 8.200,000 tons, 0.167% WO_3 (inferred resource)	1974: 14 units WO_3
Marshall (Contact district)	Cu	1972: 8,128,115 tons, 2.3% Cu equivalent	1917-30: N/A
Montrose (Alder district)	W	1952: 1,050 tons, 0.25% WO_3 (inferred resource)	
Rio Tinto (Mountain City district)	Cu	1976 Footwall deposit: 600,000 tons, 1% copper (one-third mined)	1931-47: 1,109,878 tons, 9.7% Cu, 0.3 opt Ag, 0.006
Spruce Mountain (Spruce Mountain district)	Cu, Mo	1984 two areas: 105,000,000 tons and 80,000,000 tons (low grade porphyry Cu-Mo resource)	
Victoria (Dolly Varden district)	Cu, Ag	1973: 3,500,000 tons, 2.45% Cu (reserves) 1976 underground: 2,068,650 tons, 3% Cu (proven and probable reserves) 1981: 1,375,425 tons, 2.15% Cu, 0.35 opt Ag (proven and probable reserves)	1975-77: 6,000 tons Cu 1980-81: 124,575 tons, 1.56% Cu, 0.32 opt Ag
Vivian Tunnel (Contact district)	Cu	1930: 4,000,000 tons (commercial ore)	

ESMERALDA COUNTY

Black Horse (Black Horse district)	W, Mo	1982: 300,000 tons, 0.05% WO_3, 0.08% Mo	1940-78 (Intermittant): 6,000 units WO_3
Cucomungo (Tule Canyon district)	Mo	2006 Basalt Cap Zone: 30,000,000 tons, 0.11% MoS_2 (0.066% Mo, drill-indicated resource); Roper Tunnel Zone: 9,000,000 tons 0.125% to 0.25% MoS2 (0.075% to 0.15% Mo, possible resource)	

EUREKA COUNTY

Gibellini (Gibellini district)	V	2011: 19,970,000 tons 0.30% V_2O_5 (proven and probable reserves, Gibellini	

OTHER METALLIC DEPOSITS, EUREKA COUNTY (continued)

Deposit name	Metals	Reserves/resources	Production
Gibellini (con't)		Hill, part of the measured and indicated resource); 23,050,000 tons, 0.29% V_2O_5 (measured and indicated resource, Gibellini Hill); 14,230,000 tons, 0.17% V_2O_5 (inferred resource, reduced material) 2017: 22,010,000 tons 0.294% V_2O_5, 46,550,000 lbs V_2O_5 (measured and indicated resource); 9,820,000 tons, 0.19% V_2O_5, 37,270,000 lbs V_2O_5 (inferred resource) [NI43-101 compliant] 2018: 22,095,000 tons 0.286% V_2O_5, 131,340,000 lbs V_2O_5 (measured and indicated resource, 14,970,000 tons, 0.175% V_2O_5, 52,300,000 lbs V_2O_5 (inferred resource),	
Lone Mountain (North) **(Lone Mountain district)**	Pb, Zn	2018: 3,257,000 tons 0.7% Pb, 7.57% Zn 543,000,000 lbs Zn (inferred resource)	
Louie Hill **(Gibellini district)**	V	2017: 7,060,000 tons 0.284% V_2O_5, 40,160,000 lbs V_2O_5 (inferred resource) 2018: 7,520,000 tons 0.276% V_2O_5, 41,490,000 lbs (inferred resource)	
Mount Hope **(Mount Hope district)**	Mo	2007: 965,926,000 tons 0.068% Mo (proven and probable reserves); 109,641,000 tons, 0.030% Mo (measured and indicated resource); 191,308,000 tons, 0.063% Mo (inferred resource) 2014: 984,602,000 tons 0.07% Sulfide Mo (proven and probable reserves); 65,243,000 tons, 0.033% Sulfide Mo (measured and indicated resource); 111,261,000 tons, 0.056% Sulfide Mo (inferred resource)	

HUMBOLDT COUNTY

Alpine (Porvenir) **(Potosi district)**	W	1946: 10,000 tons, 0.475% WO_3 (estimated and inferred reserve)	1943: 8,000 tons, 0.5% WO_3 1942-43, 1952-53: est. 24,000 units WO_3
Ashdown **(Vicksburg district)**	Mo	1983: 10,000 tons molybdenite on dump 2006 (Sylvia Vein): 21,550 tons, 8% Mo	2006: 10,500 lbs Mo 2007: 247,466 lbs Mo 2008: 202,597 lbs Mo 2009: 214,714 lbs Mo 2010: 189,035 lbs Mo 2011: 648,853 lbs Mo 2012: 44,092 lbs Mo
Cordero **(Opalite district)**	Ga	2007: 1000,000 tons, 47.7 ppm Ga (measured and indicated resource); 6.600,000 tons, 43.7 ppm Ga (inferred resource)	
Granite Creek **(Potosi district)**	W	1946: 118,000 tons, 0.48% WO_3 (measured, indicated, and inferred reserve)	1942-44: 88,000 tons, 0.5% WO_3 1942-46, 1950-57: 149,100 units WO_3
Kings Valley **(Disaster district)**	U	2006: 2,978,000 tons, 0.081% U_3O_8 (inferred resource)	
Kirby **(Potosi district)**	W	1946: 5,500 tons, 0.42% WO_3 (measured, indicated, and inferred reserve)	<1943: 32,000 tons, 0.43% WO_3 1943, 1950-51: est. 25,000 units WO_3
Knight **(Potosi district)**	W	1946: 2,100 tons, 0.52% WO_3 (estimated and inferred reserve)	
Markus **(Potosi district)**	W	1946: 7,650 tons, 0.4% WO_3 (measured, indicated, and inferred reserve)	1956-57: 100,000 units WO_3

OTHER METALLIC DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Metals	Reserves/resources	Production
McDermitt (Opalite district)	Hg	1982: 1,325,000 tons, 10 lbs per ton Hg (measured reserve)	1974-90: N/A
Pacific (Getchell) (Potosi district)	W	1946: 40,000 tons, 0.5% WO_3 (estimated and inferred reserve)	1951-1956: est. 150,000 units WO_3
Richmond (Potosi district)	W	1946: 20,000 tons, 0.5% WO_3 (estimated and inferred reserve)	1942-43: 30,000 tons, 0.5% WO_3 1942-43, 1954: 15,100 units WO_3
Riley (Dernan) (Potosi district)	W	1946: 578,500 tons, 0.7% WO_3 (estimated and inferred reserve)	1943-45: 88,000 tons 1943-57: est. 337,000 units WO_3
Uranium Lode Star (Virgin Valley district)	U	1984: 15 to 20,000,000 tons low grade uranium-bearing material ("submarginal" resource)	
Valley View (Saunders) (Potosi district)	W	1945: 56,000 tons, 0.49% WO_3 (estimated and inferred reserve)	<1945: 1,500 tons 1942-44, 1951-1956: est. 37,680 units WO_3

LANDER COUNTY

Deposit name	Metals	Reserves/resources	Production
Apex (Reese River district)	U	2006: 1,119,928 tons, 0.07% U_3O_8 (inferred resource)	1954-60, 1963-66: 106,000 lbs. U_3O_8
Black Eagle (Jersey district)	Mn	1942: 49,000 tons, 12.27% Mn (assured); 70,000 tons, 11.96% Mn (assured and probable); 83,500 tons, 11.68% Mn (assured, probable, and possible)	
Black Rock (Buffalo Valley district)	Mn	1942: 16,650 tons, 15.1% Mn (assured); 30,000 tons, 14.1% Mn (assured and probable); 42,600 tons, 12.7% Mn (assured, probable, and possible)	1942-47: 11,150 tons, 13.5-39.9% Mn 1950-53: 10,126 tons ore
Buckingham (Battle Mountain district)	Mo	1984: 1.1 billion tons, 0.06% MoS_2 (resource)	
Phoenix (Battle Mountain district)	Cu	2007: 279,600,000 tons, 0.13% Cu (proven and probable reserves); 91,300,000 tons, 0.16% Cu (measured and indicated resource); 23,900,000 tons, 0.16% Cu (inferred resource) 2008: 302,000,000 tons, 0.15% Cu (proven and probable reserves); 91,700,000 tons, 0.20% Cu (measured and indicated resource); 95,953,000 tons, 0.23% Cu (inferred resource) 2009: 287,500,000 tons, 0.16% Cu(proven and probable reserves); 199,687,000 tons, 0.18% Cu (measured and indicated resource); 91,815,000 0.23% Cu (inferred resource) 2010 (non-leach): 332,600,000 tons, 0.15% Cu (probable reserve, 61% recovery); 150,900,000 tons, 0.13% Cu (indicated resource); 56,600,000 0.12% Cu (inferred resource) 2010 (leach): 132,900,000 tons, 0.23% Cu (probable reserve, 53% recovery); 25,900,000 tons, 0.19% Cu (indicated resource); 45,900,000 tons, 0.22% Cu (inferred resource) 2011 (non-leach): 450,300,000 tons, 0.15% Cu, 1,300,000,000 lbs. Cu (proven and probable reserve, 61% recovery); 216,400,000 tons, 0.09% Cu (indicated resource); 132,300,000 tons, 0.1% Cu (inferred resource)	2006: 6,235,096 lbs Cu 2007: 10,808,206 lbs Cu 2008: 15,853,706 lbs Cu 2009: 23,733,389 lbs Cu 2010: 19,008,818 lbs Cu 2011: 23,897,865 lbs Cu 2012: 27,809,189 lbs Cu 2013: 29,815,908 lbs Cu 2014: 46,014,331 lbs Cu (See Major Precious Metal Deposits also) 2015: 46,330,821 lbs Cu (See Major Precious Metal Deposits also) 2016: 41,806,950 lbs Cu (See Major Precious Metal Deposits also) 2017: 33,178,523 lbs Cu (See Major Precious Metal Deposits also) 2018: 32,102,979 lbs Cu (See Major Precious Metal Deposits also) 2019: 30,585,072 lbs Cu (See Major Precious Metal Deposits also)

OTHER METALLIC DEPOSITS, LANDER COUNTY (continued)

Deposit name	Metals	Reserves/resources	Production
Phoenix (cont.)		2012 Mill: 443,200,000 tons, 0.15% Cu, 1,290,000,000 lbs Cu, (proven and probable reserve, 61% recovery); 198,100,000 tons, 0.08% Cu, 310,000,000 lbs Cu (measured and indicated resource); 119,600,000 tons, 0.1% Cu, 230,000,000 lbs Cu (inferred resource); (leach): 177,100,000 tons, 0.24% Cu, 850,000,000 lbs Cu, (probable reserve, 58% recovery); 22,300,000 tons, 0.25% Cu 120,000,000 lbs Cu (measured and indicated resource); 16,900,000 tons, 0.2% Cu, 70,000,000 lbs Cu (inferred resource) 2013 Mill: 339,100,000 tons, 0.14% Cu, 940,000,000 lbs Cu, (proven and probable reserve, 160,800,000 tons, 0.22% Cu, Leach: 710,000,000 lbs Cu, (probable reserve), 499,900,000 tons, 0.17% Cu, 1,650,000,000 lbs Cu, (proven and probable reserve,); 220,500,000 tons, 0.14% Cu (mineralized material) 2014 Mill: 324,900,000 tons, 0.14% Cu, 940,000,000 lbs Cu, (proven and probable reserve, 58% metallurgical recovery); Leach: 211,700,000 tons, 0.19% Cu, 790,000,000 lbs Cu, (probable reserve); Total: 536,500,000 tons, 0.16% Cu, 1,730,000,000 lbs Cu (probable reserve, 89,100,000 tons, 0.13% Cu (mineralized material) 2015 Mill: 289,500,000 tons, 0.14% Cu, 840,000,000 lbs Cu, (proven and probable Reserve); Leach): 237,900,000 tons, 0.19% Cu, 910,000,000 lbs Cu, (proven and probable reserve); Total: 527,400,000 tons, 0.17% Cu, 1,750,000,000 lbs Cu (proven and probable reserve); 199,400,000 tons, 0.12% Cu (mineralized material) [NI43-101 compliant] 2016: 395,500,000 tons, 0.16% Cu, 1,260,000,000 lbs Cu, (proven and probable reserve); 257,000,000 tons, 0.13% Cu (mineralized material) 2017: 394,700,000 tons, 0.17% Cu, 1,330,000,000 lbs Cu, (proven and probable reserve); 289,200,000 tons, 0.13% Cu (mineralized material) 2018: 243,100,000 tons, 0.18% Cu, 890,000,000 lbs Cu, (proven and probable reserve, 196,200,000 tons, 0.14% Cu (mineralized material) 2019: 286,700,000 tons, 0.18% Cu, 992,000,000 lbs Cu, (proven and probable reserve); 513,400,000 tons, 0.16% Cu, 1,789,000,000 lbs Cu, (measured and indicated resource, 32,300,000 tons, 0.14% Cu, 111,000,000 contained lbs Cu (inferred resource variable cut-off grades	

LINCOLN COUNTY

Andies Mine (Tem Piute district)	Hg	1964: 64,000 tons, 2.13 lbs. per ton (indicated)	
Groom Mine (Groom district)	Pb, Zn	1963: Reserve: 30,000 tons, 0.5 opt Ag, 4-5% Pb (reserve)	1915-26: Concentrates: 6,145 tons, 100,341 oz Ag, 5,926,371 lbs. Pb 1915-37: 5,737 tons ore valued at $367,325
Pan American (Comet district)	Pb, Zn	1982: 2,196,000 tons, 1.17% Pb, 2.45% Zn, (proven reserve)	1947-78: N/A

LYON COUNTY

Deposit name	Metals	Reserves/resources	Production
Ann Mason (Yerington district)	Cu	2010: 1,409,960,000 tons, 0.336% Cu, (inferred resource) 315,220,000 tons, 0.485% Cu, (inferred resource) (2 separate calculated resources)	
	Cu, Mo	2012: 1,253,000,000 tons, 0.33% Cu, 8,150,000,000 lbs. Cu, 0.006% Mo, 150,000,000 lbs. Mo; 0.0006 opt Au, 0.017 opt Ag (indicated resource); 962,000,000 tons, 0.29% Cu, 5,590,000,000 lbs. Cu, 0.004% Mo, 80,000,000 lbs. Mo; 0.0009 opt Au, 0.019 opt Ag (inferred resource)	
	Cu, Mo	2015: 1,540,000,000 tons, 0.32% Cu, 9,890,900,000 lbs. Cu, 0.006% Mo, 186,600,000 lbs. Mo; 0.0009 opt Au, 1,130,000 oz Au, 0.019 opt Ag 29,460,000 oz Ag (indicated resource); 699,600,000 tons, 0.29% Cu, 3,987,200,000 lbs. Cu, 0.007% Mo, 96,200,000 lbs. Mo; 0.0009 opt Au, 580,000 oz Au, 0.019 opt Ag 13,160,000 oz Ag (inferred resource grade)	
Blue Hill (Yerington district)	Cu, Mo	2012: Oxide Zone: 52,290,000 tons, 0.17% Cu, 179,370,000 lbs. Cu; Mixed Zone: 27,220,000 tons, 0.18% Cu, 98,120,000 lbs. Cu (inferred resource); Sulfide Zone: 54,960,000 tons, 0,23% Cu, 253,460,000 lbs. Cu, 0.005% Mo, 0.0003 opt Au, 0.009 opt Ag (inferred resource)	
MacArthur (Yerington district)	Cu	2008: 57,365,000 tons, 0.239% Cu, (measured and indicated resource, oxide and chalcocite material) 75,832,000 tons, 0.283% Cu, (inferred resource, oxide and chalcocite material)	1995-97: N/A
		2010: 143,721,000 tons, 0.192% Cu (measured and indicated resource, oxide and chalcocite material); 215,043,000 tons, 0.197% Cu (inferred resource, oxide and chalcocite material); 74,090,000 tons, 0.256% Cu (inferred resource, primary sulfide material, 0.15% Cu cut-off grade)	
		2011: 159,094,000 tons, 0.212% Cu, 675,513,000 lbs. Cu (measured and indicated resource, oxide and chalcocite material, 0.12% Cu cut-off grade) 243,417,000 tons, 0.201% Cu, 979,510,000 lbs. Cu (inferred resource, oxide and chalcocite material, 0.12% Cu cut-off grade) 1,098,000 tons, 0.292% Cu, 6,408,000 lbs. Cu (measured and indicated resource, primary sulfide material, 0.15% Cu cut-off grade) 134,900,000 tons, 0.283% Cu 764,074,000 lbs. Cu (inferred resource, primary sulfide material, 0.15% Cu cut-off grade)	
Pumpkin Hollow (Yerington district)	Cu, Fe,	2007: 342,735,000 tons, 0.579% Cu, 0.0019 opt Au, 0.0700 opt Ag, 15.67% Fe (measured and indicated resource); 438,164,000 tons, 0.446% Cu, 0.0015 opt Au, 0.0700 opt Ag, 10.23% Fe (inferred resource)	
	Cu	2009 (0.2% Cu cut-off grade): 488,228,000 tons, 0.58% Cu, 0.002 opt Au, 0.069 opt Ag (measured and indicated resource); 440,826,000 tons, 0.42% Cu, 0.001 opt Au, 0.048 opt Ag (inferred resource)	
	Fe	2009 306,420,000 tons, 30.04% Fe (measured and indicated resource); 440,138,000 tons, 20.67% Fe (inferred resource)	
	Cu	2010: 531,042,000 tons, 0.55% Cu, 0.003 opt Au, 0.079 opt Ag (total measured and indicated resource, 0.2% Cu cut-off grade) 495,129,000 tons, 0.37% Cu, 0.001 opt Au, 0.044 opt Ag (total inferred resource, 0.2% Cu cut-off grade) 33,544,000 tons, 1.74% Cu, 0.010 opt Au, 0.244 opt Ag (measured and indicated resource, Eastern underground deposits) 249,155,000 tons, 0.6% copper, 0.002 opt gold, 0.067opt	

OTHER METALLIC DEPOSITS, LYON COUNTY (continued)

Deposit name	Metals	Reserves/resources	Production
Pumpkin Hollow (con't.)		Ag (measured and indicated resource, western open pittable deposits, 0.3% Cu cut-off grade)	
	Fe	2010: 340,898,000 tons, 32.59% Fe (measured and indicated resource, western open pittable deposits); 29,769,000 tons, 25.6% Fe (inferred resource, Western open pittable deposits	
	Cu, Au, Ag	2011 Western open pit deposits: 560,599,000 tons, 0.39% Cu, 4,311,274,000 lbs. Cu, 0.002 opt Au, 1,061,000 oz Au, 0.053 opt Ag, 29,689,000 oz Ag (measured and indicated resource); 387,757,000 tons, 0.3% Cu, 12,288,414,000 lbs. Cu, 0.001opt Au, 385,000 oz Au, 0.039 opt Ag, 14,960,000 oz Ag (inferred resource) Eastern underground deposits: 50,589,000 tons, 1.45% Cu, 1,459,824,000 lbs. Cu, 0.009 opt Au, 449,000 oz Au, 0.213 opt Ag, 10,817,000 oz Ag (measured and indicated resource, 0.75% Cu cut-off grade) 12,098,000 tons, 1.11% Cu, 267,533,000 lbs. Cu, 0.002 opt Au, 24,000 oz Au 0.065 opt Ag, 792,000 oz Ag (inferred resource, 0.75% Cu cut-off grade)	
	Fe	2011: Western open pit deposits: 340,898,000 tons, 32.59% Fe, 71,162,000 tons Fe (measured and indicated resource, western, 20% Fe cut-off grade)	
	Cu, Au, Ag	2012 Western open pit deposits: 732,056,000 tons, 0.37% Cu, 5,448,225,000 lbs. Cu, 0.001 opt Au, 981,000 oz Au, 0.046 opt Ag, 34,034,000 oz Ag (measured and indicated resource, 0.15% Cu cut-off grade) 225,073,000 tons, 0.31% Cu, 1,388,107,000 lbs. Cu, 0.001 opt Au, 219,000 oz Au 0.041 opt Ag, 9,296,000 oz Ag (inferred resource, 0.15% Cu cut-off grade) East underground deposits: 27,645,000 tons, 1.49% Cu, 820,000,000 lbs. Cu, 0.008 opt Au, 220,765 oz Au, 0.17 opt Ag, 4,710,391 oz Ag (proven and probable reserve); E2 underground deposits: 8,132,000 tons, 1.65% Cu, 269,000,000 lbs. Cu, 0.006 opt Au, 50,920 oz Au, 0.186 opt Ag, 1,512,862 oz Ag (proven and probable reserve)	
	Fe	2012: Western open pit deposits: 400,226,000 tons, 32.2% Fe, 128,899,000 tons Fe (measured and indicated resource),	
	Cu, Au, Ag	2013: Open-Pit Reserve: 528,186,000 tons, 0.377% Cu, 4,132,720,000 lbs. Cu, 0.001 opt Au, 718,000 oz Au, 0.048 opt Ag, 26,694,000 oz Ag (proven and probable reserves) Western open pit deposits: 732,056,000 tons, 0.37% Cu, 5,448,225,000 lbs. Cu, 0.001 opt Au, 937,000 oz Au, 0.047 opt Ag, 34,666,000 oz Ag (measured and indicated resource); 225,073,000 tons, 0.31% Cu, 1,392,266,000 lbs. Cu, 0.001 opt Au, 198,000 oz Au, 0.039 opt Ag, 8,755,000 oz Ag (inferred resource)	
	Fe	2013: Western open pit deposits: 242,957,000 tons, 32.8% Fe, 79,738,000 tons Fe (measured resource); 152,265,000 tons, 31% Fe, 47,2126,000 tons Fe (indicated resource); 118,334,000 tons, 29% Fe, 34,270,000 tons Fe (inferred resource)	
	Cu, Au, Ag, Fe	2015: Western Open-Pit Area: 539,285,000 tons, 0.39% Cu, 4,210,511,000 lbs. Cu, 0.001 opt Au, 591,590 oz Au, 0.044 opt Ag, 23,939,204 oz Ag (proven and probable reserves); 566,400,000 tons, 0.43% Cu, 4,840,000,000 lbs. Cu, 0.001 opt Au, 750,000 oz Au, 0.042 opt Ag, 26,621,000 oz Ag, 13.6% Fe, 76,800,000 tons Fe (measured and indicated resource); 8,000,000 tons, 0.52% Cu, 83,000,000 lbs. Cu, 0.001 opt Au, 6,000 oz Au, 0.052 opt Ag, 414,000 oz Ag, 6.1% Fe, 500,000 tons Fe (inferred resource); Eastern Underground Area: 32,603,000tons, 1.287% Cu, 839,158,000 lbs. Cu, 0.005 opt Au, 168,995 oz Au, 0.113 opt Ag, 3,697,769 oz Ag (proven and probable reserves), 4,100,000 tons, 1.39% Cu, 1,503,000,000 bs. Cu, 0.005 opt	

OTHER METALLIC DEPOSITS, LYON COUNTY (continued)

Deposit name	Metals	Reserves/resources	Production
Pumpkin Hollow (con't.)		Au, 291,000 oz Au, 0.116 opt Ag, 6,257,000 oz Ag, 17.8% Fe, 9,600,000 tons Fe easured and indicated resource); 29,200,000 tons, 1.09% Cu, 636,000,000 lbs. Cu, 0.003 opt Au, 87,000 oz Au, 0.064 opt Ag, 1,875,000 oz Ag, 12.8% Fe, 3.700,000 tons Fe (interred resource)	
	Cu, Au, Ag	2019: Westernopen pits: 385,700,000 tons, 0.47% Cu, 3,590,000,000 lbs. Cu, 0.002 opt Au, 617,000 oz Au, 0.055 opt Ag, 21,266,000 oz Ag (proven and probable reserves); 553,000,000 tons, 0.452% Cu, 5,000,000,000 lbs. Cu, 0.002 opt Au, 879,000 oz Au, 0.054 opt Ag, 29,778,000 oz Ag (measured and indicated resource); 28,000,000 tons, 0.358% Cu, 197,000,000 lbs. Cu, 0.001 opt Au, 37,000 oz Au, 0.04 opt Ag, 1,088,000 oz Ag (inferred resource)	
Yerington (Yerington district)	Cu	2011: 18,391,000 tons, 0.23% Cu, 85,886,000 lbs. (measured and indicated resource, oxide and chalcocite material); 24,703,000 tons, 0.2% Cu, 97,873,000 lbs. Cu (inferred resource, oxide and chalcocite material,); 102,526,000 tons, 0.26% Cu, 531,495,000 lbs. Cu (measured and indicated resource, primary material); 0,104,000 tons, 0.2% Cu 629,209,000 lbs.Cu (inferred resource)	1952-79: 1,744,000,000 lbs. Cu
	Cu	2013: Oxide and Chalcocite Material Zone 30: 23,500,000 tons, 0.25% Cu, 118,000,000 lbs. Cu (measured and indicated resource, 0.12% Cu cut-off grade); 25,900,000 tons, 0.23% Cu, 118,000,000 lbs. Cu (inferred resource, 0.12% Cu cut-off grade); Sulfide or Primary Material Zone 40: 105,000,000 tons, 0.3%Cu, 633,000,000 lbs. Cu (measured and indicated resource); 128,000,000 tons, 0.23% Cu 600,000,000 lbs.Cu (inferred resource)	

MINERAL COUNTY

Desert Scheelite (Pilot Mtns. district)	W, Cu, Ag	2012: 6,710,000 tons, 0.31% WO_3, 0.71 opt Ag, 0.16% Cu (indicated resource, 0.2% WO_3 cut-off); 770,000 tons, 0.3% WO_3, 0.28 opt Ag, 0.24% Cu (inferred resource	
	W, Cu, Ag	2017: 9,270,000 tons, 0.27% WO_3, 24,802 tons contained W, 0.62 opt Ag, 197 tons contained Ag, 0.14% Cu, 13,000 tons Cu (indicated resource); 1,642,000 tons, 0.33% WO_3, 3,780 tons W, 0.26 opt Ag, 14 tons 0.17% Cu, 2,756 tons Cu (inferred resource)	
	W, Cu, Ag, Zn	2018: 9,930,000 tons, 0.26% WO_3, 25,800 tons contained WO_3, 0.61 opt Ag, 206 tons contained Ag, 0.15% Cu, 14,550 tons Cu, 0.41% Zn, 40,900 tons Zn (indicated resource); 1,862,000 tons, 0.25% WO_3, 0.57 opt Ag, 23 tons contained Ag, 0.16% Cu, 17,600 tons Cu, 0.38% Zn, 3,500 tons Zn (inferred resource_	
Dunlap (Pilot Mtns. district)	Cu	1941: 175,000 tons, low grade ore	
Garnet (Pilot Mtns. district)	W	2017: 2,017,000 tons, 0.36% WO_3, 0.36% WO_3, 7,264 tons contained W (inferred resource),	
M2 (Marietta district)	Cu	2017: North Zone: 4,315,218 tons, 0.525% Cu 45,308,940 lbs. Cu (indicated resource); 14,412,385 tons, 0.525% Cu, 151,330,360 lbs. Cu (inferred resource)	
	Cu	2018: 1,690,000 tons, 0.45% Cu 15,150,000 lbs. Cu (indicated resource) 3,030,000 tons, 0.44% Cu, 26,900,000 lbs. Cu (inferred resource)	

OTHER METALLIC DEPOSITS, NYE COUNTY

Deposit name	Metals	Reserves/resources	Production
New York Canyon (Santa Fe district)	Cu	2010: 26,250,000 tons, 0.43% Cu (indicated resource 2,900.000 tons, 0.31% Cu (inferred resource	
Pine Tree (Pilot Mtns. district)	Mo, Cu, Ag	2011: 240,840,000 tons, 0.04% MoS_2, 173,000,000 lbs. MoS_2, 0.09% Cu, 428.700,000 lbs. Cu, 0.044 opt Ag, 10.6800,000 oz Ag (indicated resource) 196,760,000 tons, 0.3% MoS_2, 106.200,000 lbs. MoS_2, 0.09% Cu, 324.400,000 lbs. Cu, 0.039 opt Ag, 7.7800,000 oz Ag (inferred resource)	
B and C Springs (Paradise Peak district)	Mo, Cu	1983: 131,000,000 tons, 0.12% Mo 2007 Open pit: 105,902,046 tons, 0.048% Mo, 101,126,000 lbs. Mo., 0.068% Cu, 144,282,000 lbs Cu (indicated resource); Underground: 2,846,524 tons, 0.234% Mo, 0.334% Cu (indicated resource)	
Bisoni McKay (Gibellini district)	V	2008: Area A North: 8,073,844 tons, 0.43% V_2O_5 (indicated resource); Area A North: 4,744,214 tons, 0.48% V_2O_5 (inferred resource); Area A South: 5,490,356 tons, 0.48% V_2O_5 (inferred resource) 2015: Area A North Oxide: 5,623,556 tons, 0.347% V_2O_5; Area A Reduced: 7,447,730 tons, 0.429% V_2O_5 (indicated resource); Area A Oxide: 773,522 tons, 0.374% V_2O_5; Area A Reduced: 521,468 tons, 0.378% V_2O_5 (inferred resource: Area A North and South Combined Oxide: 4,579,268 tons, 0.347% V_2O_5; Reduced: 7,300,322 tons, 0.429% V_2O_5 (indicated resource); xide: 2,893,104 tons, 0.324% V_2O_5; O Reduced: 54,952 tons, 0.498% V_2O_5 (inferred resource)	
Liberty (formerly known as Hall-Tonopah) (San Antone district)	Mo	2007: 432,951,000 tons, 0.071% Mo, 0.07% Cu (proven and probable reserves); 109,336,000 tons, 0.052% Mo, 0.11% Cu (measured and indicated resource); 127,200,000 tons, 0.051% Mo, 0.08% Cu (inferred resource)	1982-91: 50,000,000 tons, 0.11% Mo
	Mo, Cu	2011: 541,420,000 tons, 0.068% Mo, 0.08% Cu (proven and probable reserves); 105,194,000 tons, 0.052% Mo, 0.05% Cu (measured and indicated resource); 252,647,000 tons, 0.04% Mo, 0.13% Cu (inferred resource)	
	Mo, Cu	2014: 309,216,000 tons, 0.078% Mo, 482,000,000 lbs Mo, 0.098% Cu, 606,000,000 lbs. Cu (proven and probable reserves); 566,159,000 tons, 0.067% Mo, 762,200,000 lbs. Mo; 0.084% Cu, 956,400,000 lbs. Cu (measured and indicated resource); 148,598,000 tons, 0.052% Mo,154,500,000 lbs. Mo, 0.115% Cu, 341,800,000 lbs. Cu (inferred resource))	
Tonopah (San Antone district)	Cu	1999: 98,000,000 tons, 0.343% Cu (proven reserve); 137,800,000 tons, 0.314% Cu (resource)	1999-2001: N/A

PERSHING COUNTY

Big Mike (Tobin and Sonoma Range)	Cu	1969: sulfide: 74,000 tons, 11.78% Cu; oxide and mixed oxide: 380,000 tons, 3.16% Cu; total: 634,000, tons, 3.41% Cu	1970: 25,000,000 lbs Cu from 100,000 tons, 10.5% Cu
Black Diablo (Black Diablo district)	Mn	1942: 75,000 tons, 30% Mn; 75,000 tons, 5-8% Mn 572,930,865 units (possible ore); 55,934,000 tons, 24.95% Fe, 1,396,056,000 units (prospective ore); 123,008,703 tons, 26.83% Fe, 3,300,008,703 units (total)	1929-54: 5,497 long tons, 36.3% Mn; 54,485 long tons, 28.5% Mn

OTHER METALLIC DEPOSITS, PERSHING COUNTY (continued)

Deposit name	Metals	Reserves/resources	Production
Buena Vista (Mineral Basin district)	Fe	1958: 45,517,153 tons, 29.24% Fe, 1,331,035,114 units (assured ore); 21,557,550 tons, 26,57% Fe,	
Fencemaker (Table Mountain district)	Sb	1981: 100,000 tons (probable reserve) 400,000 tons (possible reserve) 2012: 34,125 tons, 2.92% Sb (inferred resource)	1880s: 1 ton Sb metal 1940: 2 tons ore, 50% Sb 1966-81: N/A 2013-2014: 500 tons ore
Gold Banks (Goldbanks district)	Hg	1965: 71,000 tons, 5.87 lbs. per ton (probable); 24,000 tons, 8.07 lbs. per ton (possible)	
Hollywood (Antelope Springs district)	Sb	1950s: 2,200 tons, 6.5% Sb, 286,000 lbs. Sb (milling ore reserve); 500 tons, 7% Sb, 70,000 lbs. Sb (indicated)	World War I, 1939-41, 1951, 1967: 523 tons Sb
Humboldt (Mill City district)	W	1958: est. 50,000-70,000 units WO_3	1917-18: 8,075 tons, 2% WO_3, milled 1918-19: 15,220 tons, 0.68% WO_3, milled 1919-58: N/A
Johnson and Heizer (Willard district)	Sb	1950s: 1,020 tons, 7.94% Sb, 145,780 lbs. Sb (milling ore reserve); 1,500 tons, 10% Sb, 300,000 lbs. Sb (indicated)	1916, 1946-49: 52 tons Sb
Majuba Hill (Antelope district)	Cu, Ag, Sn	1965: 30,000 tons, 3% Cu, 2 opt Ag, 0.18% Sn (resource)	1915-19: 5,000 tons, 12% Cu, 5 opt Ag 1942-45: 12,000 tons 3.9% Cu, 1.4 opt Ag; 350 tons, 3.4% Sn
Rose Creek (Rose Creek district)	W	1940: 6,000 tons, 15% WO_3 (reserve)	1943-45: 1,898 tons, 1% 1943-44, 1952-56: 3,690 units WO_3
Springer (Mill City district)	W	1983: 3.590,000 tons, 0.446% WO_3 (historical General Electric resource) 2009 Sutton beds: 274,000 tons, 0.619% WO_3 (indicated resource) 1,097,000 tons, 0.562% WO_3 (inferred resource) 2013 Sutton I and II: 355,000 tons, 0.537% WO_3 190,635 STU (indicated resource), 1,616,000 tons, 0.459% WO_3, 741,744 STU (inferred resource) Springer West: 318,600 tons, 0.663% WO_3, 211,232 STU (inferred resource); George: 143,950 tons, 0.423% WO_3, 60,863 STU (inferred resource), O'Byrne: 173,670 tons, 0.862% WO_3, 149,719 STU (inferred resource) 2016 Sutton I and II: 246,117 tons, 0.43% WO_3 106,113 STU (indicated resource), 1,450,368 tons, 0.44% WO_3, 583,261 STU (inferred resource); Springer West: 318,600 tons, 0.663% WO_3, 211,232 STU (inferred resource)	1917-19: 1,356 tons, 1.32% WO3 1920-58: N/A
Stormy Day (Hooker district)	W	1955: 23,000 tons, 0.7% WO_3, including 10,000 tons, 0.7-1% WO_3 (developed ore); 17,000 tons, 0.2-0.7% WO_3 (probable ore); 13,000 tons, 0.2-0.7% WO_3 (possible ore)	1944-56: 6,819 units WO_3
Sutherland (Antelope Springs district)	Sb	1950s: 5,100 tons, 4.99% Sb, 508,360 lbs. Sb (milling ore reserve); 500 tons, 10% Sb, 100,000 lbs. Sb (indicated)	1915-18, 1948-49: 875 tons Sb

OTHER METALLIC DEPOSITS, PERSHING COUNTY (continued)

Deposit name	Metals	Reserves/resources	Production
Trinity **(Trinity district)**	Pb, Zn, Ag	2012: 19,790,000 tons, 1.07 opt Ag, 21,265,000 oz Ag, 0.217% Pb, 85,987,000 lbs, Pb, 0.354% Zn, 140,253,000 lbs. Zn (inferred resource)	1987-89: 1,100,000 tons ore 6 opt Ag

WASHOE COUNTY

Red Bluff **(Pyramid district)**	U	1991: 200,000 tons, 0.13% U_3O_8 (resource, 0.05% U_3O_8 cut-off grade); 100,000 tons, 0.24% U_3O_8 (resource, 0.1% U_3O_8 cut-off grade)	

WHITE PINE COUNTY

Bald Mountain **(Bald Mountain district)**	W	1942: 6,500 tons, 0.95% WO_3, 4,600 tons, 0.45% WO_3 (reserves)	1942: N/A 1954-55: 1,000 tons ore 1979: 5,000 tons ore
Delsa **(Bald Mountain district)**	Hg	1967: 21,000 tons, 4.38 lbs. per ton	
Lage **(Butte Valley district)**	Sb	1951: 200,000 tons, low grade ore 1954: 500 tons, 5% Sb; 270,000 tons, 0.22% Sb	
Monte Cristo **(White Pine district)**	W, Mo	1980: 5,500,000 tons, 0.3% WO_3, 0.2% Mo (estimated reserve)	
Mt. Wheeler **(Lincoln district)**	Be, W, Fluorspar	1959:100,000 tons, 0.75% BeO 1969: 200,000 tons, 0.75% BeO, 0.3% WO_3, 22% CaF_2 (ore reserves) 1972: 59,625 tons (proven ore), 30,200 tons (probable ore), 191,900 tons (possible ore)	
Robinson **(Robinson district)**	Cu, Mo	2006: 122,401,000 tons, 0.69% Cu (proven and probable reserves) 2007: 103,788,000 tons, 0.68% Cu (proven and probable reserves) 2008: 121,693,000 tons, 0.54% Cu (proven and probable reserves) 2009: 103,059,000 tons, 0.53% Cu (proven and probable reserves) 2010: 121,250,000 tons, 0.50% Cu (proven and probable reserves) 716,490,000 tons, 0.33% Cu (measured and indicated resource); 154,320,000 tons, 0.29% Cu (inferred resource) 2014: 131,586,000 tons, 0.41% Cu, 1,078,869,000 contained lbs. Cu (proven and probable reserves); 394,750,000 tons, 0.45% Cu, 3,565,945,000 contained lbs. Cu (measured and indicated resource); 13,164,000 tons, 0.38% Cu, 100,025,000 contained lbs. Cu (inferred resource) 2015: Ruth/Ruth East: 124,000,000 tons, 0.416% Cu, 0.0048 opt Au, 0.0238% Mo (remaining reserves 2015-2022)	2006: 121,319,197 lbs Cu, 260,000 lbs Mo 2007: 131,986,134 lbs Cu, 62,033 lbs Mo 2008: 159,684,092 lbs Cu, 78,855 lbs Mo 2009: 122,000,000 lbs Cu, 88,711 lbs Mo 2010: 108,967,015 lbs Cu, 226,688 lbs Mo 2011: 88,893,372 lbs Cu, 1,261,309 lbs Mo 2012: 117,509,548 lbs Cu, 440,001 lbs Mo 2013: 107,898,858 lbs Cu, 1,384,649 lbs Mo 2014: 86,601,987 lbs Cu, 741,717 lbs Mo 2015: 131,307,031 lbs Cu, 905,061 lbs Mo (See Major Precious Metal Deposits also.) 2016: 118,411,099 lbs Cu, 823,659 lbs Mo (See Major Precious Metal Deposits also.) 2017: 112,633,428 lbs Cu, 652,763 lbs Mo (See Major Precious Metal Deposits also.) 2018: 112,502,784 lbs Cu, 652,763 lbs Mo (See Major Precious Metal Deposits also.) 2019: 113,132,886 lbs Cu, 786,699 lbs Mo (See Major Precious Metal Deposits also.)

INDUSTRIAL MINERALS

by David A. Davis

The total value of industrial minerals produced in Nevada was estimated to be at least $462,560,322, an 8% decrease from 2018. Minus the value of aggregate, the total value was about $207,560,322, a 27% decrease from 2018. Aggregate was the only industrial mineral with a production value of more than $100,000,000. Industrial minerals with production values of $10,000,000 to $100,000,000 were barite, lime and limestone, lithium, gypsum, silica, clay, and diatomite. Industrial mineral commodities with production values of $1,000,000 to $10,000,000 were magnesia and dolomite. Industrial mineral commodities with production values of less than $1,000,000 were salt, perlite, iron oxide, potassium sulfate, gems, and pozzolan. Zeolite was processed in Nevada but mined in California, and as such was not included in the estimate of total value of industrial minerals. Data used for these estimates, and data reported for individual commodities below, were obtained from: the Nevada Division of Minerals (NDOM), the Nevada Department of Taxation (NDT), the U.S. Bureau of Land Management (BLM), the U.S. Geological Survey (USGS), or directly from companies that produced the commodities. Data are given in short tons unless otherwise noted. Unless otherwise noted, individual and compiled state production data are from NDOM. The gross proceeds are from NDT. USGS data (mostly domestic production, consumption, prices, and trends) cited are from commodity reports on the agency's website at https://www.usgs.gov/centers/nmic/commodity-statistics-and-information.

Aggregate (Sand and Gravel, Crushed Stone)

The estimated domestic production of construction sand and gravel was 1,069,000,000 tons (970,000,000 MT), a 3.5% increase from 2018, valued at $9,000,000,000. The estimated apparent consumption was 1,080,000,000 tons (980,000,000 MT), a 4% increase from 2018. The estimated domestic production of crushed stone was 1,690,000,000 tons (1,530,000,000 MT), an 8% increase from 2018, valued at $18,700,000,000. The estimated apparent consumption was 1,760,000,000 tons (1,600,000,000 MT), an 8% increase from 2018.

The average price of construction sand and gravel increased 2% to $8.42 per ton ($9.29 per MT) from $8.29 per ton ($9.14 per MT) in 2018. Except for decreases in 2010 and 2013, prices increased annually since at least 1970, being up 661% since then, when the average was $1.11 per ton ($1.22 per MT). The average price of crushed stone increased 3% to $11.12 per ton ($12.26 per MT) from $10.75 per ton ($11.86 per MT) in 2018.

In Nevada an estimated 21,490,000 tons (19,500,000 MT) of construction sand and gravel was sold or used that was valued at $129,000,000 and 15,400,000 tons (14,000,000 MT) of crushed stone valued at $126,000,000. The amount sold or used and value of construction sand and gravel increased 10% and 11%, respectively, and crushed stone increased 57% and 62% respectively from 2018.

An estimated 21,200,000 tons (19,200,000 MT) of construction aggregate were produced in the Las Vegas area with sand and gravel operations accounting for about two-thirds of the aggregate production. The Lone Mountain area in northwest Las Vegas accounted for over a quarter of the production and continued to be the area's most important source of sand and gravel. Significant production also came from sand and gravel pits and stone quarries south and northeast of Las Vegas and in Ivanpah Valley south-southwest of Las Vegas. Portable crushers at construction sites were also important producers of base aggregate in Las Vegas.

The largest producers in the Las Vegas area in descending order of production were as follows. Las Vegas Paving, a major producer of asphalt concrete, mined sand and gravel from their Blue Diamond and Lone Mountain pits and some crushed stone from the Apex Landfill pit. Aggregate Industries, through its subsidiary Frehner Inc., mined and crushed limestone from its Sloan property a few miles south of Las Vegas. Nevada Ready Mix, a subsidiary of the Mitsubishi Corp., mined most of its aggregate from a complex of pits in alluvium in the Lone Mountain area, with minor production coming from quarries in adjacent bedrock. Wells Cargo mined mostly sand and gravel from its mining operations at Lone Mountain and some from its North (Spring Mountain) pit. Mining from the latter pit has been decreasing over the past few years as it straddles Spring Mountain Road between South Buffalo Way and South Tenaya Way and is now surrounded by residential housing and some businesses. These operations described above alone accounted for over half of the aggregate production in the Las Vegas area.

Other major producers include the following. Impact Sand and Gravel, Inc., under CTC Crushing LLC, mined sand and gravel from its Boulder Ranch and Jericho pits at the north end of Eldorado Valley. Their other pits, such as Cactus and Inspirada, which

the company has mined in the past, have not been mined since 2014. Mel Clark, Inc., mined sand and gravel from Lone Mountain. Boulder Sand and Gravel, Inc., mined sand and gravel from its Pole Line pit. Community pits and other aggregate mining facilities administered by the BLM and operated by a number of companies, including some of those already mentioned, annually account for between 10% and 20% of the total production of the Las Vegas and adjacent southern Nevada area.

The Lone Mountain Community pit covers 4,053 acres, of which 1,620 acres are in the current mine plan, and 620 acres have currently been disturbed. Annual production at the Lone Mountain area peaked at more than 10,000,000 tons in 2005 and 2006, but declined rapidly from 2007 onward with the construction downturn. However, with the recent rise in construction activity, annual production has increased to around 6,000,000 tons.

The Cind-R-Lite Block Company shipped lightweight aggregate to the Las Vegas market from their cinder operation in a Quaternary basaltic cinder cone near Amargosa Valley in Nye County. Most of the material shipped was minus 3/8-inch aggregate for the manufacture of cinder blocks and pavers. Cind-R-Lite has two manufacturing sites in the Las Vegas Valley and one in Amargosa Valley.

An estimated 9,400,000 tons (8,500,000 MT) of construction aggregate were produced in the Reno-Sparks-Carson City area with crushed rock accounting for almost 65% of the aggregate production. The area also includes Douglas, Lyon, and Storey counties. The largest producers in rough order were as follows. The Lockwood pit operated by Granite Construction was the largest single producer. The company produces crushed andesite and granitic rock. The company also produced sand and gravel from the Wade pit near Wadsworth. CEMEX was the second largest producer, but its production is combined from two operations. The company produced crushed rhyolite from the Sierra Stone Quarry near Lockwood and sand and gravel from the Paiute pit, which is currently leased from the Pyramid Lake Paiute Tribe near Wadsworth. Martin Marietta Materials, Inc., was the third largest producer, and operated the Spanish Springs (Rocky Ridge) quarry north of Sparks, which mined crushed granitic rock and some decomposed granite. Rilite Aggregate Co. was the fourth largest producer, and mined sand and light weight aggregate southeast of Reno.

Of the smaller producers, Basalite Concrete Products mined lightweight aggregate, which is an important component of crushed rock production in the area. Q and D Construction, Inc., produced aggregate from its Mustang pit, which it recently acquired from Sierra Nevada Construction Co., and Gopher Construction, Inc., produced aggregate from its Trico pit in Storey County. A small amount of decorative rock and sand and cinder for deicing was mined from the Black and Red Cinder pits northeast of Carson City. Almost 1,200,000 tons (1,100,000 MT) of decomposed granite (not included in the construction aggregate total) was produced from the Donovan pit and Lockwood quarry in Washoe County, the Dressler pit in Douglas County, and the Goni pit in Carson City.

About 6,000,000 tons (5,400,000 MT) of aggregate were produced outside of the major metropolitan areas, much of it from BLM administered pits on public lands. Over 90% of the aggregate was sand and gravel. Nye County produced over 1,000,000 tons (910,000 MT) with at least a third of this production came from the Pahrump area, which in part supplied the demand of the Las Vegas area. The remaining counties produced less than 400,000 tons (360,000 MT) each.

Aggregate Industries continued a $58,600,000 project that commenced in 2018 to widen a 6-mile (10-km) stretch of State Route 160 between Mountain Springs and Pahrump. The project includes the movement of over 10,500,000 cubic yards (8,000,000 cubic m) of dirt and placement of 590 boulders, 14,000 cubic yards (10,700 cubic m) of rip-rap, and 1,706 tons (1,548 MT) decorative rock. (https://www.nevadadot.com/projects-programs/sr-160-widening-las-vegas; Equipment World, 7/20/2018)

In January, the Nevada Department of Transportation commenced work on the $73,000,000 next phase of the "Centennial Bowl" interchange upgrade, a project expected to last 450 days. This site is where U.S. Highway 95 meets the 215 Beltway in northwest Las Vegas. The contract for the construction part of the project is $61,500,000 and was awarded to Las Vegas Paving. The project calls for removing part of the Oso Blanca Road ramp and the old north-to-west loop to make room for three new freeway flyover ramp connections. The project also calls for building the state's second longest bridge. This two-lane flyover bridge will connect north-to-west freeway traffic and measure 75 feet (23 m) tall by 39 feet (12 m) wide concrete by 2,635 feet (800 m) in length. The project also included 400,000 cubic yards (306,000 cubic m) of earthwork and 1,134 cubic yards (867 cubic m) of riprap landscaping. (Nevada Dept. of Transportation News Release, NDOT Breaks Ground

on $73 Million "Centennial Bowl" upgrade in Las Vegas, 1/22/2019)

In January, the Nevada Department of Transportation commenced work on the $50,000,000 final phase of widening U.S. Highway 50 between Carson City and Silver Springs. The contract was awarded to Granite Construction Co. The project also included excavating 400,000 cubic yards (306,000 cubic m) of dirt. The project was competed in 2020. (CarsonNow.org, NDOT begins widening of U.S. Highway 50 West of Silver Springs, Brett Fisher, 01/11/2019; Fernley Leader Courier, Highway 50 widening project in final phase, Amy Alonzo, 3/13/2019)

In late November, W.W. Clyde of Orem, Utah, completed a road improvement project along Interstate 80 about 60 miles (100 km) northwest of Wendover. The $31,300,000 contract was awarded from the Nevada Department of Transportation and commenced in May. The project included repaving 20 miles (32 km) of highway along I-80 through Pequop valley, adding a 3-mile (5-km) eastbound climbing lane to Pequop pass, placing 121,000 tons (109,800 MT) of asphalt and 37,000 tons (33,600 MT) of open grade surfacing materials, lengthening and widening merge lanes on the Summit Interchange. Three major cuts were made with the excavation of 210,000 cubic yards (160,600 cubic m) of material. An excess of 127,000 cubic yards (97,100 cubic m) was disposed of off-site. The company's portable crusher and hot plant produced all the materials needed on-site (W.W. Clyde, https://wwclyde.net/project-portfolio/i-80-pequop; Elko Daily Free Press, Rough and ready: Highway projects include work at Deeth, Pequop, Tim Burmeister, May 7, 2019).

The Nevada Department of Transportation was considering a 6-month, $17,100,000 project for enhancing a 32-mile (51-km) stretch of U.S. Highway 95 between Mile from 12 miles (20 km) north of Beatty to 4 miles (6.5 km) south of the Nye/Esmeralda County line. The project will include placing new asphalt pavement and turn lanes, creating a new 2-mile (3-km) long northbound passing lane, and widening freeway shoulders. About 20,000 cubic yards (15,300 cubic m) of dirt will be moved and 400 cubic yards (306 cubic m) of riprap will be installed. The contract was awarded to Road and Highway Builders, LLC, in 2020 for completion later in the year. (Nevada Dept. of Transportation News Release, NDOT Awards $17 Million U.S. Highway 95 Improvement Project in Nye County, 8/11/2020).

Barite

Domestic production increased more 6% to an estimated 430,000 tons (390,000 MT) valued at an estimated $44,000,000. This was the third annual increase after several years of decreases and the highest production since 477,000 (433,000 MT) were produced in 2015. Most of the production came from Nevada and a single mine in Georgia. Estimated apparent consumption increased 9% to 3,300,000 tons (3,000,000 MT). This too was the third annual increase after several years of decreases and the highest production since 3,538,000 (3,210,000 MT) were produced in 2014. The difference between domestic production and consumption was made up by imports mainly from China and some from India, Mexico, and Morocco. For the 2015–2018 period, China provided 58% of the barite imported into the United States. The percentage has declined annually for each four-year period since China provided 95% of the imports during the 2007–2010 period. This is likely because of increases in the share of imports from other sources. More than 90% of the barite sold in the United States is used as a weighting agent for drilling with the rest used as filler, extender, or weighing agents in paints, plastics, and rubber; in high-density cement shielding around x-ray units in hospitals and nuclear facilities; and for medical uses.

The estimated average price of barite was $163 per ton ($180 per MT), a 2% increase from 2018, the first increase after three consecutive price decrease. Price had generally increased annually from 2001 to 2015, increasing 680% during that time mainly due to the strong demand caused by a worldwide oil and gas drilling boom. From mid-2014 onward, an oil glut with prices down to and at times below $40 per barrel resulted in a major drop in drilling and demand for barite.

With most demand being for oil and gas drilling, the drill rig count has traditionally acted as a barometer of where production is headed, though the demand can be underestimated due to some rigs completing multiple holes from a single pad. An average of 17.8% of the rigs were used in drilling for gas, down from 18.8% in 2018. The rig count generally declined through the year starting at 1,075 and ending at 805. The average price of domestic oil varied between $48.52 and $66.30 per barrel and ended the year with increasing prices. The average price decreased 13% to $57.00 per barrel from an average of $65.23 per barrel in 2018 (Cushing, Oklahoma, West Texas Intermediate Spot Price, FOB). Despite the overall decrease in drilling activity, the increase in barite demand may in part be due to increased drilling

activity in the Permian Basin. (Baker Hughes Oilfield Operations, Inc., website: https://www.bhge.com)

Nevada's barite production comes from five operations, though one operation only sold from stockpiles. They shipped 429,802 tons (389,914 MT) valued at $46,331,297, a 5% increase from 2018. Mine production was 576,375 960,085 tons (522,884 MT), a 40% decrease from 2018. The most recent peak of 811,334 tons (736,042 MT) shipped came in 2012 during high demand for oil and gas drilling and a fracking boom. This had been the highest since 1,765,000 tons (1,601,000 MT) were produced in 1982, though it is only 33% of the high of 2,482,000 tons (2,251,670 MT) produced in 1981. Over the years, production reported by the NDOM has differed from that reported by the USGS. The difference is because the USGS reports run-of-mine, flotation, or other beneficiated material that is sold or used by the producer, while the NDOM reports only shipped barite, which may include some material from stockpiles.

M-I SWACO, a subsidiary of Schlumberger, Ltd., was the largest Nevada barite producer. The company shipped 225,000 tons (204,119 MT) of ground barite from its Battle Mountain Grinding plant in Lander County. This was a 10% decrease from 2018. The material shipped came from 222,000 tons (201,397 MT) mined at the Greystone Mine, a 69% decrease from 2018. Conventional open pit mining with front-end loaders is used to remove the barite ore with concurrent reclamation. The ore is either stockpiled at an adjacent mill site or trucked to the Battle Mountain Grinding Plant for concentration. The mill consists of a three-stage crushing and screening circuit and a jig circuit for gravity separation to do the concentrating. Barite concentrates intended for use as a drilling mud must contain between 65% and 75% $BaSO_4$ with a specific gravity greater than 4.1. The barite of the Greystone Mine is hosted in the Middle to Late Devonian Slaven Chert which consists of black chert with minor argillite and shale.

Though M-I SWACO shipped material from the nearby Mountain Springs Mine in the previous three years, nothing was shipped in 2019. The mine produced from 2016 through April 2017 and then was temporarily shut down. The barite was then processed from stockpiles. Prior to 2016, barite was only taken from stockpiles for blending at the plant. The mine had previously produced from 1952 through 1986. Like at the Greystone Mine, the barite and Mountain Springs is also hosted in the Devonian Slaven Chert. (NBMG Bulletin 98; M-I SWACO, website, https://www.slb.com)

National Oilwell Varco shipped 33,319 tons (30,227 MT) of ground barite from its Dry Creek jig plant and Osino grinding plant, a 29% decrease from 2018. Concentrates were produced in 2017 but not in 2018 or 2019. The company's Big Ledge Mine was shut down in 2014 with subsequent production coming from stockpiles. The Dry Creek jig plant was idle in 2016 but produced concentrates in 2017. At the jig plant, barite was crushed, washed, sorted, and concentrated, and then is stockpiled for later hauling to Osino. The barite is shipped to warehouses across the country with the product from Osino supplying operations as far away as Ohio and Pennsylvania. The barite at the Big Ledge Mine occurs in argillite and chert of the Ordovician Valmy Formation. (National Oilwell Varco, website, https://www.nov.com)

From its Argenta plant near Battle Mountain in Lander County, Baker Hughes Oilfield Operations, Inc., formerly Baker Hughes Drilling Fluids, shipped 26,345 tons (78,017 MT) of barite processed from Argenta Mine ore, a 69% decrease from 2018. The mill also shipped 85,587 tons (77,644 MT) processed from Slaven Mine ore, a 0.5% decrease from 2018. The product shipped had a specific gravity of 4.1 and was processed from 53,750 tons (48,761 MT) mined at the Argenta Mine, a 49% decrease from 2018, and 211, 696 tons (192,049 MT) mined at the Slaven Mine, a 122% increase from 2018. The Slaven Mine operated in 2014 and 2015 and was idle in 2016 and 2017 before being restarted in 2018. The barite in both mines is hosted in the Devonian Slaven Chert. (NBMG Bulletin 98; Baker Hughes Oilfield Operations, Inc., website, https://www.bhge.com)

Baroid Drilling Fluids, a subsidiary of Halliburton Co., is the operator of the Rossi Mine, the jig plant and the Dunphy mill facility. Due to the decreased demand, the mine was temporarily closed at the end of 2015. The mill facility was temporarily closed on April 14, 2016, though it did ship barite in 2018. The mill facility consists of two grinding plants, one built in 1964 and the other in 2014. The latter one is the largest barite grinding plant in North America. The barite at the Rossi Mine occurs in structurally complex chert and argillite of Ordovician Vinini Formation and Silurian to Devonian Elder Sandstone.

Baroid Drilling Fluids proposed an expansion of the Rossi Mine and a final environmental impact statement was compiled by the BLM and released. The proposed action includes: continued surface exploration drilling throughout the project area; expansion of the plan of operations boundary/project area; expansion of three existing pits; development of a new pit; expansion of an existing waste rock disposal

facility and construction of three new ones; and expansion, development, or improvement of new and existing infrastructure and ancillary support facilities. The proposed action would extend mining operations and surface exploration for an additional 8 years. The BLM issued a record of decision approving the project in September, and a reclamation permit was issued in 2020. (NBMG Bulletin 98; Nevada Bureau of Mining Regulation and Reclamation, Reclamation Permit 0257, 6/2/2020; BLM, Rossi Mine Expansion Project, Final Environmental Impact Statement, DOI-BLM-NV-E020-2015-0041-EIS, 5/28/2019; BLM, Rossi Mine Expansion Project, Record of Decision, DOI-BLM-NV-E020-2015-0041-EIS, 9/5/2019; Halliburton Co. website, http://www.halliburton.com)

Progressive Contracting, Inc., of St. George, Utah, shipped 60,226 tons (53,637 MT) of barite processed from 88,930 tons (80,677 MT) produced from its Maggie Creek Mine (a.k.a Carlin), increases of 2% and 31%, respectively, from 2018. Production was temporarily shut down on December 19, 2019. The mine is in Section 2, T34N, R51E in the Maggie Creek District about 7 miles (11 km) southeast of the old Carlin Gold Mine. The site includes the Maggie Creek Plant, which includes a crusher and a portable jig plant and is limited to producing 75,000 tons (68,000 MT) annually. Most of the processed barite is dewatered and stockpiled and then later shipped off site for further processing. The ore is distributed randomly over the site to an average thickness of 10 feet (3 m) and a maximum depth of 20 feet (6 m). Stockpiles from earlier mining episodes are also present at the site. Excavation is by front end loader or equivalent without the need for drilling and blasting. In 2015, The Maggie Creek Plant was authorized to process about 60,000 tons (54,000 MT) of barite stockpiled at the Coyote Mine about 12 miles (19 km) to the north-northwest. (NBMG Bulletin 98; NBMG MI-2015; Maggie Creek Plant Fact Sheet, 4/4/2018; Associated General Contractors of Utah, website, https://www.agc-utah.org/list/member/progressive-contracting-inc-st-george-17952)

Though no exploration or construction work have been divulged, Baker Hughes, Inc., had submitted a Plan of Operation to the BLM for the company's Scruffy Oz Project covering 2,180 acres (882 hectares), mostly in portions of the eastern part of T31N, R46E and the western part of T31N, R47E in the Argenta mining district. The project also includes the rights to barite on the adjacent Shoshone Pediment property owned by Bravada Gold Corp. The Plan of Operation allows for up to 300,000 (272,000 MT) tons of barite to be mined annually from three open pits for up to 5 years. Two of the open pits are located on the Shoshone Pediment property, where most of the known barite mineralization occurs. Permitting for these two pits was underway, though mine construction is now uncertain due to COVID-19 pandemic and crash in oil prices in early 2020. The barite occurs in beds at least 10 feet (3 m) thick hosted in black chert, limestone, and argillite of the Devonian Slaven Chert. (NBMG Bulletin 98; Mine Permit Submitted for Bravada's Shoshone Pediment Barite-Royalty Property in Nevada; Provides Corporate Update, http://finance.yahoo.com/news/mine-permit-submitted-bravadas-shoshone-220303848.html, 6/1/2016; Bravada Gold Corp., Corporate Presentation, 9/2020; Bravada Gold Corp., Management Discussion and Analysis, 6/29/2020; Bravada Gold Corp., website, http://www.bravadagold.com)

The U.S. Forest Service is working with the BLM on permitting the Ann Barite Mine Project for Halliburton Energy Services, Inc. The project covers about 2,500 acres (1,000 hectares) in T12–13N, R46E in the Northumberland district, Nye County. The company proposed the construction of open pits, waste rock dumps, a jig plant for the production of barite concentrate, access roadways, and support facilities. The barite will initially be stockpiled at a staging area along U.S. 50 and then transported to the Dunphy Mill for processing. The barite is hosted in Devonian dark gray chert, grayish-orange claystone, and light gray mudstone that are possibly correlative to the Slaven Chert. (Eureka County Natural Resources Advisory Commission, public meeting minutes, 6/20/2017, 1/17/2019; Elko Free Press, 6/10/2017; NBMG Bulletin 98)

The descriptions of 181 Nevada barite deposits are compiled in NBMG Bulletin 98, *Barite in Nevada*, 1984, by Keith Papke. A collection of Nevada barite samples acquired by Keith Papke is also available at the NBMG Great Basin Science Sample and Records Library.

Cement

Domestic cement production was an estimated 96,800,000 tons (97,600,000 MT), a 2% increase from 2018, valued at $12,500,000,000. Production includes 94,800,000 tons (86,000,000 MT) of portland cement and 2,700,000 tons (2,400,000 MT) of masonry cement. Estimated apparent consumption increased 0.6% to 112,400,000 tons (100,000,000 MT) with the difference between production and consumption made up by imports from Canada, Greece, China, Turkey,

and others. Imports (hydraulic cement and clinker) increased 9% to 17,700,000 tons (16,100,000 MT). Production, consumption, and prices are driven by construction. The estimated average mill price increased 2% to $112.04 per ton ($123.50 per MT) from 2018, the seventh annual increase since 2011. Construction spending decreased due to decreased spending on private residential and nonresidential projects. The top three cement consumers in decreasing order were Texas, California, and Florida.

The only cement producer in Nevada is Nevada Cement Co. (a subsidiary of Eagle Materials, Inc. of Dallas, Texas), which has a plant in Fernley in Lyon County. The plant produced 474,434 tons (430,404 MT) of cement, a 5% decrease from 2018. The plant has two kilns, a long dry kiln installed in 1964 and a one-stage preheater installed in 1969. The plant's annual capacity is 500,000 tons (450,000 MT) of cement and 560,000 tons (510,000 MT) of clinker. The plant produces Type I/II, low alkali, moderate sulfate-resistant cement; Type II/V, low alkali, high sulfate-resistant cement; IP portland-pozzolan moderate sulfate-resistant cement; and Class N pozzolan. The company serves markets in northern Nevada and California and has a rail terminal in Sacramento.

The cement is manufactured from limestone mined from three areas, pozzolan from the nearby Mustache pit, iron oxide from the Barth Mine in northern Eureka County, and clay from the Terraced Hills north of Pyramid Lake. A small amount of gypsum from an undisclosed source is also added during the clinker stage of production. About 67% of the limestone comes from the Churchill quarry in the Trinity Range about 40 miles (64 km) east of the plant and the remainder comes from the Fernley quarry a few miles south of Fernley, and the Relief Canyon quarry near the Relief Canyon Mine in the southern Humboldt Range about 70 miles (110 km) northeast of the plant. Overall, the company has at least 50 years of limestone reserves.

The gross proceeds were $7,856,348 for the combined clay, pozzolan, iron ore, and limestone mines and the cement plant, a 1% decrease from 2018. The gross proceeds of the clay, iron ore, and limestone mines are also included in those sections below. Overall, for their fiscal year ending March 31, 2020, Eagle Materials reported their total cement sales volume increased 11% and overall cement sales revenue increased 15% from the previous year. Their average price was $109.96 per ton ($121.21 per MT), a 2% increase from the previous year. (Eagle Materials Inc., 10-K Report, 5/22/2020; Eagle Materials Inc., website, http://www.eaglematerials.com; Nevada Cement Co., website, http://www.nevadacement.com)

Clay

Domestic clay production decreased 1.5% to an estimated 28,700,000 tons (26,000,000 MT) from 2018 with a sales value of $1,800,000,000. The USGS divides output into: ball clay, bentonite, common clay, fire clay, fuller's earth, and kaolin. Estimated apparent consumption decreased 3.5% to 24,300,000,000 tons (22,000,000 MT) from 2018. The difference between production and consumption was mainly attributable to imports, mainly from Brazil. Nevada has never been a large clay producer. The state's production (not including clay produced from stockpiles) decreased 33% to 120,536 tons (109,350 MT). The gross proceeds for all Nevada clay production increased 18% to $13,845,609 from 2018.

IMV Nevada, a subsidiary of Lhoist North America, mined 116,636 tons (105,811 MT) and shipped 115,250 tons (104,554 MT) of sepiolite from its Amargosa Valley clay mine, a 5% decrease in mining and almost 300% increase in shipping from 2018. The company also processed and shipped 7,437 tons (6,746 MT) of calcium bentonite and 1,226 tons (1,112 MT) of saponite clay. No bentonite or saponite was mined in 2018. The production was from stockpiles. The operation covers 10,000 acres (4,047 ha) of mining claims of which 5,000 acres (2,023 ha) are patented and owned outright by IMV. The company maintains an exploration plan with a rolling 10-year outlook that continues to identify new ore reserves for future production. As 2019 commenced, the company had already announced an average 11% price increase on its lime, limestone, and clay products to cover the rising costs of energy, personnel, capital, and operating expenses.

The bentonite is a white to off-white, calcium-based montmorillonite with an unusually well-developed dioctahedral crystalline structure and an extremely high cation exchange capacity. Saponite is similar to sodium bentonite (montmorillonite) except that magnesium has replaced all or most of the aluminum and exchangeable sodium. It is a swelling clay with a trioctahedral structure, a flat tubular mica-like crystal and a low cation exchange capacity that imparts thixotropy to aqueous solutions. Saponite has the same uses as bentonite but is more stable due to a much lower cation exchange capacity. Sepiolite is a hydrous magnesium silicate. It is structurally similar to bentonite and saponite, but the crystals are much more highly ordered and contain very few of the

imperfections which affects cation exchange capacity. The nearly perfect crystal structure, which forms long "ribbons", contributes to high thermal stability, and helps impart viscosity to aqueous suspensions. Unlike bentonite and saponite. Sepiolite is unaffected by electrolytes and can gel salt solutions. Sepiolite it is more efficient in some applications, such as asbestos replacement and reinforcing systems and is also an excellent binder. The clays occur in shallow, flat-lying deposits in Pliocene lacustrine rocks in the Ash Meadows-Amargosa Flat area of Nye County. It is processed at the company's Amargosa Valley plant, and clay products are exported worldwide for use in drilling mud, construction, and animal feed. The sepiolite and saponite deposits have unusual geology and are considered to have originated in a Pliocene playa with an area of at least 22 square miles (57 square km). The sepiolite, which yields most of the profits for the operation, occurs in an almost continuous bed with an average thickness of about seven feet (2 m). IMV Nevada is the only commercial producer of sepiolite and saponite in North America. (Lhoist North America, news release, 12/1/2018; Lhoist North America, website, https://www.lhoist.com/us_en/imv-nevada)

Two companies intermittently mine and ship minor amounts of Nevada smectite from several sites for use in high-value specialty products. At its White Caps Mill near Beatty in Nye County, Vanderbilt Minerals Co. processes small amounts of clay stockpiled from several deposits in Nevada, Arizona, and California. The company last mined its New Discovery Mine just south of Beatty in 2017, but smectite was processed and shipped from stockpiles in 2018 and 2019. The company mined the Blanco Mine located about 40 miles (64 km) west-southwest of Tonopah in the Coaldale mining district in Esmeralda County in 2017 but not since. The mine was temporarily shut down on May 1, 2017, but smectite was processed and shipped from stockpiles in 2018 and 2019. The company mined 2,500 tons (2,300 MT) of smectite from its Buff-Satin property about 10 miles (16 km) northeast of Lovelock in the Willard Mining District in Pershing County, a 31% decrease from 2018. Buff-Satin had been temporarily shut down since December 2012, and then for a short time starting November 30, 2018. The company shipped 3,170 tons (2,876 MT) after processing from stockpiles from all of the mines, an 8% increase from 2018. The gross proceeds for the three mines were $1,354,636. The clay at the New Discovery Mine is derived from altered perlite and periltic pitchstone interbedded in Tertiary tuff-breccia. The clay at the Blanco Mine is derived from altered tuff and tuffaceous sedimentary rocks of the late Miocene to early Pliocene Esmeralda Formation. The clay at the Satin and Buff Mines is derived from late Miocene to early Pliocene altered welded and non-welded tuffs. (Vanderbilt Minerals Co., website, www.vanderbiltminerals.com)

The American Colloid Co. intermittently produces calcium bentonite from its Nassau property in Coal Canyon in the Willard mining district for use in specialty clay products. The company mined the deposit in 2016 but not since. However the company did ship 600 tons (544 MT), an 80% decrease from 2018. Shipping was from stockpiles both onsite and offsite. The clay is hosted in altered rhyolite tuff-breccia of probable Miocene–Pliocene age. (American Colloid Co., website, https://www.mineralstech.com/business-segments/performance-materials/american-colloid-company)

The Nevada Cement Co., did not mine halloysite from its company-owned Flanagan pit in the Terraced Hills about 8 miles (13 km) northwest of Pyramid Lake. The company mines halloysite on an as-needed basis and did mine 30,000 tons (27,200 MT) in 2018. Because of its high alumina content, halloysite is used in the production of portland cement at the Nevada Cement Co. plant at Fernley. The halloysite occurs in partly altered, lapilli tuff in a pyroclastic unit separating late Miocene to Pliocene andesitic and basaltic flows. (Nevada Cement Co., website, http://www.nevadacement.com)

PMMR Corp. (Precious Minerals Mining and Refining Corp.) mined about 1,500 tons (1,360 MT) of material from East Walker Clay Mine in the Washington mining district in Lyon County. The company sells a volcanically derived clay-based mineral under the trade name Orykta™ as a soil and animal feed additive and shipped 5,000 tons (4,536 MT) of product. The difference between mining and shipping was made up from stockpiles. The two main components reported in Orykta™ are natrojarosite and gypsum. The company's 1998 approved plan of operation allowed for annual production of up to 36,500 tons (33,100 MT). (Bill Minor, CEO, oral communication, 9/1/2020; Precious Minerals Mining and Refining Corp. website, https://www.oryktamineralgoods.com)

Lithium Nevada Corp., a subsidiary of Lithium Americas Corp. (formerly Western Lithium USA Corp.) owns the Nevada Lithium and Thacker Pass Projects. The properties are within the McDermitt caldera, and contain high-lithium clays, including

lithium-bearing illite and hectorite, with significant amounts of clay formed by hydrothermal alteration of volcaniclastic sedimentary rocks making up the moat deposits in the western part of the caldera. Also, Cypress Development Corp., which owns the Clayton Valley Lithium Project containing of the Glory and Angel claim blocks, was experimenting with extracting lithium from lithium rich clay on its property. Several other companies were exploring properties containing lithium-bearing clay in Clayton Valley and the surrounding areas. All of these sites are discussed in detail in the lithium section.

The descriptions of 31 Nevada clay deposits are compiled in NBMG Bulletin 76, *Montmorillonite, Bentonite, and Fuller's Earth Deposits in Nevada*, 1970, by Keith Papke. A collection of Nevada clay samples acquired by Keith Papke is also available at the Nevada Bureau of Mines and Geology Great Basin Science Sample and Records Library.

Diatomite

The United States is the world's largest producer of diatomite. Domestic production increased 2.4% to an estimated 1,080,000 tons (980,000 MT) valued at $330,000,000. This was the third annual increase, and production in 2018 and 2019 both topped the previous all-time high of 993,000 tons (901,000 MT) in 2014. Estimated apparent consumption increased 2.4% to 1,014,000 tons (920,000 MT) for the third year in a row. Exports increased 6% to 81,000 tons (72,000 MT). Production was from six companies with 12 mining areas and nine processing facilities in California, Nevada, Oregon, and Washington. About 60% of the diatomite is used in filtration products. The rest is used absorbents, fillers, light weight aggregates, specialized pharmaceuticals, biomedical purposes, nontoxic insecticides, and other applications. The estimated average free on board plant price increased 3% to $308 per ton ($340 per MT) from 2018. Nevada produced 277,147 tons (251,426 MT) of diatomite, a 29% decrease from 2018. This follows a 44% increase in 2018. The gross proceeds increased 1.6% to $47,466,527 from 2018. About two-thirds of the diatomite produced in Nevada is used in filtration and the remainder is largely used in absorbents, fillers, and cement.

U.S. Silica, LLC, a subsidiary of U.S. Silica Holdings, Inc., which bought out EP Minerals, LLC, in 2018, produced almost 90% of Nevada's diatomite. In December 2019, the company announced its Industrial and Specialty Products business would increase prices. Depending upon grade and product, prices were increased up to 6% for most of its non-contracted silica sand, aggregate diatomaceous earth and clay products used primarily in foundry, paints, coatings, elastomers, roofing, chemicals, recreation, building products, agricultural, pet litter and other applications. Also, prices were increased up to 5% for whole grain sand used in glass applications. The price increases were intended to support upgrading capacity and to offset the rising production costs. (U.S. Silica Holdings, Inc., Form 10-K, 2/25/2020; EP Minerals, LLC, news release 12/3/2019; U.S. Silica, LLC, website, http://www.ussilica.com)

The U.S. Silica, LLC, Colado facilities in Pershing County is the company's largest Nevada diatomite operation. It consists of a plant at Lovelock that processes diatomite mined from a series of pits about 15 miles (24 km). The mine produced 114,418 tons (103,799 MT), and shipped 148,438 tons (134,662 MT) decreases of 45% and 6%, respectively, from 2018. The plant processed 125,183 tons (113,565 MT) and shipped 126,526 tons (114,784 MT), decreases of 7% and 5%, respectively, from 2018. The diatomite occurs as thick beds interbedded with freshwater tuffaceous sedimentary rocks of probable Miocene age. The diatomite has to be dry before processing. Most diatomite is about 3% water, but the diatomite at the Colado Mine is 50% water. It is mined in the summer and laid out in the sun to dry. Despite the wetness of the diatomite, there is no ground water for at least 2,000 feet (600 m) below the pit, and what water that is needed for the operation has to be hauled in from Lovelock. The operation consists of 3,773 acres (1,527 ha) of the company-owned claims on Federal land and 7,205 acres (2,916 ha) of an evergreen land lease.

The Colado plant is the world's largest producing diatomite facility with an annual capacity of about 156,000 tons (141,500 MT). The plant contains three kilns that produce calcined and flux-calcined filter aids and functional additives and also has a perlite expander. The diatomite is processed using soda ash, natural gas, and electricity to manufacture filtration products used in industries including brewing, corn wet milling, oil and gas, wineries, potable water, swimming pools and petrochemicals. The plant also produces filler products used as an anti-block in polyethylene film and flattening agents in paint. The plant has full rail service via the Union Pacific Railroad, and its proximity to the port of Oakland allows it to be the primary export plant for filter aid and fillers. (U.S. Silica Holdings, Inc., Form 10-K, 2/25/2020; U.S. Silica, LLC, website, http://www.ussilica.com)

The U.S. Silica, LLC, Clark operation consists of the Clark plant in the Clark mining district, Storey County, about 20 miles (32 km) east of Reno and the nearby Clark Mine about 4 miles (6 km) east of the plant. The mine produced 84,732 tons (76,868 MT) and shipped 56,022 tons (50,823 MT) decreases of 17% and 29% respectively from 2018. The plant processed 40,578 tons (36,812 MT) and shipped 41,211 tons (37,386 MT), decreases of 32% and 30% respectively from 2018. The operation consists of 2,690 acres (1,089 ha) of combined company-owned private property and unpatented placer claims and 2,813 acres (1,138 ha) of leased land. The diatomite at Clark contains about 90% of the diatom *Melosira granulate*, and is interbedded with Neogene diatomaceous shale and thin beds of lacustrine volcanic tuff.

The Clark plant operates on natural gas and electricity, contains a rotary kiln and a flash dryer, and has annual capacity of about 70,000 tons (63,500 MT). The kiln produces granular products used in the soil amendment, absorbent, and carrier markets. The flash dryer produces natural diatomite powders for the functional additive and natural insecticide/animal feed markets. The plant is immediately accessible by Interstate 80 and serviced via the Union Pacific Railroad. (U.S. Silica Holdings, Inc., Form 10-K, 2/25/2020; U.S. Silica, LLC, website, http://www.ussilica.com)

The U.S. Silica, LLC, Fernley mine and mill about 20 miles (32 km) northeast of Fernley in the Desert mining district, mined 31,875 tons (32,239 MT) and shipped 35,112 tons (31,853 MT), decreases of 1% and 0.8%, respectively, from 2018. The plant contains a rotary kiln uses electricity and recycled oil and has an annual capacity of 50,000 tons (45,000 MT). It produces granular products used in absorbent products, soil amendments, fertilizer and pet litter. The deposits consists of freshwater diatomite interbedded with minor volcanic ash and tephra units. The diatomite is mainly amorphous silica in composition. The operation consists of 5,668 acres (2,294 ha) of combined company-owned private property and unpatented placer claims. (U.S. Silica Holdings, Inc., Form 10-K, 2/25/2020; U.S. Silica, LLC, website, http://www.ussilica.com)

The U.S. Silica, LLC, Hazen Mine on the Lyon-Churchill County line produced 13,330 tons (12,093 MT) and shipped 10,390 tons (9,426 MT), decreases of 46% and 28%, respectively, from 2018. The diatomite is mainly amorphous silica in composition. The operation consists of 120 acres (49 ha) of combined company-owned private property and unpatented placer claims and 1,135 acres (459 ha) of leased unpatented placer claims. (U.S. Silica Holdings, Inc., Form 10-K, 2/25/2020; U.S. Silica, LLC, website, http://www.ussilica.com)

The U.S. Silica, LLC, is in the process of permitting its Fallon greenfield diatomite deposit. Once in operation, the diatomite will be used for filtration brewing, wine making, and the production of sweetener; swimming pool filters; additives for coatings; and low density polyethylene film. The deposit consists mainly of *Melosira granulata* with minor traces of volcanic ash and basalt detritus. The property consists of 840 acres (340 ha) of combined company-owned private unpatented placer claims. (U.S. Silica Holdings, Inc., Form 10-K, 2/25/2020; U.S. Silica, LLC, website, http://www.ussilica.com)

Imerys Minerals of California, Inc., produced 26,426 tons (23,974 MT) from its Nightingale deposit north of Fireball Ridge in Churchill County, a 0.5% decrease from 2018. The company processed and shipped the same tonnage as functional filler from its plant in Fernley. The company's Hazen pit, which had been mined since 1950 and still has reserves, has been on standby since 2009. The diatomite deposits at both Nightingale and Hazen are interbedded with Pliocene lacustrine tuffaceous shale, sandstone, and limestone, and siliceous tuff. (NBMG Bulletin 83; Imerys, website, https://www.imerys.com)

The Grefco Minerals, Inc., Basalt mine and mill near the Esmeralda/Mineral County line is small relative to other Nevada diatomite companies but has been producing diatomite for many years. The company campaign mines and then processes material from the resulting stockpiles at its plant. The company mined 2,366 tons (2,057 MT), a 4% increase from 2018. The deposit is in Miocene–Pliocene lacustrine sedimentary rocks consisting of diatomite, argillaceous and calcareous diatomite, clay, sand, and volcanic ash, and the main diatoms are *Melosira granulate*, *Stephanodiscus aslraea*, and *Eunotia robusta*.

The mill shipped 4,299 tons (3,900 MT) for filter aids, a 19% increase from 2018. The mill also shipped 906 tons (822 MT) for fillers, a 14% decrease from 2018. For filter aids, the diatomite has been calcined by heating to above 1,500ºF (815ºC) to agglomerate the diatom exoskeletons and provide for a range of filter permeabilities. For fillers, the diatomite is dried and sized without further processing. (NBMG Bulletin 78; Dicalite Management Group, website, https://www.dicalite.com)

Brief descriptions of 11 of the main Nevada diatomite deposits are compiled in NBMG Bulletin 65,

Minerals and Water Resources of Nevada, 1964, prepared by U.S. Geological Survey and Nevada Bureau of Mines and Geology.

Dimension Stone, Landscape Rock, and Decomposed Granite

Domestic production of dimension stone was 2,980,000 tons (2,700,000 MT) valued at $440,000,000, increases of 2% and 1%, respectively, from 2018. Estimated value of apparent consumption was $2,300,000,000 a 7% decrease from 2018. The difference in value was made up for by imports mainly from China, Brazil, Italy, Turkey, and other places. Nevada supplied local and regional markets, and produced 5,025 tons (4,559 MT) of dimension stone, a 48% decrease from 2018. At least 280,500 tons (254,500 MT) of crushed landscape and decorative rock was mined. Decomposed granite (DG) falls into a gray area with uses including landscape rock, paving material similar to gravel, and construction material. Reported DG production was 583,771 tons (529,594 MT), a 19% decrease from 2018. The value is difficult to estimate. With a median price of about $60 per cubic yard, landscape rock has an estimated value of about $13,000,000. At an average price of about $50 per cubic yard, the DG has an estimated value of about $22,500,000.

Mt. Moriah Stone Quarries LLC, quarried flaggy quartzite of several colors from the Cambrian Prospect Mountain Quartzite at a quarry about 15 miles (24 km) north of Baker in White Pine County. The company quarried 3,482 tons (3,159 MT), a 36% decrease from 2018. This material, which naturally splits into large slabs, is used for flagstone, ashlar (uncut facing stone), and other types of uncut building stone. The operation commonly shuts down in November or December and restarts the first quarter of the following year. (Mt. Moriah Stone Quarries LLC, website, https://www.mtmoriahstone.com)

Las Vegas Rock mined 1,543 tons (1,400 MT) of cut decorative slabs, flagstone, ashlar, boulders, and 80,000 tons (72,600 MT) of crushed landscape rock from its Rainbow Quarries near Goodsprings, about 32 miles southwest of Las Vegas at the base of Mount Potosi, a 63% decrease for dimension stone and an 8% increase for crushed rock from 2018. They also mined 70,000 tons (63,500 MT) of sand, an 8% decrease from 2018. The operation consists of a main quarry and a number of satellite quarries located according to the color of the stone. The stone is mined from the Jurassic Aztec Sandstone, and technical data including hardness, strength, and composition are available on the company's website (Las Vegas Rock website http://vegasrock.com).

Kalamazoo Materials Inc. of Tucson, Arizona, mined and processed 200,541 tons (181,930 MT) of crushed landscape rock. No mine production was reported for 2018, but the amount processed increased 49% from 2018. The company also shipped 148,397 tons (134,625 MT), a 55% increase from 2018. Mining was from the Beatty quarry located about 5 miles (8 km) north of Beatty. The company's Modoc quarry about 16 miles west of Searchlight was mined in 2015 but has not been mined since. In 2010, D and H Mining leased its pits making up the Beatty quarry to Kalamazoo. These pits produce from Pliocene tuff, which in the past, D and H Mining mined and sold under the name of "Spicerite" (strong, bright white, hydrothermally altered tuff used to make bricks and blocks). The Modoc quarry is mainly in Precambrian gneiss, schist, and granitic rocks (Kalamazoo Materials website, http://www.kalamazoomaterials.com)

The amount of landscape rock produced is likely greater than the estimate given above. Vista Landscape Center, Inc., of Henderson, Nevada, sold decorative stone mined from quarries near Searchlight and Crescent Peak 20 miles (30 km) west of Searchlight. R.T. Donovan Co. and Reno Rock Transport of Reno, Cheyenne Rock of North Las Vegas, and others also sold decorative rock produced in Nevada. (Cheyenne Rock website, https://cheyennerock.com; R.T. Donovan Co. website, www.rtdonovan.com; Reno Rock Transport website, http://www.renorock.com; Vista Landscape Center, Inc., website, http://www.vistalandscape.com)

Along with aggregate, Cinderlite Trucking Co. mined 80,000 tons (72,600 MT) of DG from their Goni pit north of Carson City, a 15% decrease from 2018. Along with crushed stone and sand and gravel and aggregate, Martin Marietta Materials, Inc., produced DG from its Spanish Springs quarry in the McClellan district on the west side of Spanish Springs Valley in the past, but reported no production in 2019. R.T. Donovan Co. produced 393,360 tons (356,854 MT) of DG from its Donovan pit in the McClellan district in Spanish Springs Valley, a 17% decrease from 2018. Mountain West Construction Co. processed 109,345 tons (99,197 MT) of DG from the Dressler pit in the Green Valley district. As with landscape rock, the amount of DG produced may be greater than the estimate above.

The Nevada Department of Transportation was considering a $12.7 million construction project to upgrade six miles of north and southbound Interstate

11 from Wagonwheel Drive to the concrete section of the "Spaghetti Bowl" interchange in Henderson. The project calls for placing nearly 24,000 tons of blacktop, repairing concrete slab and bridge decks at East Paradise Hills and College Drives, ramp repaving, new bridge painting and drainage enhancements, and lighting and signage improvements. The project also includes installing 315,283 cubic yards (241,051 cubic m) of decorative rock, 698 boulders, and 2,817 cubic yards (2,154 cubic yards) of riprap at the freeway interchanges. The contract was awarded to Las Vegas Paving Corp. in 2020. (Nevada Dept. of Transportation News Release, NDOT Awards $13 Million I-11 Paving Improvement Project in Henderson, 9/14/2020)

Fluorspar

The USGS reports only U.S. production of fluorspar equivalent (equivalent to 92% fluorspar) derived as a by-product in the form of fluorosilicic acid from phosphate rock processed for phosphoric acid. Production was an estimated 29,800 tons (27,000 MT), the same as in 2018. Apparent consumption was 474,000 tons (430,000 MT), a 4% decrease from 2018. Both are down from recent highs for production in 2015 and consumption in 2018. Imports, mostly from Mexico and Vietnam and some from South Africa, China, and other countries made up the difference between production and consumption. The average prices of acid grade and metallurgical grade fluorspar was $300 and $270 respective, increases of 9% and 5% respectively. China accounted for 57% of the world's fluorspar (but just 6% of U.S imports) production making that country by far the world's largest producer. In recent years, due to an increase in world demand and concerns China may become a net importer, several of the world's main mines have been operating at or near full capacity. New producers in Myanmar, Canada, Morocco, and South Africa were ramping up production and a new hydrofluoroolefin plant went on-line in Texas. Nevada produced an estimated 556,000 tons between 1928 and 1976, 91% of which came from four mines. Mine production continued through 1991 and then from stockpiles for several years afterwards. Despite Nevada's potential, little recent exploration has been done.

In 2012, the Tertiary Minerals took out a 50-year renewable lease on the MB Project in the Fish Creek mining district with the option buy to buy MB from Nevada Fluorspar Inc. The company then conducted several drilling and geophysical programs and other field work and compiled a resource estimate. Early metallurgical testwork indicated that the ore in certain areas of the deposit is metallurgically complex, which presented processing challenges. Lack of funding brought progress to a halt in 2018. However, recent fundraising allowed the company to restart testing. In 2019 and into 2020, the company conducted scoping level metallurgical test work programs. While the latest results show improved recoveries and grades, testing failed to produce acid-grade fluorspar concentrate. A project review will determine the future direction for MB Project. (NBMG Bulletin 93; Tertiary Minerals, PLC, news release, 7/20/2020; Tertiary Minerals, PLC, annual report, 9/30/2019; Tertiary Minerals, PLC, half-yearly report, 5/31/2020; Tertiary Minerals, PLC, website, http://www.tertiaryminerals.com)

The descriptions of 62 Nevada fluorspar deposits are compiled in Nevada Bureau of Mines and Geology Bulletin 93, *Fluorspar in Nevada*, 1979, by Keith Papke. A collection of Nevada fluorspar samples acquired by Keith Papke is also available at the Nevada Bureau of Mines and Geology Great Basin Science Sample and Records Library.

Gemstones

The combined value of the domestic production of natural and synthetic gemstones was $65,000,000, a 9% increase from 2018. Domestic production of natural and synthetic gemstones was $10,000,000, a 5% increase from 2018 and the third consecutive annual increase. Nevada ranked third, after Arizona and Oregon of the 13 states that accounted for 96% of domestic production of natural gemstones. In Nevada, the reported gross proceeds for gemstones decreased 16% to $149,838 from 2018.

Precious opal is produced from several small mines in the Virgin Valley area of northern Humboldt County. Virgin Valley is a well-known source of gemstones in North America. The best known mines are the Bonanza, Rainbow Ridge, and Royal Peacock Mines, which are pay-to-dig operations. Bonanza and Rainbow Ridge, combined, produced about 330 pounds (150 kg) of precious opal, opal potch, and wood opal. Royal Peacock Mines did not divulge its production though its gross proceeds were $1,875. The opal occurs in lacustrine sedimentary rock, volcanic ash and tuff, and bentonite of the Miocene Virgin Valley Beds of Merriam.

Turquoise is produced from several small operations. Lone Mountain Mining, LLC, mined about 1,000 pounds (450 kg) of turquoise from the Lone Mountain Mine in T1N, R41E, sections 7 and 18 in the Lone Mountain district in Esmeralda County. The

turquoise is present as nodules associated with silicification and argillization in thinly bedded calcareous shale. The Blueridge Mine operated by the Wintle family produced a small amount of variscite. The property is in T28N, R47E, sections 19, 20, 29, 30 in the Bullion district of Lander County. Though production was not divulged, Otteson Brothers Turquoise operated the Royston claims in the Royst0n district in Nye County as a pay-to-dig operation and by running tours of the property.

Gemfield Gem produced chalcedony from a pay-to-dig operation on five claims in T2S, R42E, sections 29 and 39 in the Montezuma district, Esmeralda County. The descriptions of 68 mines and districts are compiled in NBMG Report 17, *Turquoise Deposits of Nevada*, 1968, by Frank R. Morrissey.

Graphite

Natural graphite was not produced in the United States during 2018, though 57,000 tons (52,000 MT), a 16% decrease from 2018, valued at $44,000,000 were apparently consumed. One use of graphite is as the anode in lithium ion batteries, The Gigafactory being built by Tesla Motors at Patrick (see Lithium) is expected to need up to 103,000 tons (93,000 MT) of flake graphite once full production gets underway.

In early 2017, Global Li-Ion Graphite Corp. entered into an option agreement with GeoXplor Corp. to acquire full interest in the Chedic Graphite Project for $350,000, 2,000,000 shares of common stock, and conducting at least $1,200,000 of exploration work over a five-year period. After conducting preliminary exploration, including drilling the property in 2018, the company concluded there was too much uncertainty in the size and grade of the deposit and there were too many potential challenges to permitting a mine so close to Carson City. Therefore, the company dropped the project. (Global Li-Ion Graphite Corp. news releases, 2/23/2018, 7/23/2018; Global Li-Ion Graphite Corp. Management Discussion and Analysis, 12/30/2019; Global Li-Ion Graphite Corp. website, https://globalli-iongraphite.com)

Graphite is rare in Nevada and aside from the Chedric deposit, the U.S. Geological Survey's Mineral Resources Data System lists four other sites. These are the former Graphite Nos. 1 through 3 claims in Section 2, T39N, R53E, in the Jerritt Canyon Mine area in Elko County; the former Snowball Claims in Section 35, T9N, R32E, in the Gillis Range in the Fitting district in Mineral County; an unnamed "primary" ore occurrence in section 8, T6N, R33E, in the Ashby district in Mineral County; and another unnamed "primary" ore occurrence with an uncertain location in T9N, R33E, also in the Fitting district. No graphite exploration was reported at any of these occurrences in 2019.

Gypsum

Domestic crude gypsum production decreased 5% to 22,000,000 tons (20,000,000 MT) from 2018. The 2019 production was valued at $160,000,000. The production of synthetic gypsum was 17,600,000 tons (16,000,000 MT), a 4% decrease from 2018. Synthetic gypsum is produced from scrubbed emissions from coal-fired power plants. In recent years it has accounted for between 43% and 53% with an average of about 45% of production. Estimated apparent consumption of all gypsum decreased 2% to 46,300,000 tons (42,000,000 MT) from 2018. Until 2018, overall production and consumption had increased annually since 2009. The difference between production and consumption was mostly made up with imports mainly from Mexico, Canada, and Spain, which increased 17% to 6,700,000 tons (6,100,000 MT) from 2018, and has been increasing annuallysince 2012. The estimated price of crude gypsum was $7.26 per ton ($8.00 per MT) free on board from the mine, a 4% decrease from 2018.

Nevada ranked number one of the six states that produce 64% of the country's crude gypsum. The state's gypsum production was 1,662,418 tons, (1,508,136 MT), a 50% decrease from 2018. This was the second annual decrease after five annual increases. The reported gross proceeds was $28,805,299, a 32% decrease from 2018.

PABCO Gypsum in Clark County northeast of Las Vegas produced 903,514 tons (819,663 MT), a 35% decrease from 2018. The amount that was processed was not reported. PABCO Gypsum processes its gypsum to make wallboard at a plant adjacent to their mining operation. The plant has an annual capacity of 1,260,000,000 square feet (117,100,000 square m) of wallboard. The gypsum ore occurs in a nearly flat-lying late Miocene gypsite blanket atop a 5-square-mile (13-square-km) mesa. Drilling indicates the gypsum is at least 120 feet (37 m) thick in the area of current mining (NBMG Bulletin 103; PABCO Gypsum website, http://www.pabcogypsum.com).

Gypsum Resources Materials, LLC, mined 1,777,865 (1,612,869 MT) of gypsum from the Blue Diamond pit, in 2018, but has not divulged its 2019 production. Operations and production were disrupted during the first quarter. Crushing operations were halted for five weeks when two crusher components,

the HIS and the cone, broke down and special order replacement parts were ordered and installed. Mine production was stopped for another two weeks when higher than normal amounts of snow and rain caused slippery road conditions on top of the hill. The company lacked funds for operational expenses at the start of the year causing the trucking operations to shut down for five months. This impacted agricultural sales causing a revenue shortfall. By late July, the crusher was repaired, trucking was again in operation, and production had been steady for five weeks at 25,000 tons (22,700 MT) per week and being added to the three products' stockpiles. The operational and financial difficulties resulted in the company filing for Chapter 11 bankruptcy on July 26, 2019 to reorganize.

The operation covers over 2,200 acres (890 ha), and the company processes the gypsum at its plant adjacent to the mine. The operation serves Nevada, Arizona, and southern California, and is looking to expand markets into Oregon and Washington. The gypsum is interbedded with limestone, dolomite, and red shale of the Lower Permian Kaibab Formation. The gypsum is used for wallboard and cement with about two-thirds being shipped to California's Central Valley for agricultural use, largely as a soil amendment.

Empire Mining Co., LLC, mined 301,061 tons (273,121 MT) of gypsum and 257,461 tons (233567 MT) of anhydrite from its Empire Mine in Washoe County near Gerlach, an 87% increase for gypsum and a 7% decrease for anhydrite from 2018. The company also shipped 292,755 tons (265,586 MT) of gypsum and 274,542 tons (249,063 MT) of anhydrite, increases of 118% and 10% respectively from 2018. The gypsum and anhydrite were shipped to companies that make fertilizer and cement and for use in lithium extraction. The company was looking for a partner or another company to lease the existing mill and manufacturing plant. The gypsum and anhydrite occur in the Triassic or Jurassic Nightingale sequence and form ten orebodies within an area two miles (3.2 km) in diameter. The 4,400-feet by 2,200-foot (1,340-meter by 670-meter) Selenite orebody is the largest. The gypsum is white, fine-grained, and non-friable. It occurs in beds grading 85% to 95% gypsum in limestone, marble, and metasiltstone. (NBMG Bulletin 103; Empire Mining Co., LLC, website, https://www.empireminingco.com)

The Art Wilson Co., of Carson City produced 290,302 tons (263,360 MT) of gypsum from the Adams Mine in Lyon County, and the company shipped 279,581 tons (253,634 MT) from its plant, decreases of 19% and 22%, respectively, from 2018. It is mainly used as a soil amendment and livestock feed additive. The company also produces some limestone. The company has its own transportation system including the Appian siding along the Union Pacific tracks about 30 miles (48 km) east of the mine. In 2015 the Art Wilson Co. was bought out by ACG Materials (formerly Harrison Gypsum Co.) of Norman, OK, and now does business under that name. The Adams deposit is a very thinly to thinly bedded gypsum-anhydrite deposit of probable Jurassic age. The top of the deposit is a karst surface with up to 40 feet (12 m) of relief. In the pit, the northern two-third is overlain by pale orange limestone, and the southern third is overlain by dioritic breccia. Anhydrite is more abundant deeper in the pit. (NBMG Bulletin 103; ACG Materials, website, http://www.acgmaterials.com/art-wilson-company)

The Art Wilson Co., intermittently mined 37,541 tons (34,057 MT) and shipped 35,080 tons (31,824 MT) of gypsum and a small amount of limestone from its Ludwig Mine in Lyon County, a 6% decrease in production and a 113% increase in shipping from 2018. The Ludwig deposit was last mined in 1930. The deposit is Jurassic in age and is in apparent fault contact with limestone on the east side and quartz monzonite on the west side. The deposit becomes anhydrite at depth. (NBMG Bulletin 103; ACG Materials, website, http://www.acgmaterials.com/art-wilson-company)

H. Lima Nevada, LLC, mined 130,000 tons (118,000 MT) of gypsum from its Lima Nevada Gypsum quarry and shipped the same, a 128% increase from 2018. The company acquired the Pioneer Mine, located about 10 miles (16 km) east of Las Vegas, from the Pioneer Gypsum Mining Co. in 2015 and renamed it. The property consisted of 330 acres (133 ha) of claims. In 2017, the company filed a Plan of Operations with the BLM for new and expanded construction of an open pit mine and supporting facilities. The Lima Nevada gypsum quarry mines the same late Miocene gypsite deposit as the PABCO operation. The gypsum is used as a soil enhancer and cement retarder (NBMG Bulletin 103; Plan of Operations, H. Lima Nevada, LLC, Lima Nevada Gypsum Quarry, 11/2017).

Georgia-Pacific Gypsum LLC operated its plant at Apex in 2017 but not in 2018 or 2019. When in operation, the plant used synthetic gypsum and crude gypsum imported from Saint George, Utah, for the production of drywall and related products. The plant has an annual capacity of 270,000,000 square feet (25,000,000 square m) of wallboard. It also owns the Weiser Ridge quarry about 10 miles (16 km) west of

Overton, which has not been actively mined since 1995. The quarry is in gypsum interbedded with limestone of the Permian Toroweap and Kaibab Formations. (Georgia-Pacific Gypsum LLC, website, http://www.gp.com)

CertainTeed Gypsum Manufacturing Inc. produced gypsum board, land plaster (soil amendment), and plaster products from its plant at Blue Diamond, Clark County. The plant has an annual capacity of 700,000,000 square feet (65,000,000 square m) of wallboard. The plant has two sources of gypsum. The company acquired about 70,000 tons from the company's Black Rock Mine in Mohave County, Arizona, about 120 miles (190 km) northeast of Blue Diamond, which trucks the gypsum to the plant. The company also acquired gypsum from the nearby Blue Diamond Hill Mine, operated by Gypsum Resources Materials, LLC. This source was partly disrupted during the first part of the year but by late July increased from 70,000 tons (63,500 MT) to 150,000 tons (136,000 MT) weekly. (United States Bankruptcy Court, District of Nevada, Gypsum Resources Materials, LLC, Debtor, Case No. BK-S-19-14796-mkn, 7/29/2019; NBMG Bulletin 103; CertainTeed Gypsum Manufacturing, Inc., website, http://www.certainteed.com)

The descriptions of 26 Nevada gypsum deposits are compiled in Nevada Bureau of Mines and Geology Bulletin 103, *Gypsum Deposits in Nevada*, 1987, by Keith Papke. A collection of Nevada gypsum samples acquired by Keith Papke is also available at the Nevada Bureau of Mines and Geology Great Basin Science Sample and Records Library.

Iron Oxide

The USGS reports iron ore that is not used in general iron and steel production as iron oxide pigments (IOP). This includes use in concrete and other construction materials (59%); plastics (11%), coatings and paint (7%); foundry uses (5%); and animal food, magnetic tapes, and other uses (12%). The estimated combined amount of sold or used finished natural and synthetic IOP decreased 21% to 41,900 tons (38,000 MT) from 2018, that was valued at $52,000,000. Estimated apparent consumption of combined naturally and synthetically produced IOP decreased 12% to 209,000 tons (190,000 MT). About 84% of IOP consumed was imported. The estimated average price was $1,553 per ton ($1,400 per MT), an 11% decrease from 2018. Nevada's production of IOP was small and not reported, but the gross proceeds decreased 55.5% to $385,237 in 2019.

Saga Exploration Co. was the only company to produce IOP (reported as iron oxide) in Nevada, and that was shipped from stockpiles at the Nevada Barth Mine in Eureka County. The iron ore consists mostly of hematite and some magnetite, and is used in the manufacturing of cement by the Nevada Cement Company in Fernley. The American Smelting and Refining Company leased the property from the Central Pacific Railroad Company and mined 544,295 tons (439,780 MT) of iron ore between 1903 and 1918 for use as flux in their lead smelter in Salt Lake City. Lessees continued to work the property off and on afterwards with some mining in the 1960s and 1970s. Saga Exploration has shipped iron ore from stockpiles since 1993.

Lime, Limestone, and Dolomite

Domestic production of quicklime and hydrate decreased 0.6% to an estimated 19,840,000 tons (18,000,000 MT), valued at about $2,400,000,000. Apparent consumption remained the same as in 2018 at 19,840,000 tons (18,000,000 MT). The average price at the plant was $112.50 per ton ($124 per MT) for quicklime and $137 ($151 per MT) for hydrate, a 0.5% decrease for the former and no change for the latter each from 2018. Despite the fluctuations in production and consumption the prices of quicklime and hydrate have increased 118% and 115%, respectively, since 1991. The USGS rolls its production figures of limestone and dolomite not used in lime production into the figure for crushed stone, and in 2019, about 69% of the crushed stone produced nationwide was from limestone and dolomite.

Nevada limestone production was 3,515,916 tons (3,189,618 MT), an 0.5% increase from 2018. Nevada dolomite production was 320,495 tons (290,751 MT), a 2% increase from 2018. The gross proceeds were $37,014,458 for limestone (including cement), a 6% decrease from 2018, and $4,537,427 for dolomite, an 8% increase from 2018.

Nevada's largest lime producer, the Pilot Peak high-calcium lime operation of Graymont Western US, Inc. (formerly Continental Lime, Inc.) is in the Toano Range about 10 miles (16 km) northwest of Wendover in Elko County. The operation produced 1,600,000 tons (1,450,000 MT) of limestone, a 22% increase from 2018. The company shipped 557,000 tons (505,000 MT) of chemical lime and 23,000 tons (20,865 MT) of hydrated lime, increases of 8% and 22%, respectively, from 2018. The plant has three kilns with a combined capacity of more than 700,000 tons (635,000 MT) of quicklime per year and a

hydrated lime plant capable of producing 350 tons (320 MT) per day. Production is mainly from the Devonian Devils Gate Limestone, which has between 35 years and 50 years of reserves.

Pilot Peak mainly markets lime to gold-mining operations for use in cyanide-solution pH control. Newmont Goldcorp Corp. and Barrick Gold Corp. are the main customers. However, the company also sells to the Bingham copper operation in Utah, and the Marigold, Rochester, and Florida Canyon Mines in Nevada. The company sells product to the coal-fired power plants to capture sulfur dioxide including the NVEnergy plant at Valmy. On the agricultural side, the company sells product to Amalgamated Sugar in Idaho to process sugar beets. The company also sells hydrated quicklime for road construction in Nevada, Utah, and Wyoming. (Elko Daily Free Press Mining Quarterly, Fall 2018; Graymont Western US, Inc. 2017 Sustainability Report, 3/20/2018; Graymont Western US, Inc. website, http://www.graymont.com).

Nevada's other lime producer, Lhoist North America (formerly Chemical Lime Co.), produced lime at Apex in the Apex mining district about 20 miles northeast of Las Vegas. In some years, the operation is the State's largest lime producer. The operation produced 1,370,000 tons (1,243,000 MT) of limestone and 276,000 tons (250,000 MT) of dolomite, increases of 4% and 2%, respectively, from 2018. The operation makes high-calcium quicklime used in metallurgical processing, paper manufacturing, and environmental markets. The company also produces dolomitic quicklime and hydrated high calcium lime at Apex, mainly for construction uses. The company's Henderson plant processes Type S hydrated dolomitic lime for building and home construction. The company shipped 428,000 tons (388,000 MT) of high-calcium quicklime and 83,000 tons (75,000 MT) of dolomitic quicklime, increases of 4% and 12%, respectively, from 2018. The company also shipped 58,000 tons (53,000 MT) of hydrated lime. Production is from the Devonian Sultan Limestone. (Lhoist North America website, https://www.lhoist.com)

As noted in the Cement section, Nevada Cement Co. mines limestone from three quarries. The company's main production came from its Churchill Mine in the Trinity Range about 40 miles east of the plant. There the company mined 361,276 tons (327,747 MT) from Mesozoic marble. The company mined 127,158 tons (115,357 MT) from Tertiary lacustrine limestone deposits in its main quarry a few miles south of Fernley. The company also mined 53,834 tons (48,838 MT) from massive limestone beds in the Upper Triassic Natchez Pass Formation near Relief Canyon in the southern Humboldt Range about 70 miles (110 km) northeast of the plant. These mark decreases of 43% and 33%, respectively, from 2018 for the first two mines, and an 8% increase for the third one. (Nevada Cement Co. website, http://www.nevadacement.com)

Aggregate Industries, a subsidiary of LafargeHolcim, Ltd., produced over 2,443,539 tons (2,216,764 MT) of crushed limestone, a 16% decrease from 2018, from its Sloan quarry a few miles south of Las Vegas. The crushed limestone is used as aggregate along with Portland cement, sand, and water to produce ready mixed concrete. As part of its South West Region Concrete Division, Aggregate Industries has a series of ready mix plants in North Las Vegas, Sloan, and Summerlin. Since it is used as aggregate, the Sloan production is included with that for crushed stone in the Aggregate section (Aggregate Industries website: https://www.lafargeholcim.us)

Of Nevada's specialty dolomite and limestone producers, the Nutritional Additives Corp. produces agricultural and nutritional dolomite products along the northwest edge of the Sonoma Range about five miles (8 km) south of Winnemucca. The company processed 1,709 tons (1,550 MT) of dolomite from the Triassic Dun Glen Formation. No mining or shipping amounts were reported. Between 2012 and 2018, only amounts shipped were reported, which has ranged between 1,389 tons (1,260 MT) and 1,739 tons (1,578 MT). Min-Ad, Inc., a subsidiary of Inter-Rock Minerals Inc. of Toronto, Canada, also produced dolomite from the Dun Glen Formation about three miles (5 km) south of the Nutritional Additives Corp. operation. The company mined 44,495 tons (40,366 MT) and shipped 45,894 tons (41,635 MT), increases of 10% and 6%, respectively, from 2018. Its dolomite is mostly sold to Midwestern states and as far as New York and Alberta for use in beef and dairy feed. Along with gypsum, the Art Wilson Co. mined 3,648 tons (3,309 MT) and shipped 2,626 tons (2,382 MT) of pure calcitic limestone from the Adams Mine, increases of 150% and 65%, respectively, from 2018. The limestone is used for soil pH control and reportedly contains no detectable magnesium.

Lithium

The U.S. Geological Survey keeps domestic production and actual consumption confidential due to there being only one producer of lithium raw materials in the United States (Silver Peak operation of Nevada,

see below). Estimated consumption declined 33% to 2,200 tons (2,000 MT) from 3,300 tons (3,000 MT) in 2018, an amount that had been steady since 2016. Imports for domestic consumption (up 24%), prices (up 162%), and world mine production (up 202%) generally increased from 2015 through 2018. Most of the increase was due to lithium-based rechargeable battery sales, which accounted for 65% of the global lithium market, up from 56% in 2018. Of the remaining market, 18% is ceramics and glass, 5% is lubrication grease, and the rest includes air treatment, metallurgy, polymers, pharmaceuticals, aluminum production, and other uses. However, 2019 saw major decreases in imports (down 27%), prices (see below), and world mine production (down 19%). World mine production (excluding that of the U.S.) fell to 85,000 tons (77,000 MT) from 105,000 tons (95,000 MT) in 2018. Production decreases were largely due to production exceeding consumption and falling prices. Also, though global consumption increased 18% to 63,600 tons (57,700 MT), it was below expectations due to China scaling back subsidies on electric vehicles, lower electric vehicle volumes, and consumers reducing lithium inventories.

Subsurface brines were the dominant raw material for lithium carbonate production worldwide because of low production costs as compared with the mining and processing costs for hard-rock ores, largely spodumene. However, with the growth of demand from China over the last decade, mineral-sourced lithium operations in Australia, Brazil, Canada, and China are estimated to have supplied about half the market since 2014. World production was dominated by six mineral operations in Australia, two brine operations each in Chile and Argentina, and one brine and one mineral operation in China. New brine-based sources were under development in Argentina, Bolivia, Chile, China, and the United States. New mineral-based sources were under development in Australia, Austria, Brazil, Canada, China, and ten other countries; and new clay-based sources were under development in Mexico and the United States. However, due to over production and decreased prices, several operations postponed plans to expand capacity, and junior mining operations in Australia, Canada, and Namibia ceased production.

Nevada has recently experienced a lithium rush mainly due to the Tesla Motors, Inc., Gigafactory 1 in the Tahoe-Reno Industrial Center in Storey County. Tesla Motors, Inc., is in partnership with Panasonic Corp. of Japan. At the factory, Panasonic produces battery cells and Tesla assembles them into battery packs for its Model 3 electric car. Production reached a sustained rate 3,000 battery packs per week in 2019. By year's end, Panasonic was producing 35 GWh of battery cells and was preparing to ramp up to 54 GWh. Tesla also produces the Model 3 drive units with the cars being assembled at the Tesla Factory in Fremont, California. The Fremont plant has an annual capacity of 590,000 of Models 3, S, X, and Y cars. The company also produces Powerwalls and Powerpacks at the Gigafactory 1. These are rechargeable lithium-ion battery stationary energy storage products with Powerwall for home use and Powerpack for commercial or electric utility grid use. Construction began in 2014 but the Gigafactory 1 has remained about 30% complete since 2018. However, production has been well underway with Tesla and Panasonic focusing on optimizing the current production capacity before resuming expansion. After suffering losses through 2019, the two companies reported a profit in early 2020.

Once in full production, the Gigafactory 1 will more than double the present world production of lithium-ion batteries and at significantly less cost using the economies of scale, innovative manufacturing, reduction of waste, and vertical integration by having most manufacturing processes under one roof. Tesla Motors, Inc., originally projected producing 500,000 electric cars annually by 2020. It produces over 365,000 electric cars in 2019. This higher rate will require an annual production of 27,000 tons (24,500 MT) of lithium compounds.

The company prefers to have lithium sourced as close as possible to its Gigafactory, preferably North America, but has had to go abroad for a supply. While Nevada is well placed as a potential supplier, only the Albemarle Silver Peak operation is presently producing. Tesla has a conditional supply agreement with Pure Energy Minerals, which has a lithium brine property in Clayton Valley, but that company has yet to go into production. Tesla recently signed an offtake agreement for supplies form Mount Holland, Australia, under a joint venture between Kidman Resources, Ltd., and SQM, and was in negotiations with SQM for supplies from Chile.

Besides lithium, the batteries also require significant amounts of graphite and cobalt. Panasonic has not disclosed the exact composition, but it has been estimated that each kilowatt-hour will require 0.23–0.46 lbs. (104–208 g) of cobalt, 1.3–1.8 lbs. (590–820 g) of lithium, and 2.6–3.5 lbs. (1.2–1.6 kg) of graphite. Graphite is used on the anode, but can be replaced with lithium titanate, which reduces battery charging times and has the potential of increasing the lithium market even more. At its Gigafactory 3 in Shanghai, China,

Tesla requested permission from the Communist government to use to use lithium iron phosphate batteries in the manufacture of its cars. This would eliminate the need for the more expensive and controversially sourced cobalt. Cobalt is used on the cathode. (Slash Gear, https://www.slashgear.com/tesla-panasonic-gigafactory-1-expansion-report-battery-production-model-y-11572844; Tesla Motors, Inc., website, https://www.tesla.com; INSIDEEVs, https://insideevs.com/news/395889/q4-2019-tesla-production-sites-assignment-capacity; WhichEV, https://www.whichev.net/2020/05/29/tesla-seeks-approval-in-china-to-build-new-cheaper-teslas; Electrek, 2/12/2018; https://electrek.co/2018/02/12/tesla-gigafactory-1-building-permits-expansion; Electrek, https://electrek.co/2018/05/17/tesla-secures-dea-lithium-australia; USA TODAY, 5/3/2018, https://www.usatoday.com/story/money/cars/2018/05/03/teslas-battery-gigafactory-hits-new-output-levels/576017002; Tesla Powerwall, https://en.wikipedia.org/wiki/Tesla_Powerwall; Lithium-titanate Batteries, https://en.wikipedia.org/wiki/Lithium-titanate_battery)

Albemarle U.S., Inc., shipped 7,887,994 pounds (3,578 MT) of lithium carbonate, from its Silver Peak operation, a 39% decrease from 2018. The gross proceeds decreased 44% to $36,022,907 from 2018. Lithium carbonate is used in the production of aluminum and ceramics. Production comes from 3,365,313,966 gallons (12,739,093,100 liters) of lithium chloride brine pumped from beneath the Clayton Valley playa. The brine varies between 100 and 300 ppm lithium and is pre-concentrated through solar evaporation in ponds covering much of north central Clayton Valley. The lithium carbonate is processed from the brine at the company's plant in the town of Silver Peak on the west side of the valley. The company also shipped 489,647 pounds (222 MT) of lithium hydroxide monohydrate and 39,058 pounds (17.7 MT) of lithium hydroxide anhydrous processed from lithium hydroxide monohydrate brought in from the company's operation at Kings Mountain, North Carolina. These compounds are used in carbon dioxide scrubbers and lithium battery electrolyte. The operation covers 13,500 acres (5,463 ha), and the company estimates that at an annual production rate of 6,600 tons (6,000 MT), about 20 years' worth of reserves remain. This operation was the world's dominant lithium producer until the late 1980s, when a Chilean lithium brine operation started up, followed by brine operations in Argentina and China. (Albemarle Corp., 10-K Report, 2/26/2020; Albemarle Corp., website, https://www.albemarle.com).

In 2018, through an option agreement, Caelan Capital, Inc., (formerly Alba Minerals, Ltd.), began acquisition of the Muddy Mountain Lithium Project in Clark County from Speleo Resources. The project consists of three prospects—Government Hills, Rattlesnake Wash, and White Basin. The prospects are within 20 miles (30 km) of one another and between 18 miles (29 km) and 33.5 miles (54 km) east of Las Vegas in the Muddy Mountains district. Caelan Capital, Inc., dropped its option, and the prospects are listed as available on the Speleo Resources website. (Caelan Capital, Inc., Management Discussion and Analysis, 6/1/2020; Speleo Resources, website, https://speleoresources.com)

American Batteries Metals Corp. completed a drill hole (TW-1) to 3,004 feet (916 m) on its Railroad Valley Property (a.k.a Western Nevada Basin Claim) in T8–9N, R56–57E in the Butterfield Marsh mining district. The Volcanic and Middle Sandstone areas assayed up to 148.5 ppm lithium, and another interval assayed 276 ppm lithium. The property consists of 1,300 placer claims covering just over 30,000 acres (12,140 ha). Aside from lithium, the company also commenced studying the possibility of producing sodium carbonate (a.k.a soda ash) from its Railroad Valley holdings. American Batteries Metals Corp. had changed its name from Oroplata Resources, Inc., in March. LithiumOre Corp., a subsidiary of Oroplata Resources, Inc., owned the Western Nevada Basin Claim. The company is headquartered in Incline Village, Nevada. The company again changed its name to American Battery Technology Co. in 2020. (American Battery Technology Co., news releases, 3/4/2019, 4/5/2019, 10/15/2019, 12/23/2019, 6/3/2020; American Battery Technology Co., website, https://americanbatterytechnology.com)

In 2018, American Lithium Corp. signed a letter agreement with Alaska Nevada Mining Co. Corp. whereby the former would acquire full interest, subject to a 2.5% gross royalty in the Tonopah Lithium Clay (TLC) Project. The company then expanded the property to 197 contiguous claims covering about 4,111 acres (1,664 ha) in T3–4N, R42E in the Tonopah mining district. The surface of the property is generally a Quaternary flat alluvial outwash plane interspersed with shallow washes draining westward. These washes partly expose the underlying Miocene Siebert Formation. A rhyolite intrusion crops out on high ground along the northeast property line. The outwash alluvium averaging 13 feet (4 m) thick. The

Siebert Formation consists of finely laminated claystone beds with lenses of sandstone and conglomerate, and occasional thin volcanic tuff and ash layers. Collectively, this mixed unit is referred to as claystone. Underlying the claystone are tuffaceous sandstones and conglomerates collectively referred to as the basal tuff unit. The claystone and basal tuff units dip at 2° to 3° to the northwest. The units are cut by four roughly parallel high angle with normal faults trending north-northeast with displacements ranging between 50 feet (15 m) and 500 feet (152 m). Elevated lithium concentrations occur in the alluvium, underlying claystone, and basal tuff unit. The highest and most consistent lithium grades occur in the lower claystone beds that are located east of the westernmost fault in the western half of the property. Samples taken from the upper claystone located west of this fault contain significantly less lithium (<400 ppm). East of this fault, the lithium concentration is highest in a zone of about 150 feet (46 m) above the basal tuff. The lithium concentration decreases higher in the sequence to the base of the alluvium. The mineralized zone covers about 3,035 acres (1,228 ha) over a vertical distance of between 100 feet (31 m) in the south and 500 feet (152 m) in the north of the property. The company completed 18 reverse circulation holes totaling 5,638 feet (1,719 m) and five core holes totaling 1,600 feet (487.7 m). Significant intercepts using a 600 ppm lithium cut-off grade included 200 feet (61 m) grading 1,109 ppm lithium, 119 feet (36.4 m) grading 1,084 ppm lithium, 160 feet (48.8 m) grading 1,140 ppm lithium, 175 feet (53.3 m) grading 1,125 ppm lithium, 180 feet (54.9 m) grading 1,034 ppm lithium, 120 feet (36.6 m) grading 1,142 ppm lithium, 220 feet (67.1 m) grading 1,237 ppm lithium, 220 feet (67 m) grading 1,239 ppm lithium, and 220 feet (67.1 m) grading 1,083 ppm lithium. (American Lithium Corp. news releases 6/19/2019, 7/11/2019; American Lithium Corp. NI 43-101 Technical Report, 4/15/2020; American Lithium Corp. website, https://www.americanlithiumcorp.com)

ANJ Resources, Inc., had an option to acquire full interest in the Salt Wells Project in Churchill County from Great Basin Oil, LLC, by spending $140,000 over a 2-year period. AJN Resources, Inc., drilled two reverse circulation holes on its Salt Wells lithium project. The first hole was drilled to 300 feet (91 m). Lithium values in the brine averaged between 1 and 5 ppm. The highest sediment sample assays occurred near the top of the hole with the best values being 660 ppm boron and 332 ppm lithium over 20 feet (6 m). Access to the second hole, which was lost after drilling 100 feet (30 m) was difficult due to soft ground. Boron values were anomalous, but lithium values were minimal. The company, therefore, dropped the project. Great Basin Oil, LLC, corporate status is listed as dissolved. The property, which covered 2,100 acres (850 ha), was part of the connected Salt Wells North, Salt Wells Connection, and Salt Wells South Projects of AmericanPacific Borate and Lithium, Ltd., covering about 14 square miles (36 square km). The projects lie within an internally drained, fault bounded basin covering about 42.5 square miles (110 square km). (Nevada Secretary of State, Business Search, 2020; AmericanPacific Borate and Lithium, Ltd., website, https://americanpacificborates.com; ANJ Resources, Inc., news releases, 8/21/2019, 12/16/2019; ANJ Resources, Inc., website, https://ajnresources.com)

In March, Belmont Resources, Inc., and MGX Minerals, Inc., completed one hole totaling 840 feet (256 m) in lake bed sediments on the Lithium Brine Project in the Kibby Basin in the Monte Cristo Valley in Esmeralda County, Nevada. The hole was commenced in December, but completion was delayed because of freezing rain and ice. Lithium assays of the sediment samples averaged above 100 ppm for the entire hole with a high of 127 ppm at 210 feet (64 m) and a low of 38 ppm at 40 feet (12 m). Groundwater analyses indicated the presence of saline rather than fresh water. It was rich in sodium and magnesium, but lithium ranged between 80 ppb and 150 ppb. The property consisted of 16 160-acre association placer claims covering 2,560 acres (1,036 ha) over Kibby Flat mostly in sections 29 through 32, T6N, R37.5E. MGX Minerals, Inc., has an option agreement with Belmont Resources, Inc., to acquire a 25% interest in the property, which includes plans to conduct up to an additional 4,800 feet of drilling across four diamond drill holes. (MGX Minerals, Inc., Management Discussion and Analyses, 12/30/2019; Belmont Resources, Inc., Management Discussion and Analyses, 6/14/2020; Belmont Resources, Inc., news releases, 3/4/2019, 3/21/2019, 5/2/2019; Belmont Resources, Inc., website, http://www.belmontresources.com)

Blue Eagle Lithium, Inc., acquired the South Railroad Lithium Project from Plateau Ventures LLC, through a quit claim deed in October 2018. The property consists of 276 placer claims covering 5,520 acres (2,234 ha) in T6N, R55E, just southwest of the Butterfield Marsh mining district. In April, the Company entered into a purchase and sale agreement with Rangefront Geological, whereby the former would purchase a 100% working interest in 50 mineral claims covering 1,000 acres (405 ha) in Railroad

Valley with an option to acquire an additional 26 mineral claims comprising of 520 acres (315 ha). Rangefront Geological would receive 200,000 restricted shares in Common Stock for the first 50 claims and 100,000 restricted shares in Common Stock for the remainder on May 14, 2019. Through June, Rangefront Geological conducted a baseline soil sampling program, and at least seven test pits were dug to test material for hand augering. No results have been released. The Security and Exchange Commission issued a temporary suspension of trading starting July 1, 2019. The company's website ceased, and no more activity has been reported. (Security and Exchange Commission Release no. 86271, 7/1/2019; Blue Eagle Lithium Inc. Provides Update on Current Groundwork at its Railroad Valley Property, 6/21/2019, Globe Newswire; Eagle Lithium, Inc., Form 10-K, 4/30/2019)

Cypress Development Corp. completed six holes totaling 2,309 feet (704 m) in a 0.2 square-mile (0.5 square km) area its Glory property of its Clayton Valley Lithium Project. The drilling program was designed to define an area of relatively higher grade lithium, upgrade the resources, provide tonnage for the mine plan, and provide material for geotechnical and metallurgical testing. The holes ranged between 308 feet (94 m) and 466 feet (142 m). The lithium assays of each hole are as follows: hole GCH-07, 459 feet (140 m) grading 1,032 ppm, including 289 feet (88 m) grading 1,189 ppm; hole GCH-08, 358 feet (109 m) grading 1,127 ppm, including 279 feet (85 m) grading 1,226 ppm; hole GCH-09, 380 feet (116 m) grading 924 ppm, including 243 feet (74 m) grading 1,115 ppm; hole GCH-10, 298 feet (91 m) grading 948 ppm, including 167 feet (51 m) grading 1,130 ppm; hole GCH-11, 390 feet (119 m) grading 1,004 ppm, including 269 feet (82 m) grading 1,115 ppm; and hole GCH-12, 367 feet (112 m) grading 1,127 ppm, including 262 feet (80 m) grading 1,252 ppm. Except for holes GCH-09 and GCH-10, all holes bottomed in >600 ppm lithium.

Geologically, uplifted basement rocks of Angel Island dominate the western part of the project area, while uplifted, lacustrine sedimentary units of the upper Miocene to lower Pliocene Esmeralda Formation dominate the southern and eastern parts. Significant lithium concentrations are encountered in the sedimentary units of the Esmeralda Formation at the ground surface and to depths of up to 400 feet (124 m). The lithium bearing sediments occur mainly as calcareous and salty interbedded tuffaceous mudstones and claystones. The overall mineralized sedimentary package is a laterally and vertically extensive, roughly tabular zone of interbedded mudstone and claystone with at least two prominent subsurface oxidation-reduction horizons. The clay includes illite, smectite, and montmorillonite. Lithium is commonly found absorbed within the lattice structure of the illite and smectite, which largely make up the mudstones and claystones. Two samples designated as oxide and reduced material analyzed as being composed of 57–61% illite, 17–26% smectite, 17–22% other silicates, and less than 0.25% calcite and dolomite.

Production will involve extraction of lithium from the clay. Two phases of metallurgical extraction research produced positive results, and a commercially viable process based on filtration was identified. NORAM Engineering and Constructors, Ltd., was contracted for concept testing focused on revising the extraction flowsheet. A NI43-101 technical report prefeasibility study with updated resource estimates was underway for release in 2020.

The Clayton Valley Lithium Project, consists of two properties containing placer claims and overlapping lode claims covering 1,280 acres (518 ha) for the Glory property and 2,700 acres (1,093 ha) for the Dean property. The Dean property adjoins the east boundary of the Albemarle Corp. Silver Peak operation, and the Glory Project adjoins the south boundary of the Dean property. The company completed acquisition of full interest minus a 3% net smelter return in the Glory property in January. (Cypress Development Corp. NI43-101 Technical Report, 5/19/2020; Cypress Development Corp. Management Discussion and Analyses, 3/24/2020; Cypress Development Corp. news releases, 1/28/2019, 2/7/2019, 2/26/2019, 4/11/2019, 4/23/2019, 7/15/2019, 11/14/2019; Cypress Development Corp. website, https://www.cypressdevelopmentcorp.com)

Enertopia Corp., completed five diamond core holes on its Clayton Valley NV Lithium Property in late 2018, and drilled in 2019. For the 2019 drill program, the lithium assays of each hole are as follows: TOP-01: 1) combined 275 feet (84 m) grading range 300 ppm to 1,760 ppm averaging 1,039 ppm, 2) upper claystone 118 feet (36 m) grading range 470 ppm to 1,230 ppm averaging 815 ppm, 3) reduced claystone 157 feet (48 m) grading range 300 ppm to 1,760 ppm averaging 1,179 ppm; TOP-02: 1) combined 262 feet (80 m) grading range 490 ppm to 2,580 ppm and averaging 1,231 ppm, 2) upper claystone 76 feet (23 m) grading range 490 ppm to 1,630 ppm and averaging 870, 3) reduced claystone 186 feet (57 m) grading range 920 ppm to 2,580 ppm and averaging 1,368 ppm; TOP-03: 1) combined 335

feet (102 m) grading range 400 ppm to 1,890 ppm and averaging 1,002 ppm, 2) upper claystone 85 feet (26 m) grading range 400 ppm to 1,190 ppm and averaging 623 ppm, 3) reduced claystone 250 feet (76 m) grading range 500 ppm to 1,890 ppm and averaging 1,129; TOP-04 1) combined 265 feet (81 m) grading range 820 ppm to 2,080 ppm and averaging 1,208 ppm, 2) upper claystone 54 feet (16 m) grading range 940 ppm to 2,080 ppm and averaging 1,312, 3) reduced claystone 116 feet (35 m) grading range 820 ppm to 1,730 ppm and averaging 1,255 ppm, 4) lower claystone 95 feet (29 m) grading range 890 ppm to 1,480 ppm and averaging 1,102 ppm; TOP-02M 1) upper claystone 30.25 feet (9 m) grading range 490 ppm to 1,630 ppm and averaging 1,140 ppm, 2) reduced claystone 80 feet (24 m) grading range 920 ppm to 2,580 ppm and averaging 1,405 ppm. The area containing the Enertopia claim block gently slopes toward the northwest with the washes cutting through the Tertiary Esmeralda Formation. The Esmeralda Formation here consists of mostly weathered, soft and crumbly siltstones, mudstones and claystones with several thin beds of harder, more consolidated sediments. Most beds were tuffaceous, as evidenced by fine crystal shards. Almost all of the sediments are calcareous, indicating lakebed deposition. An NI43-101 technical report with a maiden resource estimate was underway for release in 2020. The property which consists of nine lode (Dan claims) and eight placer claims (Steve claims) covering 160 acres (65 ha) in section 14, T2S, R40E. (Enertopia Corp., NI43-101 Technical Report, 3/30/2020; Enertopia Corp., news releases, 2/19/2019; Enertopia Corp., Form 10-K, 11/29/2019; Enertopia Corp., website, https://www.enertopia.com)

Ioneer, Ltd. (formerly Geoscience Global), headquartered in North Sydney, Australia, drilled completed 45 holes at its Rhyolite Ridge lithium-boron property about 16 miles (25 km) west of the Silverpeak Operation. The program commenced in July 2018 and was completed in January 2019. The program was largely in-fill drilling between existing holes and focused on the starter pit area and an area immediately to the south. Some of the results of this program are reported in MI-2018. No drilling was reported on the property for the rest of 2019 or through 2020. The lithium-boron mineralization remains open to the south. The deposit is 4,600 feet (1,400 m) wide and extends 8,200 feet (2,500 m) along strike. The deposit is tabular and flat lying to gently dipping with the high-grade Upper Zone averaging 65 feet (20 m) thick over its known extent. The lithium-boron mineralization has a low clay and high searlesite ($NaBSi_2O_5(OH)_2$) content. Lithium-boron grades are highest in the southwestern part of the deposit, where the starter pit is planned.

The company updated its reserves and resources for the Rhyolite Ridge South Basin and was preparing a definitive feasibility study that was released in early 2020. The mine would be an open pit with 16-foot (5-meter) high benches. The ore would be processed at a plant to be built on site. Production is expected to commence in 2023 with an expected mine life of 26 years and would progress in two phases. The first phase will be from an initial starter pit now under construction in the southwestern part of the ore body. Production from this pit will last about 4.5 years. Lithium grades at the starter pit are about 15% higher than the average grade of the deposit and more exposed at the surface. The ore zone shallows and increases in grade southward. The second phase will expand the pit southward and eastward first and later northward. Annual production was expected to be 22,700 tons (20,600 MT) of lithium carbonate and 192,200 tons (174,400 MT) of boric acid with recovery rates of 85% for lithium carbonate, 95% for lithium hydroxide, and 79% for boric acid. The initial capital cost would be about $785,000,000 with another $74,000,000 to build a lithium hydroxide unit in year three. *The average all-in sustaining cash cost is estimated to be $2,280 per ton (0.9 MT) of battery grade lithium hydroxide.* The project contains over 600 claims covering 19.2 square miles (51.6 square km). This includes another 81claims under an option to purchase. (ioneer, Ltd., annual report, 9/17/2020; ioneer, Ltd., half-year report, 2/26/2020; ioneer, Ltd., quarterly reports, 10/28/2019, 1/30/2020; ioneer, Ltd., website, https://www.ioneer.com)

Noram Ventures, Inc., completed a Phase IV drilling program consisting of deepening six existing holes with new drilling totaling 1,154 feet (352 m) on its Zeus lithium property in Clayton Valley. The lithium assays of the new drilling are as follows: CVZ-47-RD 235 feet (71.6 m) grading range 570 ppm to 1,750 ppm and averaging 1,004 ppm; CVZ-48-RD 65 feet (19.8 m) grading range 192 ppm to 1,260 ppm and averaging 528 ppm; CVZ-50-RD 1) 115 feet (35 m) grading range 215 ppm to 1,080 ppm and averaging 512; CVZ-51-RD 317 feet (96.6 m) grading range 550 ppm to 2,730 ppm and averaging 1,074 ppm; CVZ-52-RD 167 feet (50.9 m) grading range 490 ppm to 1,720 ppm and averaging 968 ppm; CVZ-53-RD 255 feet (77.7 m) grading range 438 ppm to 2,260 ppm and averaging 1,072 ppm. The company upgraded its resource estimates. The rocks hosting the lithium consist mostly of soft and crumbly tuffaceous

siltstones, mudstones and claystones, which contain several thin beds of harder, more consolidated sediments. Most of the sediments are also calcareous with some algal mats present and likely represent lakebed deposits. The rocks are considered to be part of the upper Miocene to lower Pliocene Esmeralda Formation. The purer claystones have higher grade lithium than claystone mixed with mudstones and siltstones. The property contains 150 placer claims and 140 lode claims covering 3,000 acres (1,214 ha). (Noram Ventures, Inc., news releases: 10/17/2019, 1/9/2020, 1/15/2020, 1/29/2020; Noram Ventures, Inc., website, http://www.noramventures.com)

HiTech Minerals, Inc., drilled 21 auger holes on its Clayton North Project in the Alum mining district of Esmeralda County in 2018, but reported no exploration activity for 2019. The company concentrated its U.S. exploration efforts by drilling nine holes on its McDermitt lithium property in Oregon about 17 miles west-northwest of McDermitt, Nevada. The Clayton North Project covers lithium-bearing clays in the upper Miocene to lower Pliocene Esmeralda Formation. HiTech Minerals, Inc., is the U.S. based subsidiary of Jindalee Resources, Ltd., headquartered in West Perth, Australia. The project consists of 28 placer claims covering 560 acres (227 ha). (Jindalee Resources, Ltd, annual report, 10/23/2019; Jindalee Resources, Ltd, quarterly report, 1/30/2020; Jindalee Resources, Ltd, news release, 8/2/2019; Jindalee Resources, Ltd, website, https://www.jindalee.net)

Iconic Minerals, Ltd., completed a drill hole at its Bonnie Claire Lithium Project in Sarcobatus Valley in 2018. Though a new drill project was planned for late 2019, no drilling was conducted at least through mid-2020. The deposit at Bonnie Claire would be expected to contain the lithium in clay. However, the lithium deposit at Bonnie Claire is different in that lithium compounds like lithium carbonate and lithium salts occur within the pore space between fine grain clay, silt, and sand. The fine-grained portions of the sediment have particle sizes equivalent to that of clay, but the sediment does not contain high percentages of typical clay minerals. The sediments consist mainly of quartz, calcite, feldspar, and mica and average less than ten percent zeolitic clay. Therefore, the lithium must be occurring as carbonate or a chloride not associated with clay minerals. Also, the lithium-bearing sediments of the deposit surround an oxidation/reduction horizon with the higher lithium concentrations occurring mainly within the oxidized zones. The company contracted St-Georges Eco-Mining Corp. to conduct concentration and metallurgical testing. St-Georges Eco-Mining Corp. successfully developed a nitric acid leaching method that puts between 99.97% and 100% of the lithium from the sediments into solution at room temperature within 1–4 hours.

The company also has an option agreement to acquire full interest in the Smith Creek Project in Lander County. However, no exploration work has been reported since a Magneto Telluric geophysical survey was completed in 2017. (Iconic Minerals, Ltd., Management Discussion and Analysis, 12/20/2019; Iconic Minerals, Ltd., Audited Annual Financial Statement, 12/20/2019; Iconic Minerals, Ltd., news releases, 7/10/2019, 7/25/2019, 2/20/2020; Iconic Minerals, Ltd., website, http://iconicminerals.com)

Lithium Nevada Corp., a subsidiary of Lithium Americas Corp. (formerly Western Lithium USA Corp.) owns the Nevada Lithium and Thacker Pass Projects in a claim blc, covering 37,641 acres (15,233 ha), mainly in the Disaster mining district in northern Humboldt County. The Thacker Pass Project is the former Stage I area and is now a stand-alone project. It covers 8,320 acres (3,367 ha) in much of the northern half of T44N, R35E at the southern end of the McDermitt caldera. The property is within the 16.3 Ma McDermitt caldera, and covers several areas containing inferred uranium resources and broader zones of uranium, molybdenum, and lithium mineralization. Significant lithium mineralization has been defined in five areas referred to as: PCD, South Lens, South Central Lens, North Central Lens, and North Lens by Chevron (who drilled the area in 1985) and Stages I through V respectively by Lithium Americas Corp. In each area, the high lithium clay occurs in thick, apparently continuous accumulations with the zones of mineralization varying between about 3 and 300 feet (0.9 m and 91 m) thick. The lithium largely occurs in high-lithium clays, including hectorite and illite, with significant amounts of clay formed from the hydrothermal alteration of the volcaniclastic sedimentary rocks making up the moat deposits in the western part of the caldera. These moat deposits extend north through the western Montana Mountains and Disaster Peak into Oregon. In the Thacker Pass area, the sedimentary section of these deposits consists of alternating layers of thick claystone and thin volcanic ash with the claystone making up 40% to 90% of the section. Surficial oxidation persists to depths of 50 feet to 100 feet (15 m to 30 m). The lithium content does not change across the oxidized/unoxidized rock boundary. The highest lithium grades generally occur in the middle and lower parts of the sedimentary section. The clay

consists of two different mineral types, smectite and illite, with hectorite being a subtype of smectite. The smectite type clay occurs at depths of less than 100 feet (30 m). Hectorite has been found elsewhere in the McDermitt caldera. Drill intervals with lithium contents commonly greater than 4,000 ppm contain clay that is more like illite than smectite. The illite type clay generally occurs below 100 feet (30 m) and sporadically occurs in intervals that contain higher lithium content.

No drilling was reported, and the company's "Drilling and Geological Expenses" were $533,000, down 60% from 2018. The company moved the Project south of the Montana Mountains to avoid disturbing sensitive ecological areas located within those mountains. The company commenced a definitive feasibility study with a Phase 1 annual production capacity of 22,000 tons (20,000 MT) of battery-quality lithium carbonate equivalent. The study is expected to be completed in mid-2020. The Bureau of Land Management commenced work on a draft environmental impact statement in early 2020 for release later in the year. By year's end, over 23,100 pounds (10,500 kilograms) of high-quality lithium sulfate had been produced at the process testing facility in Reno, Nevada. The company was also evaluating its financing options, including the possibility of a joint venture partner at Thacker Pass.

Clay from two open pits at the Stage 1 lens of the Nevada Lithium Project was processed in Fernley. RheoMinerals, Inc. (formerly Hectatone, Inc.), a subsidiary of Lithium Americas Corp., operated its 24,000-ton (22,000-MT) annual capacity organoclay plant at the company-owned industrial complex in Fernley adjacent to rail and freeway access. Production had commenced in December 2014, but the plant was not fully operational until 2016. The company developed methods to process hectorite into a drilling mud additive initially under the trade name Hectatone™ and later into six drilling related products under several trade names including RheoMinerals™ and Hectagel™. The decline in drilling for oil and gas hampered demand, and the company redirected product development and successfully entered the environmental, animal feed, and industrial coatings markets. Sales for 2019 were $5,340,000, up 10% from 2018. However, the production was running at a loss with the actual cost of production being $6,294,000 for 2019 alone, a loss of $946,000. In the fourth quarter, the company decided to terminate the RheoMinerals, Inc., business including divesting its assets. (Lithium Americas Corp. Management Discussion and Analysis, 3/13/2020; Lithium Americas Corp. Audited Annual Financial Statements, 3/13/2020; Lithium Americas Corp. Annual Information Form, 3/13/2020; Lithium Americas Corp. news releases, 9/25/2019, 11/12/2019, 1/21/2020, 7/30/2020; Lithium Americas Corp. website, https://www.lithiumamericas.com)

Pure Energy Minerals, Ltd., of Vancouver, British Columbia, conducted geophysical surveys on and drilled the Clayton Valley South portion of its Clayton Valley Project (a.k.a. Nevada Lithium Brine Project) in 2017. Only minor field work was reported for 2018 and 2019, but a drilling program was commenced in 2020. Pure Energy Minerals, Ltd., reached an agreement with Schlumberger Technology Corp., a subsidiary of Schlumberger, Ltd., on the terms of an earn-in agreement providing for the development of the Clayton Valley Project. Under the agreement, Schlumberger Technology Corp. has the option to acquire all of Pure Energy Minerals interests in the Clayton Valley Project. Schlumberger Technology Corp. may earn into the option by constructing a pilot plant for processing lithium brine at its cost and expense. Schlumberger Technology Corp. then has three years to exercise the option commencing on receipt of the final permits required to construct the Pilot plant and may then only exercise the option if Pilot plant is completed and has been successfully tested. Pure Energy Minerals, Ltd., retains a 3.0% net smelter returns royalty and receives an advance minimum royalty payment of US$400,000 per year starting January 1, 2021 for a period of five years or until the Clayton Valley Project achieves commercial production. The project consists of 1,083 placer claims covering 23,228 acres (9,400 ha) with lithium bearing brine present down at least to 2,790 feet (820 m). (Pure Energy Minerals, Ltd., Management Analysis and Discussion, 11/26/2019, 2/25/2020; Pure Energy Minerals, Ltd., news releases, 5/1/2019, 5/30/2019, 5/19/2020; Pure Energy Minerals, Ltd., website, http://www.pureenergyminerals.com)

In 2018, Reedy Lagoon Corp., Ltd., conducted a 3-dimensional audio magnetotelluric survey on its Alkali Lake North Property; completed a core hole on its Big Smoky Valley South Property; completed one core hole on its Columbus Salt Marsh Property; and staked and conducted a 3-dimensional audio magnetotelluric survey over its Clayton Valley Property. However, in 2019, no field work was report the properties, and the Big Smoky Valley South and Columbus Salt Marsh properties were divested. (Reedy Lagoon Corp., Ltd., Annual Report, 6/30/2019; Reedy Lagoon Corp., Ltd., Quarterly Reports, 4/30/2019, 7/31/2019, 1/31/2020; Reedy

Lagoon Corp., Ltd., website, http://www.reedylagoon.com.au)

Spearmint Resources, Inc., drilled its McGee Lithium Project in 2018, but other than pay the claim maintenance fees, reported no work on its Clayton Valley Lithium Prospects in 2019. The company announced a drilling program to commence later in 2020. The company's Clayton Valley Lithium Prospects consist of the McGee Lithium Project (formerly McGee Claim Block) about five miles (eight km) southeast of Silverpeak, and the Elon Claim Block about seven miles (11 km) southwest of the McGee Lithium Project. McGee Lithium Project consists of 20 lode claims and six 80-acre association placer claims covering 880 acres (356 ha). (Spearmint Resources, Inc., Management Analysis and Discussion, 5/29/2020; Spearmint Resources, Inc., Audited Annual Financial Statements, 5/29/2020; Spearmint Resources, Inc., news releases, 6/19/2020, 7/28/2020; Spearmint Resources, Inc., website, https://www.spearmintresources.ca)

In 2017, United Battery Metals Corp. (formerly United Lithium Corp.) entered into an option agreement with Ultra Lithium, Inc., to acquire a 100% interest in certain claims of the latter company's South Big Smoky Valley property. The property consisted of 100 20-acre placer claims covering about 2,000 acres (809 ha) in T1N, R38E in Esmeralda County. In 2018, after spending less than $70,000 on field and other work, the company dropped the option. In 2019, Ultra Lithium, Inc., dropped South Big Smoky Valley property. (Ultra Lithium, Inc., Management Discussion and Analysis, 2/28/2020; United Battery Metals Corp. Management Discussion and Analysis, 11/27/2018, 3/21/2019; Ultra Lithium, Inc., website, http://www.ultralithium.com)

Magnesia

Domestic production noted as shipments of magnesium compounds (magnesium oxide content) was an estimated 452,000 tons (410,000 MT), a 1% increase from 2018, valued at $276,000,000. Production increased after a decline that followed seven consecutive annual increases. About 73% of domestic magnesia production came from seawater and natural brines, and the rest was produced from mining magnesite and minor brucite in Nevada and processing olivine stockpiles in Washington. Estimated apparent consumption increased 2% to 948,000 tons (860,000 MT) from 2018, the third consecutive annual increase. Most of the difference between consumption and production was made up by imports. About 72% of the magnesium compounds are used in agricultural, chemical, construction, environmental, and industrial operations in the form of caustic-calcined magnesia, magnesium chloride, magnesium hydroxide, and magnesium sulfates. The remainder is used for refractories in the form of dead-burned magnesia, fused magnesia, and olivine.

China accounts for 68% of the world production of magnesia and provides about 60% of the caustic-calcined magnesia imports into the U.S. Prices for caustic-calcined magnesia range between $73 and $190 per ton. ($80 and $210 per MT). Prices increased 14% through August 2019. Overall consumption increased due increases in use for animal feed supplements, fertilizer, and wastewater treatment. (https://www.made-in-china.com/products-search/hot-china-products/Caustic_Calcined_Magnesia_Price.html)

Premier Chemicals, LLC, of Cleveland, Ohio, originally owned the Gabbs magnesia operation in Nye County, which is the only place in the country that mines magnesite. Magnesite and some brucite (<5%) have been mined at Gabbs since 1935, and in the 1940s were processed in Henderson, Nevada, to make magnesium metal. From the 1950s to the 1980s, mining and processing was by Basic Industries, a major producer of refractory magnesia. During the 1990s, the availability of cheap foreign refractory magnesia caused production at Gabbs to be switched to light-burned (caustic calcined) magnesia that is mainly marketed for wastewater treatment and agricultural uses.

Basic Industries mined 324,723 tons (294,225 MT) of magnesite from the quarry, a 23% increase from 2018. The company shipped 118,698 tons (114,257 MT) of magnesium oxide, a 5% decrease from 2018. The plant capacity is rated at 150,000 tons (136,000 MT) per year. The gross proceeds decreased 10% to $6,494,420 in 2019. The magnesite and brucite occur as complex replacement bodies in Triassic dolomite in an area of about 1,300 acres (530 ha) in the Paradise Range just east of the town of Gabbs. The resource is thought to be sufficient for more than 50 years of production at present mining rates.

Perlite

Domestic mine production of perlite was 573,000 tons (520,000 MT), a 2% increase from 2018. The value of domestic processed perlite was $35,000,000. Until 2003, the U.S. was the world's largest producer of perlite, but has been surpassed Greece, Turkey, and China. Estimated apparent consumption increased 8%

to 738,000 tons (670,000 MT) in 2019, the difference between production and consumption being made up by imports mostly from Greece. The estimated average price remained the same in 2019 at $65.30 per ton ($72 per MT). About 58% of perlite production is used in building construction products. About 18% is used for horticultural aggregate and most of the rest is used in fillers, filters, and specialty insulation.

Nevada has large perlite resources, and several deposits in central Pershing, northern Lincoln, and southern Clark counties were mined extensively in the past. However, the state now produces only minor amounts of perlite. Current perlite production in Nevada is restricted to relatively small-scale mining of two deposits for niche markets, and the state produced less than 0.4% of the domestic total in 2019. In Nevada 2,213 tons (2,007 MT) were mined in 2019 and 10,357 (9,396 MT) were shipped, an 87% decrease in mining and a 6% increase in shipping. The gross proceeds increased 5.5% to $692,241 in 2019.

Wilkin Mining and Trucking Inc. mined, processed, and shipped 2,213 tons (2,007 MT), a 35% increase in 2019, from the Tenacity Perlite Mine in the South Pahroc Range mining district about 25 miles (40 km) west of Caliente, Lincoln County. The company has mined perlite in the area for more than 25 years. The company has a small popping plant in Caliente, and sales were almost exclusively of expanded perlite used for horticultural purposes. The deposit consists of a large, flat-lying, 20-foot (6-m) thick perlite flow with obsidian pellets in Tertiary rhyolitic volcanic rocks.

U.S. Silica, LLC, shipped 8,144 tons (7,368 MT) of expanded perlite, an of 0.3% 2019, from its Colado diatomite plant in Pershing County. The product is marketed as a filter aid. The crude perlite comes from the Popcorn Mine (also known as the Desert Mountains Perlite Deposit and Perlite Mine) about 15 miles (24 km) south of Fallon, Churchill County. Perlite is usually mined a week or two per year. Perlite was mined in 2018, but not in 2019. The mine did ship 6,191 tons (5,616 MT), likely from stockpiles, a 19% decrease from 2018. The Colado diatomite plant includes a perlite expander installed in 1994 with an annual capacity of about 15,000 tons (13,600 MT). The perlite is crushed and screened as a raw material for the company's Blair, Nebraska facility. The plant also sells expanded perlite ore for use as a filter aid. The perlite occurs as glassy flows associated with rhyolitic flows (NBMG Bulletin 83; U.S. Silica Holdings, Inc., Form 10-K, 2/25/2020; U.S. Silica, LLC, website, http://www.ussilica.com)

In 2017, Sunrise Resources, PLC, discovered a new deposit of perlite and pozzolan and staked it as its NewPerl perlite project about 15 miles (24 km) south of Goldfield in the Cuprite district. For permitting reasons, the project was then divided into a northern Jackson Wash Project a southern NewPerl Project. The two projects are about 10 miles (16 km) apart. In 2018, the company conducted geologic mapping and sampling programs, but no field work was reported for 2019. Expandability tests indicated that large areas of both projects are suitable for horticultural grade perlite production. The test results identified two sites at NewPerl. One was along a 660-foot (200-meter) wide flank of a 3,300-foot (one-km) long ridge with up to 260 feet (80 m) of vertical relief. The other is the Knoll prospect, which contains an outcrop area about 1,300 feet (400 m) in diameter and forms a knoll about 150 feet (45 m) high. A notice level exploration permit was approved for a program at the Knoll prospect to drill up to eight holes and conduct up to 1,000 tons (907 MT) of bulk sampling. However, the work had not been carried out by year's end. At the Jackson Wash Project, expandability tests indicated the best samples came from a mile (1.6 km) long continuous perlite flow averaging 500 feet (150 m) in width with a 30-foot (10-meter) vertical projection above its immediate surroundings. (Sunrise Resources, PLC, news releases, 1/3/2019, 4/24/2019, 5/14/2019; Sunrise Resources, PLC, Presentation, 8/18/2020; PLC, 2019 Annual Report, 2/18/2020; Sunrise Resources, PLC, 2019 Half-yearly Report, 5/29/2020; Sunrise Resources, PLC, website, https://www.sunriseresourcesplc.com)

Potassium Sulfate

Potassium sulfate is lumped under potash. Domestic production of potash was 562,000 tons (510,000 MT) valued at $400,000,000. Apparent consumption was 5,950,000 tons (5,400,000 MT) with the difference made up with imports. Production from Nevada's one small producer accounted for less than 2% of domestic production.

Heart of Nature, LLC, a subsidiary of Advanced Bio-Minerals Technologies, LLC, of Henderson, Nevada, mined and processed 9,748 tons (8,843 MT) of material (reported as potassium sulfate) from its Alum/Sulfur pit (formerly the Rulco Potassium Sulfate project) in the Alum mining district in Esmeralda County, a 35% decrease from 2018. The company mines material as needed but did not submit a report for 2018. The gross proceeds declined 2% to $287,574 from 2018. The mineral assemblage mined includes alunite, potassium alum (kalinite), jarosite, gypsum, native sulfur, and potassium feldspar. The

alunite occurs with kalinite and sulfur as veins, stringers, and fracture fillings in either a dike or neck of rhyolite intruded into folded rhyolitic tuffs of the Tertiary Esperanza Formation. Reddish, iron-stained jarosite occurs locally in the pit. The material is mined, crushed, and stockpiled with the stockpiled material being processed as necessary. Alunite and sulfur are the main essential minerals with thiobacillis bacteria added. The final product is sold as an agricultural soil amendment, as an odor control for manure, and as an odor and algae control for ponds under the trade name SK Microsource™. (Heart of Nature, LLC, website, http://www.heartofnature.biz)

Pozzolan

The NDT includes pozzolan with clay. The only pozzolan producer is the Mustache quarry near Fernley owned by the Nevada Cement Co., which mined 959 tons (849 MT) with gross proceeds of $21,454. The quarry had was idle from 2014 through 2018. The source of the pozzolan is shale within the Pliocene Chloropagus Formation.

Sunrise Resources, PLC, drilled its CS Pozzolan-Perlite Project in the Crow Springs district, Esmeralda County in 2018 but not in 2019. Bulk sampling tests were conducted with positive results for the use of the pozzolan in cement and the perlite for horticultural purposes. The company completed the season with sensitive and key baseline studies over the project area including botanical, wildlife, bird, golden eagle, archeological, cultural, and architectural surveys, all of which were accepted by the BLM. The company then submitted its Plan of Operation. Work then commenced on an environmental assessment and a series of 14 supplemental reports. These were released in 2020 followed by a finding of no significant impact.

The company proposed open-pit mining the deposits. The Plan of Operation tentatively calls for a four-phase, 27-year plan. Phases 1 through 3 (years 1 to 15) would involve mining pozzolan and perlite from the Main Zone. Phase 4 would mine pozzolan only from the Tuff Zone. Over the life of the mine, about 1,656,000 tons (1,502,000 MT) of perlite, 14,523,000 tons (13,175,000 MT) of pozzolan, and 2,617,000 tons (2,374,000 MT) of waste rock would be mined. The material is semi-consolidated and fractured and drilling and blasted is not expected to be necessary. The pozzolan and perlite will be crushed and screened at on-site processing facilities. The project is expected to disturb 264.9 acres (107.2 ha) with another five acres (2 ha) disturbed for road widening and a well pad. The Plan of Operation does not include mining the northern part of the Main Zone or Northeast Zone, which have potential to sustain mining. The company signed an agreement with Tonopah Resources, Inc., to evaluate and if appropriate, to lease the latter's mothballed grinding plant at Millers about 14 miles (22 km) west of Tonopah. The company also signed an agreement to lease water rights at the old Liberty molybdenum mine from Liberty Moly, LLC.

These deposits formed in and around a rhyolitic volcano with its crystalline core located west of the Main Zone. Thick perlite deposits formed on the margins of crystalline rhyolite lava flows in the inner parts of the volcanic complex just east of the crystalline core. Further out from the core, east and northeast of the Main Zone, tephra zones formed as air fall deposits with the Northeast Zone being an extensive tephra zone. Some of the tephra was contaminated by silty material in drainages and marginal lakes forming a silty tuff. Perlitic flows in the eastern part of the Main Zone are interbedded with the tephra deposits. Still further away from the crystalline core, finer grained pyroclastic material fell to the ground to form volcanic tuffs such as in the Tuff Zone. The more distal tephra, tuffs, and silty tuffs are glassy and silica- and aluminum-rich and contain a significant water content, which makes them good pozzolans. However, their perlitic properties are compromised by being finer grained and having a higher content of non-expandable material, especially where contaminated by non-glassy silty material. (BLM, Crow Springs Project Mine Plan of Operations and Access Road and Well Site Right-of-Way, Esmeralda County, Nevada, Environmental Assessment, DOI-BLM-NV-B020-2020-0002-EA, 7/2020; BLM, Crow Springs Project Mine Plan of Operations NVN-096868/Nevada Reclamation Permit Application and Approval of Issuance of Rights of Way Grants, Finding of No significant Impact, 7/28/2020; Sunrise Resources, PLC, Presentation, 8/18/2020; Sunrise Resources, PLC, 2019 Annual Report, 2/18/2020; Sunrise Resources, PLC, 2019 Half-yearly Report, 5/29/2020; Sunrise Resources, PLC, news releases, 5/13/2019, 8/14/2019, 9/20/2019, 12/4/2019, 12/16/2019, 2/19/2020, 5/15/2020; Sunrise Resources, PLC, website, https://www.sunriseresourcesplc.com)

Rare Earths

MP Materials, Mountain Pass Mine in California, which restarted production in 2018 after being on care and maintenance since 2015, is the only domestic producer of rare earths elements (REE). The company

processes REE from the fluorocarbonate mineral bastnasite, and produced 28,600 tons (26,000 MT) of bastnasite concentrates (60-70% rare earth oxides), a 44% increase from 2018. Estimated apparent consumption was 14,300 tons (13,000 MT), a 12% increase from 2018. All of the concentrates were sent to China for refining, and consumption was supplied by imports, 80% of which came from China. Prices vary according to which REE oxide and range between 91 cents per pound ($2 per kilogram) for cerium oxide and europium oxide and $231 per pound ($510 per kilogram) for terbium oxide. World mine production increased 10.5% to 231,500 tons (210,000 MT), 63% being from China and 12% from Mountain Pass. The uses of REE are: catalysts 75%; metallurgical applications, ceramics and glass, and polishing 5% each; and other uses 8%.

In 2018, Cypress Development Corp. conducted extraction tests on core from its Cypress Dean Lithium Project and Cypress Glory Lithium Project. Besides lithium, leach solutions from 29 surface samples, three core holes from the Dean Project, and one core hole from the Glory Project also contained rare earth elements with assays ranging between 110 ppm and 200 ppm total REEs. The company was preparing a new technical report for release in 2020, but only noted REE as potentially being extracted as a by-product (Cypress Development Corp. NI43-101 Technical Reports, 9/24/2018, 5/19/2020; Cypress Development Corp. website, https://www.cypressdevelopmentcorp.com)

Salt

Domestic production of salt increased 2% to 46,300,000 tons (42,000,000 MT) valued at $2,300,000,000. Nevada's only producer, the Huck Salt Co., produced 17,000 tons (15,400 MT) of salt, an 11% decrease from 2018. In 2019 the gross proceeds increase 23% to $834,094. The company shipped 24,532 tons (22,255 MT), which includes both processed and unprocessed salt, a 23% increase from 2018. The salt is mainly used for de-icing roads, the production levels of which are dependent on weather, and for water softeners. The salt is mined from the playa on Fourmile Flat about 25 miles southeast of Fallon, Churchill County. Salt has been harvested almost continuously from the site since the 1860s, when it was hauled to the mills that processed Comstock silver and gold ore. The descriptions of brine and evaporite deposits are compiled in Nevada Bureau of Mines and Geology Bulletin 87, *Evaporites and Brines in Nevada Playas*, 1976, by Keith Papke.

Silica

The USGS includes silica under *Industrial Sand and Gravel*. The U.S. is by far the world's largest silica sand producer, and the estimated domestic production was 121,000,000 tons (110,000,000 MT), a 9% decrease from 2018, valued at $5,700,000,000. About 5% of the production is exported. The estimated average price decreased 11% to $45.72 per ton ($50.40 per MT) from 2018. The uses of silica are: hydraulic fracturing sand and well-packing and cement sand, 73%; glassmaking sand and other whole grain silica, 7%; foundry sand, 3%; and fillers and building products, golf course sand, and other uses, 17%. Nevada shipped 740,167 tons (671,475 MT) of silica, a 14% decrease from 2018 and less than 1% of the national total. The gross proceeds (excluding Southern Nevada Liteweight) decreased 12% to $17,304,879 in 2019. No Nevada sand was used for hydraulic fracturing in 2019.

Nevada's main silica producer, Simplot Silica Products at Overton, Clark County, shipped 617,553 tons (560,240 MT), a 14% decrease from 2018. The company has consistently mined and processed about 1,000,000 tons per year. The sand is mined from a large open pit in the relatively friable Cretaceous Baseline Sandstone, washed in the pit, and transported via a 5-mile slurry pipeline to a plant where it is screened and bagged. The facility produces four grades of sand based on coarseness, AFS 55, 60, 70, and 100. AFS 70, which is used mainly in manufacturing glass and foundry castings.

Southern Nevada Liteweight mined, processed, and shipped 146,682 tons (134,251 MT) of silica sand, a 1% decrease from 2018, from the Hidden Valley South (former Money pit) quarry about 20 miles (32 km) south of Las Vegas. The quarry produced 122,614 tons (111,235 MT) of plaster sand and 24,068 tons (21,834 MT) of concrete sand for stucco and masonry block.

Zeolites

Domestic production and apparent consumption of zeolite each increased 14% to an estimated 108,000 tons (98,000 MT) and 101,400 tons (92,000 MT), respectively, in 2019. Prices varied in 2019 between $45 and $272 per ton ($50 and $300 per MT), the same as in 2018, depending upon the zeolite. Six companies operated nine zeolite mines nationally. Chabazite was mined in Arizona and clinoptilolite in five other states. Minor amounts of ferrierite, mordenite, and phillipsite were also likely produced. About 70% of the zeolites

sold is used in animal feed, odor control, and water treatment.

Nevada contains large known resources of zeolite; however, zeolite production has been small, and no zeolite is currently mined in Nevada. KMI Zeolite, Inc. processed 16,920 tons (15,350 MT) and shipped 7,128 tons (6,466 MT) of clinoptilolite from its new plant near Ash Meadows in Amargosa Valley about 60 miles (100 km) west of Las Vegas. This is a 61% increase in processing and a 16% decrease in shipping from 2018. The source is a large deposit of mainly clinoptilolite eight miles (13 km) west of Death Valley Junction in California about 18 miles (29 km) from the plant. The company built the new mill to be closer to the mine which cuts down transportation costs. Also, the new mill is larger and more efficient than old Shenandoah Mill, which was capable of producing 55,000 tons (50,000 MT) per year. (Conrad Wagenaar, KMI CEO, written communication, 2020; KMI Zeolite, Inc., website, http://www.kmizeolite.com)

Zeolite minerals (most of which are rare) reportedly found in Nevada include analcime, chabazite, clinoptilolite, epistilbite, erionite, ferrierite, heulandite, mordenite, natrolite, offretite, phillipsite, scolecite, and stilbite, and reported locations of these minerals are given in Nevada Bureau of Mines and Geology Special Publication 31, *Minerals of Nevada*, 2004, by Stephen B. Castor and Gregory C. Ferdock. The descriptions of a few Nevada zeolite deposits are also compiled in Nevada Bureau of Mines and Geology Bulletin 79, *Erionite and Other Associated Zeolites in Nevada*, 1972, by Keith Papke. A collection of Lovelock, Nevada, zeolite samples acquired by Keith Papke is also available at the Nevada Bureau of Mines and Geology Great Basin Science Sample and Records Library.

INDUSTRIAL MINERAL DEPOSITS

by David A. Davis

This is a compilation, in progress, of industrial mineral deposits. The information in this compilation was obtained from the Nevada Division of Minerals and from published reports, articles in mining newsletters, and company websites, annual reports, and press releases. Locations of active mines and contact information are listed in the Directory of Mining and Milling Operations.

Deposit name	Minerals	Reserves/resources	Production
CHURCHILL COUNTY			
Baxter Silica (Sand Springs district)	Silica	1961: 68,000 tons (resource within 50 feet of surface)	
Carson Sink Salt Project (Carson Sink district)	NaCl	1978: 3,600,000 tons (recoverable NaCl)	
Fallon	Diatomite	2019: 935,000 tons, (70% recovery, probable reserves)	
Fallon Bentonite Project (Sand Springs Marsh district)	Bentonite	2012: 34,000,000 tons, Na-Bentonite (proven reserves)	2012: 7,000 tons stockpiled
Fernley (Desert district)	Diatomite	2019: 1,526,000 tons, (60% recovery, probable reserves)	2010-2015: 263,700 tons 2016: 31,486 tons 2017: 31,221 tons 2018: 35,427 tons 2019: 35,875 tons
Hot Springs Mtn. (Desert district)	Limestone	1964: 2,500,000 tons, 91.4-97% $CaCO_3$, 0.84-2.11% $MgCO_3$, 1.46-4.75% SiO_2 (estimated reserves)	
Salt Wells	Bentonite	1984: 1,700,000 tons (reserve) 2,700,000 tons (probable reserve)	
CLARK COUNTY			
Anderson (January) (Moapa district)	Gypsum	1936: 1,500,000 tons, (estimated reserve)	
Anniversary (Muddy Mountains district)	Colemanite	1936: 400,000 tons, (estimated reserve)	1921-1928: 25,000 tons B_2O_2
Blue Diamond (Arden district)	Gypsum	2014: >25,000,000 tons, (proven and probable reserves)	1909-1988: N/A 1962: >300,000 tons annually 1989-2004: 8,287,349 tons 2012: 43,120 tons 2013: 314,141 tons 2014: 1,116,784 tons 2015: 1,602,431 tons 2016: 1,290,640 tons 2017: 980,520 tons 2018: 1,050,540 tons
Chapparal (Moapa district)	Limestone	2012: 182,000,000-200,000,000 tons, 80-95% $CaCO_3$ (resource, <2.5% MgO)	
Lone Mountain	Aggregate	2008: Public Lands: 177,000,000 cubic yards; Private Property: 63,000,000 cubic yards (proposed for extraction)	1980-2016: N/A

INDUSTRIAL MINERAL DEPOSITS, CLARK COUNTY (continued)

Deposit name	Minerals	Reserves/resources	Production
Mica Peak (Gold Butte district)	Vermiculite	2007: 2,000,000-3,000,000 tons, (estimated recoverable reserve)	
Mount Vista (Arden) (Arden district)	Gypsum	2014: 200,000,000 tons, (resource)	1909-1931: N/A
Overton (Moapa district)	Magnesite	1936: 850,000 tons 38% MgO; 3,700,000 tons 34% MgO; 5,100,000 tons 30% MgO (resource)	1920s: small
Pabco (Apex) (Muddy Mountains district)	Gypsum	1958: 750,000,000 tons (estimated reserves)	1940s: N/A 1959-1988: N/A 1989-2005: 12,712,287 tons 2006: 1,438,886 tons 2007: 1,148,624 tons 2008: 829,801 tons 2009: 715,701 tons 2010: 682,000 tons 2011: 710,033 tons 2012: 1,033,681 tons 2013: 1,177,633 tons 2014: 1,137,216 tons 2015: 1,249,931 tons 2016: 1,375,612 tons 2017: 1,461,632 tons 2018: 1,394,825 tons 2019: 903,514 tons
Searchlight Insulation (Searchlight district)	Perlite	1951: 10,581,000 tons (indicated reserves)	1940s-1955: N/A
Sloan (Sloan district)	Dolomite	1952: 48,000,000 tons (indicated ore) 22,000,000 tons (inferred ore)	1928-2012: N/A 2013: 1,287,000 tons 2014: 1,500,000 tons 2015: 2,200,000 tons 2016: 2,016,753 tons 2017: 2,400,000 tons 2018: 2,915,247 tons 2019: 2,443,539 tons
Sloan Hills (Sloan district)	Dolomite Limestone	2011: 126,000,000 tons (material proposed to be mined)	

ELKO COUNTY

Camp Creek	Barite	1974: 90,000 tons, 90% $BaSO_4$ (resource)	
Ivanhoe Creek (Ivanhoe district)	Bentonite	2007: 2,200,000 tons, Ca-Bentonite (inferred resource)	
Lakes (Beaver district)	Barite	1982: 8,000,000 tons, 4.1 sp. gr. (resource)	1959-1965; 1973-1981: <1,000,000 tons
Southern Pequop Mtns. (Pequop district)	Phosphate	1987: 250,000 tons, 16.4% P_2O_5 (resource)	

ESMERALDA COUNTY

Clayton Valley (Enertopia Project) (Silver Peak Marsh district)	Li	2020: 90,093,350 tons, 1,121 ppm Li, 537,798 tons (indicated resource, 400 ppm Li cut-off); 20,023,900 tons, 1,131 ppm Li, 120,603 tons Li (inferred resource, 400 ppm Li cut-off) (NI 43-101 compliant)	

INDUSTRIAL MINERAL DEPOSITS, ESMERALDA COUNTY (continued)

Deposit name	Minerals	Reserves/resources	Production
Clayton Valley Lithium (Dean and Glory Project) (Silver Peak Marsh district)	Li	2018 May: Preliminary Resource Estimate: 767,800,000 tons, 886 ppm Li, 1,444,000,000 lbs Li (indicated resource, 300 ppm Li cut-off); 708,600,000 tons, 852 ppm Li, 1,312,000,000 lbs Li (inferred resource, 300 ppm Li cut-off); Classified Mineral Resource in Initial Pit: 211,000,000 tons, 988 ppm Li, 415,600,000 lbs Li (indicated resource, 300 ppm Li cut-off); 28,000,000 tons, 1,047 ppm Li, 58,600,000 lbs Li (inferred resource, 300 ppm Li cut-off) (NI 43-101 compliant) 2018 Sept: Preliminary Resource Estimate: 916,058,000 tons, 867 ppm Li, 1,588,000,000 lbs Li (indicated resource, 300 ppm Li cut-off); 1,234,918,000 tons, 860 ppm Li, 2,123,000,000 lbs Li (inferred resource, 300 ppm Li cut-off); Classified Mineral Resource in Initial Pit: 402,269,000 tons, 942 ppm Li, 758,770,000 lbs Li (indicated resource, 300 ppm Li cut-off); 176,872,000 tons, 992 ppm Li, 350,990,000 lbs Li (inferred resource, 300 ppm Li cut-off) (NI 43-101 compliant) 2020: 245,600,000 tons, 1,141 ppm Li, 560,600,000 lbs Li (Reserve, 900 ppm Li cut-off); 654,100,000 tons, 1,073 ppm Li, 1,403,000,000 lbs Li (measured and indicated resource, 900 ppm Li cut-off); 2,500,000 tons, 1,005 ppm Li, 5,100,000 lbs Li (inferred resource, 900 ppm Li cut-off) (NI 43-101 compliant)	
Clayton Valley South	Li	2015: Northern Zone, upper part of Main Ash Aquifer saturation thickness: 118 feet, 11,350 Tons Li, 102 mg/L; Northern Zone, Main Ash Aquifer saturation thickness: 102 feet, 34,940 tons Li, 370 mg/L; Northern Zone, Lower Aquifer System saturation thickness: 981 feet, 179,700 tons Li, 194 mg/L; Southern Zone, Main Ash Aquifer saturation thickness: 141 feet, 270,100 tons Li, 102 mg/L; Southern Zone, Lower Ash Aquifer saturation thickness: 581 feet, 403,400 tons Li, 37 mg/L; Total; 899,500 tons Li (Lithium Carbonate Equivalent inferred resource) 2017: 272,000 tons Li [Lithium Hydroxide Monohydrate (240,000 tons Lithium Carbonate Equivalent inferred resource)	
Diatom Hill	Diatomite	2014: 192,000,000 tons (proven indicated); 232,000,000 tons (probable indicated)	
Monte Cristo (Gilbert district)	Diatomite, Silica	2014: >220,000,000 tons (reserve)	
Potash-alum (Alum district)	Potash, Sulfur	1925: 110,000 tons, 15% potash-alum, 10% sulfur (proved ore)	
Rhyolite Ridge (Red Mountain district)	Li, B, K	2016: South Basin: 177,400,000 tons 1,550 ppm Li, 1.2% LCE, 2,180,000 tons Cont. LCE, 0.8% Li_2CO_3, 1,470,000 tons Cont. LC, 3.3% H_2BO_3, 5,876,000 tons Cont. Boric, 1.7% K_2SO_4, 2,990,000 tons Cont. Pot. (measured resources, 0.6% LCE cut-off grade); 71,200,000 tons 1,700 ppm Li, 1.2% LCE, 3,160,000 tons Cont. LCE, 0.9% Li_2CO_3, 2,314,000 tons Cont. LC, 2.6% H_2BO_3, 6,636,000 tons Cont. Boric, 1.7% K_2SO_4, 4,442,000 tons Cont. Pot. (inferred resources, 0.6% LCE cut-off grade); Searlesite Zone: 26,800,000 tons 1,820 ppm Li, 2% LCE, 529,000 tons Cont. LCE, 1% Li_2CO_3, 265,000 tons Cont. LC, 9.4% H_2BO_3,	

INDUSTRIAL MINERAL DEPOSITS, ESMERALDA COUNTY (continued)

Deposit name	Minerals	Reserves/resources	Production
Rhyolite Ridge (con't) **(Red Mountain district)**		2,513,000 tons Cont. Boric, 2% K_2SO_4, 551,000 tons Cont. Pot. (measured resources, 1.8% LCE cut-off grade); 44,400,000 tons 1,960 ppm Li, 2% LCE, 904,000 tons Cont. LCE, 1% Li_2CO_3, 462,000 tons Cont. LC, 9% H_2BO_3, 3,990,000 tons Cont. Boric,2.3% K_2SO_4, 1,014,000 tons Cont. Pot. (inferred resources,1.8% LCE cut-off grade)	
	Li, B, K	2017: South Basin (Upper and Lower Zones): 301,700,000 tons 0.9% Li_2CO_3 2,670,000 tons contained Li_2CO_3, 3.3% H_2BO_3, 9,870,000 tons contained boric acid, 1.7% K_2SO_4, 5,100,000 tons contained K (indicated resource, 1,050 ppm Li cut-off); 204,800,000 tons 0.9% Li_2CO_3 1,790,000 tons contained Li_2CO_3, 1.6% H_2BO_3, 3,320,000 tons contained boric acid, 1.6% K_2SO_4, 3,330,000 tons contained K (inferred resource, 1,050 ppm Li cut-off) (JORC compliant)	
	Li, B, K	2018: 114,700,000 tons, 1,700 ppm Li, 0.9% Li_2CO_3 1,047,000 tons contained Li_2CO_3, 12,800 ppm B, 7.2% H_2BO_3, 8,470,000 tons contained boric acid, 1.9% K_2SO_4, 2,150,000 tons contained K (indicated resource, 1,050 ppm Li, 0.5% B cut-off); 19,100,000 tons 1,900 ppm Li, 1% Li_2CO_3 198,000 tons contained Li_2CO_3, 11,300 ppm B, 7.1% H_2BO_3, 1,220,000 tons contained boric acid, 1.9% K_2SO_4, 2,540,000 tons contained K (inferred resource, 1,050 ppm Li, 0.5% B cut-off) (JORC compliant)	
	Li, B, K	2019: 143,500,000 tons, 1,597 ppm Li, 0.8% Li_2CO_3 1,224,000 tons contained Li_2CO_3, 14,091 ppm B, 8.1% H_2BO_3, 11,585,000 tons contained boric acid, (measured and indicated resource, 5,000 ppm B cut-off); 26,400,000 tons 1,700 ppm Li, 0.9% Li_2CO_3 243,000 tons contained Li_2CO_3, 13,900 ppm B, 8% H_2BO_3, 2,090,000 tons contained boric acid (inferred resource, 5,000 ppm B cut-off) (JORC compliant)	
	Li, B	2020: South Basin: 66,000,000 tons, 1,800 ppm Li, 15,400 ppm B, 639,000 equivalent contained tons Li_2CO_3, 5,853,000 equivalent contained tons H_2BO_3 (proven and probable reserves, 5,000 ppm B cut-off); 140,000,000 tons, 1,600 ppm Li, 1,200,000 equivalent contained tons Li_2CO_3, 14,270 ppm B, H_2BO_3, 11,410,000 equivalent contained tons H_2BO_3, (measured and indicated resource, 5,000 ppm B cut-off); 21,500,000 tons 1,600 ppm Li, 190,000 equivalent contained tons Li_2CO_3, 13,800 ppm B, 1,690,000 equivalent contained boric acid (inferred resource, 5,000 ppm B cut-off) (JORC compliant)	
Silver Peak **(Silver Peak Marsh district)**	Li	1975: 775,000 tons Li to 1,200 feet (brine reserves) 44,500 tons Li (recoverable) 2008: 44,000 tons (economic reserves)	1966-1997: N/A 1998: 1,200,000 lbs $LiCO_3$, 500,000 lbs LiOH 1999-2014: N/A 2015-2019: 52,566,012 lbs Li compounds
Zeus **(Silver Peak Marsh district)**	Li	2017: 18,847,650 tons. 0.106% (1,060 ppm) Li, 19,978 tons Li. 106,345 tons Li_2CO_3 (inferred resource, 400 ppm Li cut-off) (NI 43-101 compliant) 2019: 364,498,000 tons. 0.086% (858 ppm) Li, 312,800 tons Li. 1,665,200 tons Li_2CO_3 (inferred resource, 300 ppm Li cut-off) (NI 43-101 compliant) 2020: 136,648,000 tons. 1136 ppm Li, 826,087 Li_2CO_3 equivalent tons (indicated resource, 900 ppm Li cut-off); 84,757,000 tons, 1,045 ppm Li, 471,402 Li_2CO_3 equivalent tons (inferred resource, 900 ppm Li cut-off) (NI 43-101 compliant)	

INDUSTRIAL MINERAL DEPOSITS, EUREKA COUNTY

Deposit name	Minerals	Reserves/resources	Production
Bisoni (Fish Creek) (Fish Creek district)	Fluorspar	1970s: “many 100,000s” tons, 10% CaF_2 1987: >120,000,000 tons, 10% CaF_2 2014: 9,800,000 tons, 10.3% CaF_2 (indicated mineral resource, 8% CaF_2 cut-off); 32,500,000 tons, 10.4% CaF_2 (inferred mineral resource, 8% CaF_2 cut-off) [JORC compliant] 2015: MB: 6,700,000 tons, 10.8% CaF_2 (indicated mineral resource, 9% CaF_2 cut-off); 88,500,000 tons, 0.7% CaF_2 (inferred mineral resource, 9% CaF_2 cut-off) [JORC compliant]	
Unnamed (29N, 46E, S7) (Lewis district)	Silica	1964: 1,000,000 cu. yds. quartzite	
Unnamed (29N, 46E, S25) (Bullion district)	Silica	1964: 150,000,000 cu. yds. chert	
Unnamed (30N, 46E, S7) (Lewis district)	Silica	1964: 4,000,000 cu. yds. quartzite 99.2% SiO_2, 0.3% Fe_2O_3, 0.1% Al_2O_3	

HUMBOLDT COUNTY

Kings Valley (Disaster district)	Li, K, Na	2011: 16,465,000 tons, 0.4% Li, 3.85% K, 3.7% Na (proven reserves); 13, 445,000 tons, 0.388% Li, 3.93% K, 3.93% Na (probable reserves, 0.327% Li cut-off grade)	
	Li, K, Na	2012: 13,396,000 tons, 0.405% Li, 3.83% K, 1.46% Na (proven reserves); 1,980,000 tons, 0.396% Li, 3.77% K, 1.45% Na (probable reserves, 0.32% Li cut-off grade)	
Thacker Pass (Disaster district)	Li, K, Na	2016: Stage I Lens (Kings Valley): 55,945,000 tons, 0.312% Li, 929,000 tons Li, 3.27% K, 1,830,000 tons K, 1.13% Na, 633,000 tons Na (measured resource, 0.2% Li cut-off grade); 184,224,000 tons, 0.285% Li, 2,744,000 tons Li, 3.07% K, 5,551,000 tons K, 1.04% Na, 1,881,000 tons Na (indicated resource, 0.2% Li cut-off grade); 137,666,000 tons, 0.294% Li, 2,154,000 tons Li, 3.04% K, 4,180,000 tons K, 1.1% Na, 1,515,000 tons Na (inferred resource, 0.2% Li cut-off grade)	
	Li	2017: 432,650,000 tons, 2,917 ppm Li, 6,718,000 tons lithium carbonate equivalent (measured and indicated resource, 2,000 ppm Li cut-off grade); 162,520,000 tons, 2,832 ppm Li, 2,536,000 tons lithium carbonate equivalent (inferred resource, 2,000 ppm Li cut-off grade) (NI 43-101 compliant)	
	Li	2018: 197,777,000 tons, 3,283 ppm Li, 3,456,000 tons lithium carbonate equivalent (proven and probable reserve, 2,500 ppm Li cut-off grade); 424,672,000 tons, 2,917 ppm Li, 6,594,000 tons lithium carbonate equivalent (measured and indicated resource, 2,000 ppm Li cut-off grade); 162,522,000 tons, 2,932 ppm Li, 2,536,000 tons lithium carbonate equivalent (inferred resource, 2,000 ppm Li cut-off grade) (NI 43-101 compliant)	
Lone Tree Hill (Potosi district)	Silica	1964: 60,000,000 cu. yds. quartzite	

INDUSTRIAL MINERAL DEPOSITS, HUMBOLDT COUNTY (continued)

Deposit name	Minerals	Reserves/resources	Production
Unnamed (36N, 41E, S17) (Potosi district)	Marble	1964: 10,000,000 tons, 93.39% $CaCO_3$, 1% $MgCO_3$, 4.24% SiO_2, 1% Al_2O_3, 0.43% Fe_2O_3, 0.33% P_2O_5 (reserves)	
LANDER COUNTY			
Blazer (Iowa Canyon district)	Fluorspar	1970s: 300,000 tons, 30% CaF_2 1974: 437,500 tons, 25.8% CaF_2	
Bradshaw (Bullion district)	Barite	1975: 78,760 tons (reserve, shipping grade 4.22 sp. gr.); 5,100 tons (low grade resource)	1975-1982: N/A
Nevada Fluorspar (Iowa Canyon district)	Fluorspar	1974: 924,000 tons, 26% CaF_2	1945-1975: N/A
Unnamed (32N, 42E, S23) (Buffalo Valley district)	Silica	1964: 50,000,000 cu. yds. chert	
LINCOLN COUNTY			
Acoma (Acoma district)	Perlite	1951: 38,700,000 tons (indicated reserves) 21,850,000 tons (inferred reserves)	
Blue Nose (Viola district)	Limestone	2011: 227,725,000 tons (indicated resource; low, <5%, MgO); 30,595,000 tons (inferred resource, low; <5%, MgO); 16,649,000 tons (indicated resource, high MgO); 2,086,000 tons (inferred resource, high MgO)	
Boyd (Boyd district)	Kaolinite, Alum	1936: 800,000 cubic feet 1945: 3,500 tons (measurable and indicated ore); 30,000 tons (inferred ore)	1920-1930: 18,000 tons
Eccles and Minto (Acoma district)	Perlite	1951: 15,281,000 tons (indicated reserves) 9,640,000 tons (inferred reserves)	
Fairview (Silverhorn district)	Perlite	1951: 4,038,000 tons (indicated reserves) 2,000,000 (inferred reserves)	Bef. 1951: 5,000 tons
Free (Wilson Creek Range district)	Perlite	1951: 450,000 tons (indicated reserves) 1,000,000 (inferred reserves)	
Hollinger (Wilson Creek Range district)	Perlite	1951: 1,150,000 tons (indicated reserves) 3,000,000 (inferred reserves)	1940s-1968: over 250,000 tons
Johnson-Fitchett	Perlite	1951: 2,680,000 tons (indicated reserves) 1,000,000 tons (inferred reserves)	
Kopenite (South Pahroc Range district)	Perlite	1951: 10,460,000 tons (indicated reserves) 5,000,000 tons (inferred reserves)	Bef. 1951: several 1,000 tons
Leech (Wilson Creek Range district)	Perlite	1951: 1,150,000 tons (indicated reserves) 3,000,000 (inferred reserves)	
Panaca (Panaca district)	Diatomite	1936: 2,000,000 cubic feet (estimated reserves)	

INDUSTRIAL MINERAL DEPOSITS, LINCOLN COUNTY (continued)

Deposit name	Minerals	Reserves/resources	Production
Robb (South Pahroc Range district)	Perlite	1951: 16,000,000 tons (indicated reserves) 8,000,000 (inferred reserves)	
Snow (Eagle Valley district)	Perlite	1951: 29,615,000 tons (indicated reserves)	
Tenacity (South Pahroc Range district)	Perlite	1950s: 15,000,000 tons (reserves)	1950-2009: N/A 2010: 1,417 tons 2011: 1,699 tons 2012: 2,120 tons 2013: 2,199 tons 2014: 1,784 tons 2015: 2,184 tons 2016: 2,408 tons 2017: 2,530 tons 2018: 1,637 tons 2019: 2,213 tons

LYON COUNTY

Adams Claim (Mound House district)	Gypsum	2016: 6,000,000 tons gypsum and anhydrite; 300,000 tons limestone (reserves)	1996-2009: 2,312,342 tons 2010: 148,000 tons 2011: 238,802 tons 2012: 342,985 tons 2013: 441,129 tons 2014: N/A 2015: 520,530 tons 2016: 416,898 tons 2017: 388,368 tons 2018: 359,556 tons 2019: 290,302 tons
East Walker Clay Mine (Washington district)	Clay	2000: 938,522,358 cu. yds. (resource)	1998-2012: 5,000 tons 2014: 3,000 tons 2019: 1,500 tons
Hazen	Diatomite	2019: 421,000 tons, (90% recovery, probable and probable reserves)	2010-2015: 96,970 tons 2016: 9,343 tons 2017: 9,363 tons 2018: 24,579 tons 2019: 13,330 tons
Nevada Cement	Limestone	2014: Company land: 13,700,000 tons; Leased land: 71,700,000 tons (combined reserves in Churchill, Lyon, and Pershing Counties) 2015: Company land: 14,400,000 tons; Leased land: 70,600,000 tons (combined reserves in Churchill, Lyon, and Pershing Counties) 2017: Company land: 14,200,000 tons; Leased land: 69,600,000 tons (combined reserves in Churchill, Lyon, and Pershing Counties) 2018: Company land: 14,000,000 tons; Leased land: 69,100,000 tons (combined reserves in Churchill, Lyon, and Pershing Counties) 2019: Company land: 13,980,000 tons; Leased land: 68,650,000 tons (combined reserves in Churchill, Lyon, and Pershing Counties)	1964-2009: N/A 2010: 659,373 tons 2011: 661,243 tons 2012: 609421 tons 2013: 649,747 tons 2014: 723,789 tons 2015: 636,587 tons 2016: 709,211 tons 2017: 517,359 tons 2018: 878,000 tons 2019: 542,268 tons
North of Rosetta Mine (Red Mountain district)	Limestone	1959: 1,000,000 tons (estimated)	

INDUSTRIAL MINERAL DEPOSITS, LYON COUNTY (continued)

Deposit name	Minerals	Reserves/resources	Production
South of Rosetta Mine (Red Mountain district)	Limestone	1959: 400,000 tons (estimated)	
Unnamed (20N, 24E, S7) (Olinghouse district)	Gravel	1964: 3,700,000 cubic yards	
Unnamed (20N, 24E, S11)	Sand	1964: 200,000,000 tons	

MINERAL COUNTY

Baxter (Broken Hills district)	Fluorspar	1944: 177,000 tons (measurable reserve); 93,000 (indicated reserve); 186,000 tons (inferred reserve) 45%-70% CaF_2 1951: 247,163 tons 45.5% CaF_2 (indicated ore); 107,100 tons 45.5% CaF_2 (inferred ore)	1928-1957: 181,897 tons
Fluftrok (Aurora district)	Perlite	1950s: 300,000 tons (resource)	
Fluorspar King and Blue Bell (Buena Vista district)	Fluorspar	1945: 25,000-37,500 tons, 65% CaF_2	1929: 200 tons

NYE COUNTY

Bonnie Claire	Li	2018: 6,144,000,000 tons, 963 ppm Li, 5,919,500 tons Li (inferred resource, 400 ppm Li cut-off grade) (NI 43-101 compliant)	
Carrara (Bare Mountain district)	Marble	2003: 60,000,000 tons	1914-1934: ~10,000 tons
Horseshoe (Quinn Canyon district)	Fluorspar	1956: 410,000 tons, abt. 40% CaF_2 (estimated reserves)	
Mammoth (Quinn Canyon district)	Fluorspar	1956: 3,125,000 tons, 30-35% CaF_2 (estimated reserves)	
Premier (Gabbs district)	Mg	2010: 64,000,000 tons (resource)	1935-2009: N/A 2010: 422,261 tons 2011: 421,969 tons 2012: 344,552 tons 2013: 435,072 tons 2014: 430,385 tons 2015: 360,612 tons 2016: 1,000,000 tons 2017: 326,522 tons 2018: 263,260 tons 2019: 324,723 tons
Railroad Valley (Butterfield Marsh district)	Sodium Carbonate	1967: 196,000,000 tons, 17.3% sodium carbonate (reserve)	
Shannon Queen (Quinn Canyon district)	Fluorspar	1956: 12,000 tons, abt. 51% CaF_2 (estimated reserves)	
Spar (Quinn Canyon district)	Fluorspar	1956: 33,000 tons, abt. 80% CaF_2 (estimated reserves)	

INDUSTRIAL MINERAL DEPOSITS, NYE COUNTY (continued)

Deposit name	Minerals	Reserves/resources	Production
Tonopah Lithium Claims (Tonopah district)	Lithium	2020: 1,219,000,000 tons, 919 ppm Li, 700,000 tons Li, 3,720,000 tons Li_2CO_3 (measured and indicated, 400 ppm Li cut-off grade); 400,000,000 tons, 912 ppm Li, 360,000 tons Li,1,920,000 tons Li_2CO_3 (measured and indicated, 400 ppm Li cut-off grade) (NI 43-101 compliant)	
Union Canyon (Sea Bee) (Union district)	Fluorspar	1974: 433,000 tons, 18.5% CaF_2 (estimated open pit mineable) 20,000 tons, 16% CaF_2 (stockpiled)	1953-1954: 360 tons Early 1970s: mined and stockpiled: 20,000 tons
PERSHING COUNTY			
Colado (Velvet district)	Diatomite	2019: 4,195,000 tons, (83% recovery, proven and probable reserves)	2010-2015: 1,063,090 tons 2016: 194,974 tons 2017: 199, 488 tons 2018: 208,156 tons 2019: 114,418 tons
Lovelock (Muttlebury district)	Gypsum	1964: 3,000 tons gypsite	1890s: N/A
Nassau (Nevada district)	Bentonite	2012: 535,000 tons, Ca-Bentonite (wet tons of reserves)	1981-2009: <2,000 tons annually 2010: 2,000 tons 2011: 2,000 tons 2012: <2,000 tons 2013: <2,000 tons 2014-2015: 0 tons 2016: 4,486 tons 2017-2019: 0 tons
Unnamed (31N, 30E, S11) (Nevada district)	Perlite	1964: >1,000,000 tons (source of commercial quality)	
Unnamed (31N, 30E, S35) (Nevada district)	Perlite	1964: 250,000 tons (source of commercial quality)	
Unnamed (31N, 36E, S11) (Willow Creek district)	Marble	1964: 30,000,000 tons, 89.22% $CaCO_3$, 8.21% $MgCO_3$, 24% SiO_2, 0.17% Al_2O_3, 0.004% P_2O_5	
Valery (Imlay district)	Fluorspar	1965: 800,000 tons, 25% CaF_2	1953-1955: 1,932 tons
STOREY COUNTY			
Clark (Clark district)	Diatomite	2019: 3,767,000 tons, (78% recovery, proven and probable reserves)	2010-2014: 436,377 tons 2015-2016: 0 tons 2017: 6,249 tons 2018: 102,358 tons 2019: 84,732 tons
Washington Hill (Castle Peak district)	Aggregate	1989: >500,000,000 tons (light weight aggregate)	
WASHOE COUNTY			
Marble Bluff	Limestone (reserve)		1965: 200,000,000 tons, >95% $CaCO_3$

INDUSTRIAL MINERAL DEPOSITS, WASHOE COUNTY (continued)

Deposit name	Minerals	Reserves/resources	Production
Spanish Springs Quarry (McClellan district)	Aggregate	2012: 139,849,000 tons, hard rock (reserve) 2013: 139,342,000 tons, hard rock (reserve)	1984-2012: N/A 2013: 618,233 tons 2014: 663,749 tons 2015: 543,848 tons 2016: 618,233 tons 2017: 817,374 tons 2018: 881,183 tons 2019: 917,519 tons
Terraced (Sand Pass district)	Halloysite	1965: >50,000,000 tons (reserve)	1968-2014: N/A 2010: 18,856 tons 2011: 19,232 tons 2012: 10,031 tons 2013: 27,569 tons 2014: 17,534 tons 2015: 43,232 tons 2016: 25,391 tons 2017: 13,655 tons 2018: 30,000 tons 2019: 0 tons
Winnemucca Lake Silica (Nightingale district)	Quartz	1964: 1,000,000 tons	

WHITE PINE COUNTY

Hampton Creek Garnet (Mount Moriah district)	Garnet	1990: 12,000 to 60,000 tons	Early 1960s: test lots (1-5% alluvial resource)
Mount Wheeler (Lincoln district)	Be, W, Fluorspar	1969: 200,000 tons, 0.75% BeO, 0.3% WO_3, 22% CaF_2 (ore reserves)	
Tami-Mosi (Nevada district)	Mg	2011: 454,000,000 tons, 12.3% Mg, 111,000,000,000 lbs. Mg metal content (inferred resource, 12% cut-off grade)	

GEOTHERMAL ENERGY

By Bridget Ayling

OVERVIEW

The total installed geothermal energy capacity in Nevada was ~768 MWe (megawatts electric) in 2019 (fig. 1; tables 1 and 2). The McGinness Hills 3 power plant completed its first full 12 months of production with ~59 MWe gross generation for the year (exceeding the generator nameplate capacity of 48 MWe). Total gross geothermal power generation in Nevada for 2019 increased to approximately 576 MWe, and net generation (power to market) reached 444 MWe. The difference between the gross and net generation reflects the parasitic losses associated with running the geothermal plant (e.g. downhole pumps), and this averaged 23% in 2019.

The total geothermal power generation in Nevada in 2019 was 5,043,747 megawatt-hours (MWh) gross and 3,885,318 MWh net, representing an ~11% increase from generation in 2018. Data obtained from the Nevada Department of Taxation indicate that the total gross 2019 proceeds from geothermal operators in Nevada (including the direct use projects) were $313,310,016 (approximately $45 million greater than in 2018). The reported adjusted gross proceeds for 2019 (taking into account the cost of operating and maintaining plants and transmission lines, depreciation of capital investments, amortization of each long-term PPA, and other factors) were $127,001,843 (~$41 million increase compared to 2018).

In September 2019, the U.S. Bureau of Land Management (BLM) held the largest geothermal lease sale in Nevada in the last 10 years, with 142 parcels posted in the original competitive sale notice equating to 384,369 acres. 37 of those parcels were sold for a total acreage of 102,402 (fig. 2; table 3a). The high bid per acre was $20, and high bid per parcel was $96,000. Total monies received by the BLM were $637,892 (including the bonus bid, administrative fees, and first year lease rental at $2/acre). In addition to the competitive lease sale, a non-competitive lease sale was held the day after the competitive sale (and is hence known as the 'day after' sale), with 105 parcels nominated for offers and 19 parcels receiving offers for a total of 64,420 acres (table 3b). Thus, between the competitive and non-competitive lease sales, 166,822 acres were taken up for geothermal exploration in the state in 2019 – the largest amount since 2010.

In 2019, the Nevada Division of Minerals (NDOM) permitted seven new geothermal wells, and six new geothermal wells were drilled (table 4). This represents a decrease in the number of permits issued and geothermal wells drilled compared to 2018 (table 5) and the lowest number of wells drilled in one year since 2001. However, we might expect to see an increase in drilling activity over the next few years associated with the dramatic increase in geothermal acreage leased in 2019 (fig. 3). Two shallow thermal gradient (TG) holes were drilled in Granite Springs Valley in Pershing County as part of the Nevada Geothermal Play Fairway research project, which was managed by the Nevada Bureau of Mines and Geology as described below. Ormat Nevada Inc. and its subsidiaries drilled the other four wells: two injection wells, a production well, and an observation well at the Don A. Campbell, San Emidio, Steamboat Hills, and Dixie Meadows geothermal areas, respectively.

Trends

In 2019, average wellhead fluid production temperatures ranged from 97–187 °C (207–369 °F) for electricity generation, and three reported direct-use applications utilized geothermal fluids ranging between 77–95 °C (171–203 °F) (fig. 4). Production flow rates for an individual well averaged 130 liters/second (l/s; ~2,060 gallons/minute (gpm)) for electricity generation, with the highest production flowrates measured at the Don A. Campbell geothermal field (331 l/s; 5,246 gpm). Reviewing trends in production over time, it is apparent that some fields have experienced periods of production decline over the last 5 years, including Don A. Campbell, Soda Lake, Stillwater, Salt Wells, Steamboat Hot Springs, and Tuscarora, whereas others demonstrate relatively stable production, including Dixie Valley, Jersey Valley, Wabuska, Steamboat Hills, and Beowawe (Figures 5 a,b,c). In 2019, Brady Hot Springs generated twice the amount of electricity than was generated in 2017, following the repowering of the geothermal plant by Ormat Nevada Inc. in late 2018, Wabuska, Tungsten Mountain, and San Emidio also saw an increase in net power generation compared to 2018.

Since around 2008, geothermal generation capacity has been increasing at a near constant rate (fig. 6) to the current installed capacity of 768 MWe. This is almost a tripling of installed capacity since the mid 2000s, although the net power to market has only doubled in this time. The estimated price for geothermal electricity is estimated to be around 8.06 cents(c)/kilowatt-hour (kWh) in 2019 (calculated by dividing the total gross proceeds by the annual net electricity production)—an increase since 2018 (7.47 c/kWh) (fig. 7). The share of geothermal electricity generation in the state has increased since the mid-2000s to ~ 8.7% in 2018, coincident with a decrease in coal-fired electricity generation, an increase in solar generation, and variable hydroelectric generation (fig. 8). Natural gas generation has remained somewhat constant since mid-2005. It should be noted that these proportions reflect generation

of electricity in Nevada, not consumption. Some geothermal power from Nevada is sold to California utilities under various Power Purchase Agreements (PPAs).

Significant Federally Funded Geothermal Research Projects in Nevada in 2019

In 2019, there were three active geothermal research projects in Nevada that were supported by federal funds from the U.S. Department of Energy's (DOE) Geothermal Technologies Office (GTO). These projects are briefly reviewed as follows:

1. Nevada Play Fairway project: Phase 3

- Project PI: Dr. James Faulds, Nevada Bureau of Mines and Geology, University of Nevada, Reno
- Project duration: 24 months: 1 October 2017 to 30 September 2019
- Total project funding: Phase 3: $1,500,000
- Project goal: Validate the geothermal play fairway workflow developed in Phases 1 and 2 via confirmation (thermal gradient) drilling and more detailed geophysical surveys. The geothermal play fairway methodology involves integration of multiple geologic, geophysical, and geochemical parameters, utilizing quantitative geostatistical analyses, to assess geothermal potential. Two locations for possible blind geothermal systems (i.e. no surface hot springs or steam vents) were prioritized for Phase 3 work: 1) southeastern Gabbs Valley in Mineral County, and 2) northern Granite Springs Valley in Pershing County. GeoProbe drilling was conducted at Granite Springs Valley in 2018, and thermal gradient drilling was conducted at both sites in 2018 and 2019. The drilling identified two new blind geothermal systems. At Gabbs Valley, maximum temperatures of 125°C at ~152 m depth were encountered, and at Granite Springs Valley, a maximum temperature of 96°C at 250 m was encountered (Faulds et al., 2018, 2019).

2. Hawthorne Deep-Direct Use Assessment

- Project PI: Sandia National Laboratories
- Project duration: 2 years: October 2017 to September 2019
- Total project funding: $560,000
- Project goal: Develop a multi-disciplinary, three-tiered analysis approach to assess the geothermal resource and determine the feasibility of implementing a geothermal direct-use facility for the Hawthorne Army Depot (HAD) and the various town and county facilities in Hawthorne, Nevada. The three-tiered analysis approach linked a production side analysis (PSA) and a demand side analysis (DSA) into a whole-system analysis (WSA) to provide an integrated assessment of the resource and the probability of delivering economically viable direct-use energy to the Hawthorne area. In 2019, the conceptual model of one of the blind (hidden) geothermal prospects in the basin was finalized, with two low-temperature resources identified. A deeper resource (~115°C) and a shallower resource (~100°C) are proximal to one another and do not show evidence of mixing, with chemically distinct fluids. A new conceptual model was developed with three probabilistic models that follow a log-normal resource distribution: P10, P50, and P90. The P90 model is the most conservative (i.e. a 90 % chance that the proposed model exists in reality, representing the 10th percentile of the cumulative distribution function), the P50 model is the preferred (median) model that is consistent with the available data, and the P10 model is the most optimistic (i.e. a 10 % chance that the proposed model exists, representing the 90th percentile of the cumulative distribution function). Using these models in conjunction with the power density method outlined by Cumming (2016), the deep and shallow systems were estimated to have resource potentials of 7 MWe (P50) and 1.6 MWe (P50), respectively (Ayling and Hinz, 2020). The final results of the project are presented in Lowry et al., 2020.

3. Nevada Geothermal Machine Learning project

- Project PI: Dr. James Faulds, University of Nevada, Reno
- Project duration: 24 months: 1 August 2019 to 31 July 2021
- Total project funding: $500,000
- Project goal: Apply machine learning (ML) techniques to develop an algorithmic approach to identify new geothermal systems in the Great Basin region and build on the successes of the Nevada geothermal play fairway project. An algorithmic approach that empirically learns to estimate weights of influence for diverse parameters may scale and

perform better than the play fairway analysis. Project activities include augmenting the number of training sites (positive and negative) that are needed to train the ML algorithms, transforming the data into formats suitable for ML, and development and testing of the ML techniques and outputs (Faulds et al., 2020; Brown et al., 2020).

ACTIVITY DURING 2019

The following section outlines new activity at geothermal power plants and major exploration sites in 2019. For historical information about geothermal sites in Nevada, refer to previous Mineral Industry reports published annually by NBMG (e.g. Muntean et al., 2019).

Dixie Meadows (Ormat Nevada Inc.)

A new observation well (22D-8) was drilled at Ormat Nevada's Dixie Meadows prospect in August of 2019, with a permitted depth of ~914 m. This complements the six other wells that have been drilled by Ormat at Dixie Meadows since 2012: two observation wells, two thermal gradient holes, one injection well, and one production well.

Don A. Campbell (Ormat Nevada Inc.)

Ormat drilled a new injection well in the far eastern side of the field, well 42-2 with a permitted depth of ~600 m (table 4). This well is ~1.6 km east/southeast from the other injection wells in the field, and ~ 3.5 km east of the production wells in the field. No other activity is reported for the Don A. Campbell field in 2019.

Granite Springs Valley (Nevada Bureau of Mines and Geology)

Northern Granite Springs Valley was one of two prospective sites prioritized for thermal gradient drilling during the Nevada Geothermal Play Fairway project, the other being southeastern Gabbs Valley. At Granite Springs Valley, the collocation of multiple favorable geologic, geophysical, and geochemical features identified an area with the potential to host a blind (hidden) geothermal system. Drilling of six thermal gradient drilling holes (< 250 m depth) in late 2018 and early 2019 identified anomalous temperatures at shallow depths (maximum measured temperature was 96°C at ~250 m depth in well 42-2), and further validated the predictive workflow developed during the Nevada Geothermal Play Fairway project (fig. 9).

San Emidio (Ormat Nevada Inc.)

In 2019, Ormat Nevada Inc. drilled a new injection well (57-33) at the San Emidio field in the northern part of the field. In their drilling permit application, Ormat stated that this well was to be drilled as an exploration well to determine the connectivity of the northern part of the geothermal system with the main production area to the south and evaluate its suitability to serve as an injection well for the field. The well was completed in August 2019 with a permitted depth of ~152 m.

Soda Lake (Cyrq Energy)

In 2019, Cyrq Energy made progress toward repowering their Soda Lake geothermal plant with one air-cooled Ormat Energy Converter (OEC). This will replace the two existing power plants that were commissioned by Ormat in the late 1980s and early 1990s. The new unit is a higher-efficiency plant and is expected to increase generation from the existing resources. The scheduled commercial operation date is January 1, 2020.

Steamboat Hills (Ormat Nevada Inc.)

In 2019, Ormat Nevada Inc. continued work toward repowering their Steamboat Hills geothermal plant, which will involve replacing the 10 MWe (net) flash-steam system with a new 30 MWe, air-cooled facility. A new production well (83C(82)-6) was spudded at the site in November 2019, with a permitted depth of ~945 m (table 4). No other activity is reported for the Steamboat Hills field in 2019.

Tungsten Mountain (Ormat Nevada Inc.)

The Tungsten Mountain geothermal plant achieved its first full 12 months of operation in 2018, and in late 2018, Ormat Nevada Inc. completed an Environmental Assessment for a proposed 18 MWe solar photo-voltaic (PV) array (formally named 'Tungsten Mountain Solar Project') to be installed at the site to offset generation losses associated with parasitic loads[1]. The generated electricity would be consumed solely at/by the geothermal power plant to provide some or all of its parasitic power load. The project was approved, and a 7 MWe solar PV array was commissioned at the site in July 2019[2]. The effect of this is apparent with an increase of ~3 MWe net geothermal power to market in

[1] https://eplanning.blm.gov/eplanning-ui/project/117898/510

[2] https://investor.ormat.com/annual-reports/default.aspx (2019 annual report)

2019 compared to 2018 (fig. 5c). It might be expected that the overall net power generation to market will be even larger in 2020, following a full year of operation of the solar PV array.

ACKNOWLEDGMENTS

Lowell Price and Mike Visher at the Nevada Division of Minerals are thanked for providing updated information on geothermal leases, gross proceeds, drilling permits, and geothermal production information. James Faulds is thanked for his comments and review of the draft document.

REFERENCES

Ayling, B.F., and Hinz, N.H., 2020, Developing a conceptual model and power capacity estimates for a low-temperature geothermal prospect with two chemically and thermally distinct reservoir compartments, Hawthorne, Nevada, USA: Geothermics, v. 87. https://doi.org/10.1016/j.geothermics.2020.101870

Brown, S., Coolbaugh, M., DeAngelo, J., Faulds, J., Fehler, M., Gu, C., Queen, J., Treitel, S., Smith, C., and Mlawsky, E., 2020, Machine learning for natural resource assessment—an application to the blind geothermal systems of Nevada: Geothermal Resources Council Transactions, v. 44, 14 p.

Cumming, W., 2016, Resource capacity estimation using lognormal power density from producing fields and area from resource conceptual models—advantages, pitfalls and remedies, *in* Proceedings, 41st Workshop on Geothermal Reservoir Engineering. Stanford University, February 22–24, 2016, SGT-TR-209. 7 p.

Faulds, J.E., Craig, J.W., Hinz, N.H., Coolbaugh, M.F., Glen, J.M., Earney, T.E., Schermerhorn, W.D., Peacock, J., DeOreo, S., Siler, D.L., 2018, Discovery of a blind geothermal system in southern Gabbs Valley, western nevada, through application of the play fairway analysis at multiple scales: Geothermal Resources Council Transactions, v. 42.

Faulds, J.E., Hinz, N.H., Coolbaugh, Ramelli, A., M.F., Glen, J.M., Ayling, B.F., Wannamaker, P.E., DeOreo, S., Siler, D.L., Craig, J.W., 2019, Vectoring into potential blind geothermal systems in the Granite Springs Valley area, western Nevada—application of the play fairway analysis at multiple scales: Proceedings of the 44th Workshop on Geothermal Reservoir Engineering, Stanford University, February 11–13, 2019, SGP-TR-214.

Faulds, J.E., Brown, S., Coolbaugh, M., DeAngelo, J., Queen, J.H., Treitel, S., Fehler, M., Mlawsky, E., Glen, J.M., Lindsey, C., Burns, E., Smith, C.M., Gu, C., Ayling, B.F., 2020, Preliminary report on applications of machine learning techniques to Nevada geothermal play fairway analysis: Proceedings of the 45th Workshop on Geothermal Reservoir Engineering, Stanford University, February 10–12th, 2019, SGP-TR-215.

Lowry, T.S., Ayling, B., Hinz, N., Sabin, A., Arguello, R., Blake, K., Tiedeman, A., 2020, Deep direct-use geothermal feasibility study for Hawthorne NV: Sandia National Lab Technical report SAND2020-3210, https://doi.org/10.2172/1606296.

Muntean, J. L., Davis, D., Ayling, B. F. 2019, The Nevada Mineral Industry 2018, NBMG Special Publication, 222 p. https://pubs.nbmg.unr.edu/The-NV-mineral-industry-2018-p/mi2018.htm.

WEB LINKS TO OTHER GEOTHERMAL INFORMATION

For further information on geothermal resources in Nevada, check the following Websites or contact David Davis at (775) 682-8766 or via e-mail at ddavis@unr.edu:

- The Nevada Bureau of Mines and Geology ARC-GIS Open Data page: https://data-nbmg.opendata.arcgis.com/
- The Great Basin Center for Geothermal Energy https://gbcge.org/
- Map of Geothermal Resources in Nevada, NBMG Map 161, available online in PDF format: http://www.nbmg.unr.edu/Geothermal/PublishedMaps.html (includes zipped file of GIS layers)
- Nevada Bureau of Mines and Geology Geothermal Resources of Nevada Website at http://www.nbmg.unr.edu/Geothermal/index.html. This site contains geothermal exploration data, interactive maps, lease and information, and numerous geothermal digital data sets. These data are increasingly being made available through the National Geothermal Data System (www.geothermaldata.org) and the Department of

Energy's Geothermal Data Repository (https://gdr.openei.org/).

- Nevada Commission on Minerals, Nevada Division of Minerals at http://minerals.state.nv.us/ and http://minerals.nv.gov/Programs/Geo/Geo/.
- Southern Methodist University Geothermal Lab, specializing in geothermal gradient data and maps of the entire country, posts information at https://www.smu.edu/Dedman/Academics/Departments/Earth-Sciences/Research/GeothermalLab.
- Summary of Supporting Data for USGS Regional Heat-flow Studies of the Great Basin, 1970–1990, by John H. Sass, Susan S. Priest, Arthur H. Lachenbruch, S. Peter Galanis, Jr., Thomas H. Moses, Jr., John P. Kennelly, Jr., Robert J. Munroe, Eugene P. Smith, Frederick V. Grubb, Robert H. Husk, Jr., and Charles W. Mase; USGS Open-File Report 2005-1207 online version 1.0 on the Web at http://pubs.usgs.gov/of/2005/1207/.
- Geothermal Industry Temperature Profiles from the Great Basin, by John H. Sass, Susan S. Priest, Arnold J. Blanton, Penelope C. Sackett, Stephanie L. Welch, and Mark A. Walters; USGS Open-File Report 99-425 online version 1.0 on the Web at http://pubs.usgs.gov/of/1999/of99-425/webmaps/home.htm.
- The Bureau of Land Management Land and Mineral Records-LR2000 system Web address is http://www.blm.gov/lr2000/. Provides reports on BLM land and mineral use authorizations for oil, gas, and geothermal leasing, rights-of-ways, coal and other mineral development, land and mineral title, mining claims, withdrawals, classifications, and more on federal lands or on federal mineral estate.
- The U.S. Department of Energy (DOE) Geothermal Technologies Office (GTO)'s (https://energy.gov/eere/geothermal/geothermal-energy-us-department-energy) Office of Scientific and Technical Information (OSTI) have scanned approximately 3,300 agency and national lab technical reports. These files are in a PDF, full-text-searchable format and accessible online at http://www.osti.gov/scitech/ and https://www.osti.gov/home/collections. The DOE-GTO also supports the Geothermal Data Repository (GDR), where datasets and products associated with DOE-funded projects are uploaded and available for public use. https://gdr.openei.org/

Table 1. Nevada geothermal power plants and generation figures: 2019.

Plant name	Nameplate Capacity (MWe)[1]	Flash or Binary	Commission Year	2019 Production (MWhr)		2019 Production (MWe)[2]		Operator
				Gross	Net	Gross	Net	
Beowawe	18.5	F/B	1985	120,045	99,112	13.7	11.3	Terra-Gen Power
Blue Mountain	49.5	B	2009	326,723	221,444	37.3	25.3	AltaRock Energy
Brady Hot Springs	26.1	F/B	1992	158,839	105,611	18.1	12.1	Ormat Nevada Inc.
Desert Peak II	23.0	B	2006	124,287	93,665	14.2	10.7	Ormat Nevada Inc.
Dixie Valley	64.7	F	1988	551,852	491,706	63.0	56.1	TerraGen Power, LLC
Dixie Valley Binary Unit	6.2	B	2012			0.0	0.0	TerraGen Power, LLC
Don A. Campbell	22.5	B	2013	186,740	148,725	21.3	17.0	Ormat Nevada Inc.
Don A. Campbell II	25.0	B	2015	169,477	132,662	19.3	15.1	Ormat Nevada Inc.
Jersey Valley	23.5	B	2011	110,088	71,561	12.6	8.2	Ormat Nevada Inc.
McGinness Hills	48.0	B	2012	457,816	379,808	52.3	43.4	Ormat Nevada Inc.
McGinness Hills II	48.0	B	2015	457,288	384,778	52.2	43.9	Ormat Nevada Inc.
McGinness Hills III	48.0	B	2018	518,941	432,886	59.2	49.4	Ormat Nevada Inc.
Patua	48.0	B	2012	212,290	125,335	24.2	14.3	Cyrq Energy
Salt Wells	23.6	B	2009	123,208	89,809	14.1	10.3	Enel North America
San Emidio	11.75	B	2012	102,900	73,373	11.7	8.4	Ormat Nevada Inc.
Soda Lake No. 1	5.1	B	1987			0.0	0.0	Cyrq Energy
Soda Lake No. 2	21.0	B	1991	82,708	53,411	9.4	6.1	Cyrq Energy
Steamboat II	23.9	B	1992	88,604	53,243	10.1	6.1	Ormat Nevada Inc.
Steamboat III	23.9	B	1992	96,453	61,880	11.0	7.1	Ormat Nevada Inc.
Galena 1	30.0	B	2005	166,762	135,969	19.0	15.5	Ormat Nevada Inc.
Galena 2	13.5	B	2007	59,276	33,889	6.8	3.9	Ormat Nevada Inc.
Burdette (Galena 3)	30.0	B	2008	169,558	126,987	19.4	14.5	Ormat Nevada Inc.
Steamboat Hills	13.2	F	1988	101,631	83,853	11.6	9.6	Ormat Nevada Inc.
Total MW at Steamboat	***134.5***							
Stillwater 2	47.2	B	2009	179,783	110,977	20.5	12.7	Enel Stillwater
Tungsten Mountain	37.0	B	2017	284,015	235,431	32.4	26.9	Ormat Nevada Inc.
Tuscarora	32.0	B	2012	172,213	125,067	19.7	14.3	Ormat Nevada Inc.
Wabuska	5.6	B	1984	22,249	14,136	2.5	1.6	Open Mountain Energy
Total:	**768.8**			**5,043,747**	**3,885,318**	**575.8**	**443.5**	

[1] Nameplate capacity is the manufacturer's rating of equipment output capacity, as reported to the Nevada Division of Minerals by the plant operators and does not necessarily reflect the capability of the currently developed resource. These nameplate capacities are estimates, and several different values can be found in the literature. Generator nameplate capacity actually refers to the size of the actual generator, but not to the turbine size or the actual capacity of the power plant. There are no public documents breaking down nameplate capacity of the turbines or gross power, so these numbers may not adequately reflect actual generation.

[2] Production values were calculated by dividing annual megawatt hours (MWh) produced by the number of hours in a year.

Table 2. Geothermal power plant operator contact information.

Company Address	Local Contact	Project	MWe
AltaRock Energy 4010 Stone Way North, Suite 400 Seattle, WA 98103 (206) 729-2400 http://altarockenergy.com/	NGP Blue Mountain 1 15250 Blue Mountain Road Winnemucca, NV 89445 (775) 786-4322	Blue Mountain	49.5
Cyrq Energy 15 West South Temple, Suite 1900 Salt Lake City UT 84101 (801) 875 4200 http://www.cyrqenergy.com/	Patua Geothermal Power Plant 17388 Patua Road Hazen, NV 89408 (775) 217-2650 Soda Lake Power Plant 5500 Soda Lake Road Fallon, NV, 89406, USA (775) 867-5093	Patua Soda Lake No. 1 Soda Lake No. 2	48 5.1 21
Enel North America 1755 East Plumb Lane, Suite 155 Reno, NV 89502 (775) 329 0700 https://www.enelgreenpower.com/country-north-america	(775) 423-5374 (775) 423-0322	Salt Wells Stillwater	23.6 47.2
Open Mountain Energy 3451 N. Triumph Blvd, Suite 201 Lehi, UT 84043 (385) 352-8858 http://openmountainenergy.com/	21 Julian Lane Yerington, NV 89447 (385) 352-8858	Wabuska	5.6
Ormat Technologies, Inc. 6140 Plumas St Reno, NV 89519 (775) 356-9029 http://www.ormat.com/	(775) 322-7782 (775) 423-5800 (775) 852-1444 (775) 384-7807 (775) 557-2015 (775) 852-1444 (775) 852-1444 (775) 852-1444 (775) 384-7807	Brady Hot Springs Desert Peak Jersey Valley McGinness Hills (1,2 & 3) San Emidio (Empire) Steamboat Tungsten Mountain Tuscarora Don Campbell 1 & 2	26.1 23 23.5 144 11.75 134.5 37 32 47.5
Terra-Gen Power, LLC 9590 Prototype Ct., #220 Reno, NV 89521 (775) 850-1125 http://www.terra-gen.com/	(775) 635-2130 (775) 423-6535	Beowawe Dixie Valley	18.5 70.9
	Total Installed MWe (nameplate capacity)		**768.8**

Table 3a. Geothermal competitive leasing activity in Nevada, 2007–2019.

Year	Parcels Offered	Acres Offered	Parcels Sold	Acres Sold	Total receipts[1]	Highest bid per acre	Avg. bid per acre	% Acres Sold	% Parcels Sold
2007	43	122,849	43	122,849	$11,669,821	$95	$92.9	100%	100%
2008	35	105,212	35	105,212	$28,207,806	$268	$266	100%	100%
2009	108	323,222	82	243,727	$8,909,445	$3,800	$34.5	75%	76%
2010	114	328,020	75	212,370	$2,762,292	$1,000	$10.9	65%	66%
2011	51	151,119	17	42,627	$456,353	$60	$8.7	28%	33%
2012	33	94,829	8	27,834	$112,540	$2	$2	29%	24%
2013	13	16,284	9	10,373	$42,870	$2	$2	64%	69%
2014	2	3,438	1	40	$315	$2	$2	1%	50%
2015	0	0	-	-	-	-	-	-	-
2016	22	46,976	14	32,075	$30,552	$2	$2	68%	64%
2017	20	38,208	10	19,209	$78,444	$2	$2	50%	50%
2018	10	27,331	2	2,321	$26,422	$12	$9.2	8%	20%
2019	142	387,032	37	102,403	$637,892	$20	$4.2	26%	26%
Totals:	**593**	**1,644,325**	**333**	**921,040**	**$53,034,752**	**$3,800**	**$36**	**56%**	**56%**

[1] Includes bids, first year lease rental at a price of $2 per acre and application fee (~$165 per parcel (this changes year-to-year)).

Table 3b. Non-competitive geothermal leasing activity in Nevada, 2018–2019 ('day-after' sale).

Year	Parcels Offered	Acres Offered	Parcels Sold	Acres Sold	Total Receipts[2]	% Acres Sold	% Parcels Sold
2018	8	24,749	0	0	0	0	0
2019	105	281,967	19	64,420	$72,875	23%	18%

[2] First year lease rental at a price of $1 per acre and application fee ($445 per parcel in 2019).

Table 4. Geothermal wells reported as drilled, re-drilled or completed in 2019.

County	Area	Permit #	Operator Name	Well Number	Well Type[1]	UTM_ Easting[2]	UTM_ Northing[2]	Land Type	Permitted depth (m)[3]
Pershing	Granite Springs Valley	1474	Nevada Bureau of Mines & Geology	45-14	TG	336613	4452612	Federal BLM / USFS	183[4]
Pershing	Granite Springs Valley	1475	Nevada Bureau of Mines & Geology	42-2	TG	336686	4456561	Federal BLM / USFS	252[4]
Mineral	Don A. Campbell	1476	ORNI 47 LLC	42-8	Ind-Inj	387905	4299879	Federal BLM / USFS	609.6
Churchill	Dixie Meadows	1477	ORNI 32 LLC	22D-8	Obs	407747	4405487	Federal BLM / USFS	914.4
Washoe	San Emidio	1478	Ormat Nevada	57-33	Ind-Inj	296013	4477205	Federal BLM / USFS	152.4
Washoe	Steamboat Hills	1479	Steamboat Field Company LLC	83C(82)-6	Ind-Prod	262161	4361691	Federal BLM / USFS	944.9

[1] Abbreviations as follows: Ind-Inj = Industry Injection well, Ind-Prod = Industry Production well, Obs = Observation well, TG = Thermal Gradient hole.

[2] North American 1983 Datum UTM 11N (in meters).

[3] Permitted depth for each well obtained from the Nevada Division of Minerals (http://minerals.nv.gov/Programs/Geo/GeoPermits/).

[4] Drilled depth (meters)

Table 5. Geothermal drilling activity in Nevada, 2007–2019

Year	Number of permits issued	Number of wells drilled	Number of production wells drilled
2007	71	41	5
2008	130	53	16
2009	195	71	16
2010	119	74	19
2011	85	37	19
2012	49	24	12
2013	21	23	8
2014	27	14	6
2015	26	17	7
2016	14	16	9
2017	35	31	5
2018	23	25	3
2019	7	6	1

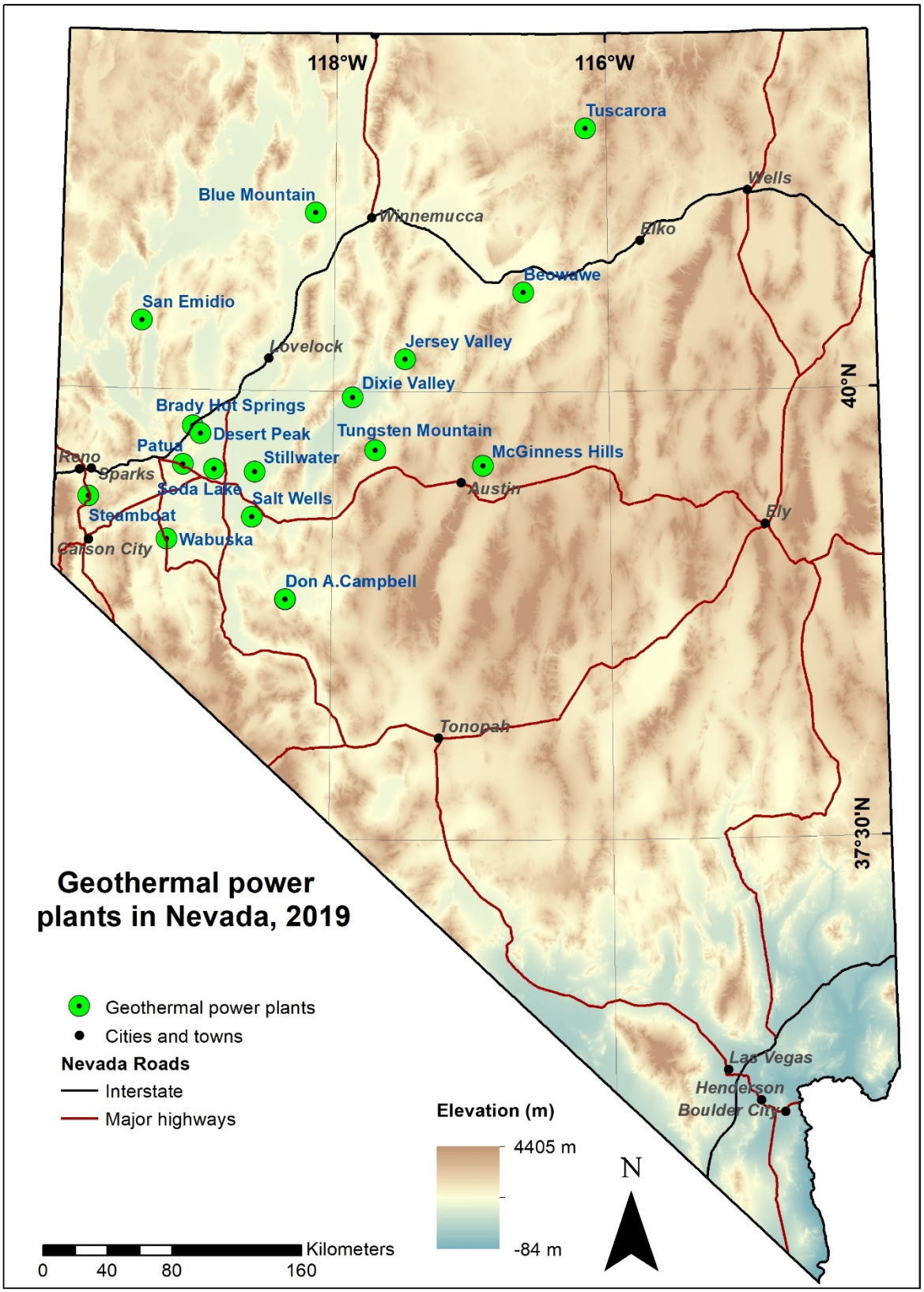

Figure 1. Location of geothermal power plants in Nevada in 2019.

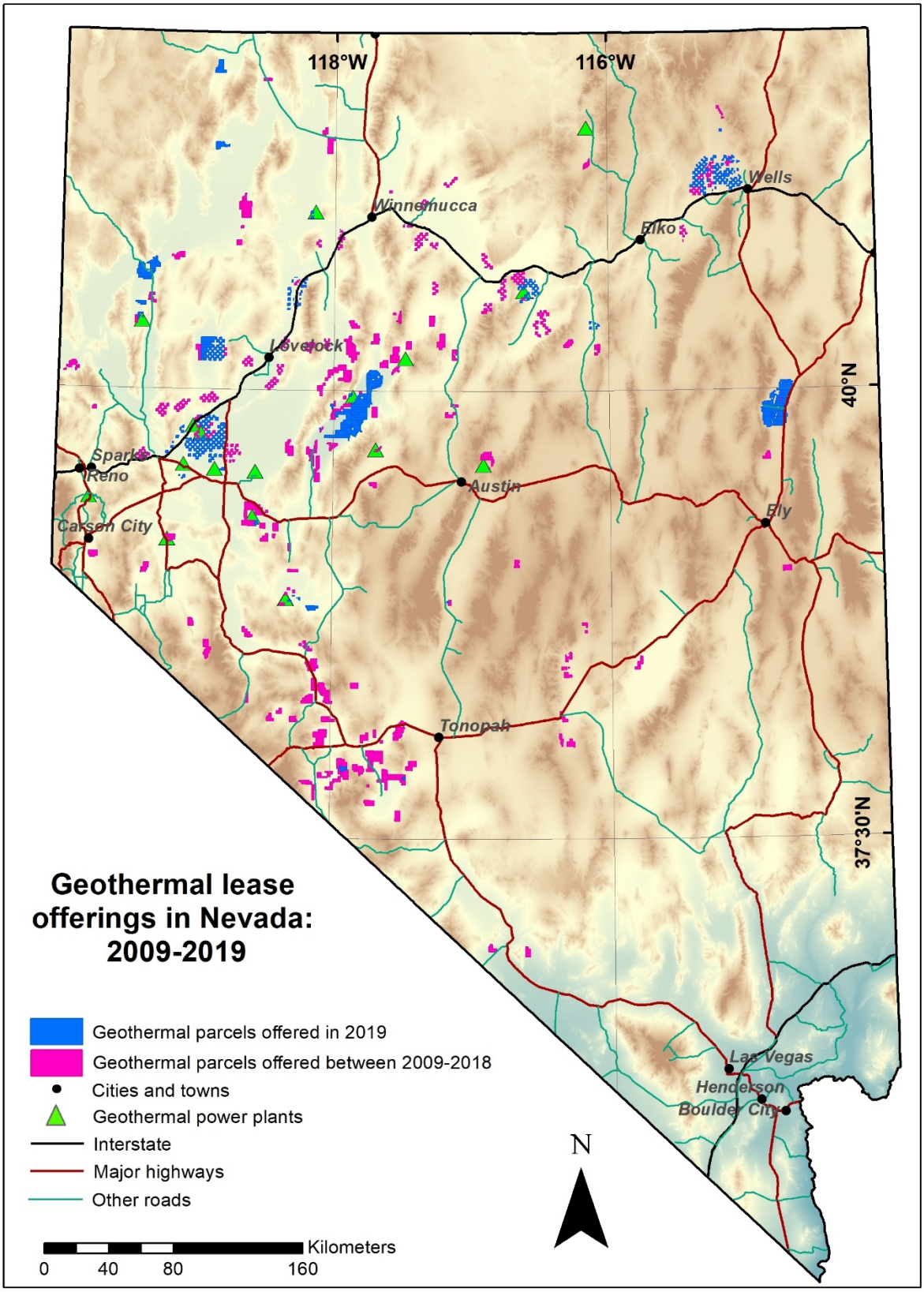

Figure 2. Geothermal leases offered by the BLM between 2009 and 2019.

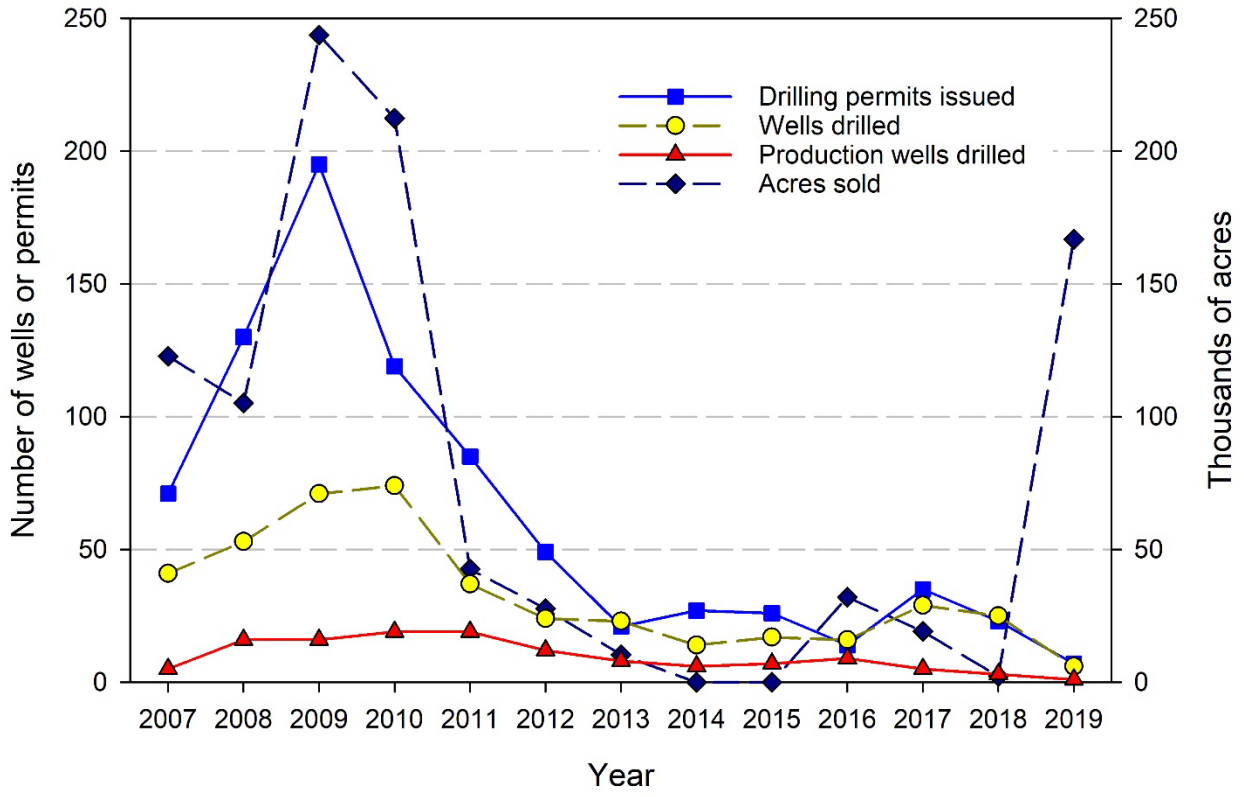

Figure 3. Trends in geothermal leasing and drilling activities in Nevada from 2007 to 2019. Note – acreage for 2019 includes parcels sold through both competitive and non-competitive ('day-after') lease sales.

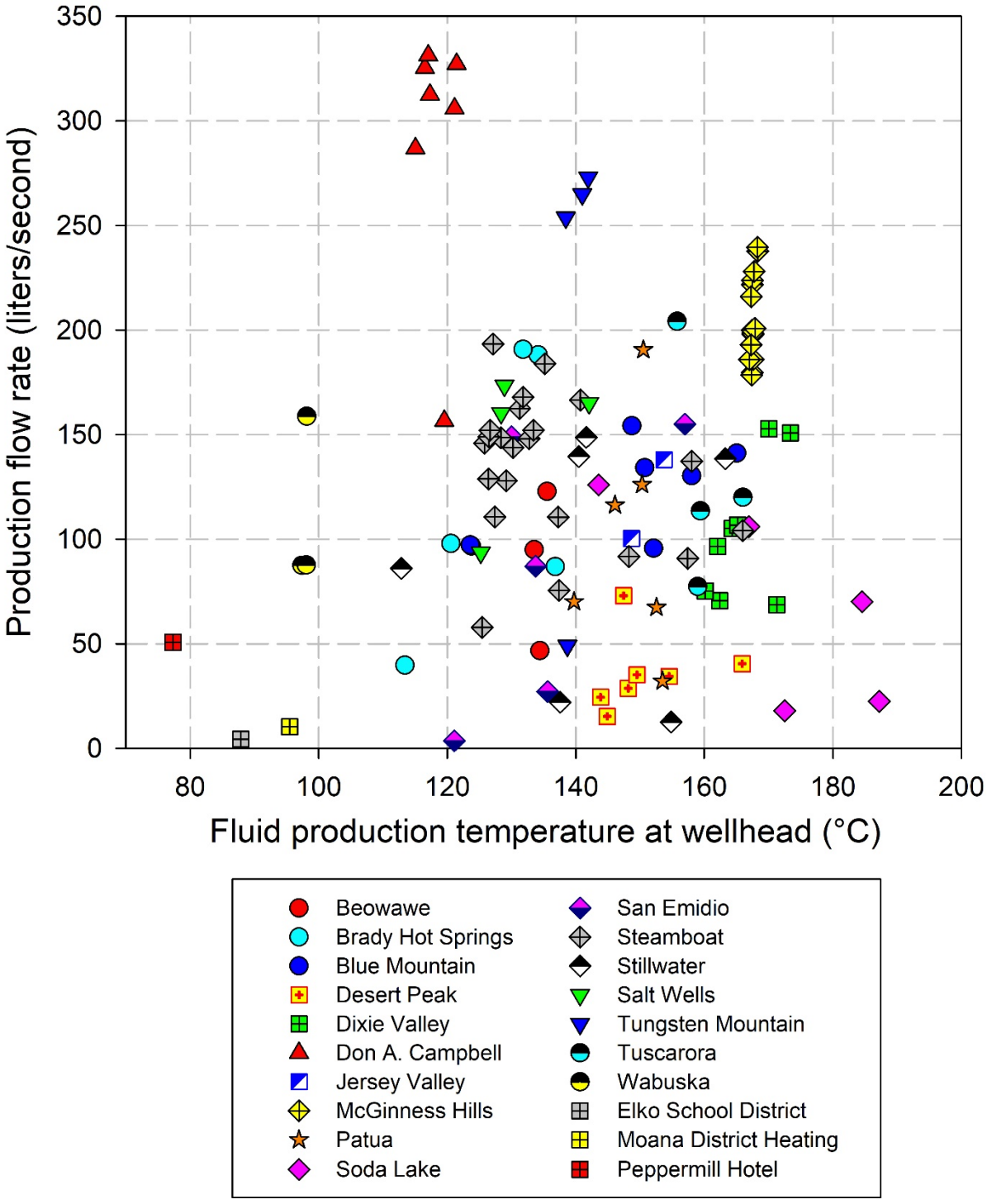

Figure 4. Average production flow rates of geothermal wells in Nevada in 2019 and their associated temperatures as measured at the wellhead. Data based on information provided to the Nevada Division of Minerals, 2019. Note that temperatures reported for wells in Dixie Valley and Beowawe represent post-flash temperatures.

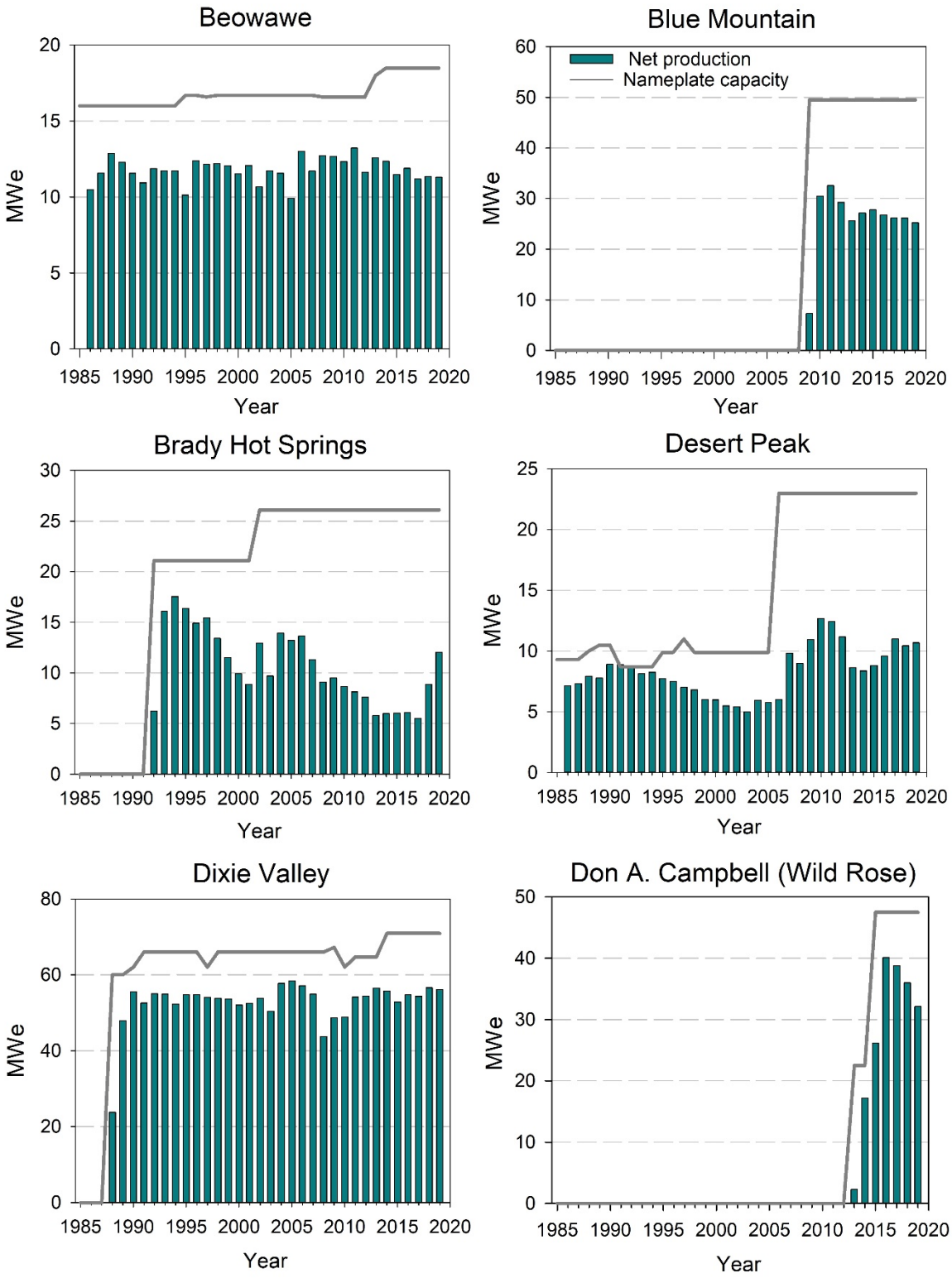

Figure 5a. Evolution of nameplate capacity (MWe) and net power generation (MWe) for geothermal power plants in Nevada (legend is the same for all plots).

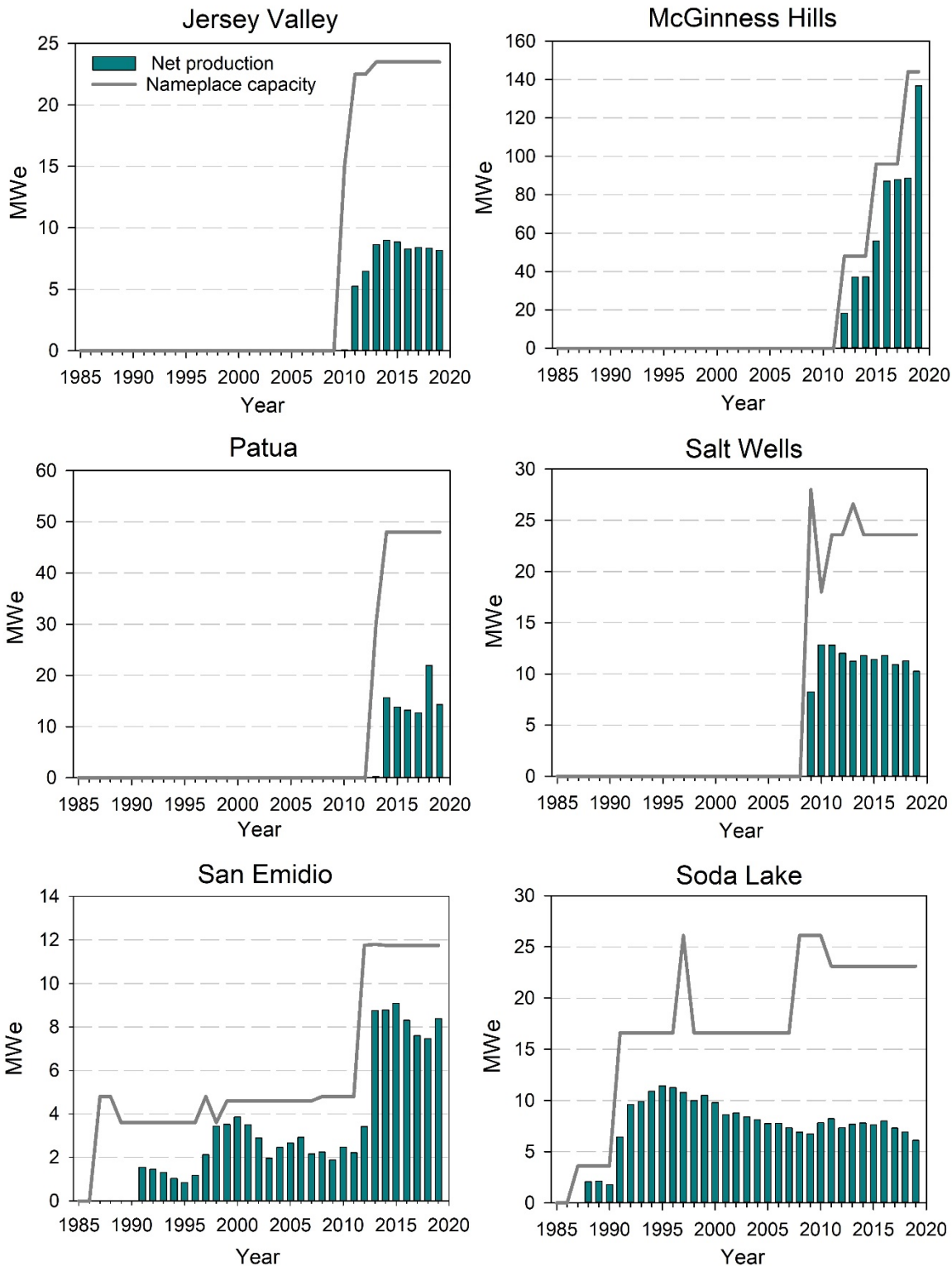

Figure 5b. Evolution of nameplate capacity (MWe) and net power generation (MWe) for geothermal power plants in Nevada (legend is the same for all plots).

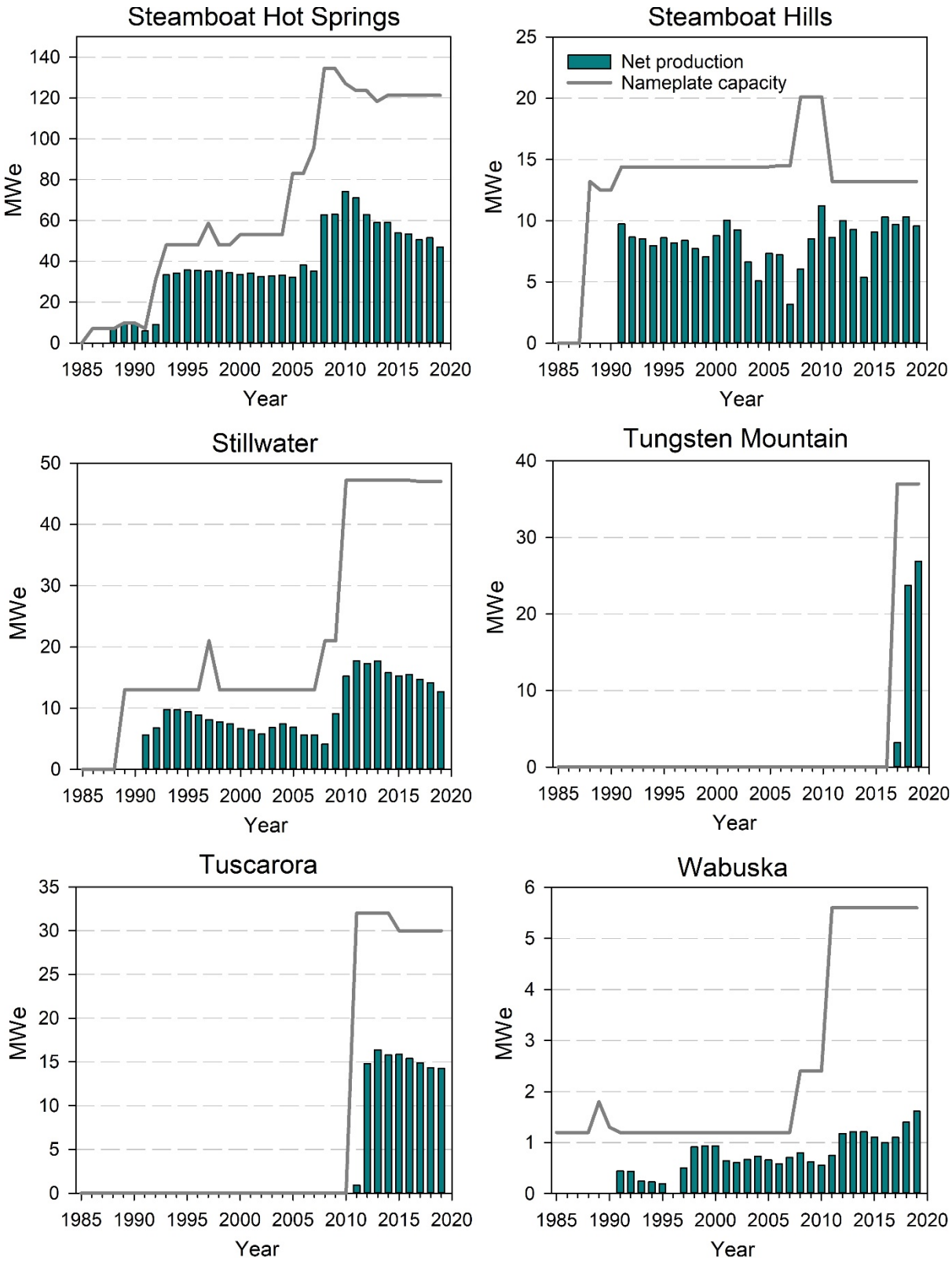

Figure 5c. Evolution of nameplate capacity (MWe) and net power generation (MWe) for geothermal power plants in Nevada (legend is the same for all plots).

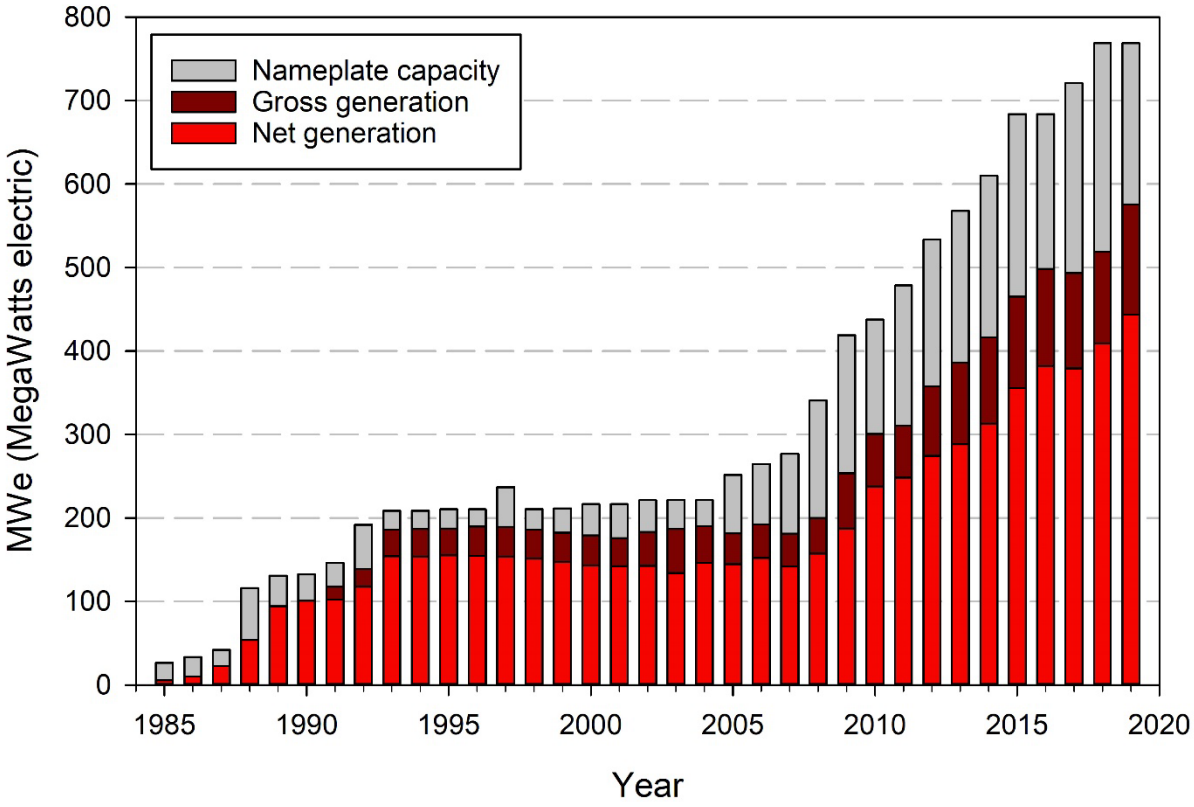

Figure 6. Growth in installed nameplate capacity, and net and gross geothermal power production in Nevada between 1985 and 2019, as reported to the Nevada Division of Minerals. Gross and net generation are calculated by dividing annual net generation in megawatt-hours by the number of hours in a year.

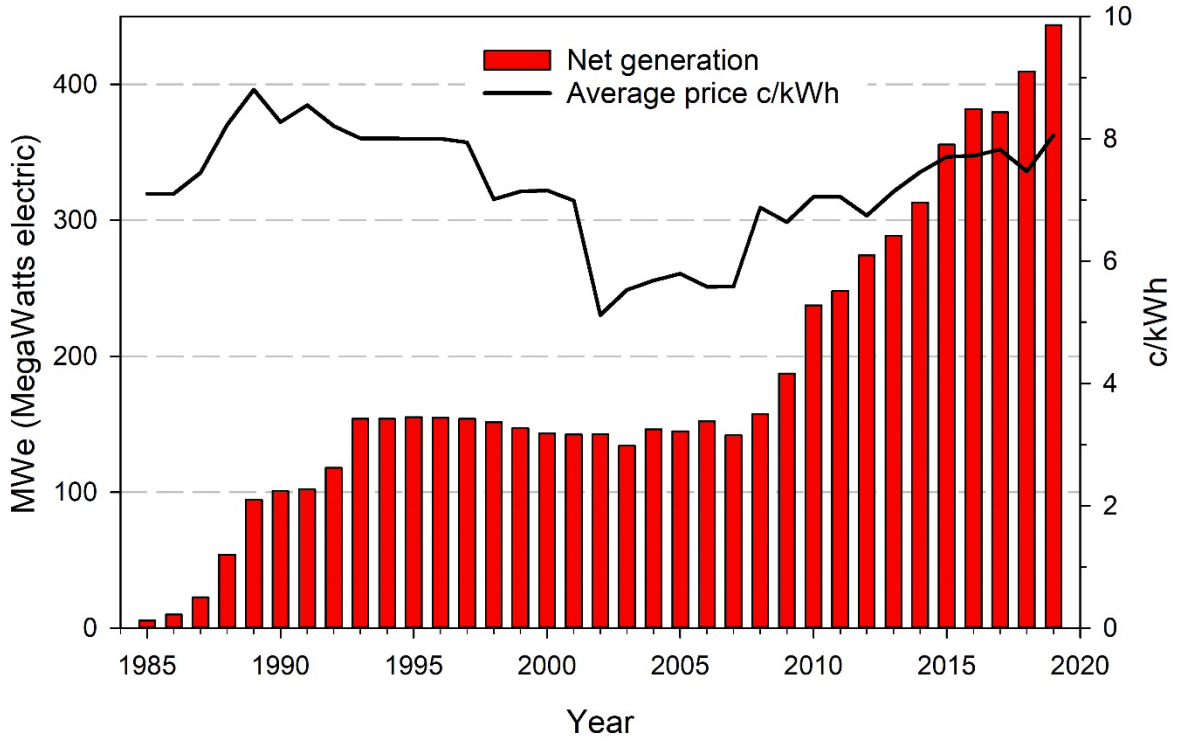

Figure 7. Trends in annual, net geothermal electricity generation and the estimated average price of geothermal electricity (calculated from gross proceeds and reported net production through 2019) in cents per kilowatt hour (c/kWh). The actual price for any individual power plant may be different and is held confidential by the State Energy Office.

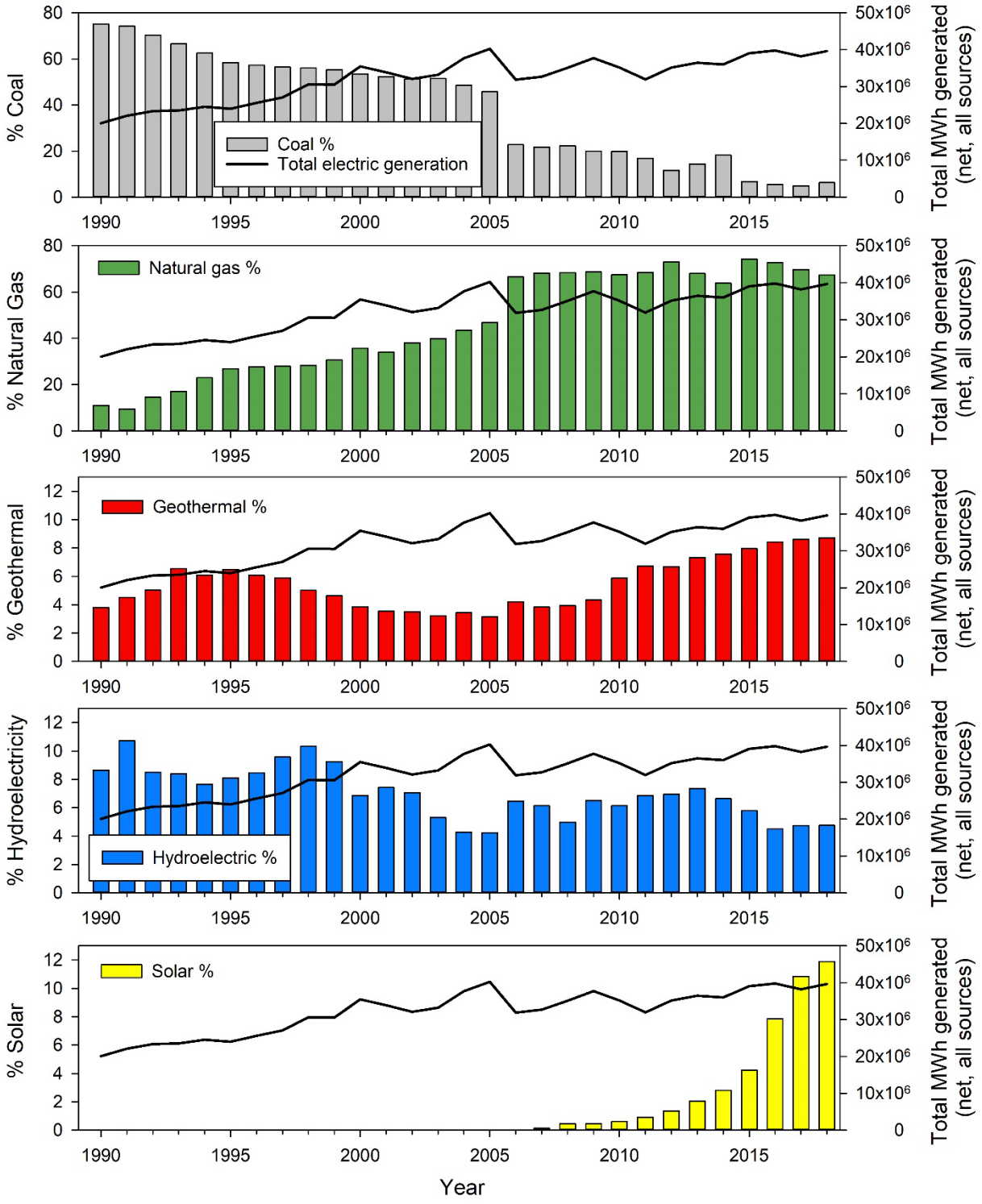

Figure 8. Changes in the major contributors to electricity generation in Nevada between 1990 and 2018. Data sourced from the U.S. Energy Information Administration (EIA)[1].

[1] https://www.eia.gov/electricity/state/nevada/

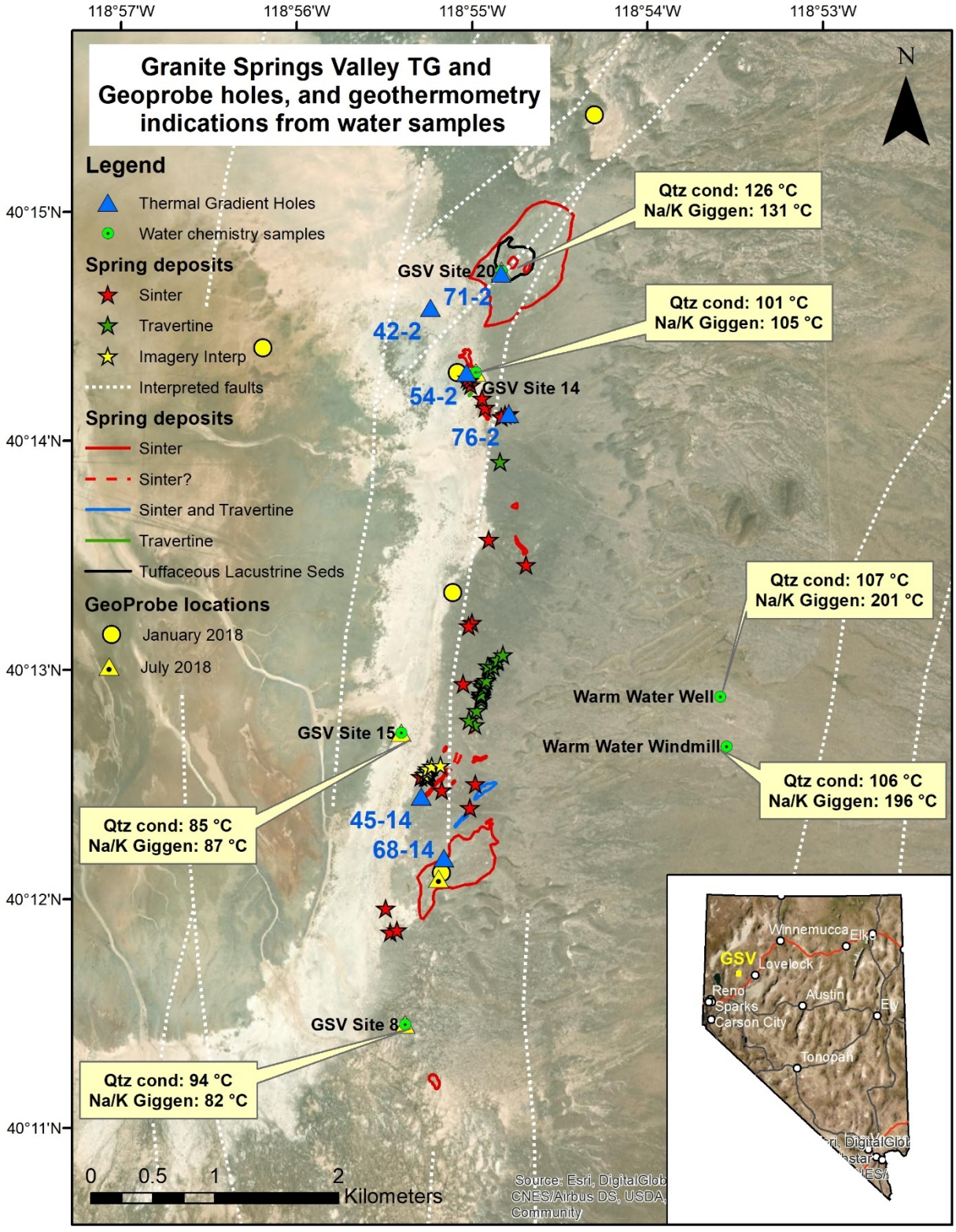

Figure 9. Location of thermal gradient and GeoProbe holes in northern Granite Springs Valley that were drilled as part of Phase 3 of the Nevada geothermal play fairway project. Drilling was completed in early 2019, with the maximum measured temperatures encountered in well 42-2.

OIL AND GAS

by David A. Davis

PRODUCTION

According to the Nevada Division of Minerals, Nevada's net oil production was 266,872 barrels in 2019, an increase of 5% from 2018. Nevada's production accounted for 0.006% of total domestic production in 2019. Production came from 57 actively producing wells in seven fields in Railroad Valley, Nye County, which accounted for 87% of the state's production, and nine wells in three fields in Pine Valley, Eureka County, which accounted for 13% of the state's production. Five other minor fields were shut-in throughout the year and four other minor fields plus an outlier well that briefly produced are plugged and abandoned. Nevada ranked 26 out of the 32 oil-producing states (http://www.eia.gov). The average per barrel net wellhead price for Nevada crude oil for 2019 was $52.59, an 18% decrease from $64.14 in 2018. The sales volume (or gross proceeds) decreased 14% to $14,035,529.62 from $16,356,064.58 in 2018 (2019–2020 Net Proceeds of Minerals Bulletin).

Production from Nevada's 67 actively producing wells, an increase of seven wells from 2018, ranged up to 106 barrels of oil per day and 2,979 barrels of water per day. The daily averages were 10.6 barrels of oil, down from 11.6 barrels per day in 2018, and 267 barrels of water per day for the 60 water producers, a 12% decrease from 305 barrels per day in 2018 for 57 water producers. Thirty-four wells produced ten or less barrels of oil per day, and ten wells produced more than 30 barrels of oil per day. Twenty-nine wells produced less than 300 days, and 21 produced less than 100 days during the year. Thirty-six other wells listed as producers were shut-in for the entire year. Ten wells that were shut-in for varying numbers of years were brought back on line in 2019, though two of those only produced for a day.

At 104 barrels of oil and 1,404 barrels of water per day over 354 days of production, Trap Spring 9 was Nevada's most productive well for the third year in a row. A new producer, Three Bar Federal No. 25-2, produced 106 barrels of oil and 27 barrels of water per day in during 56 days of production. Grant Canyon No. 10, which had been Nevada's largest producer the six prior years, was the second largest producer at 76 barrels of oil and 878 barrels of water per day over 365 days of production. Nevada's third highest continuous volume producer for the third year in a row was Kate No. 1A. It produced for 274 days and averaged 46 barrels of oil and 725 barrel of water per day. Munson Ranch No. 14-49X, which had been shut in since 2015, actually produced 48 barrels of oil and a barrel of water for one day in December.

The Bacon Flat Field produces from dolomite in the Devonian Guilmette Formation between about 4,960–5,350 feet (1,512 and 1,634 m). The field averaged 12.7 barrels of oil and 150 barrels of water per day and accounted for less than 2% of Nevada's total oil production. Oil and water production decreased 7.5% and 35%, respectively, from 2018. The field produced from two wells. One well, that has been active since 1994 and produced for 365 days. The second well had been shut in since 1993 but produced 7 barrels during short period in October. The field also had one inactive producer.

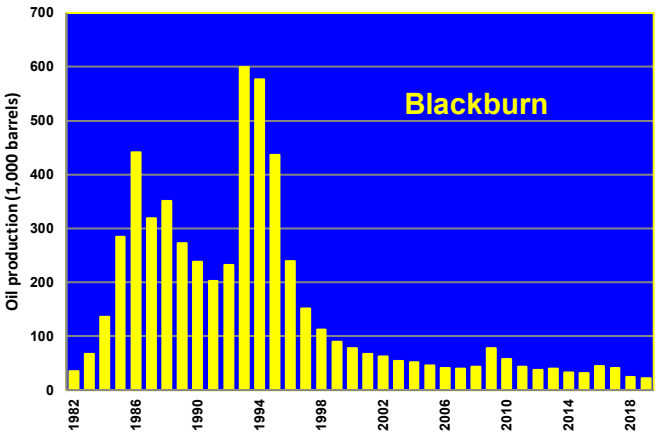

Figure 1. Chart showing oil production from the Blackburn Field in Pine Valley, Eureka County, from 1983 to 2019.

The Blackburn Field produces from the Oligocene Indian Well Formation (tuff and tuffaceous sandstone), Mississippian Chainman Shale (sandstone), and Devonian Nevada Formation (dolomite) between about 6,700 and 6,750 feet (2,043 and 2,058 m). The field had seven active wells, one more than in 2018. A producer that had been shut in since 2014 was brought back on line at the start of the year. Production ranged between 38 and 365 days and averaged 213 days of production each. Spread over the year, production for the field averaged 62 barrels of oil and 3,880 barrels of water per day, and accounted for almost 8.5% of Nevada's total oil production. Oil and water production decreased 8% and 12%, respectively, from 2018. Daily per well oil production ranged between less than 1 barrel and almost 31 barrels and averaged 13 barrels. Daily per well water production ranged between 10 and 1,944 barrels and averaged 604 barrels. Oil production increased in one wells and decreased in five wells. The field also had one inactive producer.

The Eagle Springs Field produces from Oligocene ignimbrites, the Eocene Sheep Pass Formation (lacustrine carbonates) and the Pennsylvanian Ely Limestone between about 5,780 and 7,360 feet (1,762 and 2,244 m). The field had 13 active producers, one more than in 2018. One well shut in since 2015 was brought back on line in February. One well only produced one barrel of oil during one day in October and another produced 62 barrels over Not counting the one-day outlier production ranged between 11 and 364 days and averaged 177 days, and the eight producers that were active 30 days or more averaged 257 days of production. Spread over the year, production for the field

averaged 96 barrels of oil and 1,275 barrels of water per day and accounted for about 13% of Nevada's total oil production. Oil production increased 30%, and water production decreased 24% from 2018. Daily per well oil production ranged between less than one and 34 barrels and averaged 16 barrels.

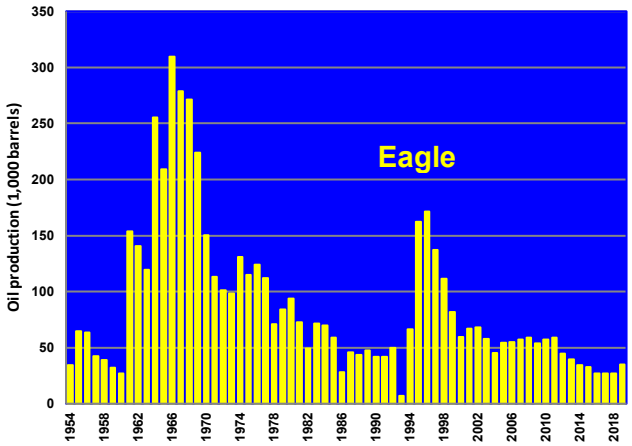

Figure 2. Chart showing oil production from the Eagle Springs Field in Railroad Valley, Nye County, from 1954 to 2019.

Daily per well water production ranged between three and 1,316 barrels and averaged 224 barrels. Of the 12 wells with production consistent from 2018, production increased in seven wells, decreased in five wells. The field had eight inactive producers, and a producer now used as a water disposal well.

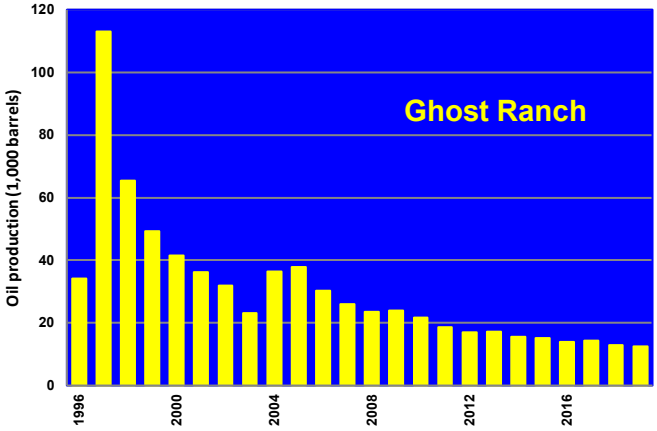

Figure 3. Chart showing oil production from the Ghost Ranch Field in Railroad Valley, Nye County, from 1996 to 2019.

The Ghost Ranch Field produces from dolomites of the Devonian Guilmette Formation between about 4,350 and 4,620 feet (1,326 and 1,409 m). The field had four active producers all of which produced 365 days. Production for the field averaged 34 barrels of oil and 1,385 barrels of water per day and accounted for 5% of Nevada's total oil production. Oil production decreased 3% and water production increased 14% from 2018. Daily per well oil production ranged between six and 13 barrels and averaged nine barrels. Daily per well water production ranged between 307 and 387 barrels and averaged 346 barrels. Production increased in two wells and decreased in two other wells.

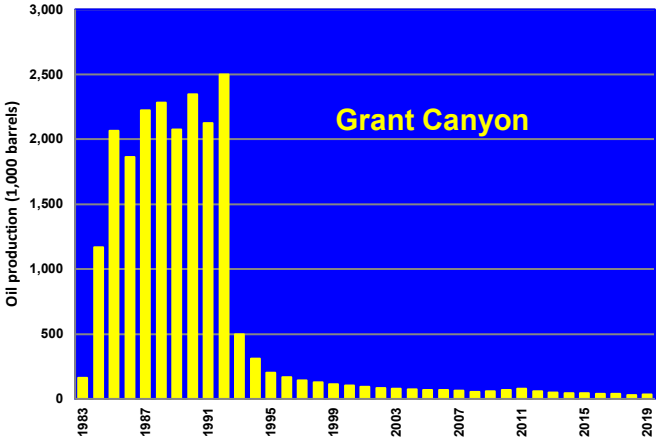

Figure 4. Chart showing oil production from the Grant Canyon Field in Railroad Valley, Nye County, from 1983 to 2018.

The Grant Canyon Field also produces from dolomites of the Devonian Guilmette Formation between about 2,160 and 4,300 feet (659 and 1,333 m). The field had three active producers, two which produced 365 days. The remaining one, Grant Canyon 7, had been shut in since 2012. It produced water for 365 days, but produced oil through the month of December. Spread over the year, production for the field averaged 92 barrels of oil and 1,885 barrels of water per day and accounted for 13% of Nevada's total oil production. Oil production increased 4% and water production decreased 14% from 2018. Daily per well oil production ranged between less than six and 76 barrels and averaged 32 barrels. Daily per well water production ranged between 292 and 878 barrels and averaged 628 barrels. The field also had two inactive producers. One, Grant Canyon 9, had produced through March 2018, and has been shut in since then.

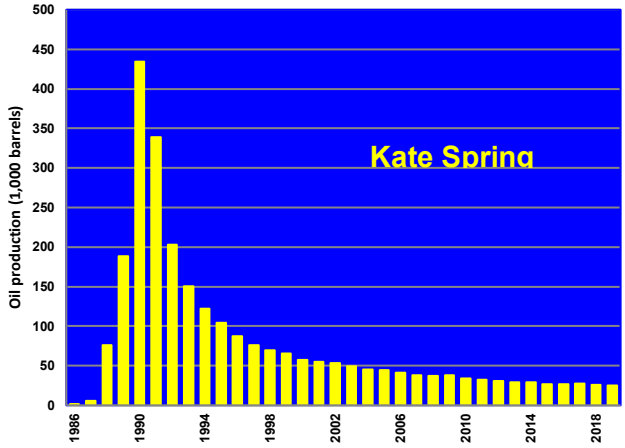

Figure 5. Chart showing oil production from the Kate Spring Field in Railroad Valley, Nye County, from 1986 to 2019.

The Sans Spring Field produces from the Oligocene Garrett Ranch Group (volcaniclastic rocks and ignimbrites) between about 5,640 and 5,770 feet (1,720 and 1,759 m). It's only active well produced for a few days each month between March and November. It averaged 34 barrels of oil per day with no water over 34 days of production. Production decreased 20% from 2018 and accounted for about 0.45% of Nevada's total oil production. The field also contains two inactive producers.

The Three Bar Field went back into production with a new producer. Production was from the Miocene Humboldt Formation (see New Producers). Three Bar contained three other wells which produced from the Miocene Humboldt Formation, the Oligocene Indian Well Formation, and the Cretaceous Newark Formation between 5,720 and 7,070 feet (1,744 and 2,155 m). These wells were plugged and abandoned in 2000 and 2001.

In the Tomera Ranch Field, the latest production is from an unnamed conglomerate unit. The field had two active wells which produced during the month of September. During that time, the field averaged 12 barrels per day of oil and no water. Oil production declined 48% from 2018, and accounted for less than 0.1% of Nevada's total oil production. Past production from three now plugged and abandoned wells was from the Oligocene Indian Well Formation (tuffaceous sandstone) between about 1,150 and 1,950 feet (351 and 595 m).

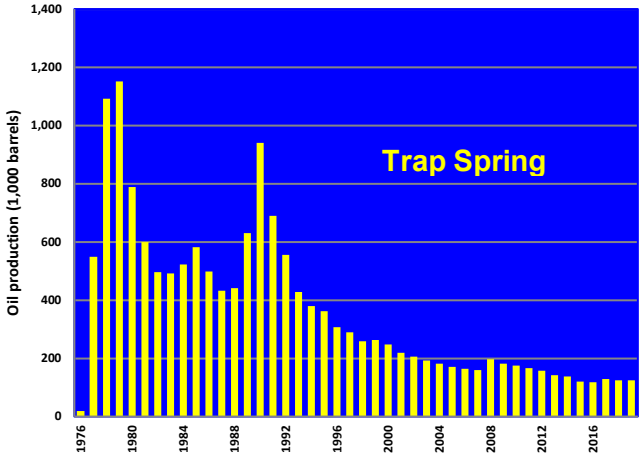

Figure 6. Chart showing oil production from the Trap Spring Field in Railroad Valley, Nye County, from 1976 to 2019.

The Trap Spring Field produces from the Oligocene Tuff of Pritchards Station between about 3,210 and 4,950 feet (979 and 1,509 m). The field had 29 active producers. Two wells only produced for one day, and the remaining wells averaged 290 days of production each. Spread over the year, production for the field averaged 344 barrels of oil and 6,358 barrels of water per day and accounted for 47% of Nevada's total oil production. Daily per well oil production ranged between 3.5 and 104 barrels and averaged 16 barrels. Daily per well water production ranged between zero and 2,989 barrels and averaged 234 barrels. Oil water production decreased 0.2% and water production increased 0.9% from 2018. Two wells, which had produced in 2018, were shut in throughout 2019, and six wells that had been shut since between 2011 and 2016 were brought on line. Oil production increased in seven wells and decreased in 16. The field had 15 inactive producers.

Five minor fields were shut-in throughout 2018. The North Willow Creek Field, which produced from the Mississippian Chainman Shale between about 6,290–6,470 feet, contains two wells and has been shut in since 2008. The remaining four fields contain one well each. The Sand Dune Field produced from Permian and Pennsylvanian limestones between about 5,970 and 6,200 feet (1,820 and 1,890 m) and was shut in in 2018. The Currant Field produced from the Eocene Sheep Pass Formation between

Production from Nevada's oil fields (barrels of oil)

Compiled from producers' reports filed with the Nevada Division of Minerals

Field (year discovered)	1954-2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Eagle Springs (1954) (Railroad Valley)	5,387,785	57,394	58,900	44,422	39,818	34,217	32,675	26,872	26,716	27,045	35,205	5,771,049
Trap Spring (1976) (Railroad Valley)	14,290,229	175,273	166,383	156,962	143,876	136,627	120,748	118,847	129,104	125,262	125,540	15,688,850
Currant (1979) (Railroad Valley)	1,823	109	119	159	194	143	25	0	0	0	0	2,572
Bacon Flat (1981) (Railroad Valley)	1,021,542	7,427	6,358	5,690	6,447	6,223	5,000	5,261	5,325	5,000	4,623	1,078,896
Blackburn (1982) (Pine Valley)	5,344,773	57,260	43,198	38,004	40,392	32,217	31,605	44,180	40,767	24,625	22,559	5,719,580
Grant Canyon (1983) (Railroad Valley)	21,117,309	68,927	77,683	58,897	50,517	46,263	42,810	41,631	38,861	32,126	33,495	21,608,519
Kate Spring (1986) (Railroad Valley)	2,370,194	33,825	32,719	30,833	29,402	28,934	26,672	26,486	27,861	26,102	25,428	2,658,455
Spencer Lease (1986) (Railroad Valley)	86	0	0	0	0	0	0	0	0	0	0	86
Tomera Ranch (1987) (Pine Valley)	36,472	0	0	11,705	3,757	2,016	1,224	961	854	385	372	57,746
North Willow Creek (1988) (Pine Valley)	51,841	0	0	0	0	0	0	0	0	0	0	51,841
Three Bar (1990) (Pine Valley)	23837	0	0	0	0	0	0	0	0	0	5,910	29,747
Duckwater Creek (1990) (Railroad Valley)	18,700	118	115	117	119	124	45	0	0	0	0	19,338
Sans Spring (1993) (Railroad Valley)	272,254	1,493	1,404	1,498	1,318	1,604	1,268	246	1,567	1,437	1,148	285,237
Ghost Ranch (1996) (Railroad Valley)	575,718	21,630	18,605	17,022	17,232	15,564	15,106	13,914	14,345	12,959	12,592	734,687
Deadman Creek (1996) (Elko County)	367	0	0	0	0	0	0	0	0	0	0	367
Sand Dune (1998) (Railroad Valley)	147,538	3,687	2,483	2,656	2,567	7,467	2,606	201	121	37	0	169,363
East Inselberg (2005) (Railroad Valley)	355	79	32	29	33	24	14	0	0	0	0	567
Toano Draw (2007) (Elko County)	1,964	0	0	0	0	0	0	0	0	0	0	1,964
Humboldt (2014) (Elko County)						2,756	0	0	0	0	0	2,756
Huntington (2014) (Elko County)						2,248	1,584	0	9	0	0	3,840
Total	50,662,787	427,222	407,999	367,994	335,672	316,426	281,382	278,599	285,530	254,978	266,872	53,885,461
Change from previous year		-6%	-4%	-10%	-9%	-6%	-11%	-1%	2%	-11%	5%	

Production of water from Nevada's oil fields (barrels of water)

Compiled from producers' reports filed with the Nevada Division of Minerals

Field (year discovered)	1994-2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Eagle Springs (1954) (Railroad Valley)	7,398,699	699,147	644,703	361,101	375,711	429,749	557,326	377,316	474,199	611,335	465,346	12,394,632
Trap Spring (1976) (Railroad Valley)	36,836,506	2,288,649	2,450,044	2,460,099	2,429,108	2,382,353	2,325,601	2,394,821	2,386,266	2,299,045	2,320,594	60,573,086
Currant (1979) (Railroad Valley)	0	2	0	0	0	0	0	0	0	0	0	2
Bacon Flat (1981) (Railroad Valley)	422,492	5,331	1,810	1,765	1,685	1,825	1,625	4,152	56,319	83,590	54,717	635,311
Blackburn (1982) (Pine Valley)	28,920,484	1,623,338	1,334,105	1,418,780	1,284,774	1,117,893	1,373,509	1,601,484	2,022,722	1,602,479	1,416,358	43,715,926
Grant Canyon (1983) (Railroad Valley)	6,456,955	709,918	644,303	640,311	637,840	621,172	547,166	572,710	534,650	803,463	687,952	12,856,440
Kate Spring (1986) (Railroad Valley)	7,548,375	494,605	450,155	426,896	337,981	368,722	398,138	343,883	449,919	496,998	400,474	11,716,146
Spencer Lease (1986) (Railroad Valley)	0	0	0	0	0	0	0	0	0	0	0	0
Tomera Ranch (1987) (Pine Valley)	505,881	0	0	0	0	0	0	0	7	0	0	505,888
North Willow Creek (1988) (Pine Valley)	3,983	0	0	773	360	0	0	0	0	0	0	5,116
Three Bar (1990) (Pine Valley)	5,958	0	0	0	0	0	0	0	0	0	1,530	7,488
Duckwater Creek (1990) (Railroad Valley)	71,001	1,080	1,080	1,080	1,080	990	0	0	0	0	0	76,311
Sans Spring (1993) (Railroad Valley)	4,205,523	0	0	0	0	0	0	0	0	0	0	4,205,523
Ghost Ranch (1996) (Railroad Valley)	496,553	529,423	514,379	479,013	600,429	537,388	561,107	452,521	518,688	442,673	505,623	5,637,797
Deadman Creek (1996) (Elko County)	0	0	0	0	0	0	0	0	0	0	0	0
Sand Dune (1998) (Railroad Valley)	383,428	37,399	50,857	55,225	49,525	14,308	5,211	365	135	102	0	596,555
East Inselberg (2005) (Railroad Valley)	3,344	856	698	0	0	0	0	0	0	0	0	4,898
Toano Draw (2007) (Elko County)	29,121	0	0	0	0	0	0	0	0	0	0	29,121
Humboldt (2014) (Elko County)						0	0	0	0	0	0	0
Huntington (2014) (Elko County)						0	4,589	0	0	4,589	0	9,178
Total	93,288,303	6,389,748	6,092,134	5,845,043	5,718,493	5,474,400	5,774,272	5,747,252	6,442,905	6,344,274	5,852,594	152,696,418
Change from previous year		1%	-4%	-4%	-2%	-4%	5%	-1%	12%	-2%	-8%	

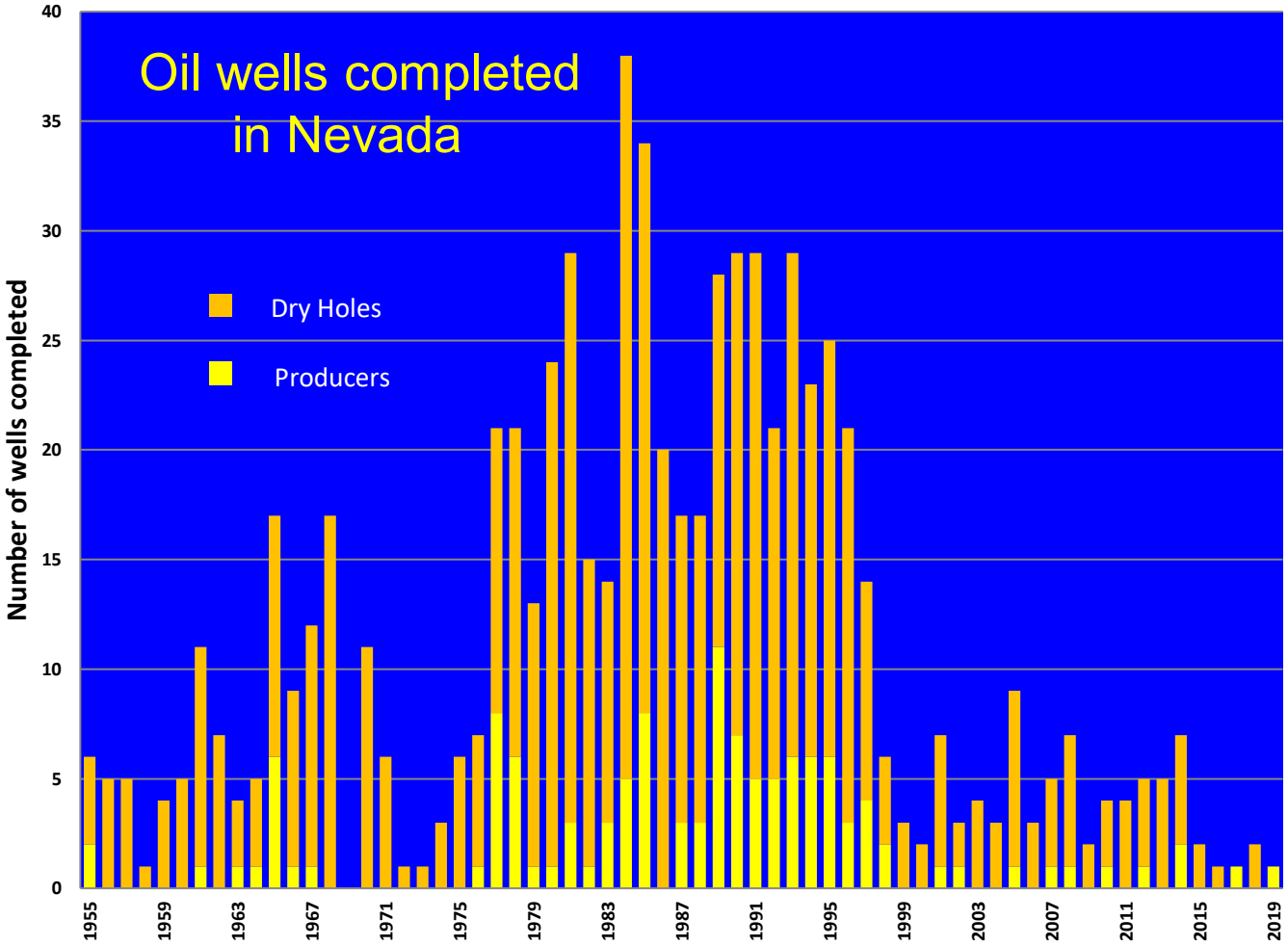

Figure 7. Chart showing number of wells completed and how many were producers in Nevada from 1955 to 2019.

Oil well activity in 2019

Company	Well	Permit No.	Location	Permit Date	Spud Date	Completion Date	Depth (Ft.)	Status
EUREKA COUNTY								
Grant Canyon Oil and Gas, LLC	Three Bar Federal No. 25-2	977	NE/4, NW/4, S25, T28N, R51E	MAR 19	MAY 19	AUG 19	8,377	Producer
NYE COUNTY								
Grant Canyon Oil and Gas, LLC	Federal No. 12-14	673	NW/4, SW/4, S14, T7N, R56E	APR 93	MAY 93	JUN 93	6,106	TA
Wester Oil Co.	Gigante No. 1-4	837	NW/4, NE/4, S4, T12N, R35E	MAY 01	AUG 01	DEC 03	7,707	TA
Tri Valley Oil and Gas	Midland Trail No. 1-32	861	SW/4, SW/4, S32, T6N, R56E	SEP 04	JUN 05	JAN 06	7,063	Shut in
Makoil, Inc.	Radio No. 6-31	865	NE/4, NW/4, S6, T9N, R57E	SEP 04	MAY 05	MAY 05	3,433	Shut in
Makoil Inc.	Trap Spring No. 27-41	899	NE/4, NE/4, S27, T9N, R56E	APR 08	DEC 08	JAN 09	7,294	Shut in
Desert Discoveries, LLC	Paradise Unit No. 2-12	916	SE/4, NE/4, S12, T12N, R34E	APR 10	JUL 10	NOV 10	4,250	Shut in
HBF Exploration, Inc.	Well No. 2	920	SW/4, NW/4, S33, T7N, R61E	APR 11	JUL 11	AUG 11	1,020	Shut in
Major Oil International	Eblana No. 1	925	NE/4, NE/4, S25, T7N, R50E	MAY 12	MAY 12	JUN 12	8,550	Shut in
Bestoso Oil and Gas, Inc.	Well No. 1	940	NW/4, SE/4, S20, T5N, R61E	APR 13			*14,000	Not Drilled
Major Oil International	Eblana No. 3	973	SE/4, SE/4, S25, T7N, R50E	JAN 18	APR 18	MAY 18	8,200	P&A
Major Oil International	Eblana No. 6	974	SE/4, NW/4, S25, T7N, R50E	JAN 18			*8,000	Not Drilled
Sam Oil. LLC	White River No. 1-9	976	NE/4, NE/4, S7, T7N, R61E	FEB 19			*2,300	Not Drilled
West Grant Canyon Development Co.	Butterfield Federal No. 1	978	SE/4, NE/4, S21, T7N, R56E	MAY 19			*8,000	Not Drilled
WHITE PINE COUNTY								
Geyser Petroleum	Pipeline Canyon No. 1	870	NE/4, SW/4, S28, T15N, R62E	JAN 05	MAR 05	AUG 05	5,280	Shut in
Grant Alliance, LLC	FLT-1	918	NE/4, NW/4, S11, T16N, R55E	OCT 10	JAN 11	MAY 11	4,875	Shut in

P&A: Plugged and abandoned; TA: Temporarily abandoned; *: Permitted depth given when the actual depth is not available

about 6,850 and 7,080 feet (2,088 and 2,159 m). The Duckwater Creek Field produced from the tuffs of the Oligocene Garrett Ranch Group between about 5,680 and 5,830 feet (1,732 and 1,777 m). The East Inselberg Field, produced from the Devonian Guilmette Formation between about 1,046–1,171 feet (319 and 357 m). The Currant, Duckwater Creek, and East Inselberg fields have been shut in since 2015.

The following four minor fields produced in the past but are all now plugged and abandoned. Deadman Creek had only one well that produced briefly from the Humboldt Formation between 8,165 and 8,850 feet (2,489 and 2,698 m). Toano Draw had only one well that produced from the Humboldt Formation between 8,250 and 8,950 feet (2,515 and 2,729 m). The Humboldt Field, produced from the Elko Formation between 7,906 feet and 8,210 feet (2,410 and 2,503 m). The Huntington Field also produced from the Eocene Sheep Pass Formation between 8,924 and 9,290 feet (2,721 and 2,832 m). The Humboldt and Huntington Fields were plugged and abandoned in 2017. While not considered a field, 86 barrels of oil were sold from the Spencer Lease in Railroad Valley before it was plugged and abandoned in 1986.

Most of Nevada's oil is used to make such products as No. 1 and No. 2 diesel fuel, kerosene, stove oil, and asphalt. Nevada crude oil was transported in batches by trucks to the 8,000-barrel-per-day capacity refinery near Currant in Railroad Valley, which is owned by Foreland Refining Corporation.

NEW PRODUCERS

Grant Canyon Oil and Gas, LLC, Three Bar Federal 25-2 was completed to 8,387 feet (2,557 m) on August 11, 2019. Oil was produced in September and October, but the well was noted as being put into production with a test on November 21. The casing was perforated in at least nine intervals between 2,980 feet and 3,555 feet (909 and 1,992 m) in the Miocene Humboldt Formation. The well as pumped during the first 24 hours produced 274 barrels of fluid, which was 11% water and less than 1% each of sediment and emulsion. The gas-oil ratio was 206, and 50 cubic feet of gas were produced.

EXPLORATION

Three wells were permitted for oil and gas in 2019, the same number as were permitted in 2018. One of these wells was completed as a producer (see above). Major Oil International never drilled its Eblana 6 and its permit 974 expired shortly after year's end. Of ten wells completed between 1993 and 2012, eight were shut-in and two were temporarily abandoned. One shut-in well has been waiting for a plugging and abandoning plan since 2005. Major Oil International Eblana 3, which was drilled and shut-in in 2018, was plugged and abandoned. The shut-in wells were never listed as producers.

One drill rig operated in May, but none were reported for the rest of the year. No wells were hydraulically fractured in Nevada in 2019, but a table of wells hydraulically fractured in the past is provided below. As of August 2019, Nevada had 496 authorized oil and gas leases covering 897,148 acres (363,071 ha), an area a little larger than the state of Rhode Island.

Scheduled for March 26–28, 2019, The Nevada State Office of the Bureau of Land Management (NSO-BLM) planned a competitive oil and gas lease sale for 136 parcels covering 259,941 acres (105,197 ha) mostly in Eureka and Nye counties in Railroad Valley, Fish Creek Valley, Sulfur Spring Range, Diamond Valley and Diamond mountains. The sale was postponed. An environmental assessment was conducted and completed in May 2019 with a Finding of No Significant Impact issued shortly thereafter. (https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/leasing/regional-lease-sales/nevada: March 26-28, 2019).

On July 30, 2019, the NSO-BLM held an internet-based competitive oil and gas lease sale for 200 parcels covering 389,176 acres (157,498 ha) in Elko, Eureka, Nye, and White Pine counties. Fifteen parcels covering 22,352 acres (9,046 ha) received 23 bids with the high bids totaling $132,691. The total receipts were $168,703. The highest and second successful highest bids were by Kirkwood Oil and Gas, LLC, at was $47 per acre for parcel NV-19-06-034 and $22 per acre for parcel NV-19-06-035 in Eureka County. The former covers 1,283 acres (519 ha) in part of section 3, T27N, R51E and all of section 34, T28N, R51E, and the latter consists of sections 22 and 27, T28N, R51E, covers 1,280 acres (518 ha). West Coast Land Services acquired parcel NV-19-06-235 in Nye County for $7 per acre. The parcel consists of section 22, T8N, R57E, covering 680 acres (275 ha). D.Y. Oil, LLC acquired parcel NV-19-06-178 in Elko County for $4 per acre. The parcel covers 720 acres (291 ha) in all of section 11 and part of section 36, T29N, R55E. The remaining parcels went for the minimum $2 per acre. One hundred eighty-five parcels covering 366,824 acres (148,452 ha) were then put up for non-competitive offers. Thirty-one parcels covering 51,561 acres (20,866 ha) were filed on (https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/leasing/regional-lease-sales/nevada: July 30, 2019).

On September 10, 2019, the NSO-BLM held a internet-based competitive oil and gas lease sale for 28 parcels covering 32,342 acres (13,089 ha) in Elko and White Pine counties. Eight parcels covering 9,164 acres (3,709 ha) received 10 bids with the high bids totaling $23.532. The total receipts were $38,601. The highest successful highest bids were $4 per acres by D.Y. Oil, LLC, for parcel NV-19-09-1960 and Kirkwood Oil and Gas, LLC, for parcel NV-19-09-1954, both in Elko County. The former covers 680 acres (275 ha) in part of section 4 and all of section 10, T29N, R55E.

Partial list of Nevada oil wells that were stimulated in the past

Modified and compiled from well records and data from consultant Jerry Walker

Permit	Company	Well Name	Year Completed	Perfs (gross)	Fluid	Proppant	Date Fracked	Present Status	Formation
3	Gulf Refining Co.	Wilkins Ranch No. 1	1954	6510'-6740'	4,000 gal. oil; 500 gal. mud acid	sand	5/25-30/1954	P&A	Oligocene volcanic tuff
203	Northwest Exploration Co.	Trap Spring No. 13	1977	4976'-5078'	10,122 gal lease oil	55,000 lbs. 8/12 sand	6/21/1977	WD	Garrett Ranch Volcanics
189	Northwest Exploration Co.	Trap Spring No. 4	1977	4018'-4389'	53,000 gal. oil	37,000 lbs. 8/12 sand	8/19/1977	P&A	Garrett Ranch Volcanics
196	Northwest Exploration Co.	Trap Spring No. 8	1977	4408'-4575'	72,300 gal. lease oil	100,000 lbs. 10/20 sand	9/11/1977	Producer	Tertiary volcanic rock
233	Northwest Exploration Co.	Trap Spring No. 20	1978	3932'-3987'	62,000 gal. lease oil	75,000 lbs. 10/20 sand	8/4/1978	WD	Pritchards Station Volcanics
196	Northwest Exploration Co.	Trap Spring No. 8	1979	4408'-4575'	1,795 gal. lease oil	100,000 lbs. 10/20, 8/12, 4/8 sand	6/23/1979	Producer	Tertiary volcanic rock
263	Wexpro Co.	Jiggs 10-1	1980	10,060'-10,080'	Hy-gel	1.5 ppg 100 mesh sand	3/6/1980	P&A	Paleozoic rock
324	Amoco Production Co.	Blackburn No. 3	1982	6274'-6345'	Jellied lease crude	30,000 lbs. 20/40 sand	1982	Shut in	Indian Well Formation
342	Sun Exploration and Production Co.	Southern Pacific No. 3-13	1983	8386'-8432'	53,090 gal. diesel; 1500 SCF CO_2	53,620 lbs. 20/40 sand	1/28/1983	P&A	Humboldt Formation
350	Amoco Production Co.	Blackburn No. 10	1983	5660'-5870'	87,500 gallons foamed oil	120,000 lbs. 20/40 sand	9/22/1983	Producer	Indian Well Formation
210	MAPCO Oil and Gas Co.	Trap Spring No. 17	1985	3570'-3610'	10,000 gal. foam	12/20 sand	1985	P&A	Horse Camp Volcanics
856	DY Exploration	Toano Draw 15-19	2005	8800'-8950'	75,000 gal. gel; 6,400 gal. slickwater	115,000 lbs. 20/40 PR6000 sand	8/30/2005	P&A	Humboldt Formation
856	DY Exploration	Toano Draw 15-19	2006	8800'-8950'	61,967 gal. water, solvents, gels, and other additives	30,900 lbs. 20/40 PR6000 sand	6/1/2006	P&A	Humboldt Formation
942	Noble Energy, Inc.	M2C-M2-21B	2014	7906'-8210'	250,057 gal. water; 2% by mass solvents, gels, and other additives	9% by mass PRC Sand; 0.7% by mass Premium white sand	3/17-24/2014	Shut in	Elko Formation
946	Noble Energy, Inc.	M10C-M10-11B	2014	8620'-8889'	343,919 gal. water; 2.5% by mass solvents, gels, and other additives	10% by mass PRC Sand; 0.6% by mass Premium white sand	6/3-4/2014	Shut in	Elko Formation
458	Grant Canyon Oil and Gas	Blackburn No. 16	1985	6959'-7012'	209,600 gal. water; 2.4% by mass solvents, gels, and other additives	12% by mass Premium white sand; 2.4% by mass PRC Sand	6/5/2014	Producer	Nevada Formation
928	Makoil, Inc.	Portuguese Mtn. 14A-2	2014	N/A	29,949 gal. water; 14% by mass solvents, gels, and other additives	32% by mass Premium white sand	11/23/2014	P&A	N/A
960	Noble Energy, Inc.	K1L-1V	2014	N/A	300,537 gal. water; 0.3% by mass solvents, gels, and other additives	7% by mass Premium white sand; 1.5% by mass SSA-2	12/5/2014	Producer	N/A

Abbreviations: Perf (gross) - larger interval containing one or more smaller perforated intervals; P&A - plugged and abandoned; gal. - gallons; WD - water disposal

The remaining parcels went for the minimum of $2 per acre. Twenty parcels covering 23,179 acres (9,380 ha) were then put up for non-competitive offers. Eleven parcels covering 15,892 acres (6,431 ha) were filed on (https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/leasing/regional-lease-sales/nevada: September 10, 2019).

On October 1, 2019, the NSO-BLM held an internet-based competitive oil and gas lease sale for 141 parcels covering 269,184 acres (108,937 ha) in Elko, Eureka, and Nye counties. This included parcels from the postponed March sale. Eleven parcels covering 19,052 acres (7,710 ha) received 13 bids with the high bids totaling $40,130. The total receipts were $70,526. The successful highest bid was $5 per acre by Federal Abstract Co. for parcel NV-19-10-203 in Nye County. The parcel covers 673 acres (273 ha) in parts of sections 31 and 33, T9N, R57E. The remaining parcels went for the minimum $2 per acre. One hundred thirty parcels covering 250,133 acres (101,227 ha) were then put up for non-competitive offers. Thirteen parcels covering 24,428 acres (9,886 ha) were filed on. The total in rental and fees collected was $49,612.50 (https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/leasing/regional-lease-sales/nevada: October 1, 2019).

On November 12, 2019, the NSO-BLM held an internet-based competitive oil and gas lease sale for 48 parcels covering 111,420 acres (45,091 ha) in Lincoln, Nye, and White Pine counties. This included parcels from the postponed March sale. Only two parcels covering 3,974 acres (1,608 ha) received bids, which totaled $7,950. The total receipts were $14,252.50. Federal Abstract Co. bid the minimum $2 per acre for parcels NV-19-11-298 and NV-19-11-308 in White Pine County. The former covers 1,934 acres (783 ha) in part of section 13 and all of sections 20 and 21, T16N, R60E. The latter covers 2,040 acres (825 ha) in part of sections 21 and 29 and all of sections 28 and 30, T15N, R62E. Forty-six parcels covering 107,446 acres (43,483 ha) were then put up for non-competitive offers. None were filed on (https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/leasing/regional-lease-sales/nevada: November 12, 2019)

On December 17, 2019, the NSO-BLM held an internet-based competitive oil and gas lease sale for 272 parcels covering 458,993 acres (185,752 ha) in Lincoln, Nye, and White Pine counties. Ten parcels covering 13,217 acres (5,349 ha) received 42 bids with the high bids totaling $150,443. The total receipts were $171,971.50. The three highest successful highest bids were by Kirkwood Oil and Gas, LLC, at was $41 per acre for parcel NV-2019-12-5590, $33 per acre for parcel NV-2019-12-5587, and $26 per acre for parcel NV-2019-12-5584 in Nye County. The first covers 1,000 acres (405 ha) in all of section 32 and part of section 33, T9N, R57E. The second one covers 1,658 acres (671 ha) in parts of sections 28 through 31, T9N, R57E. The last one covers 1,278 acres (517 ha) in all of section 20 and parts of sections 21 and 22, T9N, R57E. D.Y. Oil, LLC acquired parcel NV-2019-12-2717 in Nye County for $5 per acre. The parcel covers 980 acres (397 ha) in all of section 25 and part of section 36, T7N, R56E. The remaining parcels went for the minimum $2 per acre. One hundred forty-six parcels covering 254,834 acres (103,130 ha) were then put up for non-competitive offers. Only one parcel covering 1,189 acres (481 ha) was filed on. The total in rental and fees collected was $2,218.50 (https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/leasing/regional-lease-sales/nevada: December 17, 2019).

TRANSFERS

No transfers occurred during 2018.

OTHER DEVELOPMENTS

The NSO-BLM had received an expression of interest for oil leasing involving U.S. Forest Service lands in the Ruby Mountain Range, Elko County. In 2017, the BLM then sent a request asking the Forest Service for leasing concurrence, along with any stipulations to protect surface resources. In July 2018 and March 2019, the Forest Service released draft and final environmental assessments covering potential oil lease sales on 52,533 acres (21,260 ha) in the Ruby Mountains. The area is between Lamoille and Sherman Creeks and included sections 1–5, 8–17, T26N, R56E; sections 1, 2, 11–14, 23–26, 35, 36, T27N, R56E; sections 1–27, 31–36, T28N, R57E; sections 3–5, 8–10, 19–21, 28–36, T29N, R57E; and sections 12, 13, 24–27, 34–36, T32N, R57E. A large number of negative responses were received from hunting, conservation, and environmental groups; the general public; and the local Native American tribes. In March, the U.S. Forest Service issued a notice decision adopting the No Leasing Alternative of the final environmental assessment denying U.S. Forest Service consent to allow oil and gas leasing on these lands. The decision only involved U.S. Forest Service lands, and in the July lease sale (see above), the BLM included some parcels adjacent to withdrawn lands. U.S. Senator Catherine Cortez-Masto of Nevada introduced the Ruby Mountains Protection Act that would withdraw 450,000 acres (182,000 ha) from oil leasing though it would continue to protect existing multiple uses including recreation, grazing, and mining. Geologically, the Ruby Mountains are mainly underlain by a metamorphic core complex which has very low hydrocarbon potential. (U.S. Forest Service, Ruby Mountains Oil and Gas Leasing Availability Analysis, Environmental Assessment, 7/2018; U.S. Forest Service, Ruby Mountains Oil and Gas Leasing Availability Analysis, Environmental Assessment, 3/2019; U.S. Forest Service, Draft Decision Notice and Finding of No Significant Impact for the Ruby Mountains Oil and Gas Leasing Availability Analysis, March 2019; Senator Catherine Cortez-Masto press release, 8/26/2019)

In March, under provisions of the Utility Environmental Protection Act, Pilot Pipeline, LLC, filed a notice (Docket No. 19-03031) with the Public Utilities Commission of Nevada of an application to a Federal agency for approval to construct Pilot Pipeline Project. The project will consist of a 4-inch (10.2-cm) natural gas transmission pipeline to supply natural gas to Wendover Gas Utility. The pipeline will tie into the Ruby Pipeline and extend 54 miles (86 km) south past Montello and Pilot Valley and along Interstate 80 to West Wendover in Elko County. The project will include five in-line underground block valves about ten small meter and regulator facilities. The corridor will include 95 acres (38 ha) of Federal land and 103 acres (42 ha) of county road and private land. Twenty-six miles of the pipeline will be on land managed by the BLM, which will require an environmental analysis. (Original Filing, Public Utilities Commission of Nevada, Electronic Filing, 3/21/2019).

In May, under provisions of the Utility Environmental Protection Act, Southwest Gas Corp. filed a notice (Docket No. 19-05017) with the Public Utilities Commission of Nevada of an application to a Federal agency for approval to construct a 69.5-mile (111-kilometer) 24-inch (61-centimeter) steel natural gas transmission pipeline. The pipeline will replace two existing existing pipelines, which will be abandoned in place. The pipeline will start at the company's existing pressure limiting station south of Laughlin and extend west and northwest roughly along US 95 west of Searchlight and end at the company's existing pressure limiting station south of Henderson. The pipeline will be within BLM land grants and the Clark County, Boulder City, and Nevada Department of Transportation rights-of-way. Part of the pipeline will be on land managed by the BLM, which will require an environmental assessment. The project will be done in three phases over 12 years. (Original Filing, Public Utilities Commission of Nevada, Electronic Filing, 5/9/2019; Southwest Gas to Replace Pipeline, The Laughlin Nevada Times, 7/16/2019).

In 2016, the BLM published its final Methane and Waste Reduction Rule, which involves the perceived waste of natural gas from BLM-administered mineral leases. In Nevada, most production is from public lands, but gas production is small and only from the Kate Spring field where it is used to run equipment. The rules and delays in implementation spawned a series of lawsuits, and Congress was reviewing the rule under the Congressional Review Act. In December 2017, the BLM suspended 2018 compliance dates until 2019 and proposed to return to the rules in place prior to 2016. A lawsuit was initiated against the BLM by the State of California, the Sierra Club, the Wilderness Society, and others. In July 2020, Judge Yvonne Rogers of the United States District Court, District of Northern California ruled against the BLM and ordered the rule must go into effect within 90 days. (United States District Court, District of Northern California, Case No. 4:18-cv-05712-YGR; https://www.blm.gov/sites/blm.gov/files/Final%20Rule%20-1004-AE53%20-%20%20Ready%20for%20OFR%209.18.18_508%20%281%29.pdf; https://energyindepth.org/mtn-states/myth-vs-fact-on-the-blm-methane-venting-and-flaring-rule; https://www.blm.gov/press-release/blm-offers-revision-methane-waste-prevention-rule).

U.S. OIL PRODUCTION AND CONSUMPTION

According to the Energy Information Agency of the U.S. Department of Energy (http://www.eia.gov), the total petroleum products supplied to the U.S. averaged 20,463,000 barrels per day, a 1% decrease from 20,711,000 barrels per day in 2018, and only 1.6% down from the all-time high of 20,788,000 barrels per day in 2005. Domestic crude oil production averaged 12,248,000 barrels per day,

an 11% increase from 10,990,500 barrels per day in 2018. Production increased in nine of the previous ten years. Production reached an all-time high and was 27% higher than the previous record of 9,636,849 barrels per day set in 1970. Imported crude oil averaged 6,795,000 barrels per day, a 12.5% decrease from 7,768,500 barrels per day in 2018, and down 33% from the all-time high of 10,126,000 barrels per day in 2005. Imported crude oil accounted for 36% of the total, down from 41% in 2018. The average price of domestic oil decreased 13% to $$57.00 per barrel from an average of $65.23 per barrel in 2018 (Cushing, Oklahoma, West Texas Intermediate Spot Price, FOB).

NEVADA OIL PRODUCERS AND REFINERY

(Nevada Oil Patch; unpublished well files)

Company	Field/Refinery	Contact	Addresses, Phone and FAX Numbers, and Websites
Grant Canyon Oil and Gas, LLC	Bacon Flat Blackburn Grant Canyon Sans Spring Three Bar	Michael O'Neal Rod Prosceno Steve Barnes	717 17th Street, No. 1400 Denver, CO 80202 Phone: 303-297-2777 FAX: 303-298-0049 E-mail: michael@onealrc.com E-mail: rod@4arocket.com E-mail: steve@breckenergy.com
Kirkwood Oil and Gas, LLC/ Wesco Operating, Inc.	Eagle Springs Ghost Ranch North Willow Creek Sand Dune	Robert Kirkwood	120 South Durbin Street P. O. Box 1706 Casper, WY 82602 Phone: 307-265-5178 FAX: 307-265-1791 E-mail: bradl@kirkwoodcompanies.com Website: http://www.kirkwoodcompanies.com
Makoil, Inc.	Currant Duckwater Creek Ghost Ranch Kate Spring Trap Spring	Gregg Kozlowski	25391 Commercentre Drive, No. 120 Lake Forest, CA 92630 Phone: 949-462-9010 FAX: 949-462-9012 E-mail: makoil@msm.com Website: http://www.makoil.com
Tomera Oil Fields, LLC	Tomera Ranch	Patsy Tomera Thomas Tomera	HC 65 Box 11 Carlin, NV 89822 Phone: 775-754-2333
Western General, Inc.	Kate Spring	Richard Taylor	HC 34 Box 34830 Ely, NV 89301 Phone: 702-233-1490 E-mail: richardtaylor@cox.net
Foreland Refining Corporation	Currant Refinery		1582 West 2600 South Woods Cross, UT 84087 Location: 65 miles south of Ely Phone: 775-863-0229

Status of Nevada oil and gas production wells in 2019

This table gives the amount of oil and water produced and the number of production days in 2019. The sources of information include well records and statistics from the Nevada Division of Minerals.
Status abbreviations with dates of the action where applicable: BBL-barrels; ex-except; MCF-thousand cubic feet; PA-plugged and abandoned; Prod-production; SI-shut-in; WD-water disposal

FIELD/OPERATOR/WELL	NEVADA PERMIT	DATE COMPLETED	STATUS	LOCATION	PRODUCTION OIL (BBL)	PRODUCTION WATER (BBL)	PRODUCTION GAS (MCF)	PRODUCTION DAYS
EAGLE SPRINGS (Nye Co., 1954)								
Kirkwood Oil and Gas, LLC								
Eagle Springs Federal No. 44-35	813	05/98	SI 08/04-06/11; SI 02/12	SE, NW, S35, T9N, R57E	0	0		0
Eagle Springs Federal No. 54-35	726	10/94	Prod	SW, NE, S35, T9N, R57E	4,796	84,157		364
Eagle Springs Unit No. 1-34	107	07/67	SI 07/86	SE, NE, S34, T9N, R57E	0	0		0
Eagle Springs Unit No. 1-35	4	05/54	WD 1978	NE, NW, S35, T9N, R57E	0	0		0
Eagle Springs Unit No. 1-36	76	02/65	SI 05/08	SW, NE, S36, T9N, R57E	0	0		0
Eagle Springs Unit No. 2-36	80	07/65	SI 11/96-12/06; SI 12/15-02/19 ex 5/17	NW, SE, S36, T9N, R57E	4,817	45,735		226
Eagle Springs Unit No. 4-36	86	10/65	SI 06/97	NW, SE, S36, T9N, R57E	0	0		0
Eagle Springs Unit No. 5-36	94	04/66	Prod	NW, NE, S36, T9N, R57E	11,301	7,039		331
Eagle Springs Unit No. 15-35	21	07/55	SI 09/95-08/02	NW, SW, S35, T9N, R57E	49	684		12
Eagle Springs Unit No. 35-35	17	03/55	Prod	NE, SW, S35, T9N, R57E	2,027	28,640		356
Eagle Springs Unit No. 43-36	83	08/65	Prod	NE, SE, S36, T9N, R57E	36	90		29
Eagle Springs Unit No. 62-35	46	01/60	SI 01/12	NW, NE, S35, T9N, R57E	0	0		0
Eagle Springs Unit No. 73-35	69	10/63	Prod	SE, NE, S35, T9N, R57E	3,521	115,294		352
Eagle Springs Unit No. 74-35	71	04/64	SI 01/98-01/01; SI 10/16-11/19 ex 8/18	SE, NE, S35, T9N, R57E	62	2,393		11
Eagle Springs Unit No. 84-35	77	01/65	SI 10/97	SE, NE, S35, T9N, R57E	0	0		0
Eagle Springs/Plains Petroleum No. 13-36	744	02/96	Prod; SI 01/12-07/17	SW, NW, S36, T9N, R57E	633	19,645		58
Eagle Springs/Plains Petroleum No. 23-36	733	10/95	Prod	SW, NW, S36, T9N, R57E	7,271	12,801		258
Eagle Springs/Plains Petroleum No. 24-36	737	11/94	SI 07/16-12/17	SW, NW, S36, T9N, R57E	17	130		16
Eagle Springs/Plains Petroleum No. 55-35	761	11/95	SI 02/97	SW, NE, S35, T9N, R57E	0	0		0
Eagle Springs/Plains Petroleum No. 64-35	755	09/95	SI 01/12	SW, NE, S35, T9N, R57E	0	0		0
Eagle Springs/Plains Petroleum No. 82-35	734	10/94	Prod	NE, NE, S35, T9N, R57E	674	148,681		113
Eagle Springs/Plains Petroleum No. 83-35	754	07/95	Prod	SE, NE, S35, T9N, R57E	1	57		1
TRAP SPRING (Nye Co., 1976)								
J. N. Oil and Gas Federal No. 1	449	09/85	PA 01/99	NE, NW, S34, T9N, R56E				
Munson Ranch No. 12-42	572	06/90	PA 08/08	SE, NE, S12, T9N, R56E				
Munson Ranch No. 12-44X	445	07/85	PA 08/08	SE, SE, S12, T9N, R56E				
Trap Spring No. 4	189	03/77	PA 07/95	SE, NE, S27, T9N, R56E				
Makoil, Inc.								
Britton No. 13-21	224	04/78	SI 12/91	NE, NW, S13, T9N, R56E	0	0		0
Munson Ranch No. 11-23X	346	10/82	SI 11/82	NE, SW, S11, T9N, R56E				
Munson Ranch No. 12-14	688	05/95	Prod	SW, SW, S12, T9N, R56E	166	15		10
Munson Ranch No. 12-23	596	11/90	Prod; SI 04/98	NE, SW, S12, T9N, R56E	0	0		0
Munson Ranch No. 12-24	432	04/85	Prod	SE, SW, S12, T9N, R56E	2,017	12,826		356
Munson Ranch No. 12-32	559	12/89	Prod	SW, NE, S12, T9N, R56E	3,541	16,345		363
Munson Ranch No. 12-33	423	03/85	SI 04/96	NW, SE, S12, T9N, R56E	0	0		0
Munson Ranch No. 12-34	406	10/84	Prod	SW, SE, S12, T9N, R56E	2,575	4,332		357
Munson Ranch No. 12-43	880	03/08	Prod	NE, SE, S12, T9N, R56E	7,886	13,952		354
Munson Ranch No. 13-1	435	08/85	Prod; SI 03/16-11/19	SE, NW, S13, T9N, R56E	516	706		40
Munson Ranch No. 13-11	622	11/91	Prod; SI 02/03-03/16; SI 01/18	NW, NW, S13, T9N, R56E	0	0		0
Munson Ranch No. 13-11R	840	11/01	Prod	NW, NW, S13, T9N, R56E	1,770	23,508		364
Munson Ranch No. 13-12	537	07/89	Prod; SI 07/89	SW, NW, S13, T9N, R56E	0	0		0
Munson Ranch No. 13-14	623	09/91	Prod; SI 01/01-12/06	SW, SW, S13, T9N, R56E	4,515	88,729		314
Munson Ranch No. 13-21X	640	05/92	Prod	NE, NW, S13, T9N, R56E	4,312	20,220		364
Munson Ranch No. 13-24	218	08/79	SI 12/18	SE, SW, S13, T9N, R56E	0	0		0
Munson Ranch No. 13-31	382	07/84	Prod	NW, NE, S13, T9N, R56E	3,448	19,855		364
Munson Ranch No. 13-32	373	08/84	Prod	SW, NE, S13, T9N, R56E	4,172	41,478		364
Munson Ranch No. 13-33	211	11/78	Prod	NW, SE, S13, T9N, R56E	1,809	7,970		329
Munson Ranch No. 13-41X	448	09/85	Prod	NE, NE, S13, T9N, R56E	8,886	75,151		355
Munson Ranch No. 13-42	222	11/78	Prod	SE, NE, S13, T9N, R56E	1,413	60,398		296
Munson Ranch No. 13-45	547	08/89	SI 03/16	NW, SW, S13, T9N, R56E	0	0		0
Munson Ranch No. 13-46	548	07/89	SI 06/92	NE, SW, S13, T9N, R56E	0	0		0
Munson Ranch No. 14-23	313	08/81	Prod	NE, SW, S14, T9N, R56E	3,099	19,531		363
Munson Ranch No. 14-24	354	10/83	SI 06/96	SE, SW, S14, T9N, R56E	0	0		0
Munson Ranch No. 14-32	455	09/87	Prod	SW, NE, S14, T9N, R56E	2,770	69,704		364
Munson Ranch No. 14-33	513	07/89	SI 03/16-08/19	NW, SE, S14, T9N, R56E	521	1,499		87
Munson Ranch No. 14-34	287	11/80	SI 07/15	SW, SE, S14, T9N, R56E	0	0		0
Munson Ranch No. 14-34X	522	08/88	Prod	SW, SE, S14, T9N, R56E	1,543	7,824		364
Munson Ranch No. 14-41	538	07/89	Prod	NE, NE, S14, T9N, R56E	0	0		0
Munson Ranch No. 14-44	528	08/89	Prod	SE, SE, S14, T9N, R56E	2,521	127,632		364
Munson Ranch No. 14-49	550	08/89	SI 01/11-10/13; SI 03/16-08/19	NE, SE, S14, T9N, R56E	317	1,408		91
Munson Ranch No. 14-49X	562	02/90	SI since 07/15-11/19	NE, SE, S14, T9N, R56E	48	1		1
Trap Spring No. 2	185	02/77	Prod	SE, SW, S27, T9N, R56E	5,448	929		363
Trap Spring No. 3	188	04/77	Prod	NW, NE, S34, T9N, R56E	9,948	1,084,277		363
Trap Spring No. 8	196	09/77	SI 03/16	SE, SW, S23, T9N, R56E	0	0		0
Trap Spring No. 9	197	09/78	Prod	NW, NW, S26, T9N, R56E	36,700	496,868		354
Trap Spring No. 14-42	523	10/88	SI since 02/16-08/19	SE, NE, S14, T9N, R56E	926	5,531		96
Trap Spring No. 16	232	09/78	Prod	NW, SE, S23, T9N, R56E	2,313	114,148		363
Trap Spring No. 19	219	12/77	Prod	SE, NW, S23, T9N, R56E	11,714	4,946		363
Trap Spring No. 23-41	574	06/90	Prod	NE, NE, S23, T9N, R56E	628	811		53
Trap Spring No. 27-41	899	01/09	SI 01/09	NE, NE, S27, T9N, R56E	0	0		0
Zuspann No. 24-1	198	06/77	SI 07/86	NW, SW, S24, T9N, R56E	0	0		0
Zuspann No. 24-3	208	09/77	SI 08/15-11/19	NE, NW, S24, T9N, R56E	18	0		1
EAST INSELBERG (Nye Co., 2005)								
Makoil, Inc.								
East Inselberg No. 36-33	860	04/05	SI 12/06-06/10; SI 08/15	NW, SE, S36, T10N, R56E	0	0		0
CURRANT (Nye Co., 1979)								
Makoil, Inc.								
Currant No. 1	241	10/78	SI 07/05-05/07; SI 08/15	SE, SW, S26, T10N, R57E	0	0		0

Status of Nevada oil and gas production wells in 2019

FIELD/OPERATOR/WELL	NEVADA PERMIT	DATE COMPLETED	STATUS	LOCATION	PRODUCTION OIL (BBL)	PRODUCTION WATER (BBL)	PRODUCTION GAS (MCF)	PRODUCTION DAYS
BACON FLAT (Nye Co., 1981)								
Grant Canyon Oil and Gas, LLC								
Bacon Flat No. 1	316	07/81	SI 10/88	C, SW, S17, T7N, R57E	0	0		0
Bacon Flat Federal No. 23-17	657	09/92	SI 12/93 ex 10/19	NE, SW, S17, T7N, R57E	7	1		1
Bacon Flat Federal No. 23-17A	710	01/94	Prod	NE, SW, S17, T7N, R57E	4,616	54,716		365
BLACKBURN (Eureka Co., 1982)								
Grant Canyon Oil and Gas, LLC								
Blackburn No. 3	324	03/82	SI 12/98 ex 11/05	SW, SW, S8, T27N, R52E	0	0		0
Blackburn No. 10	350	09/83	Prod	SW, NW, S8, T27N, R52E	4,765	42,875		349
Blackburn No. 14	442	07/85	Prod; SI 01/01-10/08	NE, SE, S7, T27N, R52E	10,192	14,079		331
Blackburn No. 16	458	12/85	Prod; SI 08/09-09/13	SE, NE, S7, T27N, R52E	894	9,742		56
Blackburn No. 18	660	11/92	Prod	NE, SE, S7, T27N, R52E	3,215	690,034		355
Blackburn No. 19	724	06/94	Prod	NW, SW, S8, T27N, R52E	201	60,802		208
Blackburn No. 21	802	09/97	SI 08/14-12/18	NE, SE, S7, T27N, R52E	2,872	598,461		365
Grant Canyon Oil and Gas, LLC								
Blackburn No. 22	971	05/16	Prod	NW, SW, S8, T27N, R52E	420	365		38
GRANT CANYON (Nye Co., 1983)								
Grant Canyon No. 4	376	07/84	PA 04/92	NE, NW, S21, T7N, R57E				
Grant Canyon No. 5	400	08/84	PA 07/95	E/2, NE, S20, T7N, R57E				
Grant Canyon Oil and Gas, LLC								
Grant Canyon No. 3	375	08/84	SI 06/92	SW, SW, S16, T7N, R57E	0	0		0
Grant Canyon No. 7	625	08/91	SI 12/93-10/07; SI 12/12-11/19	NW, NW, S21, T7N, R57E	181	106,542		365
Grant Canyon No. 9	642	04/92	SI 03/18	NW, NW, S21, T7N, R57E	0	0		0
Grant Canyon No. 10	706	07/11	Prod; PA 11/93-01/10	NW, NW, S21, T7N, R57E	27,816	320,420		365
Grant Canyon No. 22-21	705	01/94	Prod	SE, NW, S21, T7N, R57E	5,498	260,990		365
KATE SPRING (Nye Co., 1986)								
Makoil, Inc.								
Kate Spring No. 12-2	544	08/89	Prod	NW, NW, S2, T8N, R57E	5,405	95,599	783	365
Western General, Inc.								
Kate Spring No. 1	436	01/86	Prod	W/2, SW, S2, T8N, R57E	3,400	36,000	131	80
Kate Spring No. 1A	560	12/89	Prod	NW, SW, S2, T8N, R57E	12,614	198,587	1,340	274
Kate Spring No. 1B	567	08/90	Inj 10/90					
Kate Spring No. 1C	592	09/91	Prod; SI 06/97-07/2016	SW, SW, S2, T8N, R57E	1,600	7,500	64	132
Taylor Federal No. 1	497	10/87	Prod	NE, SE, S3, T8N, R57E	2,409	62,788	229	249
Taylor Federal No. 2	536	06/89	SI 09/93 ex 06/17	SE, NE, S3, T8N, R57E	0	0	0	0
SPENCER LEASE (Nye Co., 1986)								
Spencer Federal No. 32-29	446	12/85	PA 06/86	SW, NE, S29, T9N, R57E				
TOMERA RANCH (Eureka Co., 1987)								
Tomera Ranch No. 33-1	591	10/90	PA 09/07	SW, SW, S33, T31N, R52E				
Southern Pacific Land Co. No. 1-5R	647	05/92	PA 06/97	NE, NE, S5, T30N, R52E				
Tomera Ranch No. 33-2RR	841	01/02	PA 09/07	SW, SW, S33, T31N, R52E				
Tomera Oil Fields, LLC								
Tomera Ranch No. 3	923	02/12	Prod	SE, SW, S33, T31N, R52E	200	0		30
Tomera Ranch No. 33-1B	962	11/14	SI 09/18	SW, SW, S33, T31N, R52E	172	0		30
Foreland Corp.								
Southern Pacific Land Co. No. 1-5	492	08/87	WD 1992	NE, NE, S5, T30N, R52E				
NORTH WILLOW CREEK (Eureka Co., 1988)								
North Willow Creek No. 5-27	646	06/93	PA 10/98	SE, NW, S27, T29N, R52E				
Kirkwood Oil and Gas, LLC								
North Willow Creek No. 6-27	648	09/93	SI 04/02	NE, SW, S27, T29N, R52E	0	0		0
Southern Pacific Land Co. No. 1-27	633	01/92	SI 02/97-04/02; SI 06/08	NW, SE, S27, T29N, R52E	0	0		0
THREE BAR (Eureka Co., 1990)								
Three Bar Federal No. 24-13A	566	09/90	PA 01/01	SW, SW, S24, T28N, R51E				
Three Bar Federal No. 5	679	07/93	PA 12/00	SE, NE, S25, T28N, R51E				
Three Bar Federal No. 25-A	556	10/90	PA 01/01	C, NE, S25, T28N, R51E				
Grant Canyon Oil and Gas, LLC								
Three Bar Federal No. 25-2	977	06/19	Prod	C, NE, S25, T28N, R51E	5,910	1,530		56
DUCKWATER CREEK (Nye Co., 1990)								
Makoil, Inc.								
Duckwater Creek No. 19-11	542	03/90	SI 06/15	NW, NW, S19, T9N, R57E	0	0		0
SANS SPRING (Nye Co., 1993)								
Grant Canyon Oil and Gas, LLC								
Federal No. 5-14	635	02/93	SI 03/98	SW, NW, S14, T7N, R56E				
Sans Springs No. 5-14A	792	05/97	Prod	SW, NW, S14, T7N, R56E	1,148	0		34
Federal No. 12-14	673	06/93	SI 10/93 TA	SW, SW, S14, T7N, R56E				
GHOST RANCH (Nye Co., 1996)								
Makoil, Inc.								
Ghost Ranch Springs No. 2-21X	800	08/97	Prod; SI 08/97-8/04	NE, NW, S2, T8N, R57E	4,818	116,628		365
Kirkwood Oil and Gas, LLC								
Ghost Ranch Springs No. 38-35	793	01/97	Prod	SE, SW, S35, T9N, R57E	2,325	141,371		365
Ghost Ranch Springs No. 47-35	799	03/97	Prod	SE, SW, S35, T9N, R57E	3,307	111,875		365
Ghost Ranch Springs No. 48-35	779	07/96	Prod	SE, SW, S35, T9N, R57E	2,142	135,749		365
DEADMAN CREEK (Elko Co., 1996)								
Deadman Creek No. 44-13	342	01/96	PA 09/98	SE, SE, S13, T39N, R65E				
SAND DUNE (Nye Co., 1998)								
Kirkwood Oil and Gas, LLC								
Sand Dune Federal No. 88-35	816	07/98	Prod	SE, SE, S35, T9N, R57E	37	51		3
TOANO DRAW (Elko Co., 2007)								
Toano Draw No. 15-19	856	12/06	PA 10/08	NW, SW, S19, T39N, R66E				
HUMBOLDT (Elko Co., 2013)								
M2C-M2-21B	942	10/13	PA 08/17	NE, NW, S2, T34N, R58E	0	0		0
HUNTINGTON (Elko Co., 2014)								
K1L-1V	960	11/14	PA 09/17	SW, SW, S1, T29N, R55E	0	0		0

DIRECTORY OF MINING AND MILLING OPERATIONS

By David A. Davis

Compiled from information supplied by the Nevada Div. of Minerals, Mine Safety and Training Section of the Div. of Industrial Relations, and companies.
Except for larger BLM community pits, aggregate operations with less than 100,000 tons annual production are not listed.
CIL: carbon-in-leach, CIP: carbon-in-pulp, HL: heap leach, ML: mill, N/A: not available, OP: open-pit mine, OS: other surface, PL: placer, UG: underground

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
CARSON CITY							
Black and Red Cinder Pits	Cinderlite Trucking, Inc.	S21, 22, T16N, R20E	cinder decorative stone	OP, ML	mining screening	4	1665 South Sutro Terrace Carson City, NV 89706 Phone: 775-882-4483 FAX: 775-882-1671 Web: http://www.cinderlite.com
Churchill Quarry	Nevada Cement Co.	S31, T25N, R29E	limestone	OP	mining	3/7 (Nevada Cement pits combined)	P.O. Box 840 Fernley, NV 89408 Phone: 775-575-2281 FAX: 775-575-4387 Web: http://www.nevadacement.com
Goni Pit	Cinderlite Trucking Corp.	S28, T16N, R20E	decomposed granite sand gravel	OP	mining	6 (Mine and plant combined)	1665 South Sutro Terrace Carson City, NV 89706 Phone: 775-882-4483 FAX: 775-882-1671 Web: http://www.cinderlite.com
Goni Plant	Cinderlite Trucking Corp.	S28, T16N, R20E	decomposed granite sand gravel	ML	crushing screening	6 (Mine and plant combined)	1665 South Sutro Terrace Carson City, NV 89706 Phone: 775-882-4483 FAX: 775-882-1671 Web: http://www.cinderlite.com
CHURCHILL COUNTY							
Huck Salt	Huck Salt Co.	S12, T16N, R31E	salt	OS	mining evaporation	11	2900 Phritzie Lane Fallon, NV 89406 Phone: 775-423-2055 FAX: 775-423-0467 Web: http://www.hucksalt.com
Fernley Operations Mill	EP Minerals, LLC	S29, T23N, R27E	diatomite	ML	calcining classification drying grinding	25	P.O. Box 860 I-80 Frontage Rd. Fernley, NV 89408-0860 Phone: 775-423-6668 FAX: 775-423-6411 Web: http://www.epminerals.com
Fernley Operations Mine	EP Minerals, LLC	S28, 32, T23N, R27E	diatomite	OP	mining	35 (Mine and mill combined)	P.O. Box 860 I-80 Frontage Rd. Fernley, NV 89408-0860 Phone: 775-423-6668 FAX: 775-423-6411 Web: http://www.epminerals.com
Nightingale Pit	Imerys Filtration Minerals, Inc.	S17, 18, 19, 20, T24N, R26E	diatomite	OP	mining	15/6 (Mine and plant combined)	100 Front St. Fernley, NV 89408 Phone: 775-575-2536 FAX: 775-575-1507 Web: http://imerys-filtration.com/north-america
Popcorn Mine	EP Minerals, LLC	S24, T16N, R28E; S19, T16N, R29E	perlite	OP	processing shipping	4	640 Clark Station Rd. Sparks, NV 89434 Phone: 775-824-7700 FAX: 775-824-7715 Web: http://www.epminerals.com
CLARK COUNTY							
Apex Landfill Pit	Las Vegas Paving Corp.	S19, T18S, R64E	sand gravel	OP, ML	mining crushing screening	27/3	4420 South Decatur Blvd. Las Vegas, NV 89103 Phone: 702-251-5800 FAX: 702-251-1968 Web: http://www.lasvegaspaving.com
Apex Lhoist Quarry	Las Vegas Paving Corp.	S23, T18S, R64E	aggregate sand	OP, ML	stockpile	7	4420 South Decatur Blvd. Las Vegas, NV 89103 Phone: 702-251-5800 FAX: 702-251-1968 Web: http://www.lasvegaspaving.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
CLARK COUNTY (continued)							
Apex Lhoist Plant	Lhoist North America	S26, T18S, R63E	limestone	OP, ML	calcining crushing screening	102/4 (Mine and plant combined)	12101 North Las Vegas Blvd. Las Vegas, NV 89165 Phone: 702-643-7702 Phone: 702-643-9517 Web: http://www.lhoist.us
Apex Lhoist Quarry	Lhoist North America	S26, T18S, R63E	limestone	OP, ML	mining	102/4 (Mine and plant combined)	12101 North Las Vegas Blvd. Las Vegas, NV 89165 Phone: 702-643-7702 Phone: 702-643-9517 Web: http://www.lhoist.us
Blue Diamond Hill Mill	Gypsum Resources Materials, LLC	S32, T21S, R59E	gypsum	OP, ML	crushing screening	48/4 (Mine and mill combined)	P.O. Box 147 Blue Diamond, NV 89004 Phone: 702-830-3378 FAX: 702-441-7148 Web: http://www.bluediamondhillmine.com
Blue Diamond Hill Mine	Gypsum Resources Materials, LLC	S32, T21S, R59E	gypsum	OP, ML	mining	48/4 (Mine and mill combined)	P.O. Box 147 Blue Diamond, NV 89004 Phone: 702-830-3378 FAX: 702-441-7148 Web: http://www.bluediamondhillmine.com
Blue Diamond Pit	Las Vegas Paving Corp.	S26, T22S, R60E	sand gravel	OP, ML	mining crushing screening	11	4420 South Decatur Blvd. Las Vegas, NV 89103 Phone: 702-251-5800 FAX: 702-251-1968 Web: http://www.lasvegaspaving.com
Boulder Ranch Quarry	CTC Crushing LLC	S15, 22, T23S, R63E	sand gravel	OP, ML	mining crushing screening	22	1045 Palms Airport Dr., Suite 110 Las Vegas, NV 89119 Phone: 702-597-1010 FAX: 702-853-9507 Web: http://www.impactsandandgravel.com
El Dorado Quarry	Portable Aggregate Producers, LLC	S14, T23S, R63E	sand gravel	OP, ML	mining crushing screening	16	P.O. Box 62437 Boulder City, NV 89006 Phone: 702-558-9180 FAX: 702-558-9182
Henderson Community Pit	Various (U.S. Bureau of Land Management manages pit) pit)	S14, T21S, R62E	sand gravel	OP	mining		Bureau of Land Management 4701 North Torrey Pines Dr. Las Vegas, NV 89130-2301 Phone: 702-515-5000 Web: https://www.blm.gov
Henderson Plant	Lhoist North America	S12, T22S, R62E	lime	ML	calcining	102/4 (Mine and plant combined)	12101 North Las Vegas Blvd. Las Vegas, NV 89165 Phone: 702-643-7702 Phone: 702-643-9517 Web: http://www.lhoist.us
Jericho Pit	CTC Crushing LLC	S2, T23S, R63E	sand gravel	OP, ML	mining crushing screening	6	1045 Palms Airport Dr., Suite 110 Las Vegas, NV 89119 Phone: 702-597-1010 FAX: 702-853-9507 Web: http://www.impactsandandgravel.com
Las Vegas Plant	CertainTeed Gypsum Manufacturing, Inc.	S5, 8, T22S, 59E	gypsum	ML	processing	110	Highway 159 Blue Diamond, NV 89004 Phone: 702-875-4111 FAX: 702-875-4213 Web: http://www.certainteed.com
Lima Nevada Gypsum Mill	H. Lima Nevada LLC	S30, T20S, R64E	gypsum	ML	crushing screening	10 (Mine and mill combined)	704 East Yosemite Manteca, CA 95336 Phone: 209-239-6787 FAX: 209-239-6778
Lima Nevada Gypsum Mine	H. Lima Nevada LLC	S30, T20S, R64E	gypsum	OP	mining	10 (Mine and mill combined)	704 East Yosemite Manteca, CA 95336 Phone: 209-239-6787 FAX: 209-239-6778

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
CLARK COUNTY (continued)							
Lone Mountain	Las Vegas Paving Corp.	S35, 36, T19S, R59E; S2, T20S, R60E	aggregate	OP, ML	mining crushing screening	7	4420 South Decatur Blvd. Las Vegas, NV 89103 Phone: 702-251-5800 FAX: 702-251-1968 Web: http://www.lasvegaspaving.com
Lone Mountain	Mel Clark, Inc.	S36, T19S, R59E	sand gravel	OP, ML	mining	5	10550 West Lone Mtn Rd. Las Vegas, NV 89129 Phone: 702-643-1914 FAX: 702-643-1954 Web: http://www.melclarkinc.com
Lone Mountain	Nevada Ready Mix Corp.	S36, T19S, R59E	sand gravel	OP, ML	mining crushing screening	21	601 West Bonanza Las Vegas, NV 89106 Phone: 702-457-1115 FAX: 702-932-3992 Web: http://www.nevadareadymix.com
Lone Mountain Pit	Wells Cargo, Inc.	S35, T19S, R60E	sand gravel rock	OP, ML	mining gravity	9	9127 West Russell Rd., Suite 210 Las Vegas, NV 891148 Phone: 702-876-5090 FAX: 702-876-3977 Web: http://www.wcilv.com
Lone Mountain Community Pit	Various (U.S. Bureau of Land Management manages pit) pit)	S36, T19S, R59E; S1, T20S, R59E	sand gravel	OP	mining		Bureau of Land Management 4701 North Torrey Pines Dr. Las Vegas, NV 89130-2301 Phone: 702-515-5000 Web: https://www.blm.gov
Mesquite Community Pit	Various (U.S. Bureau of Land Management manages pit) pit)	S20, T13S, R71E	sand gravel	OP	mining		Bureau of Land Management 4701 North Torrey Pines Dr. Las Vegas, NV 89130-2301 Phone: 702-515-5000 Web: https://www.blm.gov
Money Pit	Southern Nevada Liteweight, Inc.	S9, T25S, R61E	silica sand	OP, ML	mining milling	10/2	4262 Blue Diamond Rd. Las Vegas, NV 89139 Phone: 702-399-8621 FAX: 702-633-4062
North (Spring Mountain) Pit and Mill	Wells Cargo, Inc.	S15, T21S, R60E	sand gravel rock	OP, ML	mining crushing screening	4	9127 West Russell Rd., Suite 210 Las Vegas, NV 891148 Phone: 702-876-5090 FAX: 702-876-3977 Web: http://www.wcilv.com
PABCO Apex Plant	Pacific Coast Building Products, Inc.	S7, T20S, R64E	gypsum	ML	crushing screening washing	18/1 (Mine and plant combined)	P.O. Box 364329 North Las Vegas, NV 89036 Phone: 702-407-3700 FAX: 702-643-6249 Web: http://www.pabcogypsum.com
PABCO Apex Quarry	Pacific Coast Building Products, Inc.	S7, 18, T20S, R64E	gypsum	OP	mining	18/1 (Mine and plant combined)	P.O. Box 364329 North Las Vegas, NV 89036 Phone: 702-407-3700 FAX: 702-643-6249 Web: http://www.pabcogypsum.com
Pole Line Pit and Mill	Boulder Sand and Gravel, Inc.	S14, T20S, 62E	sand gravel	OP, ML	mining crushing	5	4090 West Hacienda Ave., Suite 100 Las Vegas, NV 89118 Phone: 702-294-1156 FAX: 702-367-4727
Rainbow Quarries	Las Vegas Rock, Inc.	S34, T25S, R58E	landscape rock sand stone	OP, ML	mining crushing sawing	11	2 Prison Rd. P.O. Box 19118 Jean, NV 89019 Phone: 702-791-7625 FAX: 702-896-4533 Web: http://www.vegasrock.com
Sierra Ready Mix Quarry	Sierra Ready Mix, LLC	S6, 7, T25S, R60E	sand gravel	OP, ML	mining crushing screening	9	4150 Smiley Rd. North Las Vegas, NV 89081 Phone: 702-664-3000 FAX: 702-664-1736 Web: http://www.sierrareadymix.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
CLARK COUNTY (continued)							
Simplot Silica Products Pit	J. R. Simplot Co.	S11, T17S, R67E	silica sand	OP	mining	38 (Mine and plant combined)	P.O. Box 308 Overton, NV 89040 Phone: 702-397-2667 FAX: 702-397-2798 Web: http://www.simplot.com
Simplot Silica Products Plant	J. R. Simplot Co.	S30, T16S, R68E	silica sand	ML	drying flotation hydrosizing screening	38 (Mine and plant combined)	P.O. Box 308 Overton, NV 89040 Phone: 702-397-2667 FAX: 702-397-2798 Web: http://www.simplot.com
Sloan Mill	Aggregate Industries	S13, T23S, R60E	sand gravel	ML	crushing screening	51 (Mine and plant combined)	4675 West Teco Ave., Suite 140 Las Vegas, NV 89118 Phone: 702-649-6250 FAX: 702-642-2213 Web: http://www.aggregate-us.com
Sloan Quarry	Aggregate Industries	S13, T23S, R60E	sand gravel	OP, OS	mining	51 (Mine and plant combined)	4675 West Teco Ave., Suite 140 Las Vegas, NV 89118 Phone: 702-649-6250 FAX: 702-642-2213 Web: http://www.aggregate-us.com
South Jean Pit	Service Rock Products	S28, T25S, R60E	sand gravel	OP	mining	7	151 Cassia Way Henderson, NV 89014 Phone: 702-798-0568 Phone: 702-798-0580 Web: http://www.servicerock.com
DOUGLAS COUNTY							
Bing Materials Pit and Mill	Bing Materials Co.	S16, T12N, R20E	sand gravel	OP, ML	mining crushing	19	P.O. Box 487 Minden, NV 89423 Phone: 775-265-3641
ELKO COUNTY							
Arturo Mine Project	Barrick Goldstrike Mines, Inc.	S3, T36N, R49E S34, 35, T37N, R49E	gold	OP, CIL,	mining	30	P.O. Box 29 Elko, NV 89803 Phone: 775-748-1001 FAX: 775-748-1240 Web: http://www.barrick.com
Boehler Pit	Staker Parson Co.	S12, T34N, R62E	sand gravel	OP, ML	mining crushing	7	2755 Last Chance Rd. Elko, NV 89801 Phone: 775-738-8155 Web: http://www.stakerparson.com
Dry Creek Jig Plant	National Oilwell Varco	S15, T42N, R62E	barite	ML	shipping	18 (Plants combined)	247 Bluffs Ave. Elko, NV 89801 Phone: 775-738-7171 FAX: 775-738-7196 Web: http://www.nov.com
Emigrant Mine	Newmont Goldcorp Corp.	S2, T31N, R53E; S26, 35 T32N, R53E	gold	OP	mining	227	1655 Mountain City Hwy. Elko, NV 89803 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmontgoldcorp.com
Emigrant Plant	Newmont Goldcorp Corp.	S12, T31N, R53E	gold	ML	milling	9	1655 Mountain City Hwy. Elko, NV 89803 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmontgoldcorp.com
Halleck Pit	Vega Operating Co.	S3, T33N, R52E	sand gravel	OP, ML	mining crushing screening	7	P.O. Box 1630 Elko, NV 89803 Phone: 775-738-5381 FAX: 775-738-6311
Hollister Mine	Klondex Hollister Mine, Inc	S4, 5, T37N, R48E; S32, T38N, R48E	gold silver	UG	mining	77/28	4000 West Winnemucca Blvd. Winnemucca, NV 89445 Phone: 775-621-5535 FAX: 775-328-7176 Web: https://www.hecla-mining.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
ELKO COUNTY (continued)							
Jerritt Canyon Mill	Jerritt Canyon Gold, LLC	S33, T41N, R54E	gold silver	ML, CIL	heap leach milling roasting	250/136	HC31 Box 78 Elko, NV 89801 Phone: 775-738-5600 FAX: 775-758-9233 Web: http://www.jerrittcanyon.com
Jerritt Canyon Mine	Jerritt Canyon Gold, LLC	S7, T39N, R53E; S10, 14, 23, T40N, R53E; S4, 7, 8, 18, T40N, R54E	gold silver	UG	mining	240/210 (Mine and mill combined)	HC31 Box 78 Elko, NV 89801 Phone: 775-738-5600 FAX: 775-758-9233 Web: http://www.jerrittcanyon.com
Long Canyon	Newmont Goldcorp Corp.	S29, T36N, R66E	gold	OP, HL	mining milling	271	1655 Mountain City Hwy. Elko, NV 89803 Phone: 775-778-4000 FAX: 775-778-4751 Web: http://www.newmontgoldcorp.com
Meikle Mine	Barrick Goldstrike Mines, Inc.	S12, 13, T36N, R50E	gold silver	UG	mining	584	P.O. Box 29 Elko, NV 89803 Phone: 775-748-1001 FAX: 775-748-1240 Web: http://www.barrick.com
Midas Mill	Klondex Midas Operations, Inc.	S22, T39N, R46E	gold silver	ML	milling	107/33 (Mine and mill combined)	4000 West Winnemucca Blvd. Winnemucca, NV 89445 Phone: 775-621-5535 FAX: 775-328-7176 Web: https://www.hecla-mining.com
Midas Mine	Klondex Midas Operations, Inc.	S27, T39N, R46E	gold silver	UG	mining	107/33 (Mine and mill combined)	4000 West Winnemucca Blvd. Winnemucca, NV 89445 Phone: 775-621-5535 FAX: 775-328-7176 Web: https://www.hecla-mining.com
Osino Grinding Plant	National Oilwell Varco	S10, T35N, R56E	barite	ML	grinding shipping	18 (Plants combined)	247 Bluffs Ave. Elko, NV 89801 Phone: 775-738-7171 FAX: 775-738-7196 Web: http://www.nov.com
Pilot Peak Plant	Graymont Western US., Inc.	S14, T34N, R68E	limestone	ML	calcining crushing rotary kiln screening	69 (Mine and plant combined)	P.O. Box 2520 West Wendover, NV 89883 Phone: 775-483-5463 FAX: 801-262-3942 Web: http://www.graymont.com
Pilot Peak Quarry	Graymont Western US., Inc.	S14, 15, 22, 23, 26, T34N, R68E	limestone	OP	mining	69 (Mine and plant combined)	P.O. Box 2520 West Wendover, NV 89883 Phone: 775-483-5463 FAX: 801-262-3942 Web: http://www.graymont.com
ESMERALDA COUNTY							
Basalt Mill	Grefco Minerals, Inc.	S29, T2N, R34E	diatomite	ML	drying milling	15/3 (Mine and mill combined)	P.O. Box 278 Dyer, NV 89010 Phone: 775-573-2422 Web: http://www.dicalite.com
Basalt Mine	Grefco Minerals, Inc.	S29, T2N, R34E	diatomite	OP	mining	15/3 (Mine and mill combined)	P.O. Box 278 Dyer, NV 89010 Phone: 775-573-2422 Web: http://www.dicalite.com
Blanco Mine	Vanderbilt Minerals Corp.	S22, T1N, R37E	clay	OP	mining	4 (Combined Vanderbilt Mines)	3561 East Burgundy Dr. P.O. Box 6660 Pahrump, NV 89048 Phone: 775-537-6976 FAX: 775-537-6879 Web: https://www.vanderbiltminerals.com
Gemfield Gems	Gemfield Gems	S29, 30, T2S, R42E T2S, R42E	chalcedony	OP	mining	1	P.O. Box 5 Goldfield, NV 89013 Phone: 775-485-3789 Web: http://www.gemfieldnv.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
ESMERALDA COUNTY (continued)							
Heart of Nature Alum/Sulfur Mine	Heart of Nature, LLC	S32, T1N, R38.5E	alum sulfur	OP, ML	mining crushing processing screening	5	34710 7th Standard Rd. Bakersfield, CA 93314 Phone: 877-324-3278 FAX: 661-399-9758 Web: http://www.heartofnature.biz
Lone Mountain Mine	Lone Mountain Mining, LLC	S18, T1N, R41E	turquoise	OP	mining	0/4	600 Queensridge Ct. Las Vegas, NV 89145 Phone: 719-330-8266 Web: http://www.lonemountainturquoise.com
Mineral Ridge Crusher	Mineral Ridge Gold, LLC	S1, T2S, R38E	gold silver	ML	crushing	18 (Plants combined)	1910 Idaho St., Suite 102-550 Elko, NV 89801 Phone: 775-753-4778 FAX: 775-753-4780 Web: http://www.scorpiogold.com
Mineral Ridge Mine	Mineral Ridge Gold, LLC	S1, T2S, R38E	gold silver	ML	milling	18 (Plants combined)	1910 Idaho St., Suite 102-550 Elko, NV 89801 Phone: 775-753-4778 FAX: 775-753-4780 Web: http://www.scorpiogold.com
Mineral Ridge Mill	Mineral Ridge Gold, LLC	S1, T2S, R38E	gold silver	OP, HL	mining heap leach	18 (Plants combined)	1910 Idaho St., Suite 102-550 Elko, NV 89801 Phone: 775-753-4778 FAX: 775-753-4780 Web: http://www.scorpiogold.com
Silver Peak Operations	Albemarle U.S., Inc.	T2S, R39-40E	lithium carbonate	OS, ML	mining evaporation precipitation	70/30	P.O. Box 98 Highway 265 Silver Peak, NV 89047 Phone: 775-937-2222 FAX: 775-937-2317 Web: https://www.albemarle.com
EUREKA COUNTY							
Barrick Goldstrike Mines Autoclave	Barrick Goldstrike Mines, Inc.	S29, T36N, R50E	gold silver	ML	autoclave	283	P.O. Box 29 Elko, NV 89803 Phone: 775-748-1001 FAX: 775-748-1240 Web: http://www.barrick.com
Barrick Goldstrike Mines Roaster	Barrick Goldstrike Mines, Inc.	S13, T36N, R49E	gold silver	ML	roasting	136	P.O. Box 29 Elko, NV 89803 Phone: 775-748-1001 FAX: 775-748-1240 Web: http://www.barrick.com
Betze/Post Mine	Barrick Goldstrike Mines, Inc.	S23-26, T36N, R49E; S12, 20, 29, 30; T36N, R50E	gold silver	OP, HL	mining heap leach	1217 (Mine and plant combined)	P.O. Box 29 Elko, NV 89803 Phone: 775-748-1001 FAX: 775-748-1240 Web: http://www.barrick.com
Carlin Mine	Progressive Contracting, Inc.	S2, T34N, R51E	barikte	OP, ML	mining crushing	7/5	P.O. Box 1930 St. George, UT 84771 Phone: 435-628-6662 FAX: 435-628-7314
Carlin Mill 5	Newmont Goldcorp Corp.	S36, T34N, R51E	gold silver	ML	milling	2147/435 (Combined Newmont Carlin Trend Operations)	1655 Mountain City Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4360 Web: http://www.newmontgoldcorp.com
Carlin Mill 6	Newmont Goldcorp Corp.	S36, T34N, R51E	gold silver	ML	milling	2147/435 (Combined Newmont Carlin Trend Operations)	1655 Mountain City Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4360 Web: http://www.newmontgoldcorp.com
Carlin North - Genesis Complex	Newmont Goldcorp Corp.	S33, T36N, R50E	gold	OP, HL	mining heap leach	2147/435 (Combined Newmont Carlin Trend Operations)	1655 Mountain City Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4360 Web: http://www.newmontgoldcorp.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
EUREKA COUNTY (continued)							
Carlin North - Post and adjacent mines	Newmont Goldcorp Corp.	S19, T36N, R50E	gold	OP, HL	mining heap leach	2147/435 (Combined Newmont Carlin Trend Operations)	1655 Mountain City Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4360 Web: http://www.newmontgoldcorp.com
Carlin South - Carlin and adjacent mines	Newmont Goldcorp Corp.	S14, T35N, R50E	gold	UG, HL	mining heap leach	2147/435 (Combined Newmont Carlin Trend Operations)	1655 Mountain City Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4360 Web: http://www.newmontgoldcorp.com
Carlin South - Gold Quarry and adjacent mines	Newmont Goldcorp Corp.	S3, T33N, R51E	gold	OP, HL	mining heap leach	2147/435 (Combined Newmont Carlin Trend Operations)	1655 Mountain City Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4360 Web: http://www.newmontgoldcorp.com
Dunphy Mill	BAROID/Halliburton Energy Services, Inc.	S26, T33N, R48E	barite	ML	gravity	4	912 Dunphy Ranch Rd. Battle Mountain, NV 89820 Phone: 775-468-0515 FAX: 775-468-2060 Web: http://www.halliburton.com
Nevada Barth Iron Mine and Mill	Saga Exploration Co.	S7, T31N, R51E	iron	OP, ML	screening	5	2339 Dickerson Rd. Reno, NV 89503 Phone: 775-322-9994
Ruby Hill Mill	Ruby Hill Mining Co., LLC	S10, T19N, R53E	gold silver	ML	milling	16 (Mine and plant combined)	P.O. Box 676 Eureka, NV 89316 Phone: 775-401-6435
Ruby Hill Mine	Ruby Hill Mining Co., LLC	S9-11, 14, 15, T19N, R53E	gold silver	OP, HL	heap leach	16 (Mine and plant combined)	P.O. Box 676 Eureka, NV 89316 Phone: 775-401-6435
HUMBOLDT COUNTY							
Bonanza Opal Mine	Bonanza Opal Mines, Inc.	S6, 7, T45N, R26E	precious opal	OP	mining	2	P.O. Box 127 Denio, NV 89404 Phone: 775-375-5955 Web: http://www.bonanzaopals.net
Hunewill Construction Gravel Pit	H.E. Hunewill Construction Construction Co.	S19, T35N, R38E	sand gravel	OP, ML	mining crushing	4	1410 West Railroad St. Winnemucca, NV 89455 Phone: 775-623-2888 FAX: 775-623-2992
Lone Tree Complex	Newmont Goldcorp Corp.	S1, 11, 13, 15, 23, T34N, R42E	gold silver	OP, HL,	heap leach	39/33 (Mine and plant combined)	1655 Mountain City Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4360 Web: http://www.newmontgoldcorp.com
Lone Tree Mine (Brooks Pit)	Newmont Goldcorp Corp.	S11, T34N, R42E	gold silver	OP	mining	17	1655 Mountain City Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4360 Web: http://www.newmontgoldcorp.com
Lone Tree Plant	Newmont Goldcorp Corp.	S15, T34N, R42E	gold silver	ML	milling	27	1655 Mountain City Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4360 Web: http://www.newmontgoldcorp.com
Marigold Mill and Refinery	SSR Mining	S9, T33N, R43E	gold silver	ML	milling	400/15 (Mine and plant combined)	P.O. Box 160 Valmy, NV 89438 Phone: 775-635-2317 FAX: 775-635-2551 Web: http://www.ssrmining.com
Marigold Mine	SSR Mining	S8, 9, 18-20; T33N, R43E	gold silver	OP, HL	mining	400/15 (Mine and plant combined)	P.O. Box 160 Valmy, NV 89438 Phone: 775-635-2317 FAX: 775-635-2551 Web: http://www.ssrmining.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
HUMBOLDT COUNTY (continued)							
MIN-AD Mine	MIN-AD, Inc.	S28, T35N, R38E	dolomite	OP, ML	mining grinding	15	P.O. Box 39 Winnemucca, NV 89446 Phone: 775-623-5944 FAX: 775-623-9028 Web: http://www.min-ad.com
Rainbow Ridge Opal Mine	Rainbow Ridge Opal Mines, Inc.	S22, 23, T45N, R26E	opalized wood precious opal	OP	mining	1	P.O. Box 97 Denio, NV 89404 Phone: (Summer) 775-941-0270 Phone: (Winter) 541-312-2679 Web: http://www.nevadaopal.com
Royal Peacock Opal Mine	Royal Peacock Opal Mine, Inc.	S30, T45N, R26E	precious opal	OP	mining	1	No. 10 Virgin Valley Rd. Denio, NV 89404 Phone: 775-941-0374 FAX: 775-272-3395 Web: http://www.royalpeacock.com
Turquoise Ridge Joint Venture	Barrick Gold Corp.	S33, T39N, R42E	gold silver	UG	mining	480/160	2055 Getchell Mine Rd. Golconda, NV 89414-9702 Phone: 775-529-5001 FAX: 775-748-3125 Web: http://www.barrick.com
Twin Creeks Juniper and Sage Mills	Newmont Goldcorp Corp.	S5, T39N, R43E	gold silver	ML	milling	166 (Plants combined)	1655 Mountain City Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4360 Web: http://www.newmontgoldcorp.com
Twin Creeks Mine	Newmont Goldcorp Corp.	S3-10, 15-22, 27-32, T39N, R43E	gold silver	OP, HL	mining heap leach	471/133 (Mine and plant combined)	1655 Mountain City Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4360 Web: http://www.newmontgoldcorp.com
Twin Creeks Pinion Mill	Newmont Goldcorp Corp.	S31, T39N, R43E	gold silver	ML	milling	166 (Plants combined)	1655 Mountain City Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4360 Web: http://www.newmontgoldcorp.com
LANDER COUNTY							
Argenta Mill	Baker Hughes Oilfield Operations, Inc.	S6, T32N, R47E	barite	ML	gravity grinding	18/5 (Mine and plant combined)	P.O. Box 277 Battle Mountain, NV 89820 Phone: 775-635-5441 FAX: 775-635-5455 Web: http://www.bakerhughes.com
Argenta Mine	Baker Hughes Oilfield Operations, Inc.	S13, 14, T32N, R46E; S18, 19, T32N, R47E	barite	OP	mining	18/5 (Mine and plant combined)	P.O. Box 277 Battle Mountain, NV 89820 Phone: 775-635-5441 FAX: 775-635-5455 Web: http://www.bakerhughes.com
Battle Mountain Grinding Plant	M-I Swaco	S18, T32N, R45E	barite	ML	gravity grinding	34	P.O. Box 370 2 North Second Street Battle Mountain, NV 89820 Phone: 775-635-5135 FAX: 775-635-2645 Web: http://www.slb.com/services/miswaco.aspx
Cortez Hills Open Pit Mine	Barrick Cortez, Inc.	S24, T27N, R47E	gold	OP	mining	932/425 (Combined Pipeline and Cortez Hills Mines/Mill)	HC 66 Box 1250 Crescent Valley, NV 89821-1250 Phone: 775-468-4400 FAX: 775-468-4496 Web: http://www.barrick.com
Cortez Hills Underground Mine	Barrick Cortez, Inc.	S24, T27N, R47E	gold	UG	mining	322/130	HC 66 Box 1250 Crescent Valley, NV 89821-1250 Phone: 775-468-4400 FAX: 775-468-4496 Web: http://www.barrick.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
LANDER COUNTY (continued)							
Cortez Pipeline Mill	Barrick Cortez, Inc.	S31, T27N, R48E	gold	ML	milling	932/425 (Combined Pipeline and Cortez Hills Mines/Mill)	HC 66 Box 1250 Crescent Valley, NV 89821-1250 Phone: 775-468-4400 FAX: 775-468-4496 Web: http://www.barrick.com
Cortez Pipeline Mine	Barrick Cortez, Inc.	S31, T27N, R48E	gold	OP, HL	mining	932/425 (Combined Pipeline and Cortez Hills Mines/Mill)	HC 66 Box 1250 Crescent Valley, NV 89821-1250 Phone: 775-468-4400 FAX: 775-468-4496 Web: http://www.barrick.com
Fire Creek	Klondex Gold and Silver Mining Co.	S15, 22 T30N, R47E	gold silver	UG	mining	91/39	4000 West Winnemucca Blvd. Winnemucca, NV 89445 Phone: 775-621-5535 FAX: 775-328-7176 Web: https://www.hecla-mining.com
Greystone Mine	M-I Swaco	S25, 26, T28N, R45E	barite	OP	mining	48 (Mine and plant combined)	P.O. Box 370 2 North Second Street Battle Mountain, NV 89820 Phone: 775-635-5135 FAX: 775-635-2645 Web: http://www.slb.com/services/miswaco.aspx
Greystone Plant	M-I Swaco	S26, T28N, R45E	barite	OP	mining crushing gravity	48 (Mine and plant combined)	P.O. Box 370 2 North Second Street Battle Mountain, NV 89820 Phone: 775-635-5135 FAX: 775-635-2645 Web: http://www.slb.com/services/miswaco.aspx
Mountain Springs Mine	M-I Swaco	S8, 9, T28N, R44E	barite	OP	mining gravity	2	P.O. Box 370 2 North Second Street Battle Mountain, NV 89820 Phone: 775-635-5135 FAX: 775-635-2645 Web: http://www.slb.com/services/miswaco.aspx
Phoenix Mill	Newmont Goldcorp Corp.	S33, T31N, R43E	gold silver	ML	milling	487/107 (Mine and mill combined)	1655 Mountain City Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4360 Web: http://www.newmontgoldcorp.com
Phoenix Mine	Newmont Goldcorp Corp.	S22, 27, 33, 34, T31N, R43E	gold silver	OP, HL,	mining heap leach	487/107 (Mine and mill combined)	1655 Mountain City Hwy. Elko, NV 89801 Phone: 775-778-4000 FAX: 775-778-4360 Web: http://www.newmontgoldcorp.com
Slaven Mine	Baker Hughes Oilfield Operations, Inc.	S13, T30N, R46E	barite	OP	mining stockpile	18/5 (Mine and plant combined)	P.O. Box 277 Battle Mountain, NV 89820 Phone: 775-635-5441 FAX: 775-635-5455 Web: http://www.bakerhughes.com
LINCOLN COUNTY							
Tenacity Perlite Mill	Wilkin Mining and Trucking Co., Inc.	S5 T4S, R67E	perlite	OP, ML	crushing	9 (Mine and mill combined)	HC 34 Box 199 Caliente, NV 89008 Phone: 775-728-4463
Tenacity Perlite Mine	Wilkin Mining and Trucking Co., Inc.	S34, T4S, R62E	perlite	OP, ML	mining	9 (Mine and mill combined)	HC 34 Box 199 Caliente, NV 89008 Phone: 775-728-4463
LYON COUNTY							
Adams Claim Gypsum Mine	Art Wilson Co.	S25, T16N, R20E	gypsum limestone	OP	mining	43/2 (Mine and mill combined)	P.O. Box 20160 Carson City, NV 89702-1160 Phone: 775-882-0700 FAX: 775-882-0790 Web: http://www.acgmaterials.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
LYON COUNTY (continued)							
Art Wilson Co. Mill	Art Wilson Co.	S25, T16N, R20E	gypsum limestone	ML	crushing grinding screening pelletizing	43/2 (Mine and mill combined)	P.O. Box 20160 Carson City, NV 89702-1160 Phone: 775-882-0700 FAX: 775-882-0790 Web: http://www.acgmaterials.com
Dayton Materials (Mustang Pit)	3D Concrete, Inc.	S23, T16N, R21E	aggregate landscape rock sand	OP, ML	mining crushing screening	10	No. 20 Ricci Rd. Dayton, NV 89403 Phone: 775-246-5440 FAX: 775-346-3911 Web: http://3dconcrete.com
Fernley Plant	Imerys Minerals of California, Inc.	S11, T20N, R24E	diatomite	ML	classification drying grinding milling	11	100 Front St. Fernley, NV 89408 Phone: 775-575-2536 FAX: 775-575-1570 Web: http://imerys-filtration.com/north-america/
Fernley Quarry	Nevada Cement Co.	S3-6, 9, T19N, R25E; S31-33, T20N, R25E	limestone	OP	mining	3/7 (Nevada Cement pits combined)	P.O. Box 840 Fernley, NV 89408 Phone: 775-575-2281 FAX: 775-575-4387
Hazen Pit	EP Minerals, LLC	S6, 9, T19N, R26E	diatomite	OP	mining	2/4	640 Clark Station Rd. Sparks, NV 89434 Phone: 775-824-7700 FAX: 775-824-7715 Web: http://www.epminerals.com
Ludwig Mine	Art Wilson Co.	S27, T13N, R24E	gypsum limestone	OP	mining	3	P.O. Box 20160 Carson City, NV 89702-1160 Phone: 775-882-0700 FAX: 775-882-0790 Web: http://www.acgmaterials.com
Nevada Cement Plant	Nevada Cement Co.	S10, 11, T20N, R24E	cement	ML	crushing dry milling rotary kiln	120/25 (Plant and mines combined)	P.O. Box 840 Fernley, NV 89408 Phone: 775-575-2281 FAX: 775-575-4387 Web: http://www.nevadacement.com
Spring Valley Mine	Geo-Nevada, Inc.	S20, 21, 28 T16N, R21E	gold silver	OP, ML	mining crushing	4	230 East Liberty St. Reno, NV 89501 Phone: 775-348-4600 FAX: 775-348-9315
MINERAL COUNTY							
Aurora Mine	Klondex Aurora Mining, Inc.	S18, 19, T6N, R29E	gold silver	OP, UG	reprocessing	12/2 (Mine and mill combined)	4000 West Winnemucca Blvd. Winnemucca, NV 89445 Phone: 775-621-5535 FAX: 775-328-7176 Web: https://www.hecla-mining.com
Borealis Mine	Borealis Mining Co., LLC	S8, 9, 16, 17, T6N, R29E	gold silver	OP, HL	heap leach	6 (Mine and plant combined)	9650 Gateway Dr., Suite 202 Reno, NV 89521 Phone: 775-826-7567
Borealis Processing Plant	Borealis Mining Co., LLC	S17, T6N, R29E	gold silver	ML	milling	6 (Mine and plant combined)	9650 Gateway Dr., Suite 202 Reno, NV 89521 Phone: 775-826-7567
Denton-Rawhide Mine	Rawhide Mining, LLC	S4, 5, 8, 16, 17, T13N, R32E	gold silver	OP, HL	mining heap leach	55/1 (Mine and plant combined)	P.O. Box 2070 Fallon, NV 89407 Phone: 775-945-1015 FAX: 775-945-1213
Denton-Rawhide Processing Facility	Rawhide Mining, LLC	S9, T13N, R32E	gold silver	ML	milling	55/1 (Mine and plant combined)	P.O. Box 2070 Fallon, NV 89407 Phone: 775-945-1015 FAX: 775-945-1213
Esmeralda Mill	Klondex Aurora Mining, Inc.	S19, T6N, R29E	gold silver	ML	reprocessing	12/2 (Mine and mill combined)	4000 West Winnemucca Blvd. Winnemucca, NV 89445 Phone: 775-621-5535 FAX: 775-328-7176 Web: https://www.hecla-mining.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
NYE COUNTY							
Amargosa Clay Operation	Lhoist North America of Arizona	S21, T17S, R51E	clay	OP, ML	mining	31/3 (Mine and mill combined)	P.O. Box 86 Amargosa Valley, NV 89020 Phone: 775-372-5341 FAX: 775-372-5320 Web: https://www.lhoist.com/us_en/imv-nevada imv-nevada
Amargosa Plant	Lhoist North America of Arizona	S28, T17S, R49E	clay	ML	crushing drying evaporation grinding screening	31/3 (Mine and mill combined)	P.O. Box 86 Amargosa Valley, NV 89020 Phone: 775-372-5341 FAX: 775-372-5320 Web: https://www.lhoist.com/us_en/imv-nevada imv-nevada
Beatty Quarry	Kalamazoo Materials, Inc.	S16, T11S, R47E	landscape rock	OP, ML	crushing screening	4	6975 North Oracle Rd. Tucson, AZ 85704 Phone: 520-575-9601 FAX: 520-575-9604 Web: http://wwwkalamazoomaterials.com
Cinder Cone Pit	Allied Building Materials, Inc. and Cind-R-Lite Co.	S36, T14S, R48E; S31, T14S, R49E; S1, T15S, R48E; S6, T15S, R49E	cinder	OP, ML	mining crushing screening	6	4745 Mitchell St. North Las Vegas, NV 89081 Phone: 702-651-1550 FAX: 702-651-1551 Web: http://www.abmnv.com
Gamebird Pit	Wulfenstein Construction	S3, T21S, R54E	sand gravel	OP	mining crushing screening	2	2281 East Postal Dr. P. O. Box 38 Pahrump, NV 89048 Phone: 775-727-5900 FAX: 775-727-6010 Web: http://wulfensteinconstruction.com
Gold Hill Mine (Smoky Valley Common Operation)	Round Mountain Gold Corp.	S11, T10N, R44E	gold silver	OP, HL	mining heap leach	839/291 (Mines and plants combined)	P.O. Box 480 Smoky Valley Mine Rd. Round Mountain, NV 89405 Phone: 775-377-2366 FAX: 775-377-3224 Web: http://www.kinross.com
New Discovery Mine	Vanderbilt Minerals Corp.	S13, 24, T12S, R46E S18, 19, T12S, R47E	clay	UG	mining	4 (Combined Vanderbilt Mines)	3561 East Burgundy Dr. P.O. Box 6660 Pahrump, NV 89048 Phone: 775-537-6976 FAX: 775-537-6879 Web: https://www.vanderbiltminerals.com
Pahrump Community Pit	Various (U.S. Bureau of Land Management manages pit)	S28, 29, T20S, R54E	sand gravel	OP	mining		Bureau of Land Management 4701 North Torrey Pines Dr. Las Vegas, NV 89130-2301 Phone: 702-515-5000 Web: http://www.blm.gov
Premier Chemicals Mine	Premier Chemicals, LLC	S22, 23, 25-27, 34-36, T12N, R36E	magnesite	OP	mining	110/15 (Mine and plant combined)	P.O. Box 177 Gabbs, NV 89409 Phone: 775-285-2601 FAX: 775-285-4021 Web: http://www.premiermagnesia.com
Premier Chemicals Plant	Premier Chemicals, LLC	S26, T12N, R36E	magnesite	ML	calcining crushing gravity screening sizing	110/15 (Mine and plant combined)	P.O. Box 177 Gabbs, NV 89409 Phone: 775-285-2601 FAX: 775-285-4021 Web: http://www.premiermagnesia.com
Round Mountain ADR Plant (Smoky Valley Common Operation)	Round Mountain Gold Corp.	S25 ,T10N, R44E	gold silver	ML	recovery	839/291 (Mines and plants combined)	P.O. Box 480 Smoky Valley Mine Rd. Round Mountain, NV 89405 Phone: 775-377-2366 FAX: 775-377-3224 Web: http://www.kinross.com
Round Mountain Mill (Smoky Valley Common Operation)	Round Mountain Gold Corp.	S25 ,T10N, R44E	gold silver	ML	milling	839/291 (Mines and plants combined)	P.O. Box 480 Smoky Valley Mine Rd. Round Mountain, NV 89405 Phone: 775-377-2366 FAX: 775-377-3224 Web: http://www.kinross.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
NYE COUNTY (continued)							
Round Mountain Mine (Smoky Valley Common Operation)	Round Mountain Gold Corp.	S19, 20, 29, 30, T10N, R44E	gold silver	OP, HL,	mining heap leach	839/291 (Mines and plants combined)	P.O. Box 480 Smoky Valley Mine Rd. Round Mountain, NV 89405 Phone: 775-377-2366 FAX: 775-377-3224 Web: http://www.kinross.com
Shenandoah Mill	KMI Zeolite, Inc.	S25, T18S, R50E	zeolite	ML	crushing screening	20	P.O. Box 5139 2399 Postal Dr. Pahrump, NV 89041 Phone: 855-823-3777 Web: http://www.kmizeolite.com
Sterling Mine	Coeur Sterling, Inc. Resources	S14, T13S, R47E;	gold	UG	heap leach	12/6	P.O. Box 549 Beatty, NV 89003 Phone: 866-608-4381 FAX: 775-981-9044 Web: https://www.coeur.com
White Caps Mill	Vanderbilt Minerals Corp.	S19, T12S, R47E	clay	ML	bagging grinding screening	4 (Combined Vanderbilt Mines)	3561 East Burgundy Dr. P.O. Box 6660 Pahrump, NV 89048 Phone: 775-537-6976 FAX: 775-537-6879 Web: https://www.vanderbiltminerals.com
Wulfenstein (BLM) Pit	Wulfenstein Construction	S28, T20S, R54E	sand gravel	OP, ML	mining crushing screening	8	2281 East Postal Dr. P. O. Box 38 Pahrump, NV 89048 Phone: 775-727-5900 FAX: 775-727-6010 Web: http://wulfensteinconstruction.com
PERSHING COUNTY							
Buff-Satin Mine	Vanderbilt Minerals Corp.	S2, T27N, R32E	clay	OP	bagging grinding screening	4 (Combined Vanderbilt Mines)	3561 East Burgundy Dr. P.O. Box 6660 Pahrump, NV 89048 Phone: 775-537-6976 FAX: 775-537-6879 Web: https://www.vanderbiltminerals.com
Coeur Rochester Mine	Coeur Rochester, Inc.	S9-11, 15, 16, 21, 27, 28, T28N, R34E	silver gold	OP, HL,	mining heap leach	289/28 (Mine and plant combined)	P.O. Box 1057 Lovelock, NV 89419 Phone: 775-273-7995 FAX: 775-273-7423 Web: http://www.coeur.com
Coeur Rochester Plant	Coeur Rochester, Inc.	S15, T28N, R34E	silver gold	ML	milling	289/28 (Mine and plant combined)	P.O. Box 1057 Lovelock, NV 89419 Phone: 775-273-7995 FAX: 775-273-7423 Web: http://www.coeur.com
Colado Mine	EP Minerals, LLC	S6, 7, 16, 18, 21, 25, T28N, R29E	diatomite perlite	OP, OS	mining	35	P.O. Box 959 150 Coal Canyon Rd. Lovelock, NV 89419 Phone: 775-824-7591 FAX: 775-824-7595 Web: http://www.epminerals.com
Colado Plant	EP Minerals, LLC	S33, T28N, R32E	diatomite perlite	ML	classification drying grinding	110	P.O. Box 959 150 Coal Canyon Rd. Lovelock, NV 89419 Phone: 775-824-7591 FAX: 775-824-7595 Web: http://www.epminerals.com
Empire Mine	Empire Mining Co.	S31, T31N, R23E	gypsum anhydrite	OP	mining	40/1 (Mine and mill combined)	Nevada Hwy. 447 M.P. 68 Empire, NV 89405 Phone: 775-800-4569 Web: http://www.empireminingco.com
Florida Canyon Mine	Florida Canyon Mining, Inc.	S3, T31N, R33E	gold silver	OP, HL	mining heap leach	187/11 (Mine and plant combined)	P.O. Box 330 Imlay, NV 89418 Phone: 775-538-7300 FAX: 775-538-7324 Web: http://www.aliogold.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
PERSHING COUNTY (continued)							
Florida Canyon Plant	Florida Canyon Mining, Inc.	S3, T31N, R33E	gold silver	ML	milling	187/11 (Mine and plant combined)	P.O. Box 330 Imlay, NV 89418 Phone: 775-538-7300 FAX: 775-538-7324 Web: http://www.aliogold.com
Nassau (Section 8) Mine	American Colloid Co.	S8, T27N, R33E	clay	OP	shipping	4	P. O. Box 428 Lovell, WY 82431 Phone: 307-548-5135 FAX: 307-548-6449 Web: http://www.colloid.com
Relief Canyon Quarry	Nevada Cement Co.	S13-16, 21-24, T27N, R34E	limestone	OP, ML	mining crushing	3/7 (Nevada Cement pits combined)	P.O. Box 840 Fernley, NV 89408 Phone: 775-575-2281 FAX: 775-575-4387 Web: http://www.eaglematerials.com
Sexton Mine	Nutritional Additives Corp.	S5, T34N, R38E	dolomite	OP, ML	mining milling	2	415 Wellington Street Winnemucca, NV 89445 Phone: 775-623-1151 FAX: 775-623-1153 Web: http://www.nutritionaladditives.com
Sunrise Gold Placer Mine	Sunrise Minerals, LLC	S17, T33N, R36E	gold	PL	mining gravity	N/A	7343 South Alton Way, Suite 100 Centennial, CO 80112 Phone: 303-779-1800 FAX: 303-770-1995
STOREY COUNTY							
Basalite Dayton Mill	Basalite Concrete Products	S16, T17N, R22E	sand gravel	ML	crushing milling	6 (Mine and mill combined)	2500 Boeing Way Carson City, NV 89701 Phone: 775-882-9336 FAX: 775-887-1025 Web: http://www.basalite.com
Basalite Dayton Pit	Basalite Concrete Products	S8, 9, 16, 17, T17N, R22E	sand gravel	OP	mining	6 (Mine and mill combined)	2500 Boeing Way Carson City, NV 89701 Phone: 775-882-9336 FAX: 775-887-1025 Web: http://www.basalite.com
Clark Mill	EP Minerals, LLC	S35, T20N, R22E	diatomite	ML	calcining crushing drying grinding screening	58	640 Clark Station Rd. Sparks, NV 89434 Phone: 775-824-7700 FAX: 775-824-7633 Web: http://www.epminerals.com
Clark Mine	EP Minerals, LLC	S27, 33, 34, T20N, R23E	diatomite	OP	mining	4	640 Clark Station Rd. Sparks, NV 89434 Phone: 775-824-7700 FAX: 775-824-7633 Web: http://www.epminerals.com
River Canyon III	Joy Engineering	S2, T19N, R22E	aggregate	OP	mining	5	81822 Highway 70 Beckworth, CA 96129 Phone: 530-832-5760 Web: http://www.joyengineering.com
Sierra Stone Plant	CEMEX	S27, 34, T19N, R22E	aggregate	ML	crushing	8 (Mine and plant combined)	3005 Canyon Way Sparks, NV 89434 Phone: 775-342-0500 FAX: 775-342-0554 Web: http://www.cemex.com
Sierra Stone Quarry	CEMEX	S26, 27, 33, 34, T19N, R22E	aggregate	OP	crushing	8 (Mine and plant combined)	3005 Canyon Way Sparks, NV 89434 Phone: 775-342-0500 FAX: 775-342-0554 Web: http://www.cemex.com
Trico Pit	Gopher Construction Co.	S33, T20N, R22E	aggregate	OP, ML	mining crushing	7	1625 East Newlands Dr. P. O. Box 801 Fernley, NV 89408 Phone: 775-575-4333 FAX: 775-575-1137

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
WASHOE COUNTY							
Donovan Pit	R.T. Donovan	S24, T21N, R20E	decomposed granite	OP, ML	mining crushing screening	17	11600 Pyramid Way Sparks, NV 89441 Phone: 775-843-5352 FAX: 775-425-0815 Web: http://www.rtdonovan.com
Empire Mill	Empire Mining Co.	S11, 13, T31N, R23E	gypsum anhydrite	ML	crushing screening	40/1 (Mine and mill combined)	Nevada Hwy. 447 M.P. 68 Empire, NV 895405 Phone: 775-800-4569 Web: http://www.empireminingco.com
Golden Valley Pit	A and K Earthmovers	S11, 12, T19N, R20E	aggregate	OP, ML	mining screening	4	515 Windmill Rd. Fallon, NV 89406 Phone: 775-423-6085 FAX: 775-423-8410 Web: http://www.akearthmovers.com
Lockwood Plant	Granite Construction Co.	S17, T19N, R21E	aggregate	ML	crushing screening washing	28 (Mine and plant combined)	1900 Glendale Ave. Sparks, NV 89432 Phone: 775-355-3434 FAX: 775-329-2803 Web: http://www.graniteconstruction.com
Lockwood Quarry	Granite Construction Co.	S17, T19N, R21E	aggregate	OP	mining	28 (Mine and plant combined)	1900 Glendale Ave. Sparks, NV 89432 Phone: 775-355-3434 FAX: 775-329-2803 Web: http://www.graniteconstruction.com
Mustang Plant	Q and D Construction, LLC	S4, T19N, R21E	aggregate	ML	crushing screening	14 (Mine and plant combined)	1050 South 21st St. Sparks, NV 89431 Phone: 775-342-6000 FAX: 775-342-6063 Web: https://qdconstruction.com
Mustang Quarry	Q and D Construction, LLC	S4, T19N, R21E	aggregate	OP	mining	14 (Mine and plant combined)	1050 South 21st St. Sparks, NV 89431 Phone: 775-342-6000 FAX: 775-342-6063 Web: https://qdconstruction.com
Paiute Pit	CEMEX	S2, 27, 34, T21N, R24E	sand gravel	OP	mining	9 (Mine and plant combined)	10 Hill Ranch Rd. Wadsworth, NV 89442 Phone: 775-575-1162 Web: http://www.cemex.com
Paiute Plant	CEMEX	S34, T21N, R24E	sand gravel	ML	crushing screening	9 (Mine and plant combined)	10 Hill Ranch Rd. Wadsworth, NV 89442 Phone: 775-575-1162 Web: http://www.cemex.com
Rilite Aggregate	Rilite Aggregate Co.	S23, T18N, R20E	sand rock	OP, ML	mining crushing	11	3025 Mill St. Reno, NV 89502 Phone: 775-329-8842 FAX: 775-329-3593
Spanish Springs Plant	Martin Marietta Materials, Inc.	S15,T21N, R20E	aggregate	ML	crushing screening	17 (Mine and plant combined)	11059 Pyramid Lake Rd. Sparks, NV 89436 Phone: 775-425-4455 FAX: 775-425-5131 Web: http://www.martinmarietta.com
Spanish Springs Quarry	Martin Marietta Materials, Inc.	S15, 22, T21N, R20E	aggregate	OP	mining	17 (Mine and plant combined)	11059 Pyramid Lake Rd. Sparks, NV 89436 Phone: 775-425-4455 FAX: 775-425-5131 Web: http://www.martinmarietta.com
Terraced Hill Clay (Flanigan) Mine	Nevada Cement Co.	S13, 14, T27N, R19E	clay	OP, ML	mining milling	3/7 (Nevada Cement pits combined)	P.O. Box 840 Fernley, NV 89408 Phone: 775-575-2281 FAX: 775-575-4387 Web: http://www.eaglematerials.com

Directory of Mining and Milling Operations (continued)

Mine/Mill Name	Operator	Location	Commodity	Type	Process/ Activity	Company/ Contract Employees	Address
WASHOE COUNTY (continued)							
Wade Sand Pit	Granite Construction Co.	S3, T20N, R24E	sand	OP	mining screening	2	P.O. Box 2087 1900 Glendale Ave. Sparks, NV 89432 Phone: 775-355-3434 FAX: 775-329-2803 Web: http://www.graniteconstruction.com
WHITE PINE COUNTY							
Bald Mountain Mine	KG Mining (Bald Mountain), Inc.	S14, 15, 19, 20, T24N, R57E	gold silver mercury	OP	mining heap leach	550/140 (Mine and plants combined)	435 Jiggs Hwy., Unit 16 Spring Creek, NV 89815 Phone: 775-237-7100 FAX: 775-237-7101 Web: http://www.kinross.com
Bald Mountain Mooney North Mooney Plant	KG Mining (Bald Mountain), Inc.	S29, T24N, R58E	gold silver mercury	ML	milling	550/140 (Mine and plants combined)	435 Jiggs Hwy., Unit 16 Spring Creek, NV 89815 Phone: 775-237-7100 FAX: 775-237-7101 Web: http://www.kinross.com
Bald Mountain Mooney South Mooney Plant	KG Mining (Bald Mountain), Inc.	S32, T24N, R58E	gold silver mercury	ML	milling	550/140 (Mine and plants combined)	435 Jiggs Hwy., Unit 16 Spring Creek, NV 89815 Phone: 775-237-7100 FAX: 775-237-7101 Web: http://www.kinross.com
Bald Mountain Plant No. 2	KG Mining (Bald Mountain), Inc.	S14, T24N, R57E	gold silver mercury	ML	milling	550/140 (Mine and plants combined)	435 Jiggs Hwy., Unit 16 Spring Creek, NV 89815 Phone: 775-237-7100 FAX: 775-237-7101 Web: http://www.kinross.com
Mount Moriah Quarry	Mount Moriah Stone Quarries, LLC	S22, 23, 26, 27, 33-36, T16N, R70E	building stone landscape rock	OP	mining	45	P.O. Box 70 No. 10 Hatch Rock Rd. Baker, NV 89311 Phone: 435-855-2232 FAX: 435-855-2332 Web: http://mtmoriahstone.com
Pan Mine	Fiore Gold, Ltd.	S36, T17N, R55E	gold silver	OP, HL	mining heap leach	43/93	P.O. Box 150278 Ely, NV 89315 Phone: 775-366-1901 FAX: 303-357-2499 Web: http://fioregold.com
Robinson Mine	KGHM International, Ltd.	S6, 8, 17, 18, T16N, R62E	copper gold molybdenum	OP	mining	620/135 (Mine and mill combined)	P.O. Box 382 Ruth, NV 89319 Phone: 775-289-7000 FAX: 775-289-7349 Web: http://kghm.com
Robinson Sag Mill and Concentrator	KGHM International, Ltd.	S8, T16N, R62E	copper gold molybdenum	ML	milling	620/135 (Mine and mill combined)	P.O. Box 382 Ruth, NV 89319 Phone: 775-289-7000 FAX: 775-289-7349 Web: http://kghm.com

For additional information on Nevada's mineral resources and mineral industries, please see the following:

Mining and Exploration Applications on "Open Data" Web Page: https://data-nbmg.opendata.arcgis.com/

Mining District Files: https://gisweb.unr.edu/MiningDistricts/
Reno Mineral Resources: https://gisweb.unr.edu/RenoMinerals/
43-101 Reports: https://gisweb.unr.edu/43-101Reports/

NBMG Publications (selected publications listed below): http://pubs.nbmg.unr.edu/

Statewide Commodity Publications

- Antimony (B61)
- Barite (B98)
- Copper (M100, B65)
- Fluorspar (B93)
- Gypsum (B103)
- Iron (B53)
- Mercury (B41)
- Montmorillonite, bentonite, and fuller's earth (B76)
- Nevada active mines and energy producers (OF19-1)
- Oil and gas (B104, OF01-7, OF04-1, OF11-2, OF11-6, M162)
- Radioactive minerals (B81, OF06-19)
- Talcose minerals (B84)
- Thermal waters (B91, M161, M151)
- Tungsten (B105)
- Zeolites (B79)

County Mineral Resource Bulletins

- Carson City (B75)
- Churchill (B83)
- Clark (B62)
- Douglas (B75)
- Elko (B106)
- Esmeralda (B78)
- Eureka (B64)
- Humboldt (B59)
- Lander (B88)
- Lincoln (B73)
- Lyon (B75)
- Mineral (B58)
- Nye (B77, B99B)
- Pershing (B89)
- Storey (B70)
- Washoe (B70)
- White Pine (B85)

Other Publications

- Geothermal well online search: http://nbmg.unr.edu/Geothermal/WellInfo.html
- Gold and silver resources in Nevada (M149)
- Geothermal resources (M161, M151, B91)
- Industrial mineral deposits (M142)
- Major mines of Nevada 2019 (P-31)
- Outline of Nevada mining history (SP15)
- Mining districts of Nevada (R47)

NBMG maintains an open-file office with the following information available to the public:

- NBMG, USGS, USBM, and DOE open-file reports on Nevada geology and mineral resources
- petroleum and geothermal exploration and production
- mining district records and maps
- mineral resources and reserves
- mineral resource assessments
- core and cuttings library
- wilderness study area reports
- general geologic studies
- indexes and ordering information for maps, air photos, and remote sensing imagery

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