CLAY TURQUOISE Hg DIATOMITE OIL Li Au Cu Ag Pb

NEVADA BUREAU OF MINES & GEOLOGY
SPECIAL PUBLICATION MI-1983

Au

THE NEVADA MINERAL INDUSTRY 1983

Au MAGNESITE OPAL Ag Hg Au BARITE BARITE DIATOMITE Au CRUSHED ROCK Mo Mo GRAVEL PERLITE Au OIL CEMENT LIME Hg WO_3 Au Si GRAVEL Li SALT WO_3 Li Fe Au MAGNESITE TALC GYPSUM FLUORSPAR Au OIL SAND BARITE PUMICE

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NEVADA BUREAU OF MINES & GEOLOGY
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THE NEVADA MINERAL INDUSTRY—1983

(Prepared in cooperation with the United States Bureau of Mines)

Metals
Industrial Minerals
Geothermal
Oil and Gas

Exploration
Development
Mining
Processing

John Schilling
Director/State Geologist
Nevada Bureau of Mines and Geology

1984

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Modified from Nevada Bureau of Mines and Geology Map 72 (1981)

INTRODUCTION

This report is the fifth of an annual series. Its purpose is to discuss 1983 activities in Nevada's mineral-resource industry. It describes mineral exploration and development programs, discovery of orebodies, new mines opened, expansions and closings at existing mines, oil and gas drilling and production, and geothermal drilling and utilization. A directory of operating mines is also included.

MINERALS

EXPLORATION

1983 was a year of recovery in Nevada, after the deep recession in 1982 forced layoffs and the closing of many exploration offices. Because of the great interest in, and excellent potential for, finding gold deposits, mineral exploration was at a much higher level in Nevada than elsewhere in the West, though exploration for other metals and industrial minerals remained at depressed levels. The U.S. Bureau of Land Management reported that more claims were recorded in Nevada in 1983 than in any other western state. Continued improvement is expected in 1984.

Cuts of the last few years have been so deep that future needs for minerals will be difficult to meet—in order to find enough new mines to satisfy this demand, more exploration is needed now. Nevada should continue to encourage exploration now, if mining is to be economically important in the years ahead.

Exploration, by its nature, is a rather secretive undertaking; for this reason much of what goes on is not public knowledge. Only a few of the many exploration targets being examined in Nevada are mentioned below:

CLAIMS RECORDED BY BLM*

Year	New claims	Total active claims
1980	43,175	–
1981	49,284	–
1982	30,531	241,158
1983	35,127	245,576

*U.S. Bureau of Land Management.

TOTAL CLAIMS FILED WITH BLM*

	1976–1983
Nevada	293,633
Utah	272,865
Wyoming	225,788
Arizona	212,593
Colorado	202,152
California	139,383
New Mexico	128,610
Oregon	68,790

*U.S. Bureau of Land Management.

Metals

Coeur d'Alene Mines Corp. established a district exploration office in Verdi. Raymond W. Threlkeld is in charge.

Kerr-McGee Corp. opened an exploration office in Reno to search for precious and base metals in eight western states. The office is managed by E. A. Rechbein and staffed by four geologists. (Boise, ID, Statesman, 30 Aug 83.)

Freeport Minerals Co. conducted a $2.5 million exploration program at the Mesona property of **Bull Run Gold Mines Ltd.** in Elko County. Exploratory drilling, surface sampling, and geological mapping was done. Fifty percent of the 58 holes drilled encountered gold mineralization; the best intercepts ranged from 0.05 to 0.71 oz gold/ton. (Mining Engineering, May 83.)

Drill rig at FMC's Paradise Peak gold-silver discovery. *FMC photo.*

Cordex is doing exploratory drilling for gold on its claims adjacent to Kinetic's Bluebird claims in the Battle Mountain district, Lander County. (Western Mining Letter, 7 Nov 83.)

American Copper and Nickel Co. closed down its molybdenum exploration activities at Ashdown south of Denio in Humboldt County late in the year. Some rich molybdenum reportedly had been discovered underground earlier in the year. (Winnemucca, NV, Sun, 13 Dec 83.)

Houston International Minerals Corp. announced the discovery of a new gold ore body just north of its Borealis Mine, 15 miles southwest of Hawthorne in Mineral County (Wallace, ID, Miner, 6 Jan 83.)

Industrial Minerals
by Keith G. Papke

The search for barite continued to dominate industrial-mineral exploration in Nevada during 1983, as it has for more than a decade. However, exploration in 1983—in terms of both money expended and people employed—was only a fraction of that in the peak years of 1980 and 1981. The causes of this

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A8YN-CN5-AHAL
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FMC's Paradise Peak gold-silver discovery.
FMC photos.

Drill rigs on ore zone (above). Looking northwest toward ore zone (at left).

decline in exploration were decreased domestic drilling for oil and gas and resultant lower barite consumptions, increased imports of cheap barite, mostly from Mainland China, Chile, and Morocco, and high railroad-freight rates from Nevada to the Gulf Coast area compared to ocean-freight rates. It is significant for the Nevada barite industry that about 95% of the barite consumed in the United States is used in drilling for oil and gas and that about 60% of the domestic drilling is done in Texas, Oklahoma, and Louisiana.

The number of drill rigs being operated in the United States is a widely used indicator of current demand for domestic barite. This rig count is available weekly, with a one-week delay, in the *Oil and Gas Journal*. Very little domestically produced barite is exported, but the amount of barite being imported must be taken into consideration when estimating the demand for domestic barite using the data on active rigs (see figure, p. 14). There was an increased interest in exploration for Nevada barite in the last several months of 1983. This increase probably is due partially to more drilling for oil and gas. In mid-1983 Exxon imposed more stringent requirements on the amounts of alkaline-soluble carbonates and sulfides allowed in drilling-grade barite; it is likely that these new specifications will be adopted industry-wide. Most of the companies producing barite in the United States would not be severely affected, but many foreign producers would find it difficult to meet these requirements.

Exploration for other industrial minerals appeared to show a slight increase in 1983 as the country recovered from the depression and the demand for some of these materials started to improve. Among the industrial minerals that appear to be more highly sought are swelling clays, limestone, diatomite, silica, graphite, and salt.

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DEVELOPMENT/FUTURE MINES

Metals

Newmont Mining Corp. has delayed opening its Gold Quarry gold deposit in northern Eureka County until late 1985; production had been slated for 1984. Construction of the mill and other facilities will begin in the spring of 1984. Reserves are estimated at 25.1 million tons of ore averaging 0.106 oz gold/ton, plus an additional 150 million tons averaging 0.036 oz/ton. (American Metal Market, New York, NY, 4 Nov 83.)

Cominco American Inc., a unit of Cominco Ltd. of Vancouver, British Columbia, plans to begin production at its Buckhorn gold-silver mine, 55 miles southwest of Carlin in Elko County, early in 1984. Pembina International Corp. is the minority partner in the venture. Mining will be from an open pit at the rate of 2500 tons/day; recovery will be by cyanide heap leaching. The property will produce about 30,000 oz gold and 270,000 oz silver/year during its seven-year operation span. Development cost over $12 million; 78 workers will be employed. (Western Mining Letter, 7 Nov 83.) The ore averages 0.044 oz gold and 0.6 oz silver/ton (Spokane, WA, Spokesman-Review, 9 Sep 83).

First Mississippi Corp. purchased the Getchell gold property in the Osgood Mountains, southeast Humboldt County, from Conoco, Inc. for about $5 million. The purchase includes 14,000 acres of fee land and 500 acres of unpatented claims. Reserves reportedly exceed 750,000 oz gold. Feasibility studies to determine reserves and mining-milling economics are underway (Wallace, ID, Miner, 10 Nov 83.) The mine had previously operated until 1971.

Coeur d'Alene Mines Corp. purchased Asarco Inc. holdings in the Rochester district, Pershing County. Previous drilling indicated 88.3 million tons of ore containing 1.5 oz silver and 0.007 oz gold/ton. Feasibility tests are planned to determine milling methods. (Coeur d'Alene, ID, Press, 23 Dec 83.)

Exxon Minerals Co. continued preliminary design work for its Mt. Hope molybdenum project, northwest of Eureka in Eureka County (Mineral Industry Survey-Nevada 1983, U.S. Bureau of Mines). A lead time of 8–10 years is needed to develop the $600 million project. It is estimated that it will take 1400 construction workers to build and 550 employees to operate the mine-mill complex. (Reno, NV, Nevada State Journal, 13 Jan 83.) Early in 1984 Exxon announced plans to stretch out development.

Dee Gold Mining Co. began stripping overburden and constructing processing facilities at the Dee gold deposit late in 1983. Dee Gold Mining is a partnership of **Lacana Mining Corp.** (29.3% interest), **Rayrock Resources Ltd.** (29.3%), **Dome Mines Group** (29.3%), and **John S. Livermore** (12%). Formerly called the Boulder Creek deposit, the deposit is located 1 mile north of the Boot Strap Mine in western Elko County. Some 15,000 tons of overburden are being removed daily in preparation for mining, which is expected to begin in August 1984.

Gooseberry Mine personnel, June 9, 1983. First shipment of gold and silver precipitate. *Asamera, Inc. photo.*

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FMC's Mountain Springs barite mine, Lander County. *Keith Papke photo.*

Stripping and construction is expected to cost more than $24 million. Reserves are estimated at 2.7 million tons of ore averaging 0.117 oz gold/ton. Production for 1984 is expected to be 38,000 oz gold. Mining is planned at 900 tons of ore/day, giving the mine a life of at least 10 years. (American Metal Market, 5 Jan 84, and Intermountain Pay Dirt, Apr 83.)

Pacific Silver Corp. broke ground for a 300-ton/day mill at the Buckskin gold property, 16 miles west of Yerington in northeastern Douglas County (Mineral Industry Survey-Nevada 1983, U.S. Bureau of Mines). Values are in gold, copper, and silver. At least 60 employees will be needed if the mine goes into production. The mill initially will process development ore from the 230-ft level of the old Buckskin Mine. (Denver, CO, Mining Record, 29 Jun 83.)

Westley Mines Ltd. has been drilling a gold deposit in the Santa Fe mining district northeast of Luning, Mineral County. Reserves are estimated at 5 million tons averaging 0.04 oz gold and 0.45 oz silver/ton plus 4.5 million tons averaging 0.066 oz gold and 0.9 oz silver/ton. Lacana Mining Inc. will provide technical and financial assistance and will fund all further development work, including construction, in return for an interest in the property that could reach 51%. (Wallace, ID, Miner, 12 Jan 84.)

Silver King Mines, Inc. is sinking two inclined shafts at Ward Mountain south of Ely in White Pine County. Twenty workers are employed. The principal value is silver. (Ely, NV, Daily Times, 14 Oct 83.)

FMC Corp. announced the discovery of a large gold-silver deposit 8 miles south of Gabbs in northwest Nye County. Seventy-seven holes were drilled, and 46 had gold averaging 0.14 oz/ton and silver

Daisy fluorspar mine near Beatty. *Keith Papke photo.*

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averaging 4.7 oz/ton; reserves are estimated at more than 1 million oz gold and 30 million oz silver. The ore would be mined by open-pit methods. (Wall Street Journal, 17 Jan 84.) Present plans are to put the mine into production by mid-1985 (at a cost of at least $25 million) and employ over 100 workers, but additional drilling and testing will be done before a final decision will be made. Two Nevada prospectors, Ardith and Bill Anell, are credited with making the discovery. (Reno, NV, Gazette-Journal, 17 Jan 84.) FMC has a very large group of claims—the Goose claims—mainly in the NW/4 T10N,R36E. The orebody reportedly is centered on a hill in S4.

Duval Corp. began expansion of its gold-silver mill near Battle Mountain early in 1983. The mill will handle ore from the Fortitude deposit; the deposit presently is being stripped of 250 feet of overburden. Mining is expected to begin in 1985. Duval's 1982 production from its mines at Battle Mountain was 71,000 oz gold and 315,000 oz silver; with addition of the Fortitude ore, 1985 production is expected to reach 150,000 oz gold and 1.5 million oz silver. (American Mining Congress Journal, 25 May 83.)

Kinetic Minerals Inc. announced that it had found "at least" 10 million tons of ore averaging 0.11 oz gold/ton on the Bluebird claims (S22,23,26, T32N,R43E) in the Battle Mountain mining district, Lander County. Development continues. (Intermountain Pay Dirt, Nov 1983). Kinetic drilled 15 holes (3 diamond core and 12 rotary cuttings); none was deeper than 500 feet. (Western Mining Letter, 7 Nov 83).

Lacana Mining Inc. continued development of its Relief Canyon gold deposit northeast of Lovelock in Pershing County. Lacana will have earned a 90% interest in the property when the $1 million development program is completed; **Falcon Cement Inc.** of Auburn, California, holds a 10% interest. Lacana is constructing 2 heap-leach test pads and has completed 40 drill holes totalling 10,000 feet; 140 fill-in holes will be drilled. From 5 to 10 million tons of ore containing 0.04–0.06 oz gold/ton have been found to date. (Nevada Mining Association Bulletin, Summer 1983.)

Freeport Gold Co. announced that step-out drilling around its Bell (Jerritt Canyon) gold mine added reserves of over 1.5 million tons of ore averaging 0.15 oz gold/ton. At the beginning of 1983 reserves were 11.6 million tons of ore averaging 0.233 oz gold/ton, enough to sustain operations for over 11 years. Drilling in four other widely spaced areas also encountered significant gold mineralization; drilling is continuing.

860 level loading station, Gooseberry Mine. *Asamera, Inc. photo.*

Gooseberry gold-silver mine and mill (at left). *Asamera, Inc. photo.*

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MINING/PROCESSING

The preliminary estimated value of Nevada's mineral production for 1983 was $526 million based on preliminary nonfuel estimates by the U.S. Bureau of Mines and an estimated price of $30/bbl for oil. Final figures are expected to exceed $530 million. Nevada ranked 15th among the states in nonfuel mineral production.

Metals

New Mines & Other Facilities

Minex Resources, Inc. poured its first gold bar from the Fire Creek Mine, southwest of Carlin in Lander County, in October 1983. Mining is by open-pit methods; recovery is by heap leaching. (Denver, CO, Mining Record, 26 Oct 83.) Whether mining will continue beyond the summer of 1984 will depend on this first-stage test.

Placer Amex Inc., a wholly-owned subsidiary of Placer Development Ltd. of Vancouver, British Columbia, Canada, began limited operations at its 75% owned Bald Mountain Mine, just east of the Alligator Ridge gold mine in northwestern White Pine County. The test project began in May with construction of a $1.3 million processing plant; heap leaching was expected to start in September 1983 and end in June 1984. Approximately 200,000 tons of ore, averaging 0.10 oz gold/ton, will be mined from an open pit. Mining will be carried out by a contractor, W. E. Vining Co. of Carson City, at the rate of about 2000 tons/day. The mining contractor will hire 12 local people to supplement its existing workforce; the company will employ 12 local people in the processing plant. (Ely, NV, Daily Times, 13 Jun 83.) Whether operations will continue after June 1984 will depend on what new ore reserves are found by exploratory drilling planned for the test period.

NEVADA'S ROLE IN U.S. MINERAL SUPPLY IN 1983

Commodity	Share of U.S. output (percent)	Rank in Nation
Barite	85	1
Diatomite	*35	2
Fluorspar	*1	3
Gemstones	15	2
Gold	48	1
Lithium	*35	2
Magnesite	100	1
Mercury	99	1
Silver	8	3

*Estimated by Nevada Bureau of Mines and Geology.

Placer Amex Inc. also opened its Horse Canyon open-pit gold mine 60 miles southwest of Elko in Elko County, at midyear. The ore will be processed at the Cortez mill 4 miles to the southwest. Thirty-five additional mine workers will be employed, increasing the payroll by $850,000 annually. Ore reserves are 3,400,000 tons averaging 0.055 oz gold/ton. Production is planned at 2000 tons of ore/day, and 40,000 oz gold/year. The total cost of bringing the mine into production will be over $7 million.

Tungsten Carbide Manufacturing, a division of Smith International Inc., built a $2.5 million, 60,000 square-foot facility to manufacture cemented tungsten-carbide products, in Eldorado Valley in southern Nevada. (Nevada Mining Association Bulletin, Winter 83.)

Closings/Cutbacks

Kennecott shut down its custom copper smelting operation at its McGill plant in White Pine County in June, laying off 115 workers; 65 administrative,

NEVADA'S MINERAL PRODUCTION[1]

Mineral	Unit	1982 Quantity	1982 Value (thousands)	1982[P] Quantity	1982[P] Value (thousands)	1983[P] Quantity	1983[P] Value (thousands)
Barite	thousand short tons	1,575	$52,727	1,765	$56,158	651	$20,004
Clays	thousand short tons	103	2,640	110	4,604	51	1,337
Gemstones			1,200		1,000		1,200
Gold	troy ounces	738,321	277,542	679,700	269,535	732,915	311,489
Gypsum	thousand short tons	656	4,523	758	7,073	759	5,567
Iron ore	thousand long tons	77	1,119	W	W	W	W
Mercury	76-pound flasks	25,760	W	25,000	10,000	25,000	W
Petroleum	thousand 42-gallon barrels	597	17,900	597	17,900	811	24,334
Sand and gravel	thousand short tons	6,027	11,724	7,000	14,500	7,900	16,000
Silver	thousand troy ounces	3,142	24,981	254	2,032	2,962	34,063
Stone, crushed	thousand short tons	1,300	4,500	1,240	3,800	1,200	4,000
Combined value of cement, copper, diatomite, fluorspar, lead, lime, lithium compounds, magnesite, perlite, salt, sand (industrial), and zinc			144,944		108,242		108,005
	Total		$543,800		$494,844		$525,999

[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers), as compiled by U.S. Bureau of Mines (Mineral Industry Survey, Nevada—1983) except for petroleum.
[P]Preliminary.
W Withheld.

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VALUE OF NONFUEL PRODUCTION IN NEVADA, BY COUNTY*
(Thousands)

County	1979	1980[2]	1981[2]	Minerals produced in 1981 in order of value
Carson City	W	$409	$522	Stone (crushed).
Churchill	$1,903	W	2,391	Diatomite, gold, iron ore, salt, silver, tungsten, lead, zinc.
Clark	36,779	37,178	22,008	Lime, sand and gravel (industrial), gypsum, stone (crushed), gold, silver, copper.
Douglas	1,488	W	W	Silver, gold, copper, lead.
Elko	6,427	17,098	42,457	Gold, barite, copper, tungsten, silver, lead, zinc.
Esmeralda	17,917	21,591	22,128	Lithium, diatomite, silver, gold, clays, copper.
Eureka	40,864	W	65,277	Gold, iron ore, stone (crushed), silver, mercury, lead, copper, zinc.
Humboldt	8,526	12,089	W	Gold, mercury, stone (crushed), copper, silver, clays.
Lander	49,082	87,335	W	Barite, gold, copper, silver, lead, zinc.
Lincoln	12,131	13,282	W	Tungsten, gold, lime, silver, perlite, clays, copper.
Lyon	25,254	27,695	26,403	Cement, stone (crushed), gypsum, diatomite.
Mineral	40	6,468	W	Silver, gold, tungsten, lead, zinc.
Nye	22,492	45,566	58,903	Gold, barite, clays, magnesite, silver, fluorspar, stone (crushed), brucite, lead, zinc, copper.
Pershing	17,731	18,495	25,511	Diatomite, gypsum, iron ore, silver, gold, perlite.
Storey	12,389	21,043	W	Diatomite, silver, gold, stone (crushed).
Washoe	4,659	2,793	W	Clays, copper, gold, silver.
White Pine	W	W	W	Gold, silver, tungsten, copper, lead, zinc.
Undistributed[2]	2,567	83,186	241,059	
Total	$260,249	$394,230	$506,659	

*Data from U.S. Bureau of Mines.
W Withheld to avoid disclosing company proprietary data; included with "Undistributed."
[1]Not available.
[2]Includes sand and gravel that cannot be assigned to specific counties, gemstones, and values indicated by symbol W.
[3]Data may not add to totals shown because of independent rounding.

Jack-leg drill in operation, 1003 stope, Gooseberry Mine. *Asamera, Inc. photo.*

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STATE OF NEVADA'S REVENUE FROM MINERAL INDUSTRY

Source	1978	1979	1980	1981	1982	1983
Federal[1]	$4,847,428	$6,548,509	$7,718,102	$10,262,216	$12,595,501	$12,184,106
Net proceeds tax[2] . .	1,967,717	1,976,912	3,243,145	1,912,754	1,799,735	—
Geothermal[3]	240,000	829,892	753,000	29,937	944,305	642,256
Total	$7,055,145	$9,358,250	$11,714,247	$12,204,907	$15,339,541	[4]

[1]Royalties and rentals paid under Section 35 of the Mineral Leasing Act of 1920 (calendar year).
[2]On gross yield of mine less specified allowable deductions (fiscal year starting July 1).
[3]Bonus bid payments from geothermal leases sales.
[4]No total given as net proceeds tax not known.

maintenance, and security employees remain. **Nevada Northern Railway Co.**, a subsidiary of Kennecott, asked the state Public Service Commission to cease operations for six months, starting July 1st. Its main business had been hauling copper concentrate to the smelter. (Pocatello, ID, State Journal, 17 Jun 83.)

Reopenings/Other Activities

Tenneco Minerals bought Houston Minerals' Manhattan open-pit mine and mill in northern Nye County in July 1983. The operation, which had been closed since 31 Jan 82, was reopened at year's end. The mine is expected to produce 27,000 oz gold during 1984. (Metals Week, 14 Nov 83.)

Asamera Minerals Inc., a subsidiary of Asamera Inc., began production at the underground Gooseberry gold-silver mine (S25,26,36,T19N,R22E), 24 miles east of Reno in northern Storey County in June. The previous operator, Westcoast Oil and Gas Corp., a subsidiary of Scurry-Rainbow Oil Ltd., suspended mining in 1981; Asamera purchased the mine in 1982. The vein at the Gooseberry Mine has proven and probable reserves of 607,000 tons averaging 0.23 oz gold and 9.71 oz silver/ton; exploratory and development work continues. Current production is from the 800 and 1000-ft levels; the main vertical shaft has been deepened to 1450 feet and lower levels will be developed in 1984. The mill has a capacity of 350 tons/day; throughput was 300 tons/day but is expected to increase to 350 by the end of 1983. Cyanide leaching is used to concentrate the gold and silver. Over 110 persons were employed in August. (Asamera booklet, official opening, 12 Aug 83.)

Gooseberry Mill rod mill, ball mill, flotation cells, and leach tank. *Asamera, Inc. photo.*

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Milchem barite plant at Argenta, Lander County. *Keith Papke photo.*

Baroid barite plant at Dunphy, Eureka County. *Keith Papke photo.*

Anaconda Minerals reopened the mill at its open-pit molybdenum mine north of Tonopah in Nye County, on September 22nd; the mill had been shut down since the first of the year. The mill was operating at 60% of capacity, and stripping of waste rock had continued during the shutdown. The expected duration of the mine is 20 years if operated at full capacity. A quarter of a billion dollars have been invested in the mine and mill. (Tonopah, NV, Tonopah Times Bonanza, 22 Sep 83.)

Nerco Minerals Co., the mining and resource development subsidiary of Pacific Power & Light Co. of Portland, Oregon, acquired 100% ownership in the Candelaria silver mine in Mineral County and a 50% interest in the Alligator Ridge gold and silver mine in White Pine County. Nerco acquired all the outstanding common stock of **Occidental Minerals Corp.**, which held a 92% interest in the Candelaria Mine and a 50% interest in the Alligator Ridge Mine; Nerco also acquired the 8% ownership interests of the limited partners in the Candelaria Mine. (Wallace, ID, Miner, 23 Nov 83). Both mines were producing at year's end. The Candelaria Mine was reopened in February 1983. Plans are to merge the two producing pits, the Lucky Hill and Mount Diablo, into a single pit 400 feet deep, 1200 feet wide, and 4000 feet long. Production is planned at 1.7 million oz silver and 9000 oz gold/year. Some 160 workers are employed (Mining Engineering, Dec 83). Production for 1983 is expected to total 1.5 million oz silver and 8200 oz gold. (Metals Week, 14 Nov 83.) The mine had been closed since June 1982.

United Mining Corp.'s mill at American Flat south of Virginia City in Storey County reportedly was processing 800 tons of gold-silver ore/day at mid-year. The mill feed came from dumps near the mill and from development work in the underground New Savage Mine at Gold Hill. Only limited underground work was under way. (Nevada Mining Association Bulletin, Summer 83.)

Smoky Valley Mining Co. modified plant operations and increased production at its Round Mountain Mine in northern Nye County.

Freeport Gold Co. set production records at its Bell (Jerritt Canyon) Mine in Elko County, which became the largest gold producer in the state.

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Industrial Minerals
by Keith G. Papke

The value of industrial-mineral production in Nevada in 1983 is estimated at $128 million, based on preliminary data collected by the U.S. Bureau of Mines. This can be compared to estimated values of $154 million in 1982 and $196 million in 1981—the all-time record high. Much of the decreased value in 1983, compared to the previous two years, was due to the lesser tonnage and value of barite produced. Although Nevada continues to account for about 85% of the total U.S. output, production of barite continued to decline for the reasons given in the section on exploration of industrial minerals. Statistics collected by the Nevada Division of Mine Inspection show that 1672 persons were employed in 155 industrial-mineral mines or mills in 1983. The largest number of employees and operations were in the sand and gravel business (421 and 80), followed by the barite industry (274 and 20).

The principal industrial-mineral commodities produced in Nevada—in terms of value—were barite, diatomite, cement, and lithium carbonate. Nevada also produced the following: bentonite, sepiolite, and kaolin clays; fluorspar; gem stones; gypsum; lightweight aggregate; limestone, lime, dolomite, and dolomitic lime; magnesite and magnesium oxide; perlite; pyritic soil additive; salt; sand and gravel; silica; and crushed and decorative stone. Borate mined in Death Valley, California, was processed in southern Nye County.

The decline in barite production was accompanied by a sharp decrease in the number of mines reported to be active by the Nevada Division of Mine Inspection; 12 mines were reported to be active in 1983, compared to 26 in 1982. Most of the barite production was attained by **Dresser Industries, Inc.**, **Milchem, Inc.** and **NL Industrials, Inc.** An increased amount of mining was noted in the latter part of 1983 as domestic drilling for oil and gas increased (see figure).

Three companies produced diatomite from Miocene-Pliocene, fresh-water lake deposits, making Nevada the second-largest diatomite producer. **Eagle-Picher Industries, Inc.**, with plants in Pershing and Storey Counties, is the largest producer. The **Nevada Cement Co.** plant at Fernley, the only cement producer in Nevada, continued producing, using limestone mined nearby in Lyon County and clay mined in central Washoe County. **Foote Minerals Co.** at Silver Peak in Esmeralda County produced lithium carbonate by solar evaporation and chemical processing of lithium-rich brines pumped from beneath the Silver Peak dry lake.

Production of sand and gravel, gypsum, and crushed rock—materials used mostly by construction industries—improved markedly over 1982 as building and construction increased in 1983. Although the data is not shown on the statistics concerning mineral production in Nevada, conversion of gypsum to wallboard is an important industry in Nevada. Three wallboard plants are in operation: **Genstar Corp.** and **Pacific Coast Building Products, Inc.** in Clark County and **U.S. Gypsum Co.** in northern Washoe County. Genstar also produces carbonate rocks and limes at three localities in Clark County: limestone and lime at Apex, dolomite at Sloan, and dolomitic lime at Henderson.

C-E Basic's magnesite operation at Gabbs in northwestern Nye County—the only magnesite producer in the United States—continued to operate well below capacity during the year, whereas **Simplot Silica Products** silica plant at Overton in Clark County operated at near capacity. The principal producer of Nevada clays, **Industrial Minerals Ventures, Inc.**, mined and processed bentonite and sepiolite in southern Nye County.

RESERVES, HOST ROCKS, AND AGES OF BULK-MINABLE, PRECIOUS-METAL DEPOSITS IN NEVADA[1]

by H. F. Bonham, Jr.

Deposit	Date production period or announcement	Reserves, estimated or announced and (or) production	Host rock	Mineralization age
Alligator Ridge	1981	14 million tons, 0.12 oz Au Current production 60,000 oz Au/yr	Pilot Shale	Oligocene?
Atlanta	1980	1.1 million tons, 0.08 oz Au, 1.6 oz Ag Production of 88,000 oz Au, 1,710,000 oz Ag through Sept. 1980	Pogonip Group, Ely Springs and Laketown Dolomites, Oligocene silicic tuffs	Miocene?
Aurora	1983	1.5 million tons, 0.129 oz Au	Andesite	10 m.y.
Bell Mt.	1982	1 million tons, 0.055 oz Au, 1.4 oz Ag Possible additional 1 million tons 0.022 oz Au, 1.0 oz Ag Sphinx Zone, 500,000 tons 0.14 oz Au, 3.3 oz Ag	Rhyolitic tuffs, basaltic dikes	Miocene
Borealis	1981	2.1 million tons, 0.08 oz Au, 0.5 oz Ag	Rhyolite flow dome and andesitic volcanic and volcaniclastic rocks	5 m.y.
Blue Star	1974	1.8 million tons, 0.12 oz Au	Lower Paleozoic sandy siltstone and carbonate rocks	37.5 m.y.
Bootstrap	1982	Heap leaching of low-grade mineralization No current published reserve	(upper plate Roberts Mt. Thrust)	?
Boulder Creek (Dee Mine)	1982	2.5 million tons, 0.12 oz Au	(upper plate Roberts Mt. Thrust)	?
Buckhorn	1982	2.5 million tons, 0.082 oz Au, 1.05 oz Ag	Basaltic andesite, sinter, silicified sediments	14.6 m.y.
Candelaria	1980	Estimated >5 million tons, 4 oz Ag 1981 production 1,681,792 oz Ag, 9219 oz Au	Candelaria Fm., serpentinite	Cretaceous
Carlin	1982	1.247 million oz Au, includes current reserves at Blue Star, Bootstrap Production 1965–1979, 3,044,000 oz Au from 12,088,700 tons	Roberts Mt. Fm.	?
Copper Canyon (Battle Mt.)	1978–1982	Tomboy-Minnie deposits 3.9 million tons, 0.09 oz Au, 0.28 oz Ag Fortitude deposit 16 million tons, 0.15 oz Au, 0.57 oz Ag Current production 70,000 oz Au, 1.2 million oz Ag/per year	Battle Fm.	37 m.y.
Cortez	1968–1982	Cortez deposit 3,562,100 tons, 0.279 oz Au (mined) Horse Canyon Zone 3.4 million tons, 0.055 oz Au	Roberts Mt. Fm. Argillite and limestone Wenban limestone	34 m.y.
Fire Creek	1982	350,000 tons, 0.06 oz Au	Basaltic andesite	Miocene
Getchell	1938–1950 1962–1967	Production 788,875 oz Au from 2,113,030 tons, 0.37 oz Au/ton Reserves 3.25 million tons, 0.18 oz Au Possible 10 million tons, 0.16 oz Au	Preble Fm.	90 m.y.
Gold Acres	1942–1982	800,000 tons 0.124 oz Au (mined) 2 million tons, 0.041 oz Au (heap leached)	Roberts Mt. Fm.	94 m.y.
Gold Quarry	1982	25.1 million tons, 0.106 oz Au 150 million tons, 0.036 oz Au	Lower Paleozoic siltstone, carbonates (upper plate, Roberts Mt. Thrust)	?
Gold Strike	1974–1982	>100,000 oz Au	Granodiorite, siltstone, carbonates (upper plate, Roberts Mt. Thrust)	78.4 m.y.
Hasbrouck	1982	Estimated, 5 million tons, 0.06 oz Au, 1.5 oz Ag	Siebert Fm.	16 m.y.

continued

Deposit	Date production period or announcement	Reserves, estimated or announced and (or) production	Host rock	Mineralization age
Hog Ranch	1983	>100,000 oz Au	Rhyolite, explosion breccia and sinter	15–16 m.y.
Hilltop	1983	5.1 million tons, 0.079 oz Au	Valmy Fm.	Tertiary
Ivanhoe	1983	>500,000 oz Au, 0.07–0.1 oz Au	Miocene volcanics and sedimentary rocks	Miocene
Jerritt Canyon (Bell Mine)	1981	12.5 million tons, 0.231 oz Au	Hanson Creek and Roberts Mt. Fms.	?
Maggie Creek (Gold Quarry zone)	1980	>440,000 oz Au	Lower Paleozoic siltstone and carbonates (upper plate Roberts Mt. Thrust)	?
Manhattan	1983	5 million tons, 0.036 oz Au	Lower Paleozoic metamorphics	16 m.y.
Northumberland	1981	17 million tons, 0.045 oz Au	Roberts Mt. Fm., Hanson Creek Fm., and tonalite	84.6 m.y.
Paradise Peak (Goose)	1984	10 million tons, 0.1 oz Au, 3 oz Ag	Tertiary andesitic breccias (and tuff)	Miocene
Pinson	1980	3,245,000 tons, 0.119 oz Au	Comus Fm.?	90 m.y.?
Preble	1982	1.5 million tons, 0.08 oz Au	Preble Fm.	?
Rain	1982	8.3 million tons, 0.083 oz Au 3.4 million tons, 0.147 oz Au	Webb Fm.	?
Rawhide	1984	>6000,000 oz Au	Rhyolite volcanic rocks	Miocene
Relief Canyon	1983	8 million tons 0.04 oz Au	Cane Springs Fm.	?
Rochester	1981	75 million tons, 1.5 oz Ag	Koipato Group	Late Cretaceous
Round Mt.	1977–1982	Original reserves, 12 million tons, 0.055 oz Au, 0.07 oz Ag New reserves, >195 million tons, 0.045 oz Au, 0.08 oz Ag	Rhyolite ignimbrite	25 m.y.
Santa Fe	1982	5.0 million tons, oxide ore, 0.04 oz Au, 0.45 oz Ag, 4.5 million tons sulfide ore, 0.060 oz Au, 0.9 oz Ag	Luning Fm.	Miocene
Standard	1932–1951	884,000 tons, 42,602 oz Au, 102,721 oz Ag	Natchez Pass and Grass Valley Fms.	73 m.y.
Sterling	1980	Estimated ~500,000 tons, 0.25 oz Au	Wood Canyon and Bonanza King Fms.	13.9 m.y.
Taylor	1980	10 million tons, 3 oz Ag	Guilmette and Joana Limestones, rhyolite dikes	Eocene?
Tonkin Springs	1983	>2.5 million tons, 0.09 oz Au	Vinini Fm.	?
Windfall		3 million tons, 0.05 oz Au Reserves >3 million tons, 0.03 oz Au	Eldorado Dolomite	Eocene?

[1]Locations of listed deposits are shown on NBMG Open-file Map 81–1. Several small deposits are not listed because of insufficient data.

OIL AND GAS

by Larry J. Garside and
Becky S. Weimer-McMillion

EXPLORATION

During 1983, nine wells totaling 52,885 feet were drilled in the search for oil and gas in Nevada, nearly a 49% decrease from 1982 (see bar graph). The number of Federal oil and gas leases in effect in fiscal year 1983 (see table) decreased by about 25% while the acreage of leases in effect decreased by about 18%. The average depth of wells drilled was 5876 feet, a decrease from 8605 feet in 1982. The drop in drilling generally parallels a 24% decrease in wildcat footage nationwide. A frontier drilling area such as Nevada can expect to see rather rapid fluctuations in exploration with changes in the petroleum industry. Based on early 1984 activity, the 1984 calendar year should have a considerable increase in exploration.

The **Department of Minerals**, created by the 1983 Nevada Legislature, now has jurisdiction over the regulation of oil and gas exploration and development. The regulatory authority was formerly with the Division of Mineral Resources of the Department of Conservation and Natural Resources.

The **U.S. Geological Survey** recently published Circular 902A–P, Petroleum Potential of Wilderness Lands in the Western United States. Section H, by C. A. Sandberg, contains a concise description of methods that can be used to evaluate the Basin and Range province of Nevada. In addition to the evalua-

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NEVADA'S OIL PRODUCTION[1]

Field (discovery data)	1982 year	1982 cumulative	1983 year	1983 cumulative
Eagle Springs (1954)	48,967	3,580,383	71,789	3,652,172
Trap Spring (1976)	495,907	4,693,099	492,752	5,185,851
Currant (1972)[2]	—	635	—	635
Bacon Flat (1981)	37,408	64,740	13,795	78,535
Blackburn (1982)	14,228	14,228	67,600	81,828
Grant Canyon (1983)	—	—	165,189	165,189
	596,510	8,353,085	811,131	9,164,210
			36% increase	

[1]Production (in 42-gal. barrels) as reported by the Nevada Department of Minerals.
[2]The Currant Field produced 635 barrels of oil in 1980 from its single well before it was shut in. The cost of diluting the thick oil to produce it was too high to make production economically feasible.

OIL AND GAS WELLS DRILLED AND COMPLETED DURING 1983

Company	Well	Permit no.	Total depth	County
Humboldt Associates	Ellison No. 1	268	986'	Humboldt
Chevron U.S.A., Inc.	Colorock Quarry No. 1	319	10,030'	Clark
Amoco Production Co.	Blackburn No. 5	334	8,500'	Eureka
Sun Exploration Co.	King Lear Fed. 1-17	347	7,931'	Humboldt
*Amoco Production Co.	Blackburn No. 10	350	7,645'	Eureka
Dixie Valley Ltd. Partnership	Ernst No. 1	351	1,026'	Churchill
*Northwest Exploration Co.	Grant Canyon No. 1	353	4,487'	Nye
*Western Avenue Properties	Munson Ranch No. 14-24	354	3,854'	Nye
Amoco Production Co.	Blackburn No. 12	356	8,426'	Eureka

*Producing well.

tions of wilderness areas, the report briefly describes the State's oil fields, oil and gas seeps, and potential source rocks.

A symposium on the Role of Heat in the Development of Energy and Mineral Resources in the Northern Basin and Range Province was held in May of 1983. Several timely papers on Nevada petroleum were presented at the meeting, which was sponsored by the **Geothermal Resources Council** in cooperation with the **American Association of Petroleum Geologists**. Papers from that meeting are available in Special Report 13 of the Geothermal Resources Council, Davis, CA.

PRODUCTION

Nevada's oil production for the calendar year 1983 was 811,131 barrels (see table, bar graphs), a 36% increase from 1982. Three-quarters of this increase was due to the highly productive Grant Canyon No. 1 well (see section on New Fields Discovered). At year's end Nevada had 32 producing oil wells and six shut-in former producers. Of these 32 producing wells, 30 are in Railroad Valley in northeastern Nye County.

Western Avenue Properties of Stanton, California, on November 17, 1983, formally took over as the operator of the Texaco, Inc. Munson Ranch wells in the Trap Spring oil field of Nye County. Ten wells, of which five are producers, were transferred in the change of ownership. Additionally, Western Avenue Properties completed a sixth producer, the Munson Ranch 14–24 well, in late 1983.

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Pump at the Trap Springs oil field, Nye County. *Laurie Engle photo.*

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Amoco Production Co. completed a second producing oil well in the Blackburn field of Eureka County. This well, the Blackburn No. 10 (S8,T27N,R52E), produced 2470 barrels of 28.7 API gravity oil during September, its first month of production. Amoco had previously drilled three apparent dry holes (Blackburn Nos. 4, 5, and 6) after the field discovery well was completed in April 1982. The rumored reservoir at the Blackburn field is a 100-foot-thick sandstone in the Devonian Nevada Formation.

NEW FIELDS DISCOVERED

Northwest Exploration Co. completed a new producing oil well in September 1983 in the vicinity of the Bacon Flat field in Railroad Valley, Nye County. Northwest had made several previous attempts to offset the single productive well, the Bacon Flat No. 1. The new discovery well, the Grant Canyon No. 1, is 1 mile southeast of the Bacon Flat No. 1. The two producers are separated by a dry hole; the geology of the field area is poorly understood at present. The Grant Canyon well reportedly has a productive potential of 1816 barrels of 25.5 API gravity oil per day with no gas or water. The productive formation is the Middle Devonian Simonson Dolomite. The well was perforated from the top of the Simonson (4342 feet) to 4392 feet and from 4412 to 4426 feet. (Hotline Energy Reports, 24 Sep 83; Petroleum Information, 26 Sep 83). The highest subsurface temperature known in Railroad Valley (309°F at 5350 feet) is reported from the Bacon Flat No. 1 well.

Amoco Production Co. well during drilling in the Blackburn field in 1982. *Harold Bonham photo.*

FEDERAL OIL AND GAS LEASES IN EFFECT BY COUNTY[1]

COUNTY	NUMBER OF LEASES						ACREAGE					
	Noncompetitive		Competitive		Simultaneous drawing[2]		Noncompetitive		Competitive		Simultaneous drawing[2]	
	FY82	FY83	FY82	FY83	FY82	FY83	FY82	FY83	FY82	FY83	FY82	FY83
Carson City	0	0	0	0	0	0	0	0	0	0	0	0
Churchill	460	247	0	0	4	12	976,109	498,508	0	0	6,378	25,433
Clark	1,472	1,089	0	0	2	25	2,781,326	1,893,281	0	0	7,989	58,231
Elko	1,849	1,453	0	0	10	53	4,822,687	3,354,410	0	0	21,986	142,413
Esmeralda	7	6	0	0	2	1	8,263	22,828	0	0	1,160	2,560
Eureka	688	632	0	0	13	9	1,338,098	1,143,792	0	0	57,835	42,555
Humboldt	295	191	0	0	0	1	1,299,211	606,449	0	0	0	640
Lander	305	234	0	0	0	7	695,803	503,857	0	0	0	23,078
Lincoln	1,661	1,162	0	0	1	23	3,991,842	2,692,688	0	0	1,281	115,123
Lyon	7	0	0	0	0	0	12,353	0	0	0	0	0
Mineral	12	6	0	0	1	0	14,991	6,020	0	0	1,400	0
Nye	2,138	1,630	2	2	14	48	2,891,671	2,648,280	400	400	22,648	60,204
Pershing	155	107	0	0	0	6	458,024	290,896	0	0	0	39,899
Washoe	95	9	0	0	0	0	586,765	63,760	0	0	0	0
White Pine	1,989	1,597	0	0	19	101	363,499	2,956,951	0	0	60,862	257,925
Total	11,133	8,363	2	2	66	286	20,240,642	16,681,720	400	400	181,539	768,061
	24.9% decrease				333% increase		17.5% decrease				323% increase	

[1]From the U.S. Bureau of Land Management (FY = fiscal year, 1 Oct to 30 Sep).

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Trans-Pacific Geothermal, Inc. & GRI Exploration Corp. geothermal well Dixie Belle No. 1, Dixie Valley, Churchill Co. *Trans-Pacific Geothermal, Inc. photo.*

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GEOTHERMAL ENERGY
by Larry J. Garside

EXPLORATION

Geothermal resource exploration in Nevada was down again in 1983; the total footage of the two large-diameter wells drilled was over 18,000 feet (the exact depth remains confidential in early 1984). This reduction probably results from continued low fossil-fuel prices and decisions by several major energy companies to reduce or end their non-petroleum exploration expenditures. Agreements with utilities for the purchase of geothermally generated electricity could increase interest next year, but actual production of electricity would be a more effective incentive for further drilling. Many of the State's high-temperature resources probably have been discovered; future drilling will depend, in part, on the pace of field development. The trend to small (10–15 megawatt) plants or wellhead generators in remote, developing fields will probably extend to Nevada in the next 2–3 years.

Amax Exploration Co. continued its exploration efforts in the Alum Unit in southern Big Smoky Valley by drilling three deep (~2000 ft) temperature-gradient wells.

On June 3, 1983, **Yankee Petroleum Ltd.** of Tulsa and **Caithness Geothermal** of New York City acquired the 50% working interest of Gulf Oil Corp. in geothermal leases at Steamboat Springs. Yankee and Caithness each have a 25% interest in the 4800-acre lease and Phillips Petroleum has the remaining 50% interest. (The Northern Miner, 21 Jul 83.) Caithness President Tony Bingham reported that their decision was based on results from an exploratory well drilled by Phillips which "brought in clean water at a temperature of 420°F". (EG&G Idaho Regional Geothermal Progress Monitor, Aug 83.)

Geothermal Resources International (GRI) drilled four temperature-gradient wells in the northern part of Dixie Valley in early 1983. The well depths range from 1000 to 2000 ft.

LARGE-DIAMETER GEOTHERMAL WELLS DRILLED IN NEVADA IN 1983

Company name	Well name	Depth	Location	County
Trans-Pacific Geothermal, Inc.	Dixie Belle No. 1 (Federal 27–33)	+9000'	S33,T25N,R37E	Churchill
Trans-Pacific Geothermal, Inc.	Dixie Belle No. 2 (Federal 45–33)	+9000'	S33,T25N,R37E	Churchill

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FEDERAL GEOTHERMAL LEASES IN EFFECT BY COUNTY[1]

COUNTY	NUMBER OF LEASES				ACREAGE			
	Noncompetitive		Competitive		Noncompetitive		Competitive	
	FY82	FY83	FY82	FY83	FY82	FY83	FY82	FY83
Carson City	0	0	0	0	0	0	0	0
Churchill	175	137	37	33	278,191	214,126	66,521	57,116
Clark	0	0	0	0	0	0	0	0
Douglas	0	0	0	0	0	0	0	0
Elko	26	22	4	0	38,032	26,314	5,143	0
Esmeralda	41	40	1	0	76,907	73,259	2,547	0
Eureka	11	2	3	3	8,850	1,840	6,689	6,689
Humboldt	98	56	7	7	175,897	105,872	13,512	13,512
Lander	64	57	4	3	88,889	73,195	4,499	3,859
Lincoln	0	0	0	0	0	0	0	0
Lyon	7	2	4	3	5,287	2,720	4,462	3,168
Mineral	21	5	0	0	36,289	8,239	0	0
Nye	52	52	4	3	76,513	85,742	7,395	6,083
Pershing	174	117	15	9	296,123	203,852	30,127	15,480
Storey	1	0	0	0	591	0	0	0
Washoe	18	9	11	7	16,947	10,023	16,738	11,527
White Pine	42	14	0	0	97,309	32,117	0	0
Total	730	513	90	68	1,195,825	837,299	157,633	117,434
	29.7% decrease		24.4% decrease		30.0% decrease		25.5% decrease	

[1]Data from the U.S. Bureau of Land Management (FY = fiscal year, 1 Oct to 30 Sep).

DEVELOPMENT

In December, 1983, **Sierra Pacific Power Co.** announced that it had signed agreements with three companies to purchase geothermally generated electricity. The generating plants are to be constructed by the individual companies, at no cost to Sierra Pacific. Tentatively, power generation is scheduled to begin within 2–3 years and would be Nevada's first commercial geothermal electric power production.

The three plants are to be located at Steamboat Springs, 9 miles south of Reno; Desert Peak, 65 miles northeast of Reno; and Big Smoky Valley in central Nevada. **Geothermal Development Associates** of Reno has a 10-year contract to sell a maximum of 5 megawatts of electricity from Steamboat Springs. The plant is expected to be completed by June 1985. **Phillips Petroleum Co.** has a 10-year contract to sell 9 megawatts; the plant is expected to be finished in 2–3 years. **National Energy Associates/Sequoia Thermal of San Francisco** has a 33-year contract to supply 10 megawatts, with delivery scheduled for late 1985 or early 1986. (Reno, NV, Gazette-Journal, 17 Dec 83.)

The **U.S. Navy** signed a 5-year agreement in July 1983 with **General Intertech, Inc.**, a San Diego company, to supply 75 megawatts of electricity to the Fallon Naval Air Station from geothermal sources within the station's boundaries, (Reno, NV, Gazette-Journal, 17 Dec 83.)

The **Desert Peak geothermal field** is described in a bulletin issued by the Nevada Bureau of Mines and Geology. NBMG Bulletin 97 describes the geology and methods used in the discovery of the important geothermal resource.

Chevron Resources, Inc. completed a two-stage acid treatment of the Rossi 21–19 well at Beowawe in August. The well stimulation was part of a U.S. Department of Energy cost-shared program. The well treatment, which was confined to the slotted liner interval below 4369 feet, was designed to bring the well up to commercial productivity and remove drilling-mud damage from natural fractures. Following the treatment, injectivity was increased 2.3-fold, but the well remained commercially unproductive, with low temperatures of about 240°F at the wellhead. (EG&G Idaho Regional Geothermal Progress Monitor, Oct 83.)

A new electric power line, reportedly in the planning stage, would connect the Dixie Valley geothermal area with Bishop, California. Sponsors of the plan are **Sundeco** and **Trans-Pacific Geothermal**, owners of geothermal wells and leases in Dixie Valley. The 200-mile line would cost as much as $25 million and could contribute up to 100 megawatts of additional power available to the grid. (Geothermal Report, 1 Dec 83.)

The 1983 session of the **Nevada Legislature** passed legislation allowing geothermal developers to export larger amounts of electrical energy from Nevada. In the past, producers of electricity from geothermal resources were required to make 50% of their production capacity available to utilities located within the state or to permit those Nevada utilities to recapture up to 50% of production from out-of-state utilities that had contracted to purchase the electricity from the geothermal producers.

Geothermal developers and Nevada Mining Association members testified that the restriction has discouraged investment towards the huge capital outlays needed to establish a geothermal electrical utility in Nevada. They said Nevada-based utilities may not be able to purchase their half of the shares. Moreover, prospective out-of-state purchasers of geothermally generated electricity may find it un-

economical to contract for the energy if they are not guaranteed 100% of production.

The legislation, A.B. 592, now reads:

> "In case of geothermal projects, the construction permit [from the state] may be conditioned only on a prior offering of the capacity of the project to the public utility in this state which primarily serves retail customers in the service area nearest to the proposed project; and if the offer is declined, the applicant is free to export the capacity of the project without any obligation to re-offer that capacity to any public utility in this state."

The legislation was opposed by representatives of Nevada electrical utilities. (Geothermal Hot Line, Dec 83.)

A seminar on the design and completion of small, direct-use geothermal systems was sponsored in January 1983 by the **Nevada Department of Energy**. The attendees, including local well drillers, homeowners, consulting firms, etc., heard talks concerning improved methods of well drilling and heat extraction.

The **Geothermal Resources Council** held a conference in Reno in May 1983 on the role of heat in the development of energy and mineral resources in the northern Basin and Range province. The well-attended meetings included talks on Nevada's geothermal resources and field trips to several geothermal areas. The papers from this meeting were published as a Geothermal Resources Council Special Report.

Sierra Geothermal, Inc. has designed a distribution system that could supply geothermal water for space heating to as many as 400 homes in the Moana area of southwest Reno. A 653-foot deep production well was drilled in 1980, and an injection well was completed in 1983. The production well is capable of yielding 150 gallons per minute of 215°F water. Pipes to distribute the geothermal water will be laid throughout the subdivision, and homeowners may choose to retrofit their home heating systems to utilize the geothermal fluid. Additional wells will be drilled as needed. The wells are located near the Warren Estates, another geothermally heated subdivision (Geothermal Hot Line, Dec 83).

Pilot projects to grow giant freshwater prawns in Nevada hot-spring waters are underway at **Wabuska Hot Springs**, near Duckwater on the Duckwater Indian Reservation 60 miles southwest of Ely and at **Hobo Hot Springs** 8 miles south of Carson City. The prawns do well in water temperatures of 77°–86°F and are raised commercially in tropical climates and in Israel in geothermal- and solar-heated ponds (Reno, NV, Gazette-Journal, 1 Jan 84).

The town of **Gerlach** is attempting to raise $15,000 to develop a hot-springs spa area at Great Boiling Spring, which was closed by the landowner because of legal liability questions and other problems. Over $7000 were raised by mid-year (Reno, NV, Nevada State Journal, 31 Jul 83).

Shallow wells drilled for a district heating system in **Caliente** are reported to have a yield in excess of that necessary for the planned system (EG&G Idaho Regional Progress Monitor, Sep 83).

The **Department of Minerals**, created by the 1983 Nevada Legislature, will regulate the exploration for and development of geothermal resources in the State. The new department will be responsible for issuing permits to drill geothermal wells. This function was transferred from the Department of Conservation and Natural Resources; for any consumptive use a permit from the State Water Engineer will also be required (Nevada Mining Association Bulletin, Jul 83). A subcommittee of the Commission of Mineral Resources, which oversees the department, has begun to write comprehensive geothermal drilling regulations.

The **Elko Heat Co.** extended its geothermal hot water service to the Stockman's Hotel/Casino and plans to include several other customers, including the Pioneer Hotel/Casino, First Interstate Bank, and the city sewage plant. On September 19, 1983, the Nevada Public Service Commission approved the Elko Heat Co. as a public utility (EG&G Idaho Regional Geothermal Progress Monitor; Mar, Aug, and Sep 83). The Elko General Hospital has decided to negotiate with the Elko Heat Co. concerning the possibility of drilling a geothermal well for the hospital and adjacent Elko High School. Elko Heat Co. has geothermal drilling permits that would probably preclude the hospital from drilling without an agreement with the company (Reno, NV, Nevada State Journal, 25 Aug 83).

Drilling for gold and silver at Gold Hill. *Trent Saviers photo.*

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DIRECTORY OF NEVADA MINE OPERATIONS ACTIVE DURING 1983
(excluding sand and gravel)

by Richard B. Jones

Compiled in part from information supplied by the staff of the Division of Mine Inspection, Department of Industrial Relations. UG = underground mine; OP = open-pit mine; OS = other surface; ML = mill; JV = joint venture. The primary mineral commodity produced, the method of processing, and the average number of workers employed during the year are listed to the right of each listing.

CARSON CITY

Heritage Mining Co. — gold & silver
Oristimba Placer (OP) — 3
S14,T15N,R20E
Ray Conner, Owner
No. 4 Kimberly Circle, Carson City, NV 89701

Savage Construction Co. — volcanic cinder
Cinderlite Aggregate Pit (OS,ML) — 2
S21,T16N,R20E
Kent DeForest, Pit Supervisor
2689 North Carson Street, Carson City, NV 89701

CHURCHILL COUNTY

Anchor Mine, Inc. — gold & silver
Anchor Cox Canyon Mill (ML) — (heap leach)
S18,T21N,R33E — 2
Wayne Smith, Operations Manager
P.O. Box 1443, Fallon, NV 89406

Armstrong, Edwin G. — gold & silver
Rainbow Placer Mine (OP) — 4
S12,T15N,R34E
Edwin G. Armstrong, Owner
1787 Roseman Drive, Fallon, NV 89406

Art Wilson Co. — magnetite
Iron Mine (OP) — (iron ore)
S16,T24N,R34E — 2
Art Wilson, Owner
P.O. Box 1160, Carson City, NV 89701

Belmont Resources, Inc. — gold & silver
Wonder Mine (OP) — (heap leach)
S4,9,T18N,R35E — 9
Tom Nimsic, Project Manager
468 South Maine Street, Fallon, NV 89406

Bernice Milling Co. — antimony
Vandenburg Group (UG) — 2
S24,T22N,R37E
Howard Turley, Owner
1221 Settlement Road, Dixie Valley, Fallon, NV 89406

Chemical & Petroleum Corp. of America — bentonite
Salt Wells Bentonite Mill (OP) — 4
S19,24,25,26,30,31,T18N,R30,31E
John Torok, President
4635 Alpha Avenue, Reno, NV 89506

Cyprus Mines Corp. — diatomite
Section 17 Mine (OP) — 3
S17,T19N,R26E
Thomas Landels, Plant Manager
P.O. Box 455, Fernley, NV 89408

Desert Refining, Inc. — gold & silver
Tungsten Mountain Mill (OP,ML) — (crushing)
S8,T21N,R38E — 6
Lloyd Mear, President
3600 Casa Grande, Las Vegas, NV 89102

Dixie Exploration — gold
Dixie Comstock Mine (OP,ML) — (cyanidation)
S14,T23N,R35E — 1
E. L. Foster, Partner
444 South 400 East, St. George, UT 84770

Eager Beaver Mines — antimony & gold
Great Western Mine (UG,ML) — 2
S3,T22N,R43E
John Ala, President
P.O. Box 787, Wells, NV 89835

Fisk & Robertson Mining — gold
Gold Hill Mine (OP,ML) — (heap leach)
S6,T22N,R34E — 3
Richard Fisk, Owner
3995 Alcorn Road, Fallon, NV 89406

Huck Salt Co. — salt
Huck Salt Plant (OP,ML) — (solar evaporation)
S12,T16N,R31E — 3
Elmer & John Huckaby, Partners
895 Harrigan Road, Fallon, NV 89406

Lombardo Turquoise Milling & Mining Co., Inc. — turquoise
Shoshone Mine (UG) — 2
S21,T21N,R40E
Allan E. Lombardo, President
1300 East Main Street, Austin, NV 89310

Red Star Gold, Inc. — gold
Red Star Gold Mine (OP) — 3
S33,T16N,R35E
Jack Caramilla, General Manager
100 Vassar Street, Reno, NV 89520

Standard Slag Co. — barite
Fallon Mill (ML) — (flotation)
S27,T19N,R28E — 2
Red McDougal, Plant Supervisor
P.O. Box 10477, Reno, NV 89510

Stoney Canyon Mines — gold & silver
Tungsten Mountain Mill & Stoney Canyon Mine (OP,ML) — 3
S7,8,9,16,17,T21N,R38E
Dale Farr, President
P.O. Box 822, Fallon, NV 89406

Wheeler, Jess — gold & silver
Shamrock Mine (OP) — 1
S18,T16N,R35E

Wheeler Mill (ML) — gold
S28,T19N,R28E — (gravity concentration)
Jess Wheeler, Owner — 1
P.O. Box 218, Fallon, NV 89406

Young, John — tungsten
John Young Mill (ML) — (gravity concentration)
S28,T19N,R28E — 1
John Young, Owner
4740 Alcorn Road, Fallon, NV 89406

CLARK COUNTY

Baron Mining Corp. — gold & silver
Baron Mine (OP,ML) — (heap leach)
S25,T20S,R62E — 8
Keith D. Brecheisen, President
P.O. Box 248, Jean, NV 89019

Bounsall, Eddie — gold & silver
Treasure Hawk Mine & Mill (OP,ML) — (gravity
S34,T19S,R70E — concentration, cyanidation)
Eddie Bounsall, Owner — 2
P.O. Box 357, Logandale, NV 89021

Brook, Inc. — gold & silver
Eldorado/Techatticup Mine & Mill (ML) — (cyanidation)
S2,T26S,R64E — 6
John D. Manson, General Manager
1307 Darlene Way, No. A5, Boulder City, NV 89005

Kranjac Mining — gold & silver
Techatticup Mine (ML) — 8
Contractor for Brook, Inc.
Nick Kranjac, Superintendent
P.O. Box 1002, Boulder City, NV 89005

Clark County Mining Corp. — gold
Nancy Mine (OP) — 2
S27,T23S,R60E
John T. Faulkner, President
5010 Indian River Drive, Las Vegas, NV 89103

Continental Co. — gold & silver
Continental Heap Leach — (heap leach)
S34,T28S,R63E — 15
Virgil Barker, General Superintendent
P.O. Box 162, Searchlight, NV 89046

District 32 Corp. — gold & silver
M & M Santa Anna Mine (OP) — (heap leach)
S22,T28S,R61E — 5
Kirby P. Hunt, President
P.O. Box 177, Searchlight, NV 89046

DU-ZI Partners, Ltd. — gold & silver
Rand Mine — (heap leach)
S8,T26S,R64E — 2
Nick Kranjac, General Partner
557 California Street, Suite 134, Boulder City, NV 89005

Genstar Building Materials Co. — gypsum
Division, Genstar Quarry & Mill (OP) — (crushing,
S32,T21S,R59E — screening, calcining)
Fraser Gillan, Manager — 18
Star Route 89031, Box 2900, Las Vegas, NV 89124

Genstar Cement & Lime Co. — limestone
Apex Plant & Quarry (OP,ML) — (calcining)
S26,T18S,R63E — 34
Glenn House, Manager
P.O. Box 127, Henderson, NV 89015

Simplot Silica Products — silica sand
No. 3 Pit, Mill & Dryer (OS,ML) — (screening, drying)
S30,T16S,R68E — 50
W. J. Sandoval, Manager
P.O. Box 308, Overton, NV 89040

T.N.T. Development — gold
Southern Nevada & Victory Mine (UG) — 4
S27,T28S,R63E
Robert L. Topliss, President
P.O. Box 223, Searchlight, NV 89046

Dolomite Plant (ML) — lime
S18,T22S,R63E — (calcining)
Art Reber, Manager — 49
P.O. Box 127, Henderson, NV 89015

Sloan Quarry & Mill (OP) — limestone
S13,T23S,R60E — (crushing, screening)
Earl Gillian, Superintendent — 14
Star Route, Box 2300, Las Vegas, NV 89031

Harrison, P. G., & James Harris — gold & silver
Mockingbird Mill (ML) — (gravity concentration)
S11,T26S,R64E — 2
P. G. Harrison & James Harris, Owners
P.O. Box 9-B, Nelson, NV 89046

Hydro-Chem, Inc. — gold & silver
Chaquita Mine & Mill (OP,ML) — (heap leach)
S24,T24S,R57E — 3
Corey Eddington, Vice President
5424 Topaz, Las Vegas, NV 89120

Jetco Enterprises, Inc. — gold & silver
Jetco Mill (ML) — (tank leach)
S21,T30S,R65E — 2
James E. Tinnell, President
3121 So. Maryland Pkwy., Bldg. 2, Suite 200,
Las Vegas, NV 89109

Nevada Oil & Mineral Corp. — gold & silver
Quartette Mine (OP,ML) — (heap leach)
S4,T29S,R63E — 3
John Roeder, President
P.O. Box 121, Jordan Valley, OR 97910

Pabco Gypsum — gypsum
Las Vegas Gypsum Plant (OP,ML) — (calcining)
S5,T20S,R64E — 28
Tom Pinkston, Plant Manager
P.O. Box 43327, Las Vegas, NV 89104

Quadra Mining & Development — gold & silver
Oro DeMojave Mine & Mill (UG,ML) — 8
S33,T28S,R64E
Duane Ritter, President
2008 Poplar, Las Vegas, NV 89101

Sierra Mineral Management, Inc. — gold & silver
Virgin River Project (OP,ML) — (heap leach)
S25,T15S,R68E — 4
John Ethridge, Foreman
4801 Spencer, Suite 246, Las Vegas, NV 89109

Silver Bars, Inc. — silver
Valley View Project (OP,ML) — (heap leach)
S24,T25S,R58E — 4
Robert D'Anella, Project Manager
P.O. Box 2, Jean, NV 89109

Whiting Bros. Construction Co. stone
Whiting Bros. Mill (ML) (crushing, screening)
S11,T21S,R62E 3
Mark & Phil Whiting, Owners
6418 East Vegas Valley Drive, Las Vegas, NV 89122

DOUGLAS COUNTY

High Technology Recovery Systems, Inc. silver & gold
Veta Grande Mine & Mill (OP,ML) (gravity concentration, flotation)
S10,T11N,R21E 14
Clarence Sikkenga, Mine Manager
Route 2, Box 114, Gardnerville, NV 89410

Pacific Silver Corp. gold & copper
Buckskin Operations (UG) (development)
S13,T13N,R23E 18
K. L. Stoker, President
P.O. Box 486, Yerington, NV 89447

ELKO COUNTY

Bourne Creek Mining Co. gold & silver
Bourne Creek Mine (OP,ML) (gravity concentration)
S15,16,21,22,T46N,R58E 2
Clayton Stock, President
c/o John Williams, Riverside Drive, Jarbidge, NV 89826

Carlin Gold Mining Co. gold
Bootstrap Plant (ML) (heap leach)
S8,T36N,R50E 3
J. D. McBeth, Resident Manager
P.O. Box 979, Carlin, NV 89822

Chromalloy Mining & Minerals barite
Dry Creek Mill (ML) (gravity concentration)
S26,T43N,R63E 5
Bob Walsh, Manager
P.O. Box 429, Elko, NV 89801

Dee Gold Mining Co. gold
Dee Gold Mine (OP,ML) 16
S6,T37N,R50E
Art Schwandt, General Manager
P.O. Box 1193, Elko, NV 89801

Freeport Gold Co. gold
Freeport Gold Mine (OP) 96
S34,35,T41N,R53E
Freeport Gold Mill (ML) (cyanidation)
S33,T41N,R54E 141
Joseph Farrell, President
P.O. Box 1132, Elko, NV 89801
E. R. Fegert, Inc. 35
Contractor, Freeport Gold Mine
Chuck Rogers, Project Superintendent
P.O. Box 2103, Elko, NV 89801

GeoWest Services, Inc. barite
Stormy Creek Mine & Plant (OP,ML) (screening, gravity concentration)
S22,T42N,R61E 4
Jeff Long, General Manager
P.O. Box 3228, Sparks, NV 89432

Heater, Phil gold & silver
Big 4 Mine & Mill (OP,ML) (cyanidation)
S25,T44N,R52E 2
Phil Heater, Owner
P.O. Box 187, Mountain City, NV 89831

Hecla Mining Co. copper
Victoria Mine & Mill (UG) (sublevel caving)
S5,T28N,R66E (ML) (flotation)
Frank Cotnone, Project Foreman 4
P.O. Box 65, Wendover, UT 89083

ESMERALDA COUNTY

Blackhawk Mines Corp. gold & silver
Goldfield Tailings Project (OP,ML) (heap leach)
S26,T2S,R42E 16
Russell E. Manley, President
P.O. Box 469, Tonopah, NV 89049

Combined Metals & Recovery Systems gold & silver
Argentum Mill (ML) (cyanidation)
S5,T3N,R36E 6
L. T. Atkinson, President
P.O. Box 105, Dyer, NV 89010

Ebco Enterprises gold & silver
Falcon Exploration Mine & Mill (OP,ML) (crushing, screening; heap leach)
S26,T2N,R42E 35
Stephen Eakle, General Manager
P.O. Box 847, Tonopah, NV 89049
Tonopah Divide Mine (OP) gold & silver
S26,T2N,R42E 10
Everett Berg, Owner
P.O. Box 847, Tonopah, NV 89049

Gillium, R. J. gold & silver
Gillium Mine & Mill (OP,ML) (gravity concentration)
S5,T6S,R40E 2
R. J. Gillium, Owner
General Delivery, Goldfield, NV 89013

Grefco, Inc. diatomite
Dicalite Div. (OP,ML) (air separation)
S20,T2N,R34E 22
Robert Mannon, Plant Manager
P.O. Box 288, Mina, NV 89422

KEMCO gold & silver
Buster Mine & Mill (OP,ML) (cyanidation)
S25,T5S,R39E 3
Fernand Lemieux, President
P.O. Box 464, Goldfield, NV 89013

Mammoth Canyon Resources gold & silver
Mammoth Canyon Mine & Mill (OP,ML) (gravity concentration)
S5,T7S,R40E 6
Jim Back & Ernest Hathaway, Owners
General Delivery, Dyer, NV 89010

Mine Tek gold & silver
Cornucopia (OP,ML) (heap leach)
S19,T42N,R51E 10
Scott Jolcover, General Manager
P.O. Box 237, Dayton, NV 89403

Normal Mining Co. silver & gold
Protection Leach Plant (heap leach)
S10,T45N,R53E 5
Vern Moulton, Owner
P.O. Box 77, Mountain City, NV 89831

R & A Minerals tungsten
Battle Creek Mine (UG,ML) (gravity concentration)
S1,T30N,R58E 4
Paul Davis, Operations Manager
Ruby Valley, NV 89833

San Rafael Exploration Co. gold & silver
Prunty Mine (UG) 3
S12,T45N,R56E
Louis Koncher, Lessee
P.O. Box 101, Elko, NV 89801

Tom Norris, Inc. barite
Rossi Mine (OP,ML) (gravity concentration, crushing)
S15,T37N,R49E 14
Tom Norris, Owner
P.O. Box 231, Battle Mountain, NV 89820

Tuscarora Associates silver
Tuscarora Associates Plant (ML) (heap leach)
S3,34,T39,40N,R51E 2
Earl Craig, Manager
P.O. Box 44, Tuscarora, NV 89834

Matovich, Bill & Ray Dennison gold & silver
Penny Mine (OP,ML) (gravity concentration)
S29,T7S,R41E 2
Bill Matovich, Ray Dennison, and Raymond Kerr, Partners
P.O. Box 30J, Star Route, Gold Point, NV 89013

Mineco, Inc., dba Lone Mountain Ltd. turquoise
Blue Jay Mine 2
S18,T1N,R41E
Gene Waddell, Owner
P.O. Box 1026, Tonopah, NV 89049

Mine Management, Inc. gold
Mohawk No. 2 Mine (UG) (development)
S1,T3S,R42E 2
Cooper Hayden, President
General Delivery, Goldfield, NV 89013

Mineral Drill, Inc. gold & silver
Oriental Wash Mine (OP) 2
S28,T7S,R42E
Dr. Ralph E. Pray, Consulting Engineer
P.O. Box 30K, Gold Point, NV 89013

Pentarcos gold & silver
Tule Canyon Mine (OP) 4
S3,T7S,R40E
Mason Steele, Engineer
P.O. Box 556, Goldfield, NV 89013

Potosi Mining Co. silver & gold
Indian Queen Mine (UG) 9
S5,T1S,R33E
Paul Spor, General Manager
512 North 3rd, No. 2, Bishop, CA 93514

Sunshine Mining Co. gold & silver
16 to 1 Mine (UG,ML) (tank leach)
S32,T2S,R38E 78
Allan Young, Project Manager
P.O. Box 97, Silver Peak, NV 89047

Trafalgar Mines Partnership gold
Goldfield Mine & Mill (OP, ML) (heap leach)
S35,T2S,R42E 28
James Bond, Operations Manager
P.O. Box 753, Goldfield, NV 89013

Tseng Mining-RRM silver & gold
Weepah Mine (OP) 10
S20,T1N,R39,40E
James D. Youngblood, General Manager
P.O. Box 437, Mina, NV 89422

TW-MNR Associates silver
Tonopah West (Miller's Mill) (ML) (tank leach)
S7,T3N,R31E 34
David Hamilton, Project Manager
P.O. Box 404, Tonopah, NV 89049

C.T.R. Construction Co. (OP) 7
Contractor, Tonopah West Mine
Dan Howerton, Owner
P.O. Box 355, Tonopah, NV 89049

Lurgi Corp. (ML) (construction)
Contractor, Tonopah West Mill 3
Brian Hayden, Manager
P.O. Box 3069, Tonopah, NV 89049

Veta Grande Companies, Inc. silver
Mohawk Mine (UG) 1
S26,T2S,R37E
Dan Callaghan, Superintendent
P.O. Box 2707, Silver Peak, NV 89047

Whisenant, Parthemer & James, *et.al.* gold & silver
Pinion Joint Venture (OP) 2
S26,T5S,R39E
Ron & Gary James, Owners
P.O. Box 385, Goldfield, NV 89013

Wolff Milling & Mining gold & silver
Cook Mill (ML) (gravity concentration)
S1,T7S,R41E 10
Vern Cook, Owner
Star Route, Box 30G, Gold Point, NV 89013

EUREKA COUNTY

Carlin Gold Mining Co. gold
Blue Star Mine (OP) 2
S4,T35N,R50E

Carlin Pit (OP) 105
S15,T35N,R50E

Gold Quarry Mine & (heap leach)
Maggie Creek Mine & Plant (OP,ML) 51
S29,35,T34N,R51E

Carlin Mill (ML) (cyanidation)
S15,T35N,R50E 92
J. D. McBeth, Resident Manager
P.O. Box 979, Carlin, NV 89822

Contractors, Carlin Gold Mining Co. 10
David Hayes Services
Carlin Gold Mine (ML)
Wayne Worthton, Superintendent
P.O. Box 364, Elko, NV 89801

Jasper Construction 30
Gold Strike Mine (OP)
Willis D. McIntosh, Project Manager
10,000 Hwy 55 West, Suite 490, Plymouth, MN 55441

The Industrial Company of Steamboat Springs 26
Carlin Mill (ML)
Gary McKenzie, Project Manager
P.O. Box 386, Carlin, NV 89822

Transystems, Inc. 9
Maggie Creek Mine (OP)
Mike Hughes, Term Manager
P.O. Box 547, Carlin, NV 89822

Cominco American gold & silver
Buckhorn Mine (OP,ML) (heap leach)
S30,31,T27N,R49E 20
Art Schweizer, General Manager
P.O. Box 976, Carlin, NV 89822

Cortez Gold Mines gold
Horse Canyon Mine (OP) 106
S3,T27N,R48E
A. L. Walsh, Mine Manager
Cortez, NV 89821

Nevada Barth Corp. magnetite (iron ore)
Nevada Barth Mine & Mill (OP,ML) (crushing,
S7,8,T31N,R51E screening)
Charles Rowe, Manager 3
P.O. Box 425, Carlin, NV 89822

NL Industries, Inc., Baroid Div. barite
Dunphy Mill (ML) (gravity concentration)
S23,T33N,R48E 17
Jim Kaiser, Superintendent
P.O. Box 414, Battle Mountain, NV 89820

TRV Exploration (Nevada), Inc. silver
Geddes Mine (heap leach)
S28,T18N,R53E 5
Robert G. Pate, Mine Manager
P.O. Box 442, Eureka, NV 89316

Universal Gas (Montana), Inc. gold
Bullion Monarch Mine & Mill (OP,ML) (cyanidation)
S10,T35N,R50E 20
Joseph Mercier, President
1070 Silver Street, Elko, NV 89801

Western States Minerals Corp. gold
Gold Strike Mine & Mill (OP,ML) (heap leach)
S30,T36N,R50E 11
Larry Simpson, Mine Foreman
P.O. Box 29, Elko, NV 89801

Windfall Venture gold
Windfall Mine (OP) (heap leach)
S2,T18N,R53E 18
Marvin Rasmussen, Mine Manager
P.O. Box 326, Eureka, NV 89316

HUMBOLDT COUNTY

American Mine Services molybdenum
Contractor, American Copper 3
& Nickel Co.—Ashdown Mine (UG)
S14,T45N,R29E
Martin Marinow, Project Manager
General Delivery, Denio, NV 89404

Artillery Resources gold
B & M Placer Mine & Mill (OP,ML) (gravity
S7,T32N,R44E concentration)
Cornelius O'Leary, Manager 7
1055 West Georgia Street, Suite 2020,
Vancouver, B.C. Canada

Colo Eagle Mining Co. gold
Amended Crofoot (OP) 3
S3,4,T35N,R30E
William Ridgeway, President
P.O. Box 2047, Winnemucca, NV 89445

Conoco, Inc. gold
Getchell Project (ML) (cyanidation)
S33,T39N,R42E 6
Robert Cramer, Director of New Projects
555 17th Street, Denver, CO 80202

FRM Minerals, Inc. (exploration drilling)
Getchell Project 4
S29,33,T39N,R42E
Cecil Alvarez, Vice President
P.O. Box 220, Golconda, NV 89414

Watterson Mining (ML) (cyanidation)
Contractor, Getchell Project 12
S33,T39N,R42E
Jack Watterson, Contractor
P.O. Box 372, Green River, UT 84525

Dale Aslett Sand & Gravel, Inc. gold
Dutch Flat Mine (OP,ML) (gravity concentration)
S17,T38N,R40E 5
Dale Aslett, Owner
P.O. Box 105, Jackpot, NV 89805

Dutch Flat Group, Ltd. gold
Dutch Flat Mine (OP,ML) (gravity concentration)
S17,T38N,R40E 7
Joe H. Schaeffer, Partner
P.O. Box 335, Bartlesville, OK 74005

Eddie, Charles opal
Lorrie Lee Mine (OP) 2
S5,T45N,R26E
Charles Eddie, Owner
P.O. Box 1072, Sunland, CA 91040

Furies III Mining Corp. gold
Maryann Placer Mine & Mill (OP,ML) (gravity
S25,T37N,R31E concentration)
Gary Ziebarth, President 6
P.O. Box 2024, Winnemucca, NV 89445

Hewitt, C. George opal
Cecilie Anne Mine (OP) 1
S8,9,T45N,R26E
Kelly Mine (OP) 1
S30,T45N,R26E
C. George Hewitt, Owner
c/o Virgin Valley Ranch, Denio, NV 89404

Hodson, G. Keith opal
Bonanza Opal Mine (OP) 1
S13,T45N,R25E
Rainbow Ridge Mine (OP) 1
S34,T45N,R26E
G. Keith Hodson, Owner
General Delivery, Denio, NV 89404

K.W. Minerals Corp. bentonite
High Hopes Mine (OP) 2
S19,T37N,R36E
K. W. Snyder, Owner
P.O. Box 1007, Winnemucca, NV 89445

McDermitt Mine (Joint Venture) mercury
McDermitt Mine (OP,ML) (flotation, distillation)
S33,T47N,R37E 65
Fran Schultz, Mine Manager
P.O. Box 497, McDermitt, NV 89421

Min-Ad, Inc. limestone
Min-Ad Mill (ML) (crushing, screening)
S24,T36N,R37E 4
Charles J. Evans, Superintendent
4210 Jungo Road, Winnemucca, NV 89445

Little Red's Excavating — limestone
Dun Glen Mine (OP) — 2
S28,T35N,R38E
Gerald Conklin, Contractor—Min-Ad
6990 Grass Valley Road, Winnemucca, NV 89445

Nutritional Additives Corp. — limestone
Sexton Mill (ML) — (crushing, screening)
S20,T36N,R38E — 5
Glen W. Sexton, General Manager
P.O. Box 802, Winnemucca, NV 89445

Pinson Mining Co. — gold
Pinson Mine & Mill (OP,ML) — (cyanidation)
S28,T38N,R42E — 130
H. Dan Harper, General Manager
P.O. Box 192, Winnemucca, NV 89445

Precious Metals Recovery — gold & silver
Cherokee Mine (OP) — 7
S8,T39N,R36E
Kevin Farr, Manager
P.O. Box 551, Winnemucca, NV 89445

Royal Peacock Opal Mine, Inc. — opal
Little Pebble Mine (OP) — 1
S18,T45N,R25E
Royal Peacock No. 2 Opal Mine (OP) — 2
S25,T45N,R25E
Harry Wilson, President
P.O. Box 36, Denio, NV 89404

R.W.M. Associates, Inc. — gold
Golden Amethyst Mine & Mill (OP,ML) — (gravity
S28,T36N,R36E — concentration)
Richard W. Moyle, President — 2
P.O. Box 606, Winnemucca, NV 89445

Silver Coin Mining Co. — silver
Silver Coin Mine (OP) — (heap leach)
S1,T35N,R41E — 3
N. G. Tintle and Steven J. Tintle, Lessees
P.O. Box 133, Golconda, NV 89414

Ten Mile Mining Co. — gold
Ten Mile Mine (UG) — 5
S6,T36N,R37E
Scott S. Schussler, Operations Manager
551 West 2nd Street, Winnemucca, NV 89445

Thompson, Marlon H. — gold
Gold Run Mine (OP) — 3
S28,T34N,R40E
Marlon H. Thompson, Owner/Operator
422 West Haskill, Box 8, Winnemucca, NV 89445

True North, Inc. — gold & silver
Marigold Mine (OP,ML) — (cyanidation)
S18,T33N,R43E — 2
Larie K. Richardson, Mine Manager
26011 Montanoso Drive, Mission Viejo, CA 92691

Watterson Mining Co. — silver
Watterson Mine (UG) — (heap leach)
S26,T35N,R40E — 2
Jack and William Watterson, Lessors
601 Bridge Street, No. 209, Winnemucca, NV 89445

Westbar Mining Co. — barite
Golconda Barite Mill (ML) — (gravity concentration)
S28,T36N,R40E — 5
Horton Mine (OP) — 5
S36,T36N,R40E
James D. Edgar, President
P.O. Box 1210, Battle Mountain, NV 89820

LANDER COUNTY

A. W. Arnold & Associates — barite
Rimrock Mill (ML) — (gravity concentration)
S26,T33N,R45E — 10
Richard Clark, Operations Manager
606 Commercial Street, Elko, NV 89801

Bauer Metals, Inc. — silver & gold
Bauer Mill Site (OP,ML) — (heap leach)
S23,T19N,R43E — 5
Immanuel Lichtenstein, President
P.O. Box 148, Austin, NV 89310

Cortez Gold Mines — gold
Cortez Leach Operation (OP,ML) — (heap leach)
S28,T28N,R47E — 104
Art Walsh, General Manager
Crescent Valley, NV 89821

Crested Butte Silver Mining — gold & silver
Victorine Gold Project (UG) — 12
S22,27,T16N,R43E
John L. Larsen, President
P.O. Box 186, Austin, NV 89310

Dresser Minerals — barite
Dresser Mill (ML) — (crushing, screening)
S16,T32N,R45E — 32
Greystone Mine & Mill (OP,ML) — (gravity
S16,T28N,R46E — concentration)
Garry Thielen, General Manager — 77
P.O. Box 375, Battle Mountain, NV 89820

Duval Corp. — gold
Copper Canyon Mine (OP) — 162
S23,24,T31N,R43E
Copper Canyon Mill & Electrolytic Plant (ML) — (cyanidation)
S23,24,T31N,R43E — 230
Richard Sumin, Manager
P.O. Box 451, Battle Mountain, NV 89820

FMC Corp. — barite
Mountain Springs Mine (OP) — 11
S8,9,T28N,R44E
R. Dale Taylor, Superintendent
P.O. Box 531, Battle Mountain, NV 89820

Homestake Mining — gold & silver
Klondike Mine & Mill (UG,ML) — (flotation)
S27,T16N,R43E — 14
Mike Johnson, Superintendent
c/o Mike Johnson, Kingston Canyon, Austin, NV 89310

IMCO Services, Inc. — barite
Battle Mountain Grinding Plant (ML) — (grinding,
S27,T32N,R45E — classification)
Mountain Springs Plant (ML) — 9
S4,T28N,R44E — (gravity concentration, flotation)
Ralph Gronning, Manager — 6
P.O. Box 861, Battle Mountain, NV 89820

Major Barite Co. gold
Tenabo Placer (OP) 2
S16,T28N,R47E

Major Barite Milling Plant (ML) (gravity concentration)
S8,T29N,R47E 4
John Uhalde, Superintendent
1975 Palisade Drive, Reno, NV 89509

Milchem, Inc. barite
Argenta Barite Mill (ML) (gravity concentration)
S6,T32N,R47E 28

Argenta Mine (OP) 8
S19,T32N,R47E
Carl Brown, Manager, Nevada Operations
P.O. Box 272, Battle Mountain, NV 89820

Minex Resources, Inc. gold
Fire Creek Gold Mine (OP,ML) (cyanidation)
S15,22,T30N,R47E 8
Roger D. Ellis, Vice President
Mountain City Highway, Elko, NV 89801

Frontier Mining Co.(OP) 3
Contractor, Fire Creek Gold Mine
S23,T30N,R47E
Gary Lee, Owner
P.O. Box 604, Wells, NV 89835

Monarch Milling silver
Bullion Monarch Mill (ML) (flotation)
S13,T19N,R43E 8
Robert Morris, General Manager
P.O. Box 176, Austin, NV 89310

New Pass Resources, Inc. gold & silver
Thomas "W" Mine (UG) 2
S9,T20N,R40E
Donald Jung, Manager
P.O. Box 69, Austin, NV 89310

Parsons Drilling, Inc. N/A
Galena Canyon Project (exploration drilling)
S16,T31N,R43E 2
Norman Parsons, Owner
2054 Thomas Jefferson Ave., Box 130-10,
Battle Mountain, NV 89820

Porter & Meissner Mining, Inc. barite
Rimrock Mine (OP) 8
S24,T33N,R45E
Duane H. Porter, President
P.O. Box 1072, Battle Mountain, NV 89820

S/L Corp. silver & gold
Gray Eagle Mine (OP,ML) (heap leach)
S13,T29N,R46E 8
John C. Archibald, Manager
3193 Scenic View Drive, Elko, NV 89801

Stellar International of Nevada, Inc. gold
Battle Mountain Project (OP,ML) (gravity concentration)
S20,T32N,R44E 5
Richard J. Trumble, Superintendent—
U.S. West Operations
1325 Airmotive Way, Suite 262, Reno, NV 89502

Tom Norris Mining Co. barite
Allen Barite Mine (OP) 4
S21,T21N,R42E
Tom Norris, Lessee
P.O. Box 231, Battle Mountain, NV 89820

United Mining Corp. silver
Independence Mine (UG) 13
S28,T31N,R43E
Earl Haldeman, Vice President
P.O. Box 355, Battle Mountain, NV 89820

LINCOLN COUNTY

Delaperlite Partnership Lease perlite
Mackie Perlite Mine (UG) 2
S11,T5S,R62E
Joe Wilkin, Owner
P.O. Box 472, Panaca, NV 89042

Enoch Resources gold
Moapa Venture (OP,ML) (cyanidation)
S11,T5S,R62E 4
Gregory Bradt, General Manager
1515 East Reno Avenue, Las Vegas, NV 89119

Hollingshead Mining Contracting gold & silver
Pioche Mill (ML) (flotation, gravity concentration)
S23,T1N,R67E 2
LaVar Hollingshead, Owner
Panaca, NV 89042

R.J. Dalton & Sons soil additive
Agricultural Mill (ML) (flotation)
S33,T1N,R67E 3
Richard Donohue, Superintendent
P.O. Box 131, Star Route, Pioche, NV 89043

Silver Horn Research Mill Corp. gold & silver
Research Silver Mill (ML) 25
S13,T1N,R67E

Silver Horn Mine (OP) silver
S4,T3N,R65E 2
Roy Nelson, President
P.O. Box 185, Pioche, NV 89043

Standard Slag Co. gold & silver
Atlanta Mine & Mill (OP,ML) (cyanidation)
S14,T7N,R68E 45
Ernie Charter, Manager
P.O. Box 97, Pioche, NV 89043

Tempiute Metals Co. silver
Tempiute Metals Mine (UG) 3
S14,T4S,R56E
Reland Johnson, Owner
P.O. Box 652, Farmington, UT 84025

Union Carbide Corp. tungsten
Emerson Mine (UG,ML) (flotation)
S36,T3S,R56E 19
Jerry Schierman, Mine Manager
P.O. Box 307, Alamo, NV 89001

Valdez Mine & Milling Co. silver
Contractor for RioSierra Mining, Inc. 4
Silver Park Mine (OP)
S16,T7N,R68E
Jim McColl, President
P.O. Box 389, Ely, NV 89301

Wilkin Mining & Trucking Co. perlite
Caliente Perlite Mill (ML) (crushing, screening)
S7,T4S,R67E 3
Robert D. Wilkin, Owner
P.O. Box 472, Panaca, NV 89042

LYON COUNTY

Art Wilson Co. gypsum
Adams Claims (OP,ML) (crushing, screening)
S25,T16N,R20E 8
Art Wilson, Owner
P.O. Box 1160, Carson City, NV 89701

Au Harvesters International Ltd. gold & silver
Korc Placer Mine & Mill (OP) 3
S26,T17N,R26E
Vincent P. Orlando, President
735 Cranford Avenue, Bronx, NY 10470

Comstock Virginia Mines, Inc. gold
Santiago-Haywood Mine (OP) 2
S17,T16N,R21E
Steve Russell, Geologist
P.O. Box 2407, Carson City, NV 89702

Cyprus Mines Corp., United Sierra Div. diatomite
Cyprus Mill (ML) (drying, crushing, separating)
S12,T20N,R24E 3
Section 8 Mine (OP) 1
S8,T19N,R26E
Henry Turnbaugh, Superintendent
P.O. Box 455, Fernley, NV 89408

Eagle-Picher Industries, Inc. diatomite
Hazen Pit (OP) 2
S9,T19N,R25E
M. M. Moezzi, Mine Manager
P.O. Box 959, Lovelock, NV 89419

Ida Mines, Inc. gold
Ida Mine (UG) 3
S9,T16N,R21E
Art Wilson, Vice President/Manager
P.O. Box 1160, Carson City, NV 89702

International Tungsten & Gold Canyon Placers, Inc. gold & silver
Trio Mine & Mill (OP,ML) (cyanidation)
S23,T16N,R21E 12
Steve Wendel, Manager
P.O. Box 333, Dayton, NV 89403

Minor Mineral Co., Inc. montmorillonite
Wabuska Plant (ML) (screening)
S21,T15N,R25E 2
Bill Minor, President
P.O. Box 733, Yerington, NV 89447

Nevada Cement Co. limestone
Limestone Mine (OP) 3
S4,T19N,R25E
Nevada Cement Plant (ML) cement
S10,T20N,R24E (grinding, calcining)
David Dalton, President 156
P.O. Box 895, Fernley, NV 89408

Oest Corp. gold & silver
Oest Mine (UG) 4
S9,T16N,R21E
Billy Varga, President
1001 Mountain Street, Suite 1E, Carson City, NV 89701

Southern Mining, Inc. gold
Southern Mining Mine & Mill (OP,ML) (gravity
S26,T17N,R26E concentration)
Walter Leonpacher, President 2
P.O. Box 248, Silver Springs, NV 89429

Tseng Mining Co. gold & silver
Como (Hulley-Logan) Mine (OP) 2
S15,T15N,R22E
Scott Jolcover, General Manager
P.O. Box 237, Dayton, NV 89403

Tuttle's Independent Contracting montmorillonite
Tuttle Mine (OP) (screening)
S20,21,29,T7N,R27E 3
James B. Tuttle, Owner
P.O. Box 956, Hawthorne, NV 89415

MINERAL COUNTY

C-E Basic magnesite
Luning Plant (ML) (screening)
S28,T8N,R34E 5
Gary Judd, Works Manager
P.O. Box 177, Gabbs, NV 89409

Centennial Exploration Corp. gold & silver
Aurora Trial Heap Leach (OP) 16
S17,T5N,R28E
B. Mountford, President
P.O. Box 2311, Hawthorne, NV 89418

Combined Metals & Recovery Systems gold & silver
Moho Mine (UG) 5
S26,T5N,R33E
L. T. Atkinson, President
P.O. Box 105, Dyer, NV 89010

Green Ranch Mining Co. gold & silver
Frances Mine (UG) 3
S33,T6N,R34E
Duane Moore, President
P.O. Box 352, Mina, NV 89422

H. E. Hunewill Construction Co., Inc. gypsum
Wassuk Gypsum Mine (OP) 3
S6,T12N,R27E
Harvey E. Hunewill, President
10 Artist View, Wellington, NV 89444

Ingle, Hugh C. gold & silver
Aden Mill (ML) (gravity concentration, flotation)
S8,T6N,R35E 2
Ashby Mine & Mill (OP,ML) (heap leach)
S27,T7N,R32E 2
Mabel & Garfield Mines (OP,UG) 2
S17,T7N,R33E
Hugh C. Ingle, Jr. & Hugh C. Ingle, Partners
1161 Highway 339, Yerington, NV 89447

Kinkead Mining and Construction barite
Kinkead Mill (ML) (crushing, screening, heap leach)
S15,T8N,R32E 2
Dick Merritt, Owner
P.O. Box 32, Luning, NV 89420

Lovestedt, Claude B. silver
Broken Hills Mine (UG) 3
S26,T14N,R35E
Claude B. Lovestedt, Operator
P.O. Box 2710, Carson City, NV 89702

Mako Mining Corp. gold & silver
Mako Mine (OP) 3
S28,T11N,R30E
Roger Raudio, President
P.O. Box 751, Hawthorne, NV 89415

Monarch Mining Corp. gold & silver
Stanmore Mine (OP) (development)
S22,T8N,R28E 3
Harry O. Nylene, President
P.O. Box HH, Yerington, NV 89447

Mt. Hope Mining Corp. silver
Lucky Boy Mine (UG) 5
S17,T7N,R30E
Hal Jensen, Manager
P.O. Box 797, Hawthorne, NV 89415

NERCO Metals silver & gold
Candelaria Mine (OP) (crushing, screening,
S5,T3N,R35E heap leach)
Peter Petrowsky, Manager 154
P.O. Box 1246, Hawthorne, NV 89415

New Boston Mining Co. gold & silver
New Boston Mill (ML) (crushing, screening,
S25,T7N,R34E heap leach)
Merel Richard, Owner 3
P.O. Box 283, Mina, NV 89422

Sodaville Research gold & silver
Sodaville Research Facility (ML) (gravity concentration)
S29,T6N,R35E 3
Jim Schaefer, Engineer
P.O. Box 451, Mina, NV 89422

S & R Mining & Milling gold & silver
Potosi Mine (UG) (heap leach)
S5,6,T3N,R35E 6
Kenneth Ray, General Manager
512 North 3rd, No. 2, Bishop, CA 93514

Su Oro Co Mining Co. gold & silver
Panacea Mine & Mill (ML) (heap leach)
S33,T5N,R33E 3
Jack Pouch, President
P.O. Box 228, Mina, NV 89822

TENNECO Minerals Co. gold & silver
Borealis Project (OP,ML) (crushing, screening, heap leach)
S16,T6N,R29E 39
Jaime's Ridge (OP) gold, silver, mercury
S1,T6N,R28E 15
Dan W. Martin, Nevada Operations Manager
P.O. Box 976, Hawthorne, NV 89415
Contractors:
Porter & Meissner Mining Co. (OP) gold & silver
Borealis Pit 14
S16,17,T6N,R29E
Jaime's Ridge (OP) 11
S1,T6N,R28E
Duane Porter, Owner
P.O. Box 1072, Battle Mountain, NV 89820

W. E. Vining Co. 12
Borealis Mine (OP)
S16,17,T6N,R29E
W. E. Vining, Contractor
P.O. Box 2499, Carson City, NV 89702

Thorne Placers, Inc. gold
Thorne Placer Mine (ML) (screening)
S13,T7N,R31E 4
J. Ellis George, President
Thorne Placer Mill (ML) (screening, washing, jigging)
S20,T8N,R32E 4
George Thorne, Owner
P.O. Box 258, Issaquah, WA 98027

Tseng Mining Co. gold & silver
Red Rock Mill (ML) (screening, heap leach)
S9,T6N,R35E 38
Jim Youngblood, General Manager
c/o Brown, 2025 Meadowview Lane, Reno, NV 89501

Valley Aggregates, Inc. gold
Neversweat Mine (OP,ML) (screening)
S13,T7N,R31E 5
Ore Fin Mill (ML) (gravity concentration)
S15,T8N,R32E 2
Bernie Johnson, President
P.O. Box 11765, Spokane, WA 99211

NYE COUNTY

All Minerals, Inc. barite
Barite Mine & Mill (OP,ML) (gravity concentration)
S9,T12N,R46E 22
S. R. Mahoney, President
5510 South 300 West, Murray, UT 84107

American Borate Corp. colemanite
American Borate Plant (ML) (calcining, washing, flotation)
S36,T17S,R49E 98
Landon Lockhart, General Manager
Star Route 15, Box 610, Amargosa Valley, NV 89020

Anaconda Copper Co. molybdenum & copper
Nevada Moly Project (OP,ML) (flotation, tank leach)
S6,T5N,R42E 306
Tom Parker, Project Manager
P.O. Box 1268, Tonopah, NV 89049

Arizona Hillside Mining Co., Inc. gold
Old Sullivan Mine (OP) 3
S13,18,19,T8N,R43,44E
J. Michael Migel, President
P.O. Box 103, Manhattan, NV 89022

Aurles Mining Development Co. gold & silver
Oasis Mine (OP) (heap leach)
S28,T12S,R47E 6
Reed A. Hatkoff, President
P.O. Box 278, Beatty, NV 89003

BML Mining Co. silver
Barcelona Mine (UG) 2
S36,T9N,R44E
Fred Masters, President/General Manager
P.O. Box 127, Manhattan, NV 89022

Bullfrog Enterprises — gold & silver
Montgomery Shoshone Mine (ML) — (screening, crushing vat leach)
S3,T12S,R46E — 5
Robert B. Garcia, President
P.O. Box 397, Beatty, NV 89003

C-E Basic — magnesite
Nevada Works Pit (OP) — 30
S34,T12N,R36E
Nevada Works Mill (ML) — (calcining, flotation)
S34,T12N,R36E — 119
Gary Judd, Works Manager
P.O. Box 177, Gabbs, NV 89409

Cind-R-Lite Block Co. — pumice
Cinder Cone Mine (OP) — 2
S28,T14S,R49E
Earnest Selman, Superintendent
3333 Cinder Lane, Las Vegas, NV 89103

Cyprus Mines Corp. — gold & silver
Northumberland Mine & Plant (OP,ML) — (heap leach)
S18,T13N,R46E — 118
Neil Prenn, Resident Manager
P.O. Box 8A, R.R. No. 2, Austin, NV 89310

D & K Exploration — gold & silver
Sidewinder Mine — (heap leach)
S16,T12S,R46E — 2
Brent Kerr, Partner
P.O. Box 521, Beatty, NV 89003

GEO Drilling Fluids, Inc. — barite
Jumbo Mine (OP) — 5
S34,T3N,R47E
Roy A. Winder, Superintendent
1150 Lamoille Highway, Elko, NV 89801

Gila Mines Corp. — silver
Gila Mine (OP) — (heap leach)
S24,T2N,R51½E — 8
Gregory Davis, President
P.O. Box 3189, Tonopah, NV 89049

Industrial Mineral Ventures, Inc. — clay
Amargosa Pit & Mill (OP,ML) — (crushing, screening)
S20,T17S,R49E — 50
Forrest Hansen, Resident Manager
RFD Box 549, Amargosa Valley, NV 89022

J. Irving Crowell, Jr. & Son — fluorspar
Crowell Fluorspar Mine (UG) — 3
S23,T12S,R47E
Jack Crowell, Owner
P.O. Box 96, Beatty, NV 89003

Manhattan Milling, Inc. — gold & silver
Manhattan Mill (ML) — (cyanidation)
S20,T8N,R44E — 3
Anthony Selig, President
P.O. Box 64, Manhattan, NV 89022

Marshall Earth Resources — gold & silver
Catherine Mine (UG) — 2
S1,T12N,R39E
Ione Placer (ML) — gold
S28,T13N,R39E — (screening)
4

Shamrock Tunnel No. 2 (UG) — gold & silver
S22,T13N,R39E — 2
Sky Claims (ML) — gold & silver
S34,T13N,R39E — (development)
H. R. Marshall, President — 7
Rt. 1, Box 29A, Ione, NV 89310

N.S.E. & RoWeHo Mining Co. — gold
N.S.E. & RoWeHo Mine (OP,ML) — (gravity concentration)
S9,T6N,R56E — 3
B. G. Hoffman, Tom Weber, and Jim Roper, Owners
P.O. Box 1051, Ely, NV 89301

Pauley, James — gold
Nellie Gray Patent (UG) — 2
S20,T8N,R44E
James Pauley, Operator
P.O. Box 111, Manhattan, NV 89022

R.A.W. Mining & Construction Co. — gold
Free Gold Mine (OP) — 2
S27,T7N,R40E
Ray Whisenant
P.O. Box 3999, Tonopah, NV 89049

Saga Exploration Co. — gold & silver
Sterling Mine (UG,OP,ML) — (heap leach, drifting)
S6,T13S,R48E — 30
Greg Austin, President
P.O. Box 572, Beatty, NV 89003

S & KK Exploration — gold & silver
S & KK Mine (UG) — 2
S9,T12S,R46E
W. M. Kerr, President
Route 1, 680 LN Drive, Palisade, CO 81526

Smoky Valley Mining Co. — gold & silver
Round Mountain Gold (OP,ML) — (heap leach)
S18,T10N,R44E — 242
Don L. Simpson, General Manager
P.O. Box 480, Round Mountain, NV 89045

Spicer Mining Co., Inc. — gold & silver
Shoshone Polaris Mine (UG,OP) — (development)
S10,T12S,R46E — 8
Contractor for St. Joe American Corp.
Jim Spicer, Owner
P.O. Box 278, Beatty, NV 89003

TENNECO Minerals Co. — gold
Manhattan Mine & Mill (OP,ML) — (cyanidation, gravity concentration, flotation)
S20,T8N,R44E — 10
Rex Outzen, Project Manager
P.O. Box 56, Manhattan, NV 89022
Tonopah Lab (Assay Lab) — gold & silver
S36,T3N,R42E — 9
William Robertson, Chief Assayer
P.O. Box 1232, Tonopah, NV 89049

Vanderbilt Minerals Co. — bentonite
White Caps Mine & Mill (UG,ML) — (crushing, screening)
S19,T12S,R46E — 6
Jerry Lease, Manager
P.O. Box 398, Beatty, NV 89003

White Mineral Resources gold & silver
Bullfrog Mine & Mill (ML) (heap leach)
S20,T12S,R46E 12
Arnold Buchanan, Vice President
P.O. Box 837, Beatty, NV 89003

Wilson, Jesse R. gold & silver
Paymaster Mine & Mill (OP,ML) 1
S14,T14N,R37E
Jesse R. Wilson, Owner
P.O. Box 596, Sparks, NV 89432

Wilson, Robert E. gold
G & S Mine & Mill (OP,ML) (gravity concentration)
S35,T13N,R42E 4
Robert E. Wilson, Owner
P.O. Box 10, Round Mountain, NV 89045

PERSHING COUNTY

Benickie, Michael gold
Saundra Lee & Phase II Mines (OP,ML) (gravity
S18,T32N,R32E concentration)
Michael Benickie, Owner/Operator 1
5444 Woods Drive, Sparks, NV 89431

Circle A Construction gold
Little Jupiter Mine (UG) 4
S17,T33N,R37E
Marvin Aslett, President
Trails End Estates, No. 21, Winnemucca, NV 89445

Jupiter Gold Mill (ML) 5
S1,T33N,R37E
W. C. Lage, Project Manager
Trails End Estates, No. 21, Winnemucca, NV 89445

Cooney Mining Co. magnetite
Cooney Iron Mine (OP,ML) (crushing, magnetic separation)
S29,T26N,R34E 7
John Cooney, President
P.O. Box 568, Lovelock, NV 89419

Coronado Oil & Minerals Co. silver
Oreana Mill (ML) (flotation, gravity concentration)
S36,T29N,R32E 4
Jess Darnell, Superintendent
Oreana Star Route, Lovelock, NV 89419

Dow James Minerals, Inc. (JV) gold
Spring Valley Millsite (OP,ML) (gravity concentration)
Dry Gulch Placer 4
S35,T29N,R34E
George Duffy, Jr., Owner
P.O. Box 497, Lovelock, NV 89419

Dusty Mining Co. gold
Dusty Mine (OP) (heap leach)
S20,24,30,T32N,R32E 1
Ed Speir, Owner
P.O. Box 1149, Lovelock, NV 89419

Eagle-Picher Industries, Inc. diatomite
Colado Mine (OP) 21
S8,T28N,R29E
M. M. Moezzi, Mine Manager
P.O. Box 959, Lovelock, NV 89419

Colado Plant (ML) (calcining)
S6,T27N,R32E 109
Robert Maher, Plant Manager
P.O. Drawer A, Lovelock, NV 89419

F.M. Wright Mining Co. gold
Wright Mill (ML) (flotation, gravity concentration)
S6,T28N,R33E 2
F. M. Wright, President
P.O. Box 643, Lovelock, NV 89419

Global Natural Resources, Inc. gold
Global Mine (OP,ML) (gravity concentration)
S24,T32N,R33E 4

Imlay Canyon Mine & Mill (OP,ML) (gold)
S30,T32N,R34E (gravity concentration)
Ricky Poe, Manager 6
P.O. Box 128, Imlay, NV 89418

Golden Age Minerals gold
Willow Creek Placer (OP) 1
S2,11,T31N,R36E
Ken McGriffin, Manager
P.O. Box 2019, Winnemucca, NV 89445

Granite, Ltd. silver
Hope Mine & Mill (OP) (heap leach)
S17,18,T25N,R32E 5
Ed Miller, President
P.O. Box 304, Lovelock, NV 89419

G & S Mines gold
McCann Canyon Mine (OP,ML) (gravity concentration)
S19,T33N,R36E 2
Webb Shepherd, Partner
P.O. Box 67, Imlay, NV 89418

H & M Minerals gold
Hardluck Mine (OP) 4
S4,T27N,R37E
Richard Harbin, Manager
P.O. Box 8372, Incline Village, NV 89450

Lacana Mining, Inc. gold & silver
Relief Canyon Gold Project (OP,ML) (heap leach)
S16,T27N,R34E 23
E. G. Thompson, President
P.O. Box 11305, Reno, NV 89510

Meyer Properties, Inc. gold
D & G I-36 (OP) 3
S22,T33N,R36E
Gerald Harris, Field Representative
P.O. Box 1757, Winnemucca, NV 89445

Minerals Associates, Inc. gold
Rose-Dale Mine (OP,ML) 20
S5,8,T34N,R37E
Vincent B. Duff, Safety Officer
P.O. Box 1008, Winnemucca, NV 89445

Nevada Midas Mining Corp. gold
Nevada Midas Mine (OP,ML) (gravity concentration)
S28,T31N,R37E 10
Charles Bell, President
P.O. Box 1529, Winnemucca, NV 89445

Spaulding Canyon Mine (OP,ML) (gravity concentration)
S28,T31N,R37E 6
Edward I. Stein, President
P.O. Box 2075, Winnemucca, NV 89445

Nevada Packard (JV) silver
Nevada Packard Mine (OP,ML) (cyanidation)
S28,29,32,33,T29N,R34E 12
Dale Scholz, Manager
P.O. Box 1007, Lovelock, NV 89419

Nutritional Additives Corp. limestone
Sexton Mine (OP) 2
S21,T34N,R38E
Glen W. Sexton, General Manager
P.O. Box 802, Winnemucca, NV 89445

Princeton Mining Associates gold
Placerites (OP,ML) (gravity concentration)
S7,T32N,R29E 3
Thomas J. DeLany, President
1210 Kleppe Lane, Sparks, NV 89431

Proquip, Inc. gold
Fortune Cookie Mine (OP) 16
S17,T33N,R36E
Bart Conn, President
P.O. Box 2012, Winnemucca, NV 89445

Redhill Mines, Inc. gold
Goldbanks Mine (OP) (heap leach)
S21,T30W,R39E 3
David B. Rogers, President
P.O. Box 84, Boise, ID 83701

Ro-Mac Gold, Ltd. gold
Willow Creek Mine & Mill (OP,ML) (gravity concentration)
S11,T31N,R36E 5
Ross Feraco, Vice President
c/o Larry Feraco, 4318 Holladay Boulevard
Salt Lake City, UT 84124-2702

Silver Bell Mining & Developing, Inc. antimony
Fencemaker Mine (UG) 3
S31,T25N,R37E
Walter Gertz, Mine Superintendent
P.O. Box 221, Lovelock, NV 89419

U.S. Gypsum Co. gypsum
Empire Quarry (OP) 6
S31,T31N,R24E

Lovelock Perlite Plant (ML) perlite
S8,T27N,R32E (screening)
Roger Brown, Works Manager 2
Empire, NV 89405

Utah International, Inc. tungsten
Sutton No. 2 Mine (UG) (development)
S35,T34N,R34E 11
A. F. Metcalfe, Manager
P.O. Box 325, Imlay, NV 89418

Valley Mountain Mining, Inc. tungsten
Danner Mine (OP,UG) 4
S17,T34N,R34E
Linc Moore, Mining Chairman
P.O. Box 160637, Sacramento, CA 95816

STOREY COUNTY

Asamera Minerals (U.S.), Inc. silver & gold
Gooseberry Mine & Mill (UG,ML) (cyanidation)
S25,T19N,R22E 108
Eric Anderson, Mine Manager
P.O. Box 2267, Sparks, NV 89432

Cal-Denver gold & silver
New York Mine (UG) 3
S5,T16N,R21E
Bill Varga, Project Superintendent
1512 Yew Street, Suite 201, Vancouver, B.C. V6K 3E4

Eagle-Picher Industries, Inc. diatomite
Clark Mine (OP) 8
S28,T20N,R23E
M. M. Moezzi, Mine Manager
P.O. Box 959, Lovelock, NV 89419

Clark Plant (ML) (drying, classification)
S35,T20N,R22E 49
Andy Visocon, General Works Manager
P.O. Box 1869, Reno, NV 89505

Glass Mountain Block pumice
Lower Naturalite Pit & Plant (OS,ML) (crushing, screening)
S16,T17N,R22E 2
Richard Wideriksen, Vice President
355 Greg Street, Sparks, NV 89431

Rule Resources U.S.A., Inc. gold & silver
Big Comstock Mine (UG,ML) 8
S4,T16N,R21E
W. B. Tankersley, General Manager
P.O. Box 120, Virginia City, NV 89440

United Mining Co. of Nevada, Inc. gold & silver
American Flat II Mine & Mill (OP,ML) (cyanidation)
S32,T17N,R21E 55
Tim Collins, President

New Savage Mine (UG) (development)
S27,T17N,R21E 4
Earl Haldeman, General Manager
P.O. Box 320, Virginia City, NV 89440

Burchett & Good, Contractor 10
American Flat Mine & Mill (OP)
C. H. Burchett, Owner
P.O. Box 159, Wadsworth, NV 89442

Yellow Jacket Mining gold
New Yellow Jacket Mine (OP) 2
S32,T17N,R21E
Lance Gabler, President
P.O. Box 457, Virginia City, NV 89440

WASHOE COUNTY

Art Wilson Co. clay
Clay Mine (OP) 3
S14,T27N,R19E
Art Wilson, Owner
P.O. Box 1160, Carson City, NV 89702

Cocanour, William & Jim DeSilva gold
Babe Claim (UG,ML) (gravity concentration)
S29,T21N,R23E 3
Al Cabanne, Owner
c/o ORACO, 555 Crummer Lane, Reno, NV 89511

McNicholes, Harry R. gold
Arrowhead Placer Mine (OP) 3
S33,T21N,R23E

Carmen Placer Mine (OP) 3
S33,T21N,R33E
Harry R. McNicholes, Owner/Operator
47 Silver Reef Drive, Reno, NV 89506

ORACO gold
Olinghouse Placer (OP) 4
S23,T21N,R23E
Ted V. Smith, President
555 Crummer Lane, Reno, NV 89511

Richert Mining Co. gold, silver, copper
Richert Mine (OP) 5
S29,31,32,T22N,R18E
Richard F. Denton, Sr., General Partner
P.O. Box 11885, Reno, NV 89510

Rilite Aggregate Co. pumice
Rilite Aggregate Pit & Mill (OS,ML) (crushing, screening)
S12,T18N,R20E 8
Bruno Benna, Owner
P.O. Box 11767, Reno, NV 89510

Southern Pacific Land Co. gold
Nevada Placer No. 1 (OP) 5
S26,T21N,R23E
Ronald L. Parratt, Manager
3100 Mill Street, Suite 210, Reno, NV 89502

U.S. Gypsum Co. gypsum
Empire Mill (ML) (crushing, screening)
S11,T31N,R23E 6
Roger Brown, Works Manager
Empire, NV 89405

Sun Valley Mining, Inc. gold
Sun Valley Mine (ML) 4
S9,T21N,R19E
Thomas F. Hayes, Superintendent
P.O. Box 1786, Roseburg, OR 97470-0425

University of Nevada Reno N/A
Commonwealth Mine (UG) 5
S12,T17N,R19E
Danny L. Taylor, Chairman, Mining Engineering
Mackay School of Mines, Reno, NV 89557

WHITE PINE COUNTY

Amselco Minerals, Inc. gold
Alligator Ridge Gold Mine (OP,ML) (heap leach)
S2,T22N,R57E 156
Warren Stanford, General Manager
P.O. Box 149, Ely, NV 89301

Continental Gold, Inc. gold
Osceola Project (OP) (gravity concentration)
S12,T14N,R67E 10
H. T. Eyrich, President
P.O. Box 1230, Ely, NV 89301

Hatch Rock Quarries building stone
Hatch Rock Quarry (OS) 3
S15,T16N,R70E
Richard K. Hatch, Owner/Operator
No. 10 Hatch Rock Road, Gandy Route, Garrison, UT 84728

Kennecott Minerals Co. copper
Sunshine-Puritan Precipitation Plant (ML) (precipitation)
S10,T16N,R62E 3
George Allen, General Manager
Ruth, NV 89319

O.S.A., Inc. gold & silver
O.S.A. Inc. Mine & Mill (OP,ML) (gravity concentration)
S34,35,T15N,R68E 4
Farrell B. Smith, President
P.O. Box 114, Baker, NV 89311

Placer Amex, Inc. gold
Bald Mountain Project (OP,ML) 16
S17,20,T24N,R57E
Scott Cornell, Project Engineer
P.O. Box 1229, Ely, NV 89301

W. E. Vining, Inc., Contractor 17
Bald Mountain Project (OP)
Bud Vining, Owner
P.O. Box 2499, Carson City, NV 89702

Silver King Mines, Inc. silver
Taylor Mine & Mill (OP,ML) (cyanidation)
S16,T14N,R65E 56
K. L. Stoker, President
P.O. Box 324, East Ely, NV 89315

Ward Mine (UG) zinc & copper
S14,T14N,R62E 7
Robert C. Drips, Operations Manager
P.O. Box 324, East Ely, NV 89315

Wulf Oil Corp. gold & silver
Weaver Creek Mine & Mill (OP,ML) (gravity concentration)
S15,T14N,R68E 4
Daniel J. Moberly, President
P.O. Box 428, Ely, NV 89301

Dresser barite plant at Battle Mountain. *Keith Papke photo.*

Sloan dolomite plant, Clark County. *Keith Papke photo.*

Genstar lime plant at Apex, Clark County. *Keith Papke photo.*

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