

Nevada Bureau of Mines and Geology

Special Publication MI-1995

The Nevada Mineral Industry 1995

This report, seventeenth of an annual series, describes 1995 mineral, oil and gas, and geothermal activities and accomplishments in Nevada: production statistics, exploration and development including drilling for petroleum and geothermal resources, discoveries of ore-bodies, new mines opened, and expansion and other activities of existing mines. Statistics of known gold and silver deposits, and directories of mines and mills are included.

Metals

**Industrial
Minerals**

Oil and Gas

Geothermal

Exploration

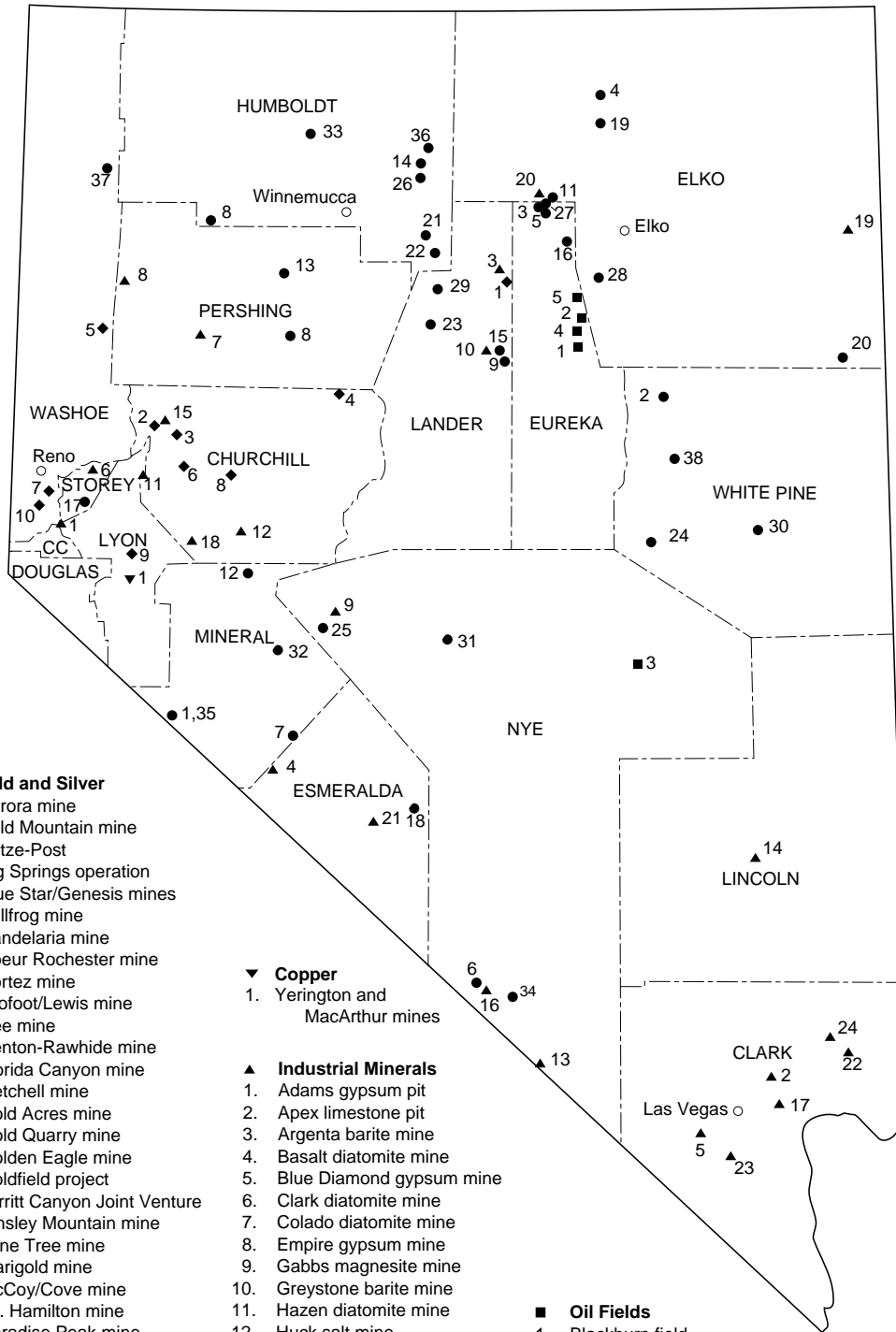
Development

Mining

Processing

Mackay School of Mines

**UNIVERSITY
OF NEVADA
RENO**



● **Gold and Silver**

1. Aurora mine
2. Bald Mountain mine
3. Betze-Post
4. Big Springs operation
5. Blue Star/Genesis mines
6. Bullfrog mine
7. Candelaria mine
8. Coeur Rochester mine
9. Cortez mine
10. Crofoot/Lewis mine
11. Dee mine
12. Denton-Rawhide mine
13. Florida Canyon mine
14. Getchell mine
15. Gold Acres mine
16. Gold Quarry mine
17. Golden Eagle mine
18. Goldfield project
19. Jerritt Canyon Joint Venture
20. Kinsley Mountain mine
21. Lone Tree mine
22. Marigold mine
23. McCoy/Cove mine
24. Mt. Hamilton mine
25. Paradise Peak mine
26. Pinson mine
27. Post mine
28. Rain mine
29. Reona mine
30. Robinson district
31. Round Mountain mine
32. Santa Fe mine
33. Sleeper mine
34. Sterling mine
35. The Aurora Partnership
36. Twin Creeks
37. Western Hog Ranch mine
38. Yankee mine

▼ **Copper**

1. Yerington and MacArthur mines

▲ **Industrial Minerals**

1. Adams gypsum pit
2. Apex limestone pit
3. Argenta barite mine
4. Basalt diatomite mine
5. Blue Diamond gypsum mine
6. Clark diatomite mine
7. Colado diatomite mine
8. Empire gypsum mine
9. Gabbs magnesite mine
10. Greystone barite mine
11. Hazen diatomite mine
12. Huck salt mine
13. IMV-Floridin - clay
14. Mackie perlite mine
15. Molten diatomite mine
16. New Discovery montmorillonite mine
17. PABCO Gypsum
18. Popcorn perlite mine
19. Pilot Peak limestone quarry
20. Rossi barite mine
21. Silver Peak lithium carbonate
22. Simplot Silica Products
23. Sloan dolomite quarry
24. Weiser gypsum quarry

■ **Oil Fields**

1. Blackburn field
2. North Willow Creek field
3. Railroad Valley (Eagle Springs, Trap Spring, Grant Canyon, Bacon Flat, Kate Spring, Carrant, Duckwater Creek, and Sans Spring fields)
4. Three Bar field
5. Tomera Ranch field

◆ **Geothermal Power Plants**

- | | |
|-----------------------|---------------------------------|
| 1. Beowawe | 6. Soda Lake No. 1 and No. 2 |
| 2. Bradys Hot Springs | 7. Steamboat I, IA, II, and III |
| 3. Desert Peak | 8. Stillwater |
| 4. Dixie Valley | 9. Wabuska |
| 5. Empire | 10. Yankee Caithness |

Major mines, oil fields, and geothermal plants, 1995.

Summary

by Jonathan G. Price

Mineral and energy production in Nevada in 1995 matched last year's all-time highest level of \$3.2 billion. Contributions to the Nevada and U.S. economy are significant in terms of jobs, commerce, taxes, improvements to the infrastructure, and lowering of the U.S. trade deficit. Nevada ranks first in the nation in production of gold, silver, mercury, and barite, which are sold almost entirely on national and international markets. Construction of new homes and casinos continues the strong demand for local sources of sand, gravel, crushed stone, gypsum, and cement.

Nevada ranked second in the United States in terms of nonfuel (excluding oil, gas, coal, and geothermal) mineral production in 1995. Arizona, which is undergoing a resurgence in copper production, produced more, and California, boosted by large demands for construction raw materials, was the third largest nonfuel mineral producer in 1995.

This report highlights activities through 1995 in metals, industrial minerals, geothermal energy, and petroleum. Numerous graphs and charts are incorporated for rapid inspection of trends in production and price.

Through a survey conducted early in 1996, the Nevada Division of Minerals collected data for Nevada Bureau of Mines and Geology Special Publication P-7, Major Mines of Nevada 1995. This publication includes, in handbook form, location maps, names and telephone numbers of operators, numbers of employees, and preliminary, non-proprietary production figures for most mines in Nevada. The full contents of this 28-page publication are available for free on the World Wide Web (<http://www.nbmj.unr.edu/majormines/mm.html>). The data from this survey, along with information from other sources, are used in the figures of this publication and will be used to update, revise, or check preliminary statistics collected and released by the U.S. Geological Survey (formerly by the U.S. Bureau of Mines).

The section on **Metals** and the table of **Major Precious-Metal Deposits** provide details on new deposit discoveries, new mine openings, mine closures, additions to reserves, and mine expansions. As has been the case in recent years, gold has been the leading mineral commodity produced in Nevada. Production of 6.764 million troy ounces, slightly less than in 1994 and valued at \$2.6 billion, came from 38

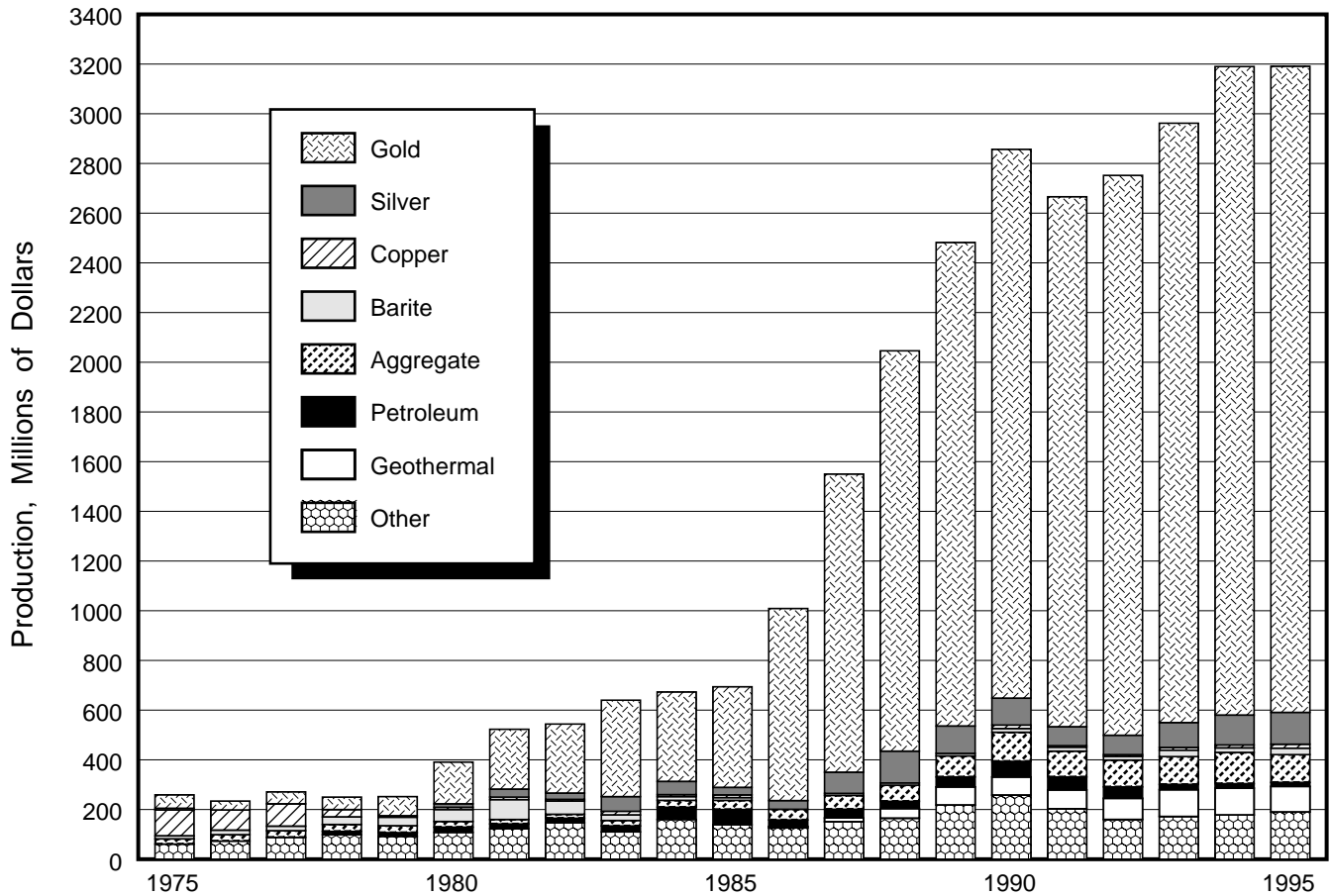
MINERAL, PETROLEUM, AND GEOTHERMAL POWER PRODUCTION IN NEVADA¹

Minerals	1994		1995 preliminary		% change from 1994 to 1995	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value
Barite (thousand short tons)	360	\$18,000	514	\$25,700	42	42
Copper (thousand pounds)	10,000	11,500	13,000	15,600	30	36
Geothermal energy (thousand megawatt-hours)	1,349	108,000	1360	108,800	1	1
Gold (thousand troy ounces)	6,800	2,610,000	6,764	2,598,000	-1	0
Petroleum (thousand 42-gallon barrels)	1,698	19,100	1,342	15,900	-21	-17
Sand, gravel, crushed stone (thousand short tons)	28,000	126,000	25,000	112,500	-11	-11
Silver (thousand troy ounces)	22,800	120,000	24,602	127,700	8	6
Other minerals ²	—	178,100	—	190,000	—	7
Total	—	3,190,700	—	3,194,200	—	0

¹ Production as measured by mine shipments, sales, or marketable production (including consumption by producers); compiled by the Nevada Division of Minerals and the Nevada Bureau of Mines and Geology.

² Production data for cement, clay, diatomite, building stone, gemstones, gypsum, lime, lithium carbonate, magnesite, mercury, perlite, salt, and silica sand are combined. See text for details of some of the commodities.

Products milled or processed in Nevada but mined from deposits in California are not included. Specifically, colemanite from a mill in Amargosa Valley in Nye County and zeolite from the Ash Meadows plant in Nye County are excluded from these totals.



Nevada mineral, petroleum, and geothermal production, 1975-1995

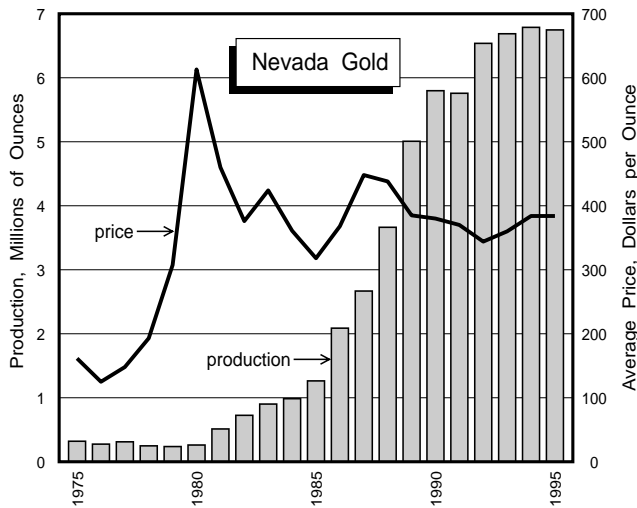
mining operations. Most of that production, 82%, came from the top six producers, and the Carlin trend in northeastern Nevada accounted for 55% of the total production.

Barrick's Goldstrike Mine in Eureka County, which produced 2 million ounces, is the largest gold mine in the United States. Nearby in Lander County, Barrick's Meikle Mine, with announced reserves of 6.6 million ounces at a grade of 0.68 ounces per ton, is the largest underground mine currently under development in the United States. One new gold operation, Alta Gold Company's Kinsley Mine in Elko County, began production in 1995. Placer Dome U.S.'s Pipeline deposit is expected to be in full production in 1997.

Nevada is a major force in the national and international gold markets, accounting for approximately 65% of U.S. production and 10% of world production (according to statistics collected by the U.S. Geological Survey). Nevada production makes the United States a net exporter of gold and helps offset

the trade deficit, which hit a record high of \$111.5 billion in 1995. The United States is second only to South Africa in gold production. Nevada production alone in 1995 was less than that of Australia, but ahead of other major producing countries - China, Russia, and Canada.

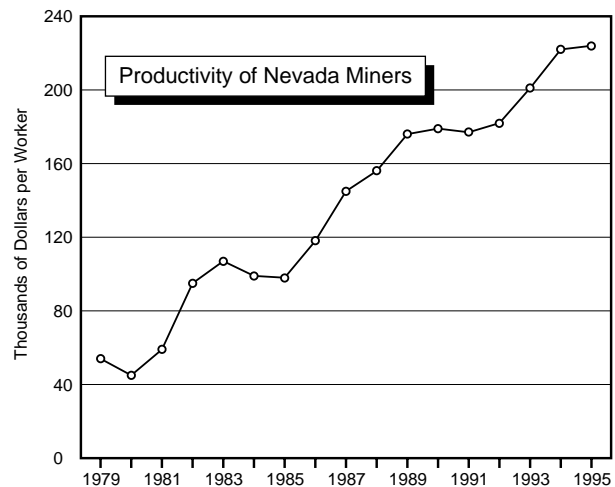
Exploration, including grass roots activity and work in known mining districts, and development of extensions to known deposits successfully added to the Nevada resource base in 1995. Major additions to reserves occurred at the Round Mountain Mine in Nye County and at the Florida Canyon Mine in Pershing County. At the end of the year the published gold resources in Nevada, including mineable reserves and perhaps some subeconomic resources, totaled 145 million ounces of gold, enough to sustain gold production at substantial levels for 20 to 30 years, assuming stable prices. As measured by the numbers of active claims on public lands, grass-roots exploration activity has declined in recent years.



The Nevada Division of Minerals recently completed its second annual survey of companies active in exploration in Nevada (Driesner, Doug, 1996, Exploration Summary, May 1996: Nevada Department of Business and Industry, Division of Minerals, Carson City, 26 p.). The 47 companies that responded to the questionnaire spent a total of \$141 million on exploration in Nevada in 1995, down 8% from 1994. The twenty-four companies that each had exploration expenditures in excess \$1 million for the year accounted for 98% of the total. Exploration expenditures in Nevada are expected to increase by 4.9% in 1996, although these companies project that they will increase their overseas exploration budgets even more substantially. The companies answered questions regarding the factors that influence their exploration activities in the United States; chief among

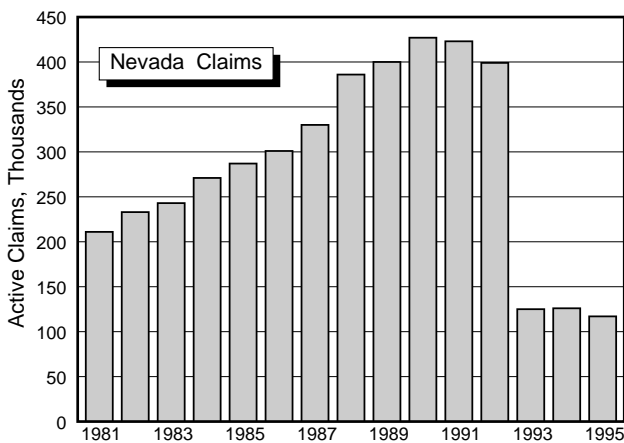
these are existence of favorable geology (continually a major attraction for Nevada), uncertainty and length of time required for permitting, uncertainty over mining law reform, and changes in foreign mining laws.

Productivity of Nevada mining operations is exceptionally high. Measured simply by the value of the commodities produced divided by the number of employees, productivity of Nevada miners is outstanding. On the average, each person in the nonfuel mineral industry in Nevada produced approximately \$224,000 in mined products in 1995. It is interesting that, according to the Nevada Division of Minerals survey, exploration companies on the average spent approximately \$523,000 per geologist (total exploration expenditures divided by total number of geologists) in Nevada in 1995. As long as these exploration geologists (approximately 269 working in Nevada in 1995) replace reserves at a rate of 4 to 8 million ounces of gold per year (with a gross value of \$1.5 to 3.1 billion, or \$6 to 11 million per geologist), these levels of expenditure (\$18 to \$35 per ounce of mineable gold discovered) make this an excellent investment.



Total value of mined product per worker in Nevada (exclusive of petroleum and geothermal energy).

Approximately 13,700 workers were employed directly in the Nevada mining industry in 1995. The Nevada Division of Minerals (see Nevada Bureau of Mines and Geology Special Publication P-7) estimates that the 1995 direct payroll alone from the mining industry in Nevada was over \$600 million. The Division of Minerals further estimates, using U.S. Department of Commerce multipliers, that there are 47,000 additional jobs created in Nevada to provide goods and services needed by the mining industry and its workers.



Number of active claims in Nevada as of September 30, from 1981 through 1995. Data from the Nevada State Office of the Bureau of Land Management.

Challenges that face the precious metal mines in Nevada include not only issues regarding mining law reform but also economic, safety, and environmental concerns with treating refractory (iron disulfide and/or carbon-bearing) ores, underground mining of more ores, dewatering mines, and treatment and disposal of large volumes of water, some of which may contain potentially toxic elements that need to be removed or may be too warm to introduce directly into streams.

Nevada led the nation in silver production in 1995, with 24.6 million troy ounces valued at \$128 million. Much of this silver was a byproduct of gold mining. With a ratio of value (average price of gold in dollars per ounce to average price of silver) of 74:1, only those deposits with more than 74 times as much silver as gold can be considered primary silver deposits. Only two such deposits operated in Nevada in 1995 — the Coeur Rochester mine in Pershing County (with a

ANNUAL TAX ON NET PROCEEDS OF MINERALS

Year	Annual net proceeds ¹ (thousands)	Annual tax (thousands)
1985	\$198,263	3,527
1986	374,664	6,091
1987	627,330	12,084
1988	798,253	13,568
1989	748,052	36,238
1990	887,035	42,737
1991	706,250	33,678
1992	694,457	33,128
1993	734,399	35,150
1994	994,416	48,205
1995	786,843	37,568

¹Net proceeds are gross income minus direct costs incurred at the mine site.

Source: Nevada Department of Taxation.

OTHER REVENUE TO THE STATE OF NEVADA FROM THE MINERAL INDUSTRY

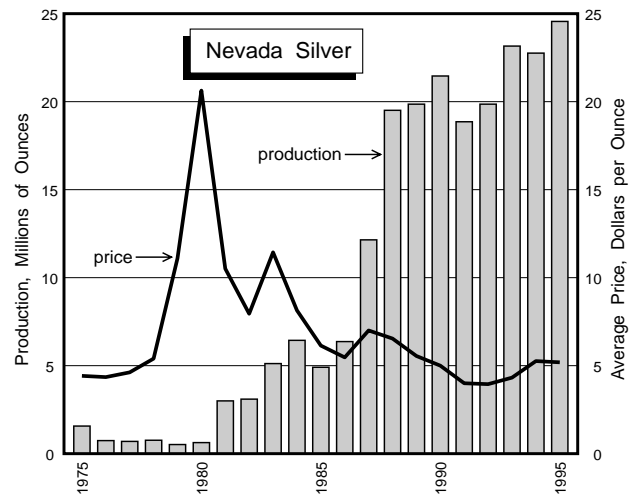
Fiscal year ¹	Mining claim fee ² (thousands)	Oil production tax ³ (thousands)
1985	\$160	129
1986	160	155
1987	175	146
1988	337	158
1989	402	161
1990	408	178
1991	386	202
1992	351	156
1993	333	159
1994	420	81
1995	395	78

¹July 1 through June 30.

²The state receives a fee of \$2.50 for each new claim and each assessment report.

³Does not include drill permit fee: \$.05 per barrel of oil produced.

Source: Nevada Division of Minerals.



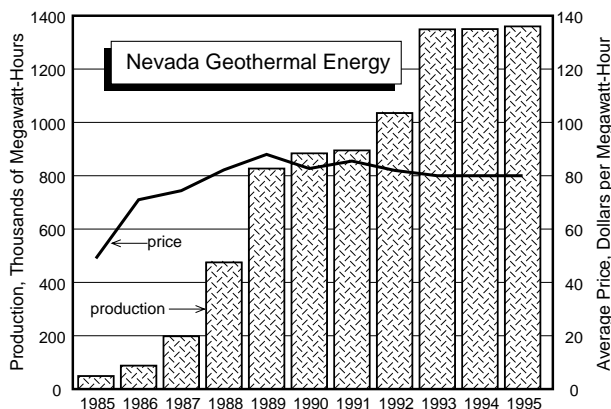
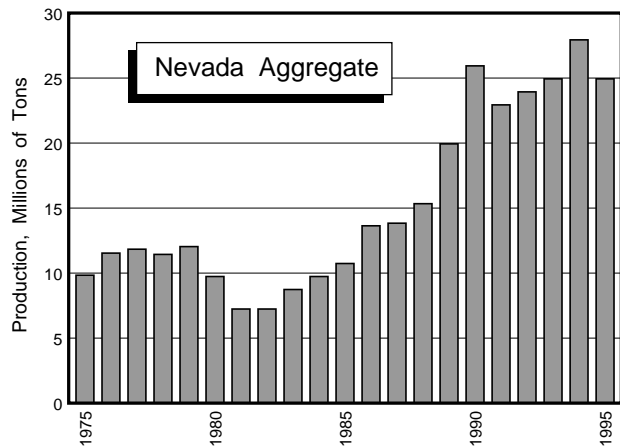
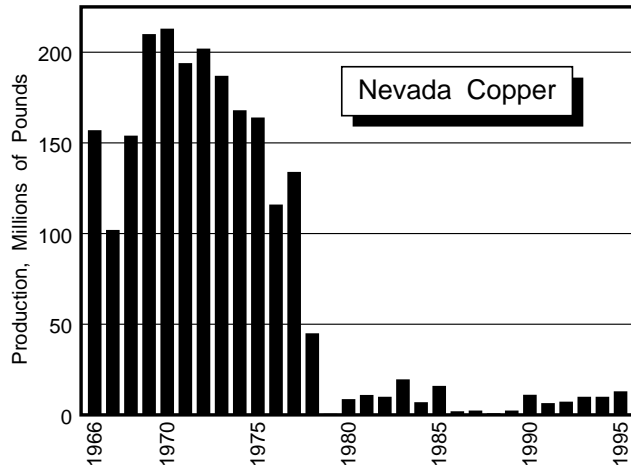
silver to gold ratio of 110:1 and total silver production of 6.5 million ounces) and the Kinross-Candelaria mine in Mineral County (with a silver to gold ratio of 267:1 and total silver production of 2.9 million ounces). The largest silver producer in the United States, Echo Bay's McCoy-Cove mine complex in Lander County, is primarily a gold mine; it yielded 11.9 million ounces of silver from ore with an average silver to gold ratio of 38:1. These three operations produced 86% of Nevada's silver in 1995.

At the end of the year the published silver resources in Nevada, including mineable reserves and perhaps some subeconomic resources, totaled 387 million ounces of silver. Depending on price, Nevada is likely to retain the present-day distinction of its nickname, the "Silver State."

Copper production increased by 30% from 1994 to 1995 as Arimetco, Inc. opened its new MacArthur Mine near its Yerington facility in Lyon County. BHP Copper began production in February 1996 at its Robinson copper-gold property near Ely, which is scheduled to produce approximately 135 million pounds of copper, 110,000 ounces of gold, and 325,000 ounces of silver annually (for 16 years) and increase Nevada's copper production tenfold.

The section on **Industrial Minerals** covers developments during 1995 and gives details on commodities such as aggregate, barite, borate, building stone, cement, clay, diatomite, fluorspar, garnet, gypsum, lime and dolomite, lithium, magnesia, perlite, salt, silica, and zeolites. In terms of dollar value, the most significant industrial mineral commodity is aggregate (sand, gravel, and crushed stone), with a value of \$112.5 million, third behind gold and silver in 1995. Aggregate production remains high as a result of Nevada's expanding population with its demands for construction materials and as a result of construction of resort hotels, airports, and highways.

Developments in the geothermal industry are covered in the section on **Geothermal Energy**. Production in 1995 slightly exceeded the historic high reached the previous year. Ten power plants sold \$109 million in electricity. Geothermal energy is also used at numerous places in Nevada for space heating, warm water, recreation, and dehydrating vegetables.

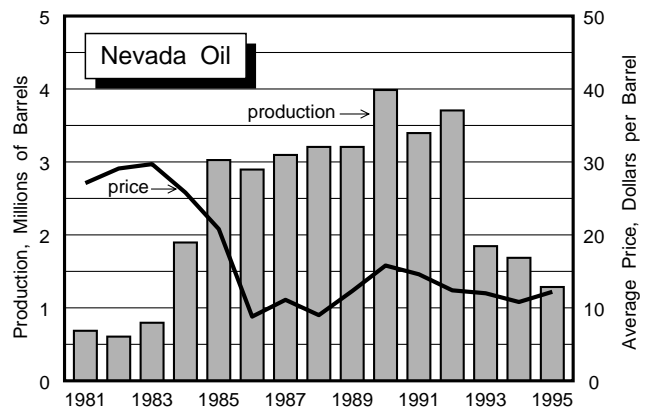


Relatively low prices for natural gas have limited development of known geothermal resources and exploration for new resources.

Developments in the Nevada petroleum industry are covered in the section on **Oil and Gas**. Oil is produced in two areas — Railroad Valley in Nye County and Pine Valley in Eureka County. Total annual oil production from Nevada (valued at \$16 million). Oil production declined for the third consecutive year. Production declined in nine fields and rose in three (Eagle Springs and Currant in Railroad Valley and North Willow Creek in Pine Valley). The largest producing field in 1995 was Blackburn in Pine Valley, with a cumulative production of 4.2 million barrels (436,000 barrels in 1995), although Railroad Valley fields collectively accounted for two thirds of total production.

The two premier fields in Railroad Valley, Grant Canyon and Trap Spring (with cumulative production of 19.8 million and 11.6 million barrels, respectively), are examples of the targets for some exploration. Measures of oil exploration in Nevada were mixed in 1995; activity was up in terms of numbers of wells spudded (25 in 1995 versus 20 in 1994) but down by 29% from 1994 in terms of acreage of federal land under lease. Given the few number of exploration wells drilled in the state (less than 1,000), the potential for finding more multimillion-barrel fields remains high.

Additional information about the Nevada mineral industry is readily available on line through the World Wide Web from the Nevada Bureau of Mines and Geology (<http://www.nbmj.unr.edu/>) and the Nevada Division of Minerals (http://www.state.nv.us/busi_industry/mineral/mineral.htm). Useful national and international data on nonfuel minerals can be obtained from the Office of Mineral Information of the U.S. Geological Survey (<http://minerals.er.usgs.gov:80/minerals/>), and the U.S. Energy Information Administration (<http://www.eia.doe.gov/index.html>) provides data on oil and gas, geothermal, and other energy sources.



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Metals

by Joseph V. Tingley and Daphne D. La Pointe

The information in this section was compiled from news releases in The Mining Record (DMR), Skillings Mining Review (SMR), International California Mining Journal (ICMJ), The Northern Miner (NM), Society of Economic Geologists Newsletter (SEG), Rocky Mountain Pay Dirt (RMPD), American Mining Congress Journal (AMCJ), and Reno Gazette-Journal (RGJ). Information was also extracted from various company annual reports and news releases on file at the Nevada Bureau of Mines and Geology, from the Nevada Division of Minerals monthly newsletter, and from the Nevada Mining Association monthly newsletter.

Nevada produced over 6.76 million oz (troy ounces) of gold in 1995 along with 24.6 million oz of silver. Nevada gold production was slightly lower than in the record year of 1994 but silver production rose to an all-time high. Nevada maintained its place as the leading gold and silver producing state in the United States with 38 mines reporting gold production and 30 mines reporting silver production during 1995. Nevada again ranked first in U.S. production of mercury and barite and was the only producer of mined magnesite in the United States. Most of the silver production and all mercury production in the state was a by-product of gold mining.

Barrick Gold's Betze-Post Mine was the largest Nevada gold producer with 2,031,833 oz; Newmont's Carlin trend deposits were second with a combined production of 1,634,483 oz of gold. Other major gold producers in 1995 included Santa Fe Pacific Gold's Twin Creeks Mine, 451,285 oz; Smoky Valley Common Operation's Round Mountain Mine, 344,437 oz; Independence Mining Co.'s Jerritt Canyon Mine, 328,000 oz; Echo Bay Minerals, 310,016 oz from its McCoy/Cove operation; Santa Fe Pacific Gold's Lone Tree Mine, 240,000 oz; Barrick Gold's Bullfrog Mine, 177,631 oz; and FirstMiss Gold's Getchell Mine, 120,000 oz.

Nevada's 1995 silver production originated mainly from three properties: Echo Bay's McCoy/Cove operation produced 11.9 million oz, Coeur d'Alene Mines Rochester Mine produced 6.5 million oz, and Kinross Gold's Candelaria Mine produced over 2.8 million oz. Other major producers included Kennecott Rawhide Mining Co.'s Denton Rawhide Mine with 960,000 oz, the Crofoot/Lewis Mine of Hycroft Resources Inc. with 417,823 oz, and Barrick Gold's Bullfrog Mine with 413,587 oz.

Copper production by Arimetco International Inc. from the Yerington and MacArthur Mines in Lyon County totaled almost 13 million pounds, up from 10 million pounds in 1994. Nevada copper production is

expected to increase dramatically in 1996 when production begins from BHP Copper's Robinson property in White Pine County. The Robinson property will contribute some 135 million pounds of copper along with substantial amounts of gold and silver annually to Nevada's metal production.

Although Nevada gold production dropped slightly in 1995, several new projects are in planning and development stages and will begin production within the next two years. The two largest are Barrick Gold's Meikle Mine, which is scheduled for startup in 1996 and should add about 400,000 oz of gold to Nevada's annual production, and Placer Dome U.S.'s Pipeline deposit which is planned to begin production in 1997 and is expected to contribute an additional 310,000 oz of gold annually.

Exploration activity in Nevada increased during the year, and several projects reported either new gold reserves or increases in known ore reserves. Figure 1 is a map of locations of new mining project plans filed with the Bureau of Land Management and the Forest Service during 1995. These locations are not claim-staking plays but include more advanced exploration activity such as building access roads, drilling, and trenching. Exploration activity was focused along the Battle Mountain-Eureka mineral belt in Eureka, Lander, and Humboldt Counties and along the Carlin trend with scattered pockets of activity occurring in Pershing, Esmeralda, White Pine, Washoe, Clark, Mineral, Lyon, Douglas, Churchill, and Nye Counties.

CHURCHILL COUNTY

Dixie Valley district

Atlas Corp. optioned the Dixie Comstock property in the southeast part of the Stillwater Range northeast of Fallon. This property has an estimated gold resource of approximately 100,000 oz (Atlas Corp. press release, 9/7/95).

DOUGLAS COUNTY

Gardnerville district

Sterling Pacific Resources carried out a geophysical survey and a 10-hole drilling program on four

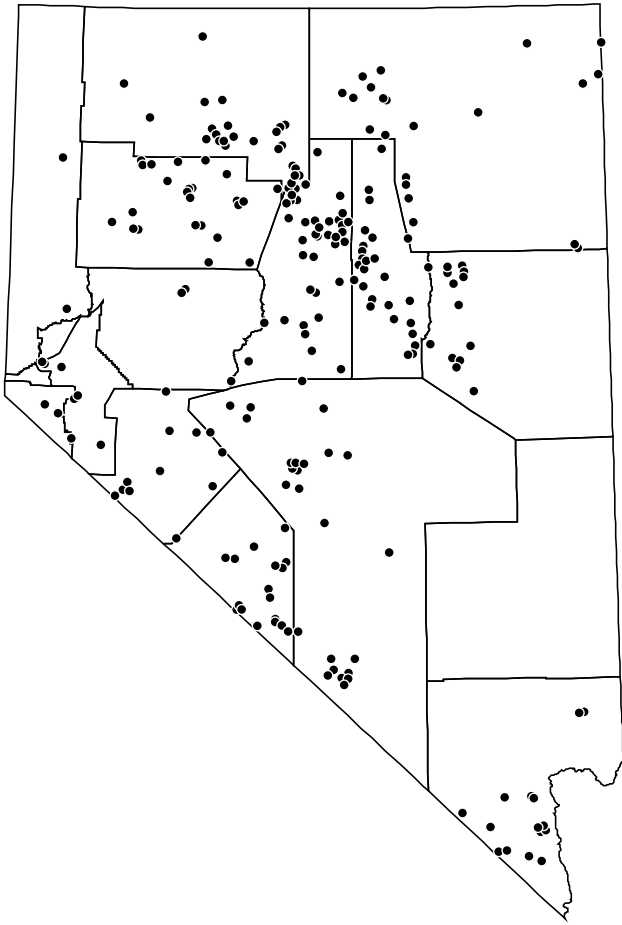


Figure 1. Plans of operation for advanced exploration activities filed with BLM and the U.S. Forest Service in 1995.

anomalies on its Monarch-Zim gold properties in the hope of outlining a bulk-tonnage deposit capable of being open-pit mined. Both the Monarch and Zim properties have been mined on a small scale since the early 1880s (NM, 2/6/95).

ELKO COUNTY

Aura district

Atlas Corp. has announced that it has purchased the Doby George gold property from Independence Mining Co. Preliminary evaluation estimates a reserve of about 3.7 million tons grading about 0.06 opt (troy ounces per short ton) gold contained in three near-surface deposits. Five additional mineralized zones have been identified within the property (DMR, 11/15/95; ME, 10/1/95).

Bootstrap district

Rayrock Yellowknife Resources Inc. resumed the deep sulfide exploration program at the Dee Gold Mine. The program was planned to test 10 deep targets, mostly located around the Dee pit area where 1992 drilling intersected refractory, carbonaceous sulfide mineralization 300 feet below the pit floor. The first hole, drilled to 1,996 feet, intersected 40 feet of 0.05 opt gold at 220 feet; the second hole, drilled to 2,596 feet, intersected about 1,000 feet of silicified, sulfide-mineralized rock at 900 feet with only trace gold values; and the third hole, drilled to 1,707 feet, encountered only low-grade gold values. Rayrock is continuing the deep sulfide drilling program on its other seven targets around the Dee pit area (ICMJ, 8/1/95; NM, 10/2/95).

A few miles north of Dee, FMC Gold drilled the Rossi property, hitting intercepts several feet in length of >0.20 opt gold (SEG, 1/7/95).

Romarco Minerals and Uranerz Exploration and Mining signed a joint exploration agreement to examine the 2000-acre Ren property of Corona Gold, a Homestake subsidiary. About 20,000 oz of gold have already been mined from the Ren pit, and earlier drilling has cut several 5-foot intervals grading up to 2.031 opt gold, and a 60-foot interval grading 0.21 opt gold. Romarco Minerals and Uranerz will spend \$5 million jointly over the next 5 years to explore the property, with Uranerz as operator (NM, 1/8/96).

Minorca Resources and Vogue Resources entered an agreement with Trio Gold to explore Trio's Rodeo Creek property. Minorca Resources has begun a 4,000-foot drilling program to test a fault structure that crosses a known gold-bearing zone. The target is a strongly altered zone anomalous in gold, arsenic, and antimony, traceable over a strike length of 3,500 feet (NM, 8/7/95; 1/8/96).

Ferber district

A number of ore-grade copper and gold intercepts were encountered by Royal Gold on their 97-claim Ferber project (DMR, 9/6/95).

Gold Circle district

In the past four years, the Midas joint venture (Franco-Nevada Mining Corp. and Euro-Nevada Mining Corp.) has spent over \$4 million in assembling and drilling a 24,000-acre land package at the historic camp of Midas. A 150-hole, 90,000-foot drilling program intersected substantial footage of high-grade mineralization along the 3,000-foot Rex Grande zone. A preliminary geologic resource estimate of the Rex Grande zone yields 13 million tons grading 0.16 opt

gold and 2.7 opt silver. Within this resource there is a high-grade core of 2.4 million tons grading 0.69 opt gold and 11 opt silver for a total of 1,650,000 oz of gold and 27 million oz of silver. The last drill hole of the 1995 season, drilled to test the downdip extension of the Rex Grande zone to the east, returned a 300-foot interval that averaged 0.61 opt gold and 7 opt silver. A widely spaced three-hole program on the Acme zone, located approximately 1 mile south of the Rex/Grande zone returned excellent results in two of the holes. The Acme zone will be an exploration priority in 1996 (DMR, 11/8/95).

Romarco Minerals, another company with a property position in the Gold Circle district, planned drilling on its five Midas claims which are entirely surrounded by the Franco-Nevada and Euro-Nevada Mining Corp. property. Romarco Minerals also planned to acquire the 108-claim Golden Repeat property located 5 miles southwest of Midas (NM, 10/2/95).

Island Mountain district

Aur Resources announced that it has discovered widespread ore grade gold mineralization at and near surface over an area of approximately 1¹/₂ miles by 1¹/₂ mile on its Coleman Canyon property. The gold mineralization discovered to date is hosted in sedimentary and intrusive rocks which have been highly sheared and altered; gold is associated with a broad gold-arsenic-antimony anomaly believed to represent a portion of a large epithermal system. Five of six holes drilled in the area of known mineralization intersected ore grade gold values and confirmed the presence of ore grade mineralization to a depth of at least 450 feet below the surface mineralization (DMR, 12/6/95; NM, 1/1/96).

Ivanhoe district

Cornucopia Resources Ltd. is looking for a development partner to assume Newmont's 75% interest in the Ivanhoe gold property after Newmont Gold announced that the deposit does not meet its criteria for development. At the Ivanhoe property, Cornucopia has outlined an estimated combined oxide/sulfide resource of 42 million tons grading 0.031 opt gold. To date more than \$20 million has been spent on exploring the property (NM, 7/31/95).

Kinsley district

Alta Gold Co. reported that production began at its Kinsley Mine on January 26, 1995 with a shipment of 513 oz of gold. Total 1995 production at Kinsley was 40,667 oz of gold and 8,050 oz of silver with anticipated annual gold production of about 50,000 oz

over the next 2¹/₂ years. Drilling by Alta Gold has confirmed three new ore deposits on the property: the Robinson Gulch discovery, the Deep Main, and Breitrick deposits, and has also confirmed and expanded reserves in the Access and Lower Main deposits. At the Robinson Gulch discovery, located about one mile south of the Kinsley Mine, rock sampling and geologic mapping during the spring of 1995 resulted in the discovery of gold-bearing jasperoid comparable in thickness and grade to the discovery jasperoid at the Kinsley Mine. Ore grade mineralization of 0.31 opt gold was encountered in the first five holes and this area was expected to be the focus of Alta's 1996 exploratory drilling program at Kinsley. Proven and probable reserves at Kinsley are 3,383 tons averaging 0.032 opt gold. (ICMJ, 3/1/95; NM, DMR, 8/2/95, 2/12/96; Alta Gold Co. annual report).

Lynn district

Barrick Gold Corp.'s Meikle Mine is the largest underground mine currently under development in North America. The high-grade sulfide orebody contains mineable reserves of 6.6 million oz of gold and is between 800 feet and 1,900 feet below the surface. The grade of the orebody is 0.68 opt gold, and the deposit is open to the northwest and south. The Meikle Mine is expected to start up in the second half of 1996, with an expected annual production of approximately 400,000 oz of gold (NM, 8/7/95; Nevada Miner, 2/1/96).

Railroad district

Santa Fe Pacific Gold Corp. has leased the Gutsy and BM properties from Minefinders. The properties are about 2 miles northwest of the Rain Gold Mine. A five-year exploration and development program is planned (NM, 1/2/95).

Westmont Gold Inc. reported a recent exploratory drill hole encountered high-grade gold mineralization at the Tess Joint Venture area adjacent to the Rain Mine. The hole encountered 80 feet of 0.233 opt gold at a depth of 1,400 feet. The company says the drilling confirms the existence of a large, high-grade gold mineralized zone at least 1,000 feet long, 200 to 250 feet wide, 40 to 75 feet thick, and averaging over 0.2 opt gold. The zone is open to the west and south. Westmont and Newmont Exploration Ltd. each own 50% of the joint venture; Newmont is the operator (RMPD, 3/1/95).

Early in the year, Consolidated Ramrod Gold Corp. reported the completion of six drill holes on targets identified through geophysical surveys on its Railroad property. Drilling encountered several mineralized zones with some assays over 0.01 opt gold (ICMJ, 1/1/95).

Robinson district

Cyprus Amax completed a 20-hole drilling program, totaling nearly 15,000 feet, on Crown Resources Corp.'s 35,000-acre Cord Ranch property. Results were generally consistent with past drilling, intersecting thick sections of low-grade mineralization averaging approximately 0.02 opt gold. A new drilling campaign is planned for 1996 (Crown Resources third quarter report, 11/10/95).

Snowstorm Mountains district

Crown Resources Corp. has acquired 4,000 acres in the Snowstorm Mountains northwest of Midas. Silicified volcanic rocks containing anomalous gold values have been outlined over a large area and detailed surface work followed by drilling is planned on the property in 1996 (Crown Resources Corp. 1995 annual report).

Tecoma district

At Twelvemile Canyon, located a few miles southwest of the Tecoma district, drilling by Lexam Explorations Inc. intersected 20 feet of 0.018 opt gold at 125 feet. This project was part of a 12,000-foot drilling project by Lexam on five gold exploration targets in Elko County (Lexam Explorations Inc. news release, 2/19/96).

ESMERALDA COUNTY**Buena Vista district**

The Dos Amigos Mining Co. is pursuing development of a small open-pit gold mine at the former site of the Tip Top Mine (U.S. Forest Service announcement, 7/14/95)

Divide district

Eastfield Resources is doing preliminary exploration work on the Hill-of-Gold deposit and 89 surrounding claims that constitute its Tonopah project. Earlier drilling at Hill-of-Gold outlined minimum reserves of 20,000 oz of gold in a zone grading 0.036 opt gold. Mapping, sampling, and geophysical surveys will be followed by trenching and drilling (NM, 4/17/95).

Goldfield district

American Pacific Minerals Ltd. has suspended mining at Goldfield, but exploration on the company's property adjacent to the Goldfield Mine continues

under an agreement with Kennecott Exploration Co. (DMR, 8/2/95).

Americomm Resources announced plans to drill seven 300- to 800-foot-deep reverse circulation holes on its Indian Springs gold property, located west of the town of Goldfield. Geologic mapping and geochemical sampling located the target area, which consists of two altered mineralized linear structures (NM, 10/2/95).

Silver Peak district

Cornucopia Resources Ltd. contracted Behre Dolbear to do a feasibility study for its Mineral Ridge property and will begin mining by early 1997 if permitting and construction proceed as planned. The property, formerly called the Silver Peak project, covers the historic Mary and Drinkwater Mines which produced more than half a million ounces of gold from underground operations between 1858 and 1942. The Drinkwater open pit also yielded 60,000 oz in 1990-1992 when operated by Homestead Minerals and Zephyr Mining. Current estimated geologic resource for the Drinkwater is 7.5 million tons grading 0.054 opt gold. Within this larger resource, proven and probable reserves total 5.2 million tons of ore with an average grade of 0.068 opt gold. The mine is expected to produce 45,000 to 56,000 oz of gold per year with an expected mine life of 5.5 years from existing reserves, but Cornucopia expects exploration and drilling to expand reserves to extend the mine life (NM, 4/10/95, 10/30/95, 1/15/96).

EUREKA COUNTY**Antelope district**

Atlas Corp. announced that it has entered an exploration joint venture with Granges Inc. on approximately 34 square miles of Atlas's Gold Bar claim block. Along with previously signed exploration agreements with Homestake, Rayrock, and Hemlo, Atlas will have active exploration in progress on the majority of the claim block while still retaining the portion that contains the known gold reserves and several advanced exploration targets. Atlas Corp. has independently completed a drill program northwest and southeast of the original Gold Bar pit. All holes to the northwest encountered gold mineralization and three holes had grades exceeding 0.1 opt gold over a distance of at least 20 feet. The company currently is permitting a second phase of drilling to further define this target (DMR, 7/19/95; Atlas news release, 10/6/95).

Delta Gold Mining Corp. announced that the company had reached an agreement with White Knight Resources Ltd. to acquire a 75% interest in the Indian

Ranch gold property. The property consists of 441 claims, totaling approximately 8,800 acres located within the Tonkin Window. Limited sampling of jasperoid boulders found on the property is reported to have returned values of up to 0.7 opt gold (DMR, 11/25/95).

Vancouver-based Royalstar Resources has acquired from Gold Capital an interest in the Tonkin Springs gold project. A reserve report by MPH Consulting of Denver increased the open-pit mineable proven and probable reserves at the Tonkin Springs Mine from approximately 418,000 oz of gold to more than 965,000 oz of gold. Only 2.5 miles of the property's 8-mile strike-length have undergone detailed exploration, and a number of geological, geochemical, and geophysical anomalies remain to be defined and drill tested (NM, 6/5/95; DMR, 12/27/95).

Buckhorn district

A second round of drilling on Royal Gold's 265-claim Buckhorn South will focus on newly discovered mineralization located approximately 1 mile from the known resource as well as on geophysical anomalies identified by Royal Gold. The Buckhorn South property contains the deep-seated Zeke deposit of 2 million tons of ore grading 0.056 opt gold (NM, 7/31/95; DMR, 9/6/95).

Cortez district

Drilling began in March on Cathedral Gold's Trendline property, located 16 miles southeast of the Pipeline gold deposit. Kennecott Exploration Co. is operator of the joint venture. Homestake has 40% and can earn 65% by making certain expenditures over 3 years (RMPD, 4/1/95).

Eureka district

Homestake Mining Co. will expend approximately \$65 million to develop the West Archimedes orebody on the company's Ruby Hill property. A feasibility study has established a proven ore reserve of 7.62 million tons at a grade of 0.099 opt gold which includes a high-grade core of 1.9 million tons grading 0.233 opt gold. Additional mineralized areas including East Archimedes, Deep East, and Achilles have been identified and have the potential to significantly increase the current reserve. The ore within the West Archimedes zone is completely oxidized. Homestake expects to begin construction and prestripping activities by the second quarter of 1997 following receipt of necessary permits and completion of an environmental impact study. Based upon this time schedule, the mine could produce gold by late 1997, with full production in 1998 at a rate of approximately 105,000 oz

per year. Ongoing exploration has outlined additional gold resources nearby which are currently being evaluated (Homestake Mining Co. press release, 2/8/96; NM, 2/19/96).

Royal Gold Inc. has acquired the Signal Peak claims, consisting of a 30-claim block located west of Eureka, Nevada. Geophysical work and drilling is scheduled for 1996 (SMR, 9/9/95).

Lynn district

Barrick Gold Corp. has acquired High Desert Mineral Resources of Nevada Inc., giving Barrick a 40% interest in the High Desert property; Newmont Gold Co. owns the other 60%. This property, situated immediately north of the original Carlin pit and less than 2 miles from Barrick's Goldstrike Mine, is estimated to contain several million oz of gold with grades ranging from 0.30 to 0.60 opt gold. Newmont has outlined three target areas on the High Desert property: the Leeville Corridor, the Hardie Footwall extension adjacent to the Carlin pit, and the Four Corners deposit, just west of the West Leeville high-grade area. Drilling on the West Leeville target has encountered 33 feet of 1.12 opt gold, 100 feet of 0.63 opt gold, and 212 feet of 0.4 opt gold. The high-grade, stratabound occurrence of carbonaceous, sulfide ore occurs in lower-plate rocks at a depth of 1,400 to 1,900 feet. The zone strikes about north-south and is over 3,000 feet long and 400 feet wide (SMR, 12/16/95).

Maggie Creek district

Other exploration activity reported along the Carlin trend included an agreement between Royal Gold Inc. and Santa Fe Pacific Gold Corp. on the Bob Creek project, consisting of 103 unpatented claims. Exploration Brex reported that they plan to spend \$2.5 million exploring a property located about 2 miles west of Newmont's Gold Quarry-Maggie Creek Mine. Three grab samples from the property returned values of 0.035 opt gold (ICMJ, 1/1/95; NM, 10/2/95).

HUMBOLDT COUNTY

Awakening district

X-Cal Resources has continued its exploration program at the 2,400-acre Sleeper Extension project, located about 8,000 feet southeast of Amax's Sleeper Mine. Drilling early in the year encountered at least four flat-lying sulfide- and silica-rich mineralized zones in Area 3, with intervals grading up to 0.027 opt gold in a structural zone hosted by Tertiary rhyolite flows. Drilling in Area 1, on a north-trending fault zone, hit a

25-foot interval grading up to 0.042 opt gold. Three new drilling targets were defined by trenching in a 1,200-foot-long geochemical soil anomaly where a 45-foot width grading 0.046 opt gold was exposed. X-Cal also identified an anomalous zone parallel to the historic Alma Gold Mine about 14,000 feet southeast of the Sleeper pit; underground sampling at the Alma returned an 11-foot width of 4.14 opt. A third area was identified around the Breccia Zone 17,000 foot southeast of the Sleeper pit with a 10-foot wide surface showing of 0.26 opt gold. Later work indicated that Areas 1 and 3 might be connected over a strike length of 5,000 feet, with gold values in the intervening area ranging from 0.01 to 0.20 opt gold in individual rock samples. A 12-hole, 5,000-foot drilling program was scheduled to begin in October. (NM, 1/15/95; NM, 1/23/95; NM, 7/10/95; DMR, 5/3/95; DMR, 7/5/95; DMR, 9/27/95).

Bottle Creek district

A drill program was completed by Gerle Gold Ltd. on the Happy Creek Gold Silver prospect in September. Four holes, totaling 3,190 feet, were drilled to test several geochemical anomalies generated by enzyme leach soil surveys and sagebrush surveys. The drill holes intersected alteration within volcanic and sedimentary rocks and include some significant sections of stockwork silicification with sulfides, but no economic precious metals values were encountered (Gerle Gold Ltd. 1995 annual report).

Buffalo Mountain district

Santa Fe Pacific Gold reported total 1995 production of 240,000 oz of gold and 11,000 oz of silver from the Lone Tree Mine, and an increase of 628,000 oz in Lone Tree's reserves in 1995 (MJ, 3/1/96).

Romarco Minerals and Uranerz USA have completed gravity and magnetic surveys, enzyme leach soil geochemistry, and 4,760 feet of rotary drilling on the pediment portion of the Nike property. The property consists of several disconnected claim blocks south of the Lone Tree Gold Mine of Santa Fe Pacific Gold Co. Five of ten drill holes encountered calc-silicate alteration and one intersection of 40 feet grading 0.05 opt gold. More exploration is planned for the property (NM, 1/22/96).

Potosi district

A feasibility study on the Turquoise Ridge deposit of FirstMiss Gold Inc. has identified a resource of 6.2 million tons grading 0.354 opt gold. Based on a cutoff grade of 0.25 opt gold, 1.25 million oz of this resource are classified as reserves. Drilling has also identified

an additional 2.8 million oz beyond the boundaries of the pre-feasibility study. FirstMiss Gold Inc. is proceeding with development plans for an underground mine to produce 2,000 tons per day, beginning in mid-1998 (FirstMiss Gold Inc. press release, 9/25/95).

Sulphur district

During 1996 an estimated \$1.4 million will be spent on exploration at the Crofoot/Lewis Mine of Granges Inc. The exploration program will further evaluate potential for oxide ore at the mine and will commence the evaluation of sulfide-related gold mineralization below the oxide orebodies of the Central and East faults (DMR, 12/6/95).

LANDER COUNTY

Argenta district

Santa Fe Pacific Gold Corp made a decision to build the combined Mule Canyon and Lone Tree flotation projects for the mutual benefit of both operations. Reserves at Mule Canyon are 4.22 million tons of oxide ore grading 0.058 opt gold and 5.78 million tons sulfide ore averaging 0.145 opt gold. Oxide ore production is scheduled to begin in early 1997, and sulfide ore production to begin in the fall of 1997, with a projected mine life of 8 years (NM, 3/6/95; E&MJ, 10/1/95; ME, 7/1/95).

Bateman Canyon district

Uranerz Exploration and Mining began a 3,000-foot reverse-circulation drilling program on the Slaven Canyon South property. To date, 23 of the 26 shallow drill holes have encountered gold mineralization up to 25 feet thick grading 0.047 opt. The project is a joint venture between Uranerz Exploration and Mining, Takla Star Resources, and Fairstar Explorations; Uranerz is the operator (NM, 7/17/95).

Battle Mountain district

Production continued during 1995 from Battle Mountain Gold Co.'s Reona Gold Mine, while total contained gold reserves in the Battle Mountain complex increased to 60.2 million tons with an average grade of 0.036 opt gold. The increase is largely from the Phoenix development project where reserves now stand at 46.6 million tons grading 0.040 opt gold. The Phoenix project plan calls for both milling and heap-leach facilities and incorporates the mining of a number of satellite orebodies. The project is targeted for completion in 1997 (DMR, 4/26/95; Battle Mountain Gold 1995 annual report).

Aquaterre Mineral Development has increased its Nevada holdings by acquiring three mineral leases to explore the BMS and Golden Wonder properties adjacent to Aquaterre's HCS project in the Battle Mountain district. Aquaterre plans a 15,000-foot drilling program on the HCS project; a 5,000-foot drilling program on the Golden Wonder property, 3 miles to the east; and mapping and sampling on the BMS property (NM, 1/8/96).

Buffalo Valley district

Fairmile Acquisitions Inc. reported that 13 holes were completed in 1995 on its Buffalo Valley property, located 5 miles south of Santa Fe Pacific Gold's Lone Tree Mine. Drilling in an area covered by alluvium about 1 mile northwest of the old Buffalo Valley open pit, along the projection of the Buffalo Valley fault, shows a well-zoned mineralized system with gold distinctly centered around a Tertiary intrusive body (Fairmile Acquisitions Inc. press release, 1/16/96).

Initial production of 15,000 to 20,000 oz of gold is expected in 1996 from Santa Fe Pacific Gold's Trenton Canyon property. Full production of 50,000 to 80,000 oz is expected annually over the anticipated mine life of 7 years. Santa Fe Pacific Gold reports that Trenton Canyon is a shallow oxide deposit containing 14.6 million tons with an average grade of 0.035 opt gold (SMR, 6/10/95).

Bullion district

Santa Fe Pacific Gold Corp. began drilling International Calneva Gold's Blue Spider property in November. The Blue Spider property is adjacent to Placer Dome's South Pipeline property (NM, 1/2/95, 3/6/95).

Romarco Minerals and joint venture partner Uranerz USA have begun an 8,000-foot minimum drilling program on their Orbit-Utah Camp property. Previous holes on the property encountered ore-grade mineralization at a depth of 1,200 feet (NM, 10/2/95; 12/4/95). At the adjacent Clipper property, Romarco Minerals will form a joint venture with Minorca Resources to explore the Clipper Mine, an earlier producing sediment-hosted silver-lead-zinc deposit with gold and copper values (NM, 10/2/95).

Royal Gold Inc. has acquired the 113-claim NAD property and the 10-claim TUB property; both properties are located near Placer Dome's South Pipeline project. Geophysical work and drilling on these properties are scheduled for 1996. Royal Gold is also continuing exploration at the GAP and Windmill target areas (DMR, 3/8/95; SMR, 9/9/95).

Placer Dome Inc. reported that its U.S. subsidiary, Placer Dome U.S. Inc., has resolved all litigation concerning the Pipeline project. The litigation

was commenced in 1992 by Gold Fields Mining Co. challenging Placer Dome's conduct in securing an option contract to purchase Gold Field's mining claims in the Pipeline area. Approximately 40% of the Pipeline orebody is on the Gold Fields claims. The court ruled in Placer Dome's favor on all mining claim and boundary disputes, and the parties have now reached agreements to settle all remaining claims and counterclaims. The Pipeline and South Pipeline deposits are now wholly owned or controlled by the Cortez Joint Venture. Placer Dome is completing feasibility studies on the Pipeline deposits and is considering the possibility of combining the development of the two properties. Pipeline contains 4.3 million oz of gold reserves. Production is expected to begin in mid-1997, with output planned to average about 310,000 oz of gold per year for 12 years (DMR, 4/5/95, 8/2/95; Placer Dome Inc. 1995 annual report).

Coral Gold Corp. reports that 90 reverse circulation and six core drill holes have been completed by Amax Gold on Coral Gold's Robertson project. Coral Gold expects the current proven and mineable reserves to substantially increase based on excellent results of the infill drilling on the Altenburg Hill and Gold Pan zones. These contain, on average, significantly higher grade intercepts than the Porphyry zone on which last year's feasibility was based. The shallow, 2,200-foot by 1,200-foot Porphyry zone has a drill-indicated resource of 20 million tons grading 0.036 opt gold (NM, 6/5/95; SMR, 12/9/95).

Levon Resources has acquired options from Coral Gold Corp. to joint venture both the Ruff and the Norma-Sass properties located in Crescent Valley, Nevada. Levon can acquire a 50% interest in the two properties by initial cash payments, stock sale, and exploration expenditures, subject to an exclusive option by Amax to acquire up to a 51% interest in the properties by bringing them to production (DMR, 9/20/95).

Kingston district

Joint venture partners Verdstone Gold and Stirrup Creek Gold plan a \$300,000 surface and underground drilling program to explore the Victorine Mine property beginning in February 1996. Drilling in 1992 discovered the Treasure Island zone and other mineralized zones near the old Victorine Mine workings. Proven and probable reserves are estimated at 256,000 tons grading 0.36 opt gold based on a cutoff grade of 0.15 opt gold, with a further possible reserve of 130,000 tons grading 0.24 opt gold (NM, 1/15/96).

Lewis district

Idaho Consolidated Metals Corp. optioned the Dean Mine and mill site and intends to establish sufficient

high-grade reserves to justify the construction of a facility utilizing the Swisher-bromine hydrometallurgical process for refractory sulfide ores. Independent reports on the property indicate a possible to probable gold resource of 246,000 oz with 11,000 oz proven; part of this has already been mined (DMR, 9/13/95).

Other exploration activity on the Battle Mountain trend includes that of X-Cal Resources, which controls the 2,000-acre Goldspar claim group and the Mill claims, east of the Goldspar group. On the Mill claims, altered and fractured rocks of the lower plate of the Roberts Mountains thrust are exposed in the Goat Ridge window in the Shoshone Range. Drilling by BHP Minerals on the property in 1993 and 1994 intersected 10 feet of 0.52 opt gold and 40 feet of 0.012 opt gold. After BHP dropped the property, X-Cal began permitting for step-out drilling on upper plate rocks. Santa Fe Pacific Gold owns a block immediately north of X-Cal's Mill claims in the Shoshone Range. A 75-25 joint venture between Cyprus Amax Minerals and Amax Gold, is exploring the North Mill Creek prospect, adjacent to Santa Fe Pacific's block. Drilling is planned in the near future. Cominco is now drilling an 1,800-acre claim block controlled by X-Cal south of Eureka, where Cominco can earn up to a 70% interest through its exploration expenditures (NM, 7/31/95).

LINCOLN COUNTY

Delamar district

Five holes of a phase three drilling program have been completed at the Easter gold property of World Wide Minerals, Ltd. All the holes intersected the previously identified mineralized zone. The drill program will continue for at least 18 holes totaling 6,000 feet. Phases one and two, conducted last year on the main vein, defined gold ore reserves of 1.5 million tons grading 0.069 opt gold. These are open-pit reserves delineated to an average depth of only 200 feet. Geophysical surveys have revealed that the Main vein persists at least 400 feet to the west, and several strong targets were encountered on the 2,000-foot-long west vein (DMR, 9/6/95, 9/20/95).

Patterson Pass

Part of Lexam Explorations Inc. 1995 Nevada exploration program included drilling at Patterson Pass, where one drill hole intersected 25 feet of 0.040 opt gold starting at 30 feet, and 25 feet of 0.014 opt gold starting at 75 feet (Lexam Explorations Inc. news release, 2/19/96).

LYON COUNTY

Talapoosa district

Miramar Mining acquired the Talapoosa property through a takeover of Athena Gold early in 1995 and has since drilled more than 73,000 feet of reverse circulation and core holes on the property. Miramar Mining has calculated proven and probable reserves of 29.9 million tons grading 0.026 opt gold and 0.4 opt silver. A geologic resource of 45 million tons grading 0.025 opt gold and 0.33 opt silver is estimated (NM, 7/3/95, 3/4/96).

Yerington district

Arimetco International Inc. has begun operations at its MacArthur deposit, which contains 51 million tons of oxide copper ore with an average grade of 0.26% copper. Ore from a 12-million-ton starter pit that has an average grade of 0.33% copper is being trucked to leach facilities at Arimetco's nearby Yerington Mine. At the Yerington Mine, Arimetco plans to begin a 2-year project for dewatering the pit, preparatory to mining sulfide ore left by Anaconda, the previous owner, and permitting is underway for a 20,000 ton-per-day mining, crushing, and concentrating operation. Arimetco says the Yerington pit contains provable and developed sulfide ore of 50 million tons grading 0.49% copper with a 0.70:1 stripping ratio. Meanwhile, Arimetco is processing 18.5 million tons of low-grade oxide dump material by heap-leaching, yielding about 45,000 pounds of copper per day (E&MJ, 5/1/95; RMPD, 5/1/95; NM, 5/15/95).

MINERAL COUNTY

Aurora district

Consolidated Nevada Goldfields Corp., in attempting to delineate the eastern extension of the Juniata vein at their Aurora Gold Mine, discovered a quartz stockwork system containing values from 0.03 to 0.054 opt gold over extensive widths. High-grade veins within the system assay up to 0.15 opt gold per ton over 30 feet. The combination vein and stockwork deposit, called the Martinez, has now been tested by drilling over 550 feet of its projected 1,400-foot strike length and a mineral inventory of 1.54 million tons grading 0.055 opt gold has been defined (NM, 3/20/95; DMR, 10/4/95).

At its Aurora Partnership Gold Mine, Electra Consolidated Mining has identified a zone estimated to contain 230,000 tons grading 0.208 opt gold within

a portion of the Humboldt vein system, immediately adjacent to the eastern end of the open pit. Interpretation of recently completed drilling indicates that there are three parallel mineralized vein systems on the property, of which the Humboldt vein system is only one. Electra is also continuing to evaluate the underground resource of its Aurora property, estimated at 1.5 million tons grading 0.1 opt gold (NM, 3/13/95; SMR, 9/2/95; DMR, 10/18/95).

Candelaria district

Kinross Gold Corp. reported the results of a 1995 assessment of the Deep Diablo resource area of its Candelaria Mine. The Deep Diablo resource adjoins the projected boundary of the final Mount Diablo pit, and would be accessed from underground. With the addition of the new resource, mine reserves now total 6,663,000 tons of ore grading 0.005 opt gold and 1.68 opt silver (Kinross Gold Corp. 1995 annual report, 3/7/96).

Garfield district

Eureka Resources is assessing the molybdenum potential of its Mindora property. Worked in the early 1980s as a heap-leach, gold-silver operation, the property is also known to contain a potential resource of more than 50 million tons grading 0.11% molybdenum. Eureka Resources is considering drilling four 1,000-foot-deep holes to test the deposit (NM, 1/23/95).

Pamlico district

Cactus West Explorations and Pamlico Gold joint venture report they are evaluating the results of 50 holes drilled on the Pamlico property. Thirteen of the reverse-circulation holes were in the vicinity of an earlier drill hole which showed 120 feet grading 0.65 opt gold. Drilling indicates the presence of a gold-bearing zone or structural system 200 feet by 400 feet or larger, open to the northeast and east. Gold is associated with abundant iron and manganese oxides but with very little quartz veining. (NM, 2/27/95; NM, 4/10/95)

Pilot Mountains district

Cactus West reports a drill-indicated resource at its Copper Mountain property of 2 to 3 million tons with an average grade of 0.6% copper with a potential geological resource of 10 to 15 million tons (SEG, 1/7/95).

NYE COUNTY

Bare Mountain district

Inter-Rock and Rayrock Yellowknife Resources have agreed on a plan to develop their Daisy gold project. The 11-square-mile Daisy property contains five sulfide and/or oxide gold orebodies aligned along an east-northeast trend: the Secret Pass, Mother Lode, Sunday Night (Joshua Hollow), South zone, and West zone deposits. The combined geologic resource contained within the Daisy property is estimated at 51.8 million tons averaging 0.026 opt gold. The main deposit, Secret Pass, has mineable oxide reserves of 11.4 million tons averaging 0.018 opt gold. The Secret Pass reserve could increase to a total of 17.9 million tons grading 0.021 opt, if a bacterial oxidation pretreatment process to treat sulfide gold mineralization proves to be viable. Development at Secret Pass is scheduled for March, 1996, with heap-leaching to begin by late 1996 at the rate of 2 million tons per year over an expected mine life of six years. Annual production anticipated is 30,000 oz of gold (NM, 5/29/95; 10/2/95; DMR, 9/6/95).

Cathedral Gold Corp. has acquired an option interest in the Goldspar property covering approximately 1,700 acres adjacent to Cathedral's Sterling Mine. At the Sterling Mine, drilling near the new Bare Top zone did not encounter economically significant mineralization. Initial surface chip sampling of the Bare Top zone had outlined an area of strongly altered limestone with gold values of 0.10 to 0.50 opt gold. Surface exploration on the Sterling property recently identified a second showing grading up to 0.1 opt gold on a north-south fault 4,000 feet north of the mine (DMR, 7/23/95, 9/6/95, 11/22/95).

Ellsworth district

Cordex Exploration is planning to drill 13 holes in the Return Mine area (U.S. Forest Service plan of operation, 10/23/95).

Fairplay district

Arimetco International has acquired the Sullivan property and adjacent claims from Omega Resources and has concluded the purchase of the nearby Paradise Peak operation from FMC Gold. Paradise Peak's main asset is its gold processing plant, which has nearly all operating permits active. Arimetco will use the facility to process ore from the Sullivan copper-gold orebody, 2.3 miles away. The Sullivan deposit contains proven and probable reserves of 17 million tons of oxide ore grading

0.34% copper and 0.0255 opt gold, plus another 8.5 million tons grading 0.32% copper. At least another 2 million tons of ore at similar grades is felt to be possible. Arimetco will complete the mining and leaching of certain residual ores located on the Paradise Peak property, and will file modification requests to treat Sullivan as a satellite orebody of Paradise Peak. The purchase from FMC Gold also includes 592 acres of patented lode mill-site claims and 2,900 acres of unpatented lode claims. FMC Gold retains mineral rights below 550 feet at the Paradise Peak property as well as a 2% NSR royalty on minerals produced above 550 feet (DMR, 12/6/95, 12/13/95; PD, 10/1/95; SMR, 2/17/96).

Round Mountain district

Round Mountain added much more gold to reserves than it mined during the year. At year's end, its reserves totaled 10.0 million oz, up from 7.8 million oz a year ago. In 1995, Round Mountain produced its three-millionth ounce of gold since Echo Bay became the operator. The mine had less gold than that in reserves — only 1.8 million oz — when Echo Bay acquired its interest in 1985. With current reserves, Round Mountain has an indicated mine life of 17 more years (Echo Bay Mines press release, 2/14/96).

Twin River district

Knorex Resources Inc. has acquired an option from Gold Valley Resources Inc. on one patented and 15 unpatented mining claims located in Ophir Canyon. The property includes the historic Murphy and McDonald Mines, which operated in the late 19th and early 20th centuries. The operation is expected to produce an early cash flow from the processing of a 30,000-ton stockpile on the property (DMR, 11/22/95).

PERSHING COUNTY

Goldbanks district

Kinross Gold Corp. acquired a 50% interest in the Goldbanks property from Restoration Minerals Co. in June 1995. The joint venture now controls 935 claims encompassing about 28 square miles. A campaign of geological mapping and drilling expanded the reserves in the main zone and led to discoveries of new resources in the KW area, the KN area, and the western extension of the main zone. This year's activity, in conjunction with earlier work by Restoration, established that ore-grade mineralization trends for at least 4 miles north-south, and about 2 miles east-west. Reserves and drill-indicated resources on the property are now estimated at 105.9 million tons containing

1.89 million oz of gold and 6.32 million oz of silver (Kinross Gold Corp. 1995 annual report).

Newhawk Gold Mines Ltd. has acquired a property package in the Goldbanks district near the property of Kinross Gold Corp. covering 3 square miles and including numerous old workings for both mercury and gold. Sampling and geological mapping on the property have outlined two targets, the Del Oro and the Pronto Plata. The Del Oro consists of a 500-foot by 300-foot rock geochemical anomaly on which earlier shallow drilling yielded 0.031 opt gold over 10 feet, and 0.01 opt gold over 50 feet. Anomalous gold values were associated with shallow thrust structures. At the Pronto Plata target, gold mineralization is associated with a north-trending, west-dipping fault zone (NM, 1/15/95; DMR, 11/8/95).

Imlay district

At the Florida Canyon Mine of Pegasus Gold Inc., 1995 exploration more than doubled reserves which now stand at 72.4 million tons grading 0.019 opt gold, proven and probable. In addition, sulfide mineralization has been discovered adjacent to and below the existing pits. Presently 8.0 million tons grading 0.061 opt gold have been outlined. The sulfide mineralization is located along a north-south structure on the western edge of the Main and Madre pits and has a strike length of about 1,200 feet. The zone is open along strike to the north and has not been fully delineated at depth. Drilling will continue during 1996 to further define the sulfide mineralization and to follow-up on other targets identified in 1995 (NM, 8/21/95; Pegasus Gold press release, 2/15/96).

Rosebud district

Hecla Mining Co. worked toward permitting their Rosebud deposit, with construction next year of an underground mine that will produce 75,000 oz of gold a year. Reserves at Rosebud are 1.6 million tons containing 0.36 opt gold and 2.3 opt silver (RMPD, 4/1/95).

WASHOE COUNTY

Deephole district

Homestake Mining Co. has optioned Canyon Resources Corp.'s Mountain View gold property. During 1993 and 1994, Canyon Resources discovered and partially delineated the gold deposit which, at present, contains an estimated 523,000 oz of gold within 19.5 million tons of mineralized rock having an average grade of 0.027 opt gold. The deposit is concealed beneath alluvium, and contains a silicified high-grade

zone of 0.1 to 0.2 opt gold that is open at depth and along strike (SMR, 7/29/95).

Olinghouse district

Alta Gold Co. announced preliminary results of the third phase of drilling at its Olinghouse property. Drilling consisted of seven core holes and 90 reverse-circulation holes. The first core hole cut two different ore zones and contained significant visible gold. At a 330-foot depth, the hole cut 64 feet grading 1.97 opt gold, including a 31.5-foot interval at 3.9 opt gold. The same hole cut 61 feet grading 0.049 opt gold. The second core hole, 400 feet to the west, also contained visible gold, but assay results are not yet in. Before the Phase three drilling program, a geologic resource at Olinghouse was estimated to be about 775,000 oz of gold, of which 404,418 oz were defined as probable reserves. Based on a later reserve report prepared by Pincock, Allen, and Holt, the Olinghouse deposit has proven and probable reserves of 9,655,000 tons with average grade of 0.036 opt gold, containing 347,595 oz of gold. More than half of this reserve lies on patented ground carrying no underlying royalty. Initial production from Olinghouse is scheduled for the fourth quarter of 1996, pending completion of mine design and approval of permits. Projected mine life is eight years. Mineralization at Olinghouse occurs in a series of closely spaced, quartz-adularia-chlorite veins cutting andesitic volcanic rocks. The property consists of nine patented and 300 unpatented mining claims occupying an area of approximately 9 square miles (DMR, 8/2/95; SMR, 1/20/96; Alta Gold Co. annual report, 1995).

WHITE PINE COUNTY

Bald Mountain district

Homestake Mining Co. has entered into an exploration agreement with Western States Minerals Corp. on the White Pine gold property. The White Pine property, located at the northern end of the Bald Mountain-Alligator Ridge mining district, has produced approximately 60,000 oz of gold to date from open-pit, heap-leach operations. Several zones within the project area have been identified to have significant exploration potential. Recent drilling in one of the zones, open at depth and along strike, has encountered several intercepts greater than 100 feet in length containing more than 0.02 opt gold (Homestake Mining Co. press release, 10/6/95).

Robinson district

Alta Gold Co. reported sale of its remaining interest in Robinson Copper Project to Redstone USA Inc.

The Robinson Copper Project, owned and operated by BHP Copper North America, is expected to go into production in 1996 producing 135 million pounds of copper, 110,000 oz of gold, and 325,000 oz of silver annually for 16 years (ICMJ, 3/1/95).

Telegraph district

Surface trenching at the Antone Canyon property of Sharpe Energy and Resources has exposed gold mineralization. The trenching program was testing for the surface extension of gold mineralization discovered in drill holes by an earlier operator. In one trench, a 100-foot surface interval averaged 0.09 opt gold and a 65-foot interval averaged 0.12 opt gold, and another trench encountered a 10-foot surface interval averaging 0.06 opt gold and a 5-foot surface interval averaging 0.28 opt gold (NM, 11/13/95).

White Pine district

A new gold zone, called the Chester gold zone, has been identified at the Mt. Hamilton Gold Mine of Rea Gold Corp. The new zone, initially outlined during a 1994 soil sampling program, is located about 1.5 miles south of the Northeast Seligman gold deposits. Forty reverse-circulation drill holes have now been completed on two mineralized zones of the Chester structure. The Northern zone is at least 400 feet long, is open to the north and east, and is mineralized to within 50 feet of the surface, grading an average of 0.04 opt gold over a 24-foot interval. The Southern zone is over 1,000 feet long and averages 15 feet thick grading 0.03 opt gold. The Mount Hamilton deposit contains 9.04 million tons of mineable ore with 0.052 opt gold and 0.38 opt silver (DMR, 11/8/95; NM, 2/5/96).

Several miles southeast of the main White Pine district, Alta Gold Co. is continuing exploration at the Griffon deposit to define the limits of the open pit, as well to explore for new reserves to the northwest and southeast of the Discovery Ridge and Hammer Ridge deposits. Based on a reserve report prepared by Pincock, Allen, and Holt, the Griffon deposit contains proven and probable reserves of 2,737,000 tons at an average grade of 0.025 opt gold, containing 68,400 oz of gold. Located about 46 miles southwest of Ely, the Griffon deposit is a Carlin-type disseminated gold system hosted in the upper part of the Mississippian Joana Limestone. The Discovery Ridge orebody is about 100 feet thick, 400 feet wide, and 700 feet long. The slightly smaller Hammer Ridge deposit is located about 1,000 feet to the southeast. Pending successful permitting, Alta plans to put Griffon into production in 1997, with an expected mine life of two years (DMR, 8/2/95; Alta Gold Co. annual report, 1995).

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Major Precious-Metal Deposits

by Harold F. Bonham, Jr., and Ronald H. Hess

The information in this compilation was obtained from the Nevada Division of Minerals and from published reports, articles in mining newsletters, and company annual reports and press releases. Locations of most of these deposits are shown on NBMG Map 91, and most active mines are shown on page 2 of this publication.

opt = troy ounces per short ton.

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
CHURCHILL COUNTY				
Bell Mountain	1989: reserves—30,000 oz Au, 125,000 oz Ag	no production	rhyolitic tuff	Miocene
Dixie Comstock	1991: 2.4 million tons, 0.049 opt Au 1995: 100,000 oz Au	1989: development 1990-93: exploration	Tertiary rhyolite	Miocene?
Fondaway Canyon	1988: 400,000 tons, 0.06 opt Au 1990: 400,000 tons, 0.06 opt Au	1989: 1,065 oz Au, 87 oz Ag 1990: 12,000 oz Au 1993: idle	Triassic slate and phyllite	Cretaceous
New Pass property	1994: 3.4 million tons, 0.042 opt Au		Permian greenstone	Mesozoic?
CLARK COUNTY				
Crescent property	1992: 390,000 tons, 0.05 opt Au; 3.3 million tons, 0.022 opt Au			
Goodsprings (Keystone)	1990: <i>estimated geologic resource</i> 64 million tons, 0.05 opt Au 1992: 110,000 tons, 0.11 opt Au	1990: ~1,000 oz Au 1993: idle	lower Paleozoic carbonate rocks	Triassic
ELKO COUNTY				
Big Springs (Sammy Creek)	1989: 1.55 million tons, 0.172 opt Au	1987-88: ~106,000 oz Au 1989-92: 274,000 oz Au, 48,000 oz Ag 1993: 52,752 oz Au 1994: 28,315 oz Au, 2,597 oz Ag 1995: 1,780 oz Au, 280 oz Ag	Mississippian to Permian overlap assemblage clastic and carbonate rocks	Cretaceous or Tertiary
Bootstrap/Capstone	1989: <i>geologic resource</i> —25.1 million tons, 0.039 opt Au 1990: 18.3 million tons, 0.044 opt Au 1994: 169,000 oz Au, <i>geologic resource</i> —1 million oz Au	1988-90: NGO	dacitic dikes, Paleozoic siltstone and laminated limestone/chert	~37 Ma
Burns Basin	Reserves and production included in Jerritt Canyon figures		Roberts Mountains and Hanson Creek Formations	Cretaceous or Tertiary
Cobb Creek	1988: <i>geologic resource</i> —3.2 million tons, 0.045 opt Au			
Cord Ranch	1991: 3.5 million tons, 0.037 opt Au 1992: 6.0 million tons, 0.03 opt Au 1994: 350,000 oz Au in 3 deposits			
Dark Star	1991: 4.5 million tons, 0.022 opt Au 1992: 5.76 million tons, 0.02 opt Au			
Dee	1990: 4.5 million tons, 0.059 opt Au 1992: 5.2 million tons, 0.049 opt Au 1994: <i>geologic resource</i> —958,000 oz Au 1995: 550,000 oz Au	1987-88: ~97,000 oz Au 1989-92: 135,000 oz Au, 142,000 oz Ag 1993: 25,860 oz Au 1994: 24,219 oz Au 1995: 45,000 oz Au	Vinini Formation Devonian carbonates, dacitic dikes	Cretaceous or Tertiary

continued

NGO: Newmont Gold Operations (Bootstrap/Capstone, Blue Star, Carlin, Genesis, Gold Quarry and Rain mines) reported production of 895,500 oz Au in 1988, 1,467,800 oz Au and 117,400 oz Ag in 1989, 1,676,000 oz Au in 1990, 1,575,700 oz Au in 1991, 1,588,000 oz Au and 98,000 oz Ag in 1992, 1,666,400 oz Au and 175,000 oz Ag in 1993, 1,554,000 oz Au and 158,000 oz Ag in 1994, and 1,634,483 oz Au and 187,859 oz Ag in 1995.

W = withheld

MAJOR PRECIOUS METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
ELKO COUNTY (continued)				
Doby George (Aura district)	1995: 3.7 million tons, 0.060 opt Au			
Emigrant Springs	1989: 30.3 million tons, 0.021 opt Au	exploration	lower Paleozoic sedimentary rocks	Cretaceous or early Tertiary
Hollister (Ivanhoe)	1989: <i>oxide</i> —18.4 million tons, 0.035 opt Au; estimated mineral inventory 83.5 million tons, 0.034 opt Au, with 52.8 million tons of <i>oxide</i> and 30.7 million tons of <i>sulfide</i> 1995: <i>geologic resource</i> —1,300,000 oz Au; 42 million tons of 0.031 opt Au (combined <i>oxide</i> and <i>sulfide</i>)	1990: 6,000 oz Au 1991: 60,000 oz Au 1993: exploration	rhyolitic tuff, flows, volcaniclastic rocks, Paleozoic sedimentary rocks	Miocene
Jerritt Canyon (includes Saval Canyon)	1989: 21.6 million tons, 0.143 opt Au mill ore; 6.5 million tons, 0.043 opt Au leachable 1990: new discovery south of current mine has a <i>geologic resource</i> of 3.2 million tons, 0.284 opt Au 1991: <i>geologic resource</i> —4.7 million oz Au	1981-90: ~2.6 million oz Au 1991-94: 1,380,000 oz Au, 25,000 oz Ag 1995: 328,000 oz Au	Hanson Creek and Roberts Mountains Formations	~40 Ma
Kinsley Mountain	1988: 2.1 million tons, 0.048 opt Au 1993: 2.6 million tons, 0.047 opt Au 1994: 3.5 million tons, 0.044 opt Au 1995: 3.5 million tons, 0.045 opt Au	1993: evaluation 1995: 44,040 oz Au, 8,050 oz Ag	upper Paleozoic carbonate rocks	Oligocene?
Meikle (Purple Vein)	1992: <i>geologic resource</i> —7.9 million tons, 0.613 opt Au 1993: <i>geologic resource</i> —6.6 million oz Au 1994: 6.6 million oz, 0.68 opt Au	underground development	Popovich and Roberts Mountains Formations	Cretaceous or Tertiary
Midas gold project (Gold Circle district)	1995: 13 million tons, 0.16 opt Au, 2.7 opt Ag, announced resource, proven Au reserve <500,000 oz		Tertiary volcanic rocks	Miocene
Pony Creek	1994: <i>geologic resource</i> —1.1 million tons, 0.057 opt Au			
Rain	1989: <i>geologic resource</i> —22.6 million tons, 0.052 opt Au 1990: 9 million tons, 0.063 opt Au	1988: 29,000 oz Au 1991: 135,400 oz Au 1994: NGO	Webb Formation	36-37 Ma
SMZ	1989: <i>geologic resource</i> —1.6 million tons, 0.019 opt Au			
Trout Creek	1988: 1.5 million tons, 0.04 opt Au	1988: exploration	lower Paleozoic rocks	Cretaceous or Tertiary
Tuscarora (Dexter)	1987: 2 million tons, 0.039 opt Au, 1.9 opt Ag 1988: 1.8 million tons, 0.037 opt Au, 0.74 opt Ag	1896-1902: 29,940 oz Au, 28,543 oz Ag 1987-89: 33,000 oz Au, 143,000 oz Ag 1990: 1,163 oz Au, 41,865 oz Ag 1992-93: idle	Eocene rhyolitic ignimbrite and andesite	38 Ma
Winters Creek	1986: 1.4 million tons, 0.146 opt Au	evaluation, exploration	lower Paleozoic carbonate rocks	Cretaceous or Tertiary
Wood Gulch	1988: 500,000 tons, 0.098 opt Au, 0.4 opt Ag 1991: mined out	1989: 19,810 oz Au, 31,122 oz Ag 1990: 14,926 oz Au, 35,374 oz Ag	lower Paleozoic sedimentary rocks, andesite-dacite dikes and sills	Cretaceous or Tertiary
Wright Window	1986: 1.3 million tons, 0.095 opt Au	1992: 3,500 oz Au	lower Paleozoic carbonate rocks	Cretaceous or Tertiary
ESMERALDA COUNTY				
Boss Mine	1987: 500,000 tons, 0.07 opt Au	1993: idle	Ordovician sedimentary rocks	Miocene?
Boss property	1990: <i>reserves</i> —637,500 tons, 0.023 opt Au 1990: <i>geologic resource</i> —31,000 oz Au			

NGO: Newmont Gold Operations (Bootstrap/Capstone, Blue Star, Carlin, Genesis, Gold Quarry and Rain mines) reported production of 895,500 oz Au in 1988, 1,467,800 oz Au and 117,400 oz Ag in 1989, 1,676,000 oz Au in 1990, 1,575,700 oz Au in 1991, 1,588,000 oz Au and 98,000 oz Ag in 1992, 1,666,400 oz Au and 175,000 oz Ag in 1993, 1,554,000 oz Au and 158,000 oz Ag in 1994, and 1,634,483 oz Au and 187,859 oz Ag in 1995.

MAJOR PRECIOUS METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
ESMERALDA COUNTY (continued)				
Goldfield Project	1983: 1.75 million tons, 0.087 opt Au 1991: 1.2 million tons, 0.05 opt Au 1993: 2.3 million tons, 0.073 opt Au 1994: 3.48 million tons, 0.071 opt Au	1903-45: 4.19 million oz Au, 1.45 million oz Ag 1989: 1,987 oz Au, 200 oz Ag 1993: 11,350 oz Au 1995: 9,850 oz Au	andesite, rhyodacite, rhyolite	21 Ma
Hasbrouck	1986: 12.9 million tons, 0.0291 opt Au, 0.59 opt Ag	1986-92: exploration 1993: idle	Siebert Formation tuff and volcanoclastic rocks	16 Ma
Hill-of-Gold deposit (Divide)	1988: 500,000 tons, 0.04 opt Au, 0.40 opt Ag 1995: <i>geologic resource</i> —100,000 oz Au, including reserves of 20,000 oz at 0.036 opt Au	evaluation 1991-93: idle	Miocene silicic tuff	16 Ma
Silver Peak	1991: 531,300 tons, 0.124 opt Au 1995: <i>proven and probable reserves</i> — 5.2 million tons, 0.068 opt Au, <i>geologic resource</i> —405,000 oz Au (includes Mary-Drinkwater project)	1991: 25,000 oz Au, 8,000 oz Ag	Wyman Formation	Mesozoic?
Top	1986: <i>geologic resource</i> —5.2 million tons, 0.093 opt Au			
Weepah	1986: 200,000 tons, 0.1 opt Au, 0.4 opt Ag	1986-87: 58,000 oz Au 1988-90: idle	Wyman Formation	Cretaceous
EUREKA COUNTY				
Archimedes/Ruby Hill project/East and West Archimedes/Deep East and Achilles	1994: <i>geologic resource</i> —20 million tons, 0.08 opt Au 1995: 7.62 million tons, 0.099 opt Au (West Archimedes)	exploration	Goodwin Limestone	Cretaceous?
Blue Star	1989: <i>geologic resource</i> —22.2 million tons, 0.030 opt Au 1990: 32 million tons, 0.047 opt Au (includes Genesis)	1974-84: intermittent 1988-94: NGO	lower Paleozoic sandy siltstone and carbonate rocks, granodiorite	Cretaceous or early Tertiary
Bobcat	1988: <i>geologic resource</i> —17.7 million tons, 0.029 opt Au		lower Paleozoic rocks	Cretaceous or Eocene
Buckhorn	1990: 700,000 tons, 0.05 opt Au; <i>geologic resource</i> —200,350 oz Au 1991: 409,000 tons, 0.062 opt Au 1992: open-pit ore mined out 1993: <i>geologic resource</i> —1.1 million tons, 0.11 opt Au	1988-91: 97,922 oz Au, 376,487 oz Ag 1992: 7,700 oz Au, 28,800 oz Ag 1993: 3,800 oz Au, 4,600 oz Ag	basaltic andesite, sinter, silicified sedimentary rocks	14.6 Ma
Bullion Monarch	1987: 1 million tons, 0.10 opt Au	exploration, evaluation	lower Paleozoic sedimentary rocks	Tertiary or Mesozoic
Carlin	1989: <i>geologic resource</i> —20.8 million tons, 0.029 opt Au 1990: 1.4 million tons, 0.066 opt Au	1965-84: 4.3 million oz Au 1988: 25,320 oz Au 1989: idle 1991: 35,500 oz Au 1993: underground development 1994: NGO	Roberts Mountains Formation	Cretaceous or early Tertiary
Genesis	1989: <i>geologic resource</i> —35.8 million tons, 0.044 opt Au 1990: 32 million tons, 0.047 opt Au (includes Blue Star)	1986: production commenced 1988-94: NGO	Ordovician-Devonian limestone, argillite chert	Cretaceous or early Tertiary
Gnome	1988: 2.7 million tons, 0.048 opt Au	exploration	Paleozoic sedimentary rocks	Cretaceous or early Tertiary
Gold Bar	1988: 2.75 million tons, 0.10 opt Au 1989: <i>geologic resource</i> —1.45 million oz Au 1990: mined out in December 1994: 240,000 oz Au 1995: 190,000 oz Au	1987-88: 91,000 oz Au 1989: 66,000 oz Au 1990: 81,263 oz Au 1991: 80,727 oz Au, 3,000 oz Ag 1992: 80,000 oz Au 1993: 55,080 oz Au 1994: 20,000 oz Au	Devonian Nevada Formation	Eocene?

NGO: Newmont Gold Operations (Bootstrap/Capstone, Blue Star, Carlin, Genesis, Gold Quarry and Rain mines) reported production of 895,500 oz Au in 1988, 1,467,800 oz Au and 117,400 oz Ag in 1989, 1,676,000 oz Au in 1990, 1,575,700 oz Au in 1991, 1,588,000 oz Au and 98,000 oz Ag in 1992, 1,666,400 oz Au and 175,000 oz Ag in 1993, 1,554,000 oz Au and 158,000 oz Ag in 1994, and 1,634,483 oz Au and 187,859 oz Ag in 1995.

continued

MAJOR PRECIOUS METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
EUREKA COUNTY (continued)				
Gold Canyon	1992: <i>reserves</i> —86,500 oz Au, <i>geologic resource</i> —131,000 oz Au 1993: 770,000 tons, 0.080 opt Au			
Gold Pick	1988: 10 million tons, 0.06 opt Au 1990: 9.7 million tons, 0.057 opt Au includes Gold Ridge and Goldstone 1991: 4.5 million tons, 0.055 opt Au 1992: <i>geologic resource</i> —329,700 oz Au, includes eastern deposit 1993: 1.4 million tons, 0.079 opt Au	exploration	Paleozoic sedimentary rocks	Eocene?
Gold Quarry	1987: 197.8 million tons, 0.042 opt Au 1988: <i>geologic resource</i> —503 million tons, 0.04 opt Au 1990: 212.6 million tons, 0.042 opt Au, <i>geologic resource</i> —534.3 million tons, 0.037 opt Au 1991: <i>reserves</i> —9.3 million oz Au	1985 170,000 oz Au 1988-94: NGO	Ordovician to Devonian chert, shale, siltstone, and impure carbonates; in part, Vinini Formation	Cretaceous or early Tertiary
Gold Ridge	1988: 4 million tons, 0.06 opt Au 1990: <i>see</i> Gold Pick 1991: 2.9 million tons, 0.04 opt Au 1992: 1.4 million tons, 0.038 opt Au 1993: 426,000 tons, 0.059 opt Au	exploration, evaluation	Paleozoic sedimentary rocks	Eocene?
Goldstone	1988: 1.7 million tons, 0.08 opt Au 1990: <i>see</i> Gold Pick 1991: 845,000 tons, 0.063 opt Au 1992: 878,000 tons, 0.061 opt Au 1993: 130,928 tons, 0.104 opt Au	exploration, evaluation	Paleozoic sedimentary rocks	Eocene?
Goldstrike (Betze, Post) and Meikle	1988: 128.4 million tons, 0.095 opt Au 1990: <i>geologic resource</i> —18.4 million oz Au 1992: 112.1 million tons, 0.180 opt Au, <i>geologic resource</i> —21 million oz Au 1993: <i>geologic resource</i> —29.1 million oz Au 1994: <i>reserves</i> —29.6 million oz Au 1995: 23 million oz Au	1980-88: 440,000 oz Au 1989: 207,264 oz Au, 15,500 oz Ag 1990: 352,880 oz Au, 20,112 oz Ag 1991: 546,146 oz Au, 22,000 oz Ag 1992: 1,108,218 oz Au, 34,735 oz Ag 1993: 1,439,929 oz Au 1994: 1,849,503 oz Au, 107,330 oz Ag 1995: 2,031,883 oz Au, 68,217 oz Ag	Ordovician to Devonian chert, shale, siltstone, and impure carbonates; in part, Vinini Formation	Cretaceous or early Tertiary
Horse Canyon	1984: 3.94 million tons, 0.055 opt Au 1988: included in Gold Acres figures	1984: 40,000 oz Au 1988-93: included with Gold Acres	Vinini Formation, Wenban Limestone	34 Ma?
Lantern	1988: <i>geologic resource</i> —15.45 million tons, 0.028 opt Au	exploration	lower Paleozoic sedimentary rocks	Cretaceous or early Tertiary
Maggie Creek	1988: <i>geologic resource</i> —303,000 tons, 0.092 opt Au	1984: 1,250,000 tons 1986: intermittent production 1988: no production reported	Ordovician to Devonian siltstone, chert, sandstone, impure limestone	Cretaceous or early Tertiary
North Star	1989: <i>geologic resource</i> —6.9 million tons, 0.052 opt Au 1990: 3.9 million tons, 0.052 opt Au	1988: 4,250 oz Au	lower Paleozoic sedimentary rocks	Cretaceous or early Tertiary
Pete	1988: <i>geologic resource</i> —15.7 million tons, 0.030 opt Au 1989: 4.3 million tons, 0.036 opt Au, <i>geologic resource</i> —15.8 million tons, 0.030 opt Au	exploration	Roberts Mountains Formation	Cretaceous or early Tertiary
Post/Deep Post	Newmont Gold Co. holdings only- 1988: <i>geologic resource</i> —195 million tons, 0.062 opt Au 1990: 40.1 million tons, 0.147 opt Au 1992: 9 million oz Au	1988: 4,930 oz Au 1991: 177,500 oz Au	Vinini Formation, lower Paleozoic carbonate rocks	Cretaceous?
Project Glistler		1989: 8,450 oz Au, 23,519 oz Ag		
Ratto Canyon	1984: ~200,000 oz Au	exploration 1995: idle	Dunderberg Shale, Hamburg Dolomite	Oligocene
Rock Creek	1988: 30,000 oz Au			
Tonkin Springs	1987: <i>oxide</i> —1.5 million tons, 0.05 opt Au; <i>sulfide</i> —2.5 million tons, 0.09 opt Au 1991: 9 million tons, 0.05 opt Au 1995: <i>proven and probable reserves</i> — 956,000 oz Au	1987: ~9,700 oz Au 1988: 565 oz Au 1989: 1,753 oz Au, 1,402 oz Ag 1990: 2,068 oz Au, 470 oz Ag 1992: idle, exploration, metallurgical testing	Vinini Formation, dacitic dikes	Oligocene?

MAJOR PRECIOUS METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
EUREKA COUNTY (continued)				
Tusc	1988: <i>geologic resource</i> —15.8 million tons, 0.059 opt Au 1990: 13.3 million tons, 0.062 opt Au	exploration 1995: in production	lower Paleozoic sedimentary rocks	Cretaceous or early Tertiary
Windfall	1988: 3 million tons, 0.03 opt Au 1995: mined out	1908-16: 24,000 oz Au 1975-84: 90,000 oz Au 1988: 6,380 oz Au, 59 oz Ag	Hamburg Dolomite	Eocene or Oligocene
Zeke	1989: 2 million tons, 0.056 opt Au, 0.224 opt Ag			
HUMBOLDT COUNTY				
Adelaide Crown	1989: <i>south pit</i> —585,000 tons, 1.313 opt Ag, 0.043 opt Au; <i>additional area</i> - 165,000 tons, 0.015 opt Au, 1.10 opt Ag	1990: 3,068 oz Au, 37,537 oz Ag 1991: 1,849 oz Au, 15,937 oz Ag 1992: idle	Preble Formation	Tertiary
Ashdown	1988: 1 million tons, 0.11 opt Au 1992: 1.1 million tons, 0.12 opt Au	exploration	Mesozoic granite	Mesozoic
Chimney Creek	1988: <i>proven, probable</i> —26.9 million tons, 0.068 opt Au; <i>inferred in south pit</i> —2.1 million oz Au 1989: <i>geologic resource</i> —4.6 million oz Au 1993: <i>see</i> Twin Creeks	1987-88: 300,000 oz Au 19989: 222,556 oz Au, 55,953 oz Ag 1990: 220,000 oz Au 1991: 228,065 oz Au, 100,000 oz Ag 1992: 247,969 oz Au, 113,463 oz Ag 1993: <i>see</i> Twin Creeks	upper Paleozoic sedimentary rocks	Eocene?
Crofoot/Lewis	1988: 25 million tons, 0.025 opt Au 1990: 12 million tons, 0.020 opt Au 1991: 13.9 million tons, 0.019 opt Au 1992: 29.8 million tons, 0.024 opt Au, <i>geologic resource</i> —45 million tons, 0.021 opt Au 1993: 29.8 million tons, 0.024 opt Au 1994: <i>geologic resource</i> —56.7 million tons, 0.018 opt Au 1994: <i>geologic resource</i> —58.1 million tons, 0.019 opt Au 1995: 66.5 million tons, 0.019 opt Au	1988: 75,800 oz Au 1989: 82,000 oz Au, 123,000 oz Ag 1990: 92,000 oz Au, 110,000 oz Ag 1991: 94,340 oz Au, 151,553 oz Ag 1992: 100,000 oz Au, 280,000 oz Ag 1993: 86,516 oz Au, 310,559 oz Ag 1994: 94,500 oz Au, 297,000 oz Ag 1995: 101,128 oz Au, 417,823 oz Ag	Camel conglomerate, rhyolite dikes	1-2 Ma
Getchell	1989: 8.1 million tons, 0.154 opt Au mill grade and 1.43 million tons, 0.049 opt Au heap-leach ore; <i>additional geologic resource</i> - 5.7 million tons, 0.092 opt Au sulfide and 2.6 million tons, 0.055 opt Au oxide 1991: 6.5 million tons, 0.192 opt Au sulfide and 1.8 million tons, 0.039 opt Au oxide. 1992: <i>sulfide</i> —7.0 million tons, 0.194 opt Au; <i>oxide</i> —2.5 million tons, 0.031 opt Au 1993: <i>geologic resource</i> —1.3 million oz Au 1994: <i>reserves</i> —1.59 million oz Au 1995: <i>resource</i> —6.2 million tons, 0.354 opt Au, <i>reserves</i> —1.25 million oz Au (Turquoise Ridge only)	1938-50, 1962-67: 788,875 oz Au 1987-88: ~35,000 oz Au 1989: 120,730 oz Au, 9,407 oz Ag 1990: 172,029 oz Au 1991: 200,958 oz Au 1992: 230,600 oz Au, 78,700 oz Ag 1993: 210,000 oz Au, 51,000 oz Ag 1994: 230,000 oz Au, 57,000 oz Ag 1995: 120,000 oz Au, 72,000 oz Ag	Comus and Preble Formations, granodiorite dikes, granodiorite	90 Ma
Lewis	1984: 10 million tons, 0.04 opt Au 1987: 9 million tons, 0.032 opt Au	1984: 3,500 tons/day 1987: ~8,800 oz Au 1988-90: included in Crofoot/Lewis	Camel conglomerate, rhyolite dikes	1-2 Ma
Lone Tree	1990: 5.4 million tons oxide mill ore, 0.159 opt Au, 5.7 million tons heap-leach ore, 0.025 opt Au and 1.2 million oz Au in sulfide ore 1991: <i>reserves</i> —1 million oz Au 1992: 3.14 million oz Au 1993: 3.8 million oz Au 1994: 4 million oz Au	1991: 36,424 oz Au 1992: 128,000 oz Au 1993: 155,000 oz Au 1994: 226,911 oz Au 1995: 240,000 oz Au, 11,000 oz Ag	Havallah Formation and dacite porphyry	38 Ma
Marigold	1990: 4.3 million tons, 0.105 opt Au mill ore, 7.6 million tons, 0.026 opt Au heap-leach ore 1992: 10 million tons, 0.055 opt Au	1989: 16,000 oz Au, 484 oz Ag 1990: 60,750 oz Au, 1,600 oz Ag 1991: 65,469 oz Au, 2,000 oz Ag 1992: 90,000 oz Au, 4,000 oz Ag 1993: 90,000 oz Au, 1,700 oz Ag 1994: 84,895 oz Au 1995: 59,800 oz Au	Paleozoic chert, argillite, and carbonate rocks	early Oligocene

continued

MAJOR PRECIOUS METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
HUMBOLDT COUNTY (continued)				
North Stonehouse	1991: 2.5 million tons, 0.103 oz Au mill ore		Havallah Formation and porphyry dikes	39 Ma
Pinson (includes Mag pit)	1989: 480,000 oz Au 1992: 4.98 million tons, 0.064 opt Au	1980: 56,000 oz Au 1986-88: 189,864 oz Au 1989: 72,489 oz Au (includes Preble) 1990: 56,382 oz Au 1991: 55,640 oz Au 1992: 50,340 oz Au, 5,730 oz Ag 1993: 50,870 oz Au, 3,470 oz Ag 1994: 44,000 oz Au, 3,500 oz Ag 1995: 44,854 oz Au	Comus Formation	90 Ma
Preble	1989: 15,110 oz Au 1992: idle, mined out	1985: 17,000 oz Au 1987: 28,000 oz Au 1988: 18,828 oz Au 1989: included with Pinson 1990: 1,161 oz Au	Preble Formation	90 Ma?
Rabbit Creek	1989: 4.1 million oz Au; <i>additional geologic resource</i> —1 million Au in refractory material 1990: <i>reserves</i> —2.5 million oz Au; <i>geologic resource</i> —5.1 million oz Au 1992: <i>reserves</i> —3.26 million oz Au 1993: <i>see</i> Twin Creeks	1990: 25,000 oz Au 1991: 115,500 oz Au 1992: 156,000 oz Au 1993: <i>see</i> Twin Creeks	Ordovician	Eocene?
Sleeper	1989: 1,975,000 oz Au 1990: 44.1 million tons, 0.038 opt Au, 0.152 opt Ag 1991: 1.7 million oz Au, 6.7 million oz Ag 1993: 751,000 oz Au	1986: 128,000 oz Au, 94,000 oz Ag 1987: 158,696 oz Au 1988: 230,410 oz Au 1989: 256,000 oz Au, 339,650 oz Ag 1990: 250,131 oz Au, 391,886 oz Ag 1991: 183,346 oz Au, 289,463 oz Ag 1992: 132,383 oz Au, 285,011 oz Ag 1993: 100,020 oz Au, 254,690 oz Ag 1994: 106,912 oz Au, 142,597 oz Ag 1995: 82,062 oz Au, 98,694 oz Ag	Miocene "latite" flows and dikes, silicic ash-flow tuff, Triassic slate and phyllite	Miocene
Trout Creek	1989: 50,000 oz Au			
Twin Creeks (Chimney and Rabbit Creeks)	1993: 5.7 million oz Au 1994: <i>geologic resource</i> —8.5 million oz Au	1993: 482,600 oz Au, 206,200 oz Ag 1994: 501,897 oz Au, 244,710 oz Ag 1995: 451,285 oz Au, 265,462 oz Ag	Paleozoic	Eocene?
Turquoise Ridge (Potosi district)	1995: 6.2 million tons, 0.354 opt Au, <i>geologic resource</i> —2.8 million oz Au		Comus and Preble Formations	Cretaceous or early Tertiary

LANDER COUNTY

Austin Gold Venture	1989: mined out	1986-88: 141,000 oz Au 1989: 50,000 oz Au	Antelope Valley Limestone	Cretaceous or Tertiary
Battle Mountain Complex (Reona Project)	1992: 500,000 oz Au 1993: <i>geologic resource</i> —900,000 oz Au 1995: <i>resource</i> (overall Battle Mountain complex)—60.2 million tons, 0.036 opt Au, including <i>reserves</i> —46.6 million tons, 0.040 opt Au	1994: 12,000 oz Au, 15,000 oz Ag 1995: 74,958 oz Au, 206,807 oz Ag		
Buffalo Valley	1988: 1.5 million tons, 0.05 opt Au 1991: idle 1994: 4.8 million tons, 0.07 opt Au 1995: 511,000 oz Au	1988: 9,238 oz Au 1989: 14,660 oz Au 1990: 15,770 oz Au 1991: W		Eocene?
Cortez	<i>see</i> Gold Acres	1968-82: 1.0 million oz Au	Roberts Mountains Formation	Cretaceous or early Tertiary
Crescent Pit	1994: 1.97 million tons mill grade, 0.125 opt Au, 2.2 million tons heap-leach, 0.029 opt Au			
Crescent Valley	1994: <i>placer reserve</i> —8 million cu yd, 0.031 oz Au/cu yd			

MAJOR PRECIOUS METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
LANDER COUNTY (continued)				
Dean (Lewis district)	1995: <i>proven reserve</i> —11,000 oz Au <i>possible to probable resource</i> —240,000 oz Au			
Elder Creek Project/Shoshone	1989: 91,500 oz Au 1990: 1.5 million tons, 0.041 opt Au	1990: 17,400 oz Au 1991: 2,702 oz Au	Valmy Formation	Cretaceous or Eocene
Fire Creek	1982: 350,000 tons, 0.06 opt Au	1983-84: 767 oz Au	basaltic andesite	Miocene
Fortitude (Copper Canyon) (Battle Mtn.)	1989: <i>proven, probable</i> —6.7 million tons, 0.13 opt Au, 0.47 opt Ag (includes Surprise and Labrador) 1992: <i>reserves</i> —3.1 million tons, 0.05 opt Au, 0.4 opt Ag 1994: mined out	1986: 259,000 oz Au, 902,000 oz Ag 1987: 255,000 oz Au 1988: 243,000 oz Au, 675,000 oz Ag 1989: 254,507 oz Au, 301,272 oz Ag 1990: 261,338 oz Au, 458,143 oz Ag (1988-90 production includes Surprise) 1991: 233,522 oz Au, 417,193 oz Ag 1992: 178,569 oz Au, 421 oz Ag 1993: 57,630 oz Au, 109,650 oz Ag 1994: 38,000 oz Au, 79,700 oz Ag	Battle Formation, Antler Peak Limestone, Pumpnickel Formation	37 Ma
Fortitude Extension (Phoenix)	1992: 500,000 oz Au 1993: <i>geologic resource</i> —900,000 oz Au			
Gold Acres and Little Gold Acres	1987: 4.8 million tons, 0.105 opt Au 1988: 5.4 million tons, 0.093 opt Au 1992: <i>reserves</i> —3.1 million tons, 0.05 opt Au, 0.4 opt Ag	1942-84: 2.4 million tons, 0.13 oz Au/ton; 2 million tons, 0.041 opt Au leached. <i>Little Gold Acres</i> : 800,000 tons, 0.124 opt Au 1988: 42,322 oz Au (includes Horse Canyon) 1989: 39,993 oz Au, 12,234 oz Ag (includes Horse Canyon) 1990: 53,945 oz Au, 10,150 oz Ag 1991: 53,500 oz Au, 6,600 oz Ag 1992: 75,000 oz Au 1993: 66,850 oz Au	Roberts Mountains Formation, Wenban Limestone, Valmy Formation, quartz porphyry dikes	92.8-94 Ma and 36 Ma
Hilltop	1984: 10.5 million tons, 0.073 opt Au 1989: 10 million tons, 0.049 opt Au	no production	Valmy Formation	Oligocene?
Klondike property	1989: 100,000 oz Au equivalent			
McCoy/Cove	1989: <i>proven and probable reserves</i> - 2.9 million oz Au, 128 million oz Ag <i>geologic resource</i> —3.5 million oz Au, 1.50 million oz Ag 1990: <i>reserves</i> —58.7 million tons, 0.045 opt Au, 2.32 opt Ag 1993: <i>reserves</i> —63.3 million tons, 0.037 opt Au, 1.66 opt Ag, <i>geologic resource</i> —2.43 million oz Au, 107 million oz Ag	1986: 50,000 oz Au 1987: 200,000 oz Au, 5 million oz Ag 1988: 100,000 oz Au, 700,000 oz Ag 1989: 214,566 oz Au, 2.26 million oz Ag 1990: 255,044 oz Au, 1.98 million oz Ag 1991: 284,327 oz Au, 5.62 million oz Ag 1992: 301,512 oz Au, 7.92 million oz Ag 1993: 395,610 oz Au, 12.45 million oz Ag 1994: 359,360 oz Au, 10.44 million oz Ag 1995: 310,016 oz Au, 11,905,805 oz Ag	Panther Canyon Formation (conglomerate, sandstone), Augusta Mountain Formation (limestone), granodiorite	39.5 Ma
Mud Springs (Bald Mtn. Zone)	1993: <i>geologic resource</i> —42,000 oz Au			
Mule Canyon	1992: 8.5 million tons, 0.136 opt Au 1995: <i>reserves</i> —oxide 4.222 million tons, 0.058 opt Au; sulfide 5.780 million tons, 0.145 opt Au	1992: exploration	basalt and basaltic andesite	15-16 Ma
Pipeline	1991: <i>geologic resource</i> —11.3 million tons, 0.237 opt Au 1993: 35.3 million tons, 0.120 opt Au 1994: <i>reserves</i> —21.2 million tons, 0.145 oz Au/ton; <i>plus other resources</i> —8.3 million tons, 0.035 opt Au 1995: 4.3 million oz Au		Roberts Mountains Formation	Cretaceous or early Tertiary
Robertson	1988: 11 million tons, 0.04 opt Au 1993: <i>geologic resource</i> —20 million tons, 0.036 opt Au	1989: 3,700 oz Au	Valmy Formation	early Oligocene

continued

MAJOR PRECIOUS METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
LANDER COUNTY (continued)				
Slaven Canyon property	1994: 50,000 oz Au			
South Pipeline	1992: 9 million tons, 0.082 opt Au 1993: <i>geologic resource</i> —31.4 million tons, 0.106 opt Au 1994: <i>geologic resource</i> —76.5 million tons, 0.048 opt Au	1995: 111,215 oz Au, 6,804 oz Ag	Roberts Mountains Formation	Cretaceous or early Tertiary
Surprise	1987: 225,000 oz Au 1988-91: production and reserve included in Fortitude figures 1994: mined out	1987: 2,000 oz Au	skarn	37 Ma
Toiyabe	1988: 813,400 tons, 0.066 opt Au	1988: 32,000 oz Au, 10,300 oz Ag 1990: 11,700 oz Au, 9,100 oz Ag 1991: 8,780 oz Au, 6,025 oz Ag	lower Paleozoic calcareous siltstone	Eocene?
Trenton Valmy (Trenton Canyon)	1994: <i>oxide resource</i> —14.6 million tons, 0.035 opt Au, (517,000 oz Au)			Vinini Formation
Victorine (Kingston district)	1992: 915,000 tons, 0.304 opt Au 1995: <i>proven and probable reserves</i> —256,000 tons, 0.36 opt Au, plus <i>additional geologic resource</i> —31,160 oz Au			
LINCOLN COUNTY				
Atlanta	1980: 1.1 million tons, 0.08 opt Au, 1.6 opt Ag 1991: idle	1980: 88,000 oz Au, 1,710,000 oz Ag 1987-89: idle 1990-93: idle	Pogonip Group, Ely Springs and Laketown Dolomites, Oligocene silicic tuff, dacite dikes	early Miocene
Delamar	1988: 200,000 tons, 0.079 Au/ton	1988: exploration 1990: exploration		
Easter project (Delamar district)	1994: <i>geologic resource</i> —3.36 million tons, 0.069 opt Au 1995: 1.5 million tons, 0.069 opt Au	1994: exploration	Cambrian quartzite	Miocene
LYON COUNTY				
Fire Angel	1989: 5,600 oz Au, <i>geologic resource</i> —148,500 oz Au			
Pine Grove	1994: 2.5 million tons, 0.061 opt Au			
South Comstock Joint Venture	1994: 3 million tons, 0.05 opt Au 1995: 100,000 oz Au			
Talapoosa	1988: 2.5 million tons, 0.041 opt Au, 0.53 opt Ag <i>oxide</i> 14.9 million tons, 0.03 opt Au, 0.49 opt Ag <i>sulfide</i> 1989: <i>additional resources delineated</i> - 2.7 million tons, 0.054 opt Au, 0.654 opt Ag 1991: <i>geologic resource</i> - 19.6 million tons, 0.045 opt Au, 0.61 opt Ag 1992: <i>geologic resource</i> —18 million tons, 0.044 opt Au, 0.61 opt Ag 1994: <i>geologic resource</i> —50 million tons, 0.026 opt Au, 0.35 opt Ag 1995: <i>geologic resource</i> —45 million tons, 0.025 opt Au and 0.33 opt Ag, including <i>proven and probable reserves</i> of 29.9 million tons, 0.026 opt Au and 0.4 opt Ag	preproduction	Kate Peak Formation	Miocene

MAJOR PRECIOUS METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
MINERAL COUNTY				
Aurora	1989: 347,000 tons, 0.253 opt Au 1990: 433,000 tons, 0.21 opt Au 1992: 493,000 tons, 0.15 opt Au 1993: 537,400 tons, 0.123 opt Au, <i>geologic resource</i> —100,000 oz Au 1994: 316,000 tons, 0.120 opt Au 1995: 1.54 million tons, 0.055 opt Au	1989: 12,683 oz Au, 16,400 oz Au 1990: 12,973 oz Au, 18,162 oz Ag 1991: 15,000 oz Au 1992: 15,000 oz Au, 35,000 oz Ag 1993: 8,600 oz Au, 17,200 oz Ag 1995: 15,000 oz Au, 35,000 oz Ag	andesite, rhyolite	10 Ma
Aurora Partnership	1983: 1.5 million tons, 0.129 opt Au, 0.3 opt Ag 1990: 816,880 tons, 0.103 opt Au 1992: 790,000 tons, 0.13 opt Au <i>geologic resource</i> —267,640 oz Au 1994: 1.5 million tons, 0.1 opt Au (underground) 1995: 230,000 tons, 0.208 opt Au (in portion of Humboldt vein system)	1930's: 100,000 oz Au 1983: 10,000 oz Au 1988: 10,302 oz Au 1989: 27,825 oz Au, 26,000 oz Ag 1991: 36,000 oz Au, 68,000 oz Ag 1992: 39,100 oz Au, 79,200 oz Ag 1993: 30,120 oz Au, 59,880 oz Ag 1994: 30,000 oz Au, 57,000 oz Ag 1995: 15,048 oz Au, 39,853 oz Ag	andesite, rhyolite	10 Ma
Borealis	1988: 1.792 million tons, 0.046 opt Au 1991: known reserves mined out	1981-84: 170,000 oz Au 1986-88: 116,256 oz Au 1989: 89,060 oz Au, 37,032 oz Ag 1990: 18,435 oz Au, 15,396 oz Ag, production ceased 1992: exploration 1995: idle	rhyolite flow dome, andesite flows, breccias, volcanoclastic rocks	5 Ma
Candelaria	1988: 24 million tons, 1.267 opt Ag, 0.011 opt Au 1992: mine idle, heap-leaching continuing 1993: <i>geologic resource</i> —20,000 oz Au, 5.8 million oz Ag 1994: <i>surface-mineable reserve</i> —15 million oz Au, 42,000 oz Au <i>underground reserve</i> —45 million oz Au, 46,000 oz Au 1995: <i>geologic resource</i> —44 million oz Au, 45,000 oz Au, including reserves of 6.663 million tons, 0.005 opt Au and 1.68 opt Ag	1982: 1.7 million oz Ag, 9,000 oz Au 1987: total production was 10 million oz Ag as of June 1987 1988: 3.8 million oz Ag, 11,000 oz Au 1989: 4.36 million oz Ag, 13,800 oz Au 1990: 4.89 million oz Ag, 11,796 oz Au, 1991: 1.68 million oz Ag, 2,870 oz Au 1992: 1.06 million oz Ag, 2,431 oz Au 1993: 904,810 oz Ag, 1,810 oz Au 1994: 3.19 million oz Ag, 12,800 oz Au 1995: 2,866,000 oz Ag, 10,720 oz Au	Candelaria Formation serpentinite, granitic dikes	Cretaceous
Denton-Rawhide	1989: <i>reserves</i> —29.4 million tons, 0.040 oz Au and 0.368 opt Ag; <i>geologic resource</i> —59.3 million tons, 0.0274 opt Au, 0.298 opt Ag 1991: 29.4 million tons, 0.040 opt Au, 0.368 opt Ag; <i>geologic resource</i> —59.3 million tons, 0.0274 opt Au and 0.298 opt Ag 1992: <i>geologic resource</i> —54 million tons, 0.026 opt Au with 29.4 million tons, 0.04 opt Au, 0.39 opt Ag and 29.9 million tons, 0.015 opt Au, 0.23 opt Ag 1993: 1.3 million oz Au, 15 million oz Ag 1995: 470,000 oz Au, 6 million oz Ag	1990: 39,000 oz Au, 170,000 oz Ag 1991: 76,000 oz Au, 500,000 oz Ag 1992: 92,000 oz Au, 804,000 oz Ag 1993: 105,000 oz Au, 1 million oz Ag 1994: 118,000 oz Au, 952,000 oz Ag 1995: 117,000 oz Au, 960,000 oz Ag	rhyolite plugs, flows, tuffs, breccias	16 Ma
Mindora	1988: 1.0 million tons, 0.037 opt Au and 1.78 opt Ag	1988: exploration		
Santa Fe	1990: 6.8 million tons, 0.035 opt Au and 0.241 opt Ag	1989 60,000 oz Au, 150,000 oz Ag 1990: 64,336 oz Au, 177,244 oz Ag 1991: 67,102 oz Au, 149,168 oz Ag 1992: 61,000 oz Au, 100,000 oz Ag 1993: 54,030 oz Au, 64,950 oz Ag 1994: 22,361 oz Au, 28,267 oz Ag 1995: 16,670 oz Au, 41,000 oz Ag	Luning Formation	Miocene
NYE COUNTY				
Baxter Springs	1988: 1 million tons, 0.050 opt Au 1990: <i>geologic resource</i> —5 million tons, 0.050 opt Au			
Bruner property, Duluth zone	1992: <i>geologic resource</i> —15 million tons, 0.026 opt Au	1993: exploration	Tertiary volcanic rocks	Miocene

continued

MAJOR PRECIOUS METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age																				
NYE COUNTY (continued)																								
Bullfrog	1989: 18.6 million tons, 0.097 opt Au 1992: 8.8 million tons, 0.14 opt Au plus an additional <i>geologic resource</i> —1.8 million tons, 0.102 opt Au	1989: 50,011 oz Au, 40,905 oz Ag 1990: 220,000 oz Au, 229,000 oz Ag 1991: 205,000 oz Au, 189,000 oz Ag 1992: 323,800 oz Au, 313,000 oz Ag 1993: 340,000 oz Au, 400,000 oz Ag 1994: 301,000 oz Au, 410,000 oz Ag 1995: 177,631 oz Au, 413,587 oz Ag	rhyolitic ash-flow tuff	9.5 Ma																				
Daisy (Bare Mountain district)	1993: 4.7 million tons, 0.024 opt Au <i>geologic resource</i> —430,000 oz Au 1994: <i>geologic resource</i> —18 million tons, 425,000 oz Au 1995: 12 million tons, 0.018 opt Au, <i>geologic resource</i> —51.1 million tons, 0.026 opt Au (includes five orebodies listed below)																							
	<table border="1"> <thead> <tr> <th>Orebody</th> <th>Gold Resource</th> <th>Gold Reserve</th> </tr> </thead> <tbody> <tr> <td>West zone</td> <td>1.45 million tons, 0.021 opt</td> <td>0.6 million tons, 0.025 opt</td> </tr> <tr> <td>South zone</td> <td>0.76 million tons, 0.097 opt</td> <td>—</td> </tr> <tr> <td>Secret Pass zone</td> <td>36.6 million tons, 0.018 opt</td> <td>11.4 million tons, 0.018 opt</td> </tr> <tr> <td>Mother Lode deposit</td> <td>9.4 million tons, 0.046 opt (<i>sulfide ore</i>)</td> <td></td> </tr> <tr> <td>Sunday Night zone (Joshua Hollow)</td> <td>2.87 million tons, 0.039 opt</td> <td></td> </tr> <tr> <td colspan="3">Total: 11.4 million tons, 0.018 opt plus 9.16 million tons, 0.01 opt oxide and sulfide ore</td> </tr> </tbody> </table>	Orebody	Gold Resource	Gold Reserve	West zone	1.45 million tons, 0.021 opt	0.6 million tons, 0.025 opt	South zone	0.76 million tons, 0.097 opt	—	Secret Pass zone	36.6 million tons, 0.018 opt	11.4 million tons, 0.018 opt	Mother Lode deposit	9.4 million tons, 0.046 opt (<i>sulfide ore</i>)		Sunday Night zone (Joshua Hollow)	2.87 million tons, 0.039 opt		Total: 11.4 million tons, 0.018 opt plus 9.16 million tons, 0.01 opt oxide and sulfide ore				
Orebody	Gold Resource	Gold Reserve																						
West zone	1.45 million tons, 0.021 opt	0.6 million tons, 0.025 opt																						
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Cuervo (Sullivan)	1987: 10.2 million tons, 0.039 opt Au, 0.086 opt Ag and 0.37% Cu 1988: <i>proven</i> —10.8 million tons, <i>probable</i> - 2.7 million tons, 0.025 opt Au 1995: <i>proven, possible</i> —17 million tons of 0.34% Cu, 0.0255 opt Au, + 8.5 million tons of 0.32% Cu	1992: idle 1993: idle	Mesozoic granodiorite and metavolcanic rocks	Mesozoic																				
Gold Bar	1987: 1.23 million tons Au ore 1993: idle		silicic volcanic rocks	Miocene																				
Ketchup Flat	1989: 300,000 oz Au, 3.1 million oz Ag 1993: mined out	production included in Paradise Peak	Miocene volcanic rocks	Miocene																				
Longstreet property	1989: 4 million tons, 0.024 opt Au, <i>geologic resource</i> —9.6 million tons, 0.024 opt Au	idle	rhyolitic volcanic rocks	Oligocene																				
Manhattan	1988: 22.4 million tons, 0.021 opt Au 1989: 1.7 million tons, 0.017 opt Au 1991: mined out 1992: idle 1993: idle	1905-59: 500,000 oz Au 1983: 26,000 - 27,000 oz Au 1986: 3,000 tons/day 1987: 24,855 oz Au 1988: 4,752 oz Au 1989: 32,389 oz Au, 17,611 oz Ag 1990: included with Round Mountain	Gold Hill Formation	16 Ma																				
Manhattan property	1989: <i>geologic resource</i> —100,000 tons, 0.50 opt Au																							
Montgomery Shoshone	1988: 3.1 million tons, 0.072 opt Au, 0.240 opt Ag	1989: preproduction 1992: idle 1993: pre-production	rhyolitic ash-flow tuff	9.5 Ma																				
Nevada Mercury	1994: <i>geologic resource</i> —50,000 oz Au																							
Northumberland	1988: 12 million tons, 0.06 opt Au	1939-42: 327,000 oz Au 1981-84: 950,000 tons/year 1988: 29,667 oz Au, 130,394 oz Ag 1989: W 1990-93: idle	Roberts Mountains and Hanson Creek Formations, granodiorite, tonalite, quartz porphyry dikes	85 Ma																				

MAJOR PRECIOUS METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
NYE COUNTY (continued)				
Paradise Peak	1989: 5.22 million tons, 0.09 opt Au, 3.62 opt Ag, mill ore; 11.52 million tons, 0.036 opt Au, 0.445 opt Ag, leachable 1991: ~ 2 year mine life 1992: reserves—197,000 oz Au, 4.3 million oz Ag 1993: mining ceased, remaining resource refractory sulfides, heap-leaching continued	1986-88: 560,000 oz Au, 8.5 million oz Ag 1989: 228,000 oz Au, 5.17 million oz Ag 1990: 198,800 oz Au, 5.42 million oz Ag 1991: 182,000 oz Au, 2.26 million oz Ag 1992: 251,000 oz Au, 1.85 million oz Ag 1993: 156,000 oz Au, 795,000 oz Ag 1994: 39,084 oz Au, 130,086 oz Ag	rhyolite and andesite flows, ash-flow and air-fall tuffs	Miocene
Round Mountain (Smoky Valley)	1989: <i>geologic resource</i> —271 million tons, 0.032 opt Au 1990: 256.8 million tons, 0.033 opt Au 1993: 151.2 million tons, 0.024 opt Au, <i>geologic resource</i> —3,876,000 oz Au 1995: 10 million oz Au	1977-84: 313,480 oz Au, 160,419 oz Ag 1984: 70,000 oz Au 1987: 190,600 oz Au 1988: 233,700 oz Au 1989: 386,227 oz Au, 211,297 oz Ag 1990: 483,192 oz Au, 236,600 oz Ag (includes Manhattan) 1991: 339,000 oz Au, 260,000 oz Ag 1992: 370,600 oz Au, 316,700 oz Ag 1993: 370,000 oz Au, 300,000 oz Ag 1994: 423,000 oz Au, 268,000 oz Ag 1995: 344,437 oz Au, 250,529 oz Ag	rhyolite ignimbrite	26 Ma
Sterling	1989: 469,000 tons, 0.21 opt Au 1990: 519,000 tons, 0.209 opt Au 1992: 403,000 tons, 0.24 opt Au <i>geologic resource</i> —765,000 tons, 0.178 opt Au 1995: 483,000 tons, 0.19 opt Au	1983-88: 75,900 oz Au 1990: 12,626 oz Au 1991: 12,215 oz Au 1995: 14,000 oz Au	Wood Canyon and Bonanza King Formations	14 Ma
Tellis claims	1988: 850,000 tons, 0.053 opt Au			
PERSHING COUNTY				
Bunce	1989: <i>geologic reserve</i> - 600,000 tons, 0.04 opt Au 1990: 500,000 tons, 0.04 opt Au	exploration	rhyolite	
Florida Canyon	1988: 37 million tons, 0.023 opt Au 1991: 48.3 million tons, 0.018 opt Au 1995: reserves—72.4 million tons, 0.019 opt Au, <i>additional geologic resource</i> —8 million tons, 0.061 opt Au, sulfide	1987-88: 109,300 oz Au 1989: 81,484 oz Au, 24,721 oz Ag 1990: 83,200 oz Au, 19,300 oz Ag 1991: 80,586 oz Au, 20,951 oz Ag 1992: 89,954 oz Au, 37,775 oz Ag 1993: 109,190 oz Au, 37,550 oz Ag 1994: 92,000 oz Au, 25,000 oz Ag 1995: 111,157 oz Au, 62,624 oz Ag	Grass Valley Formation	Cretaceous or Tertiary
Goldbanks	1994: 900,000 oz Au 1995: reserves—45.6 million tons, 0.019 opt Au, 0.044 opt Ag, <i>plus geologic resource</i> —60 million tons, 0.017 opt Au, 0.071 opt Ag			
Relief Canyon	1988: ~ 1.3 million tons, 0.03 opt Au 1991: mined out 1994: 1.5 million tons, 0.035 opt Au	1984: 24,500 oz Au 1987-88: 82,000 oz Au 1989: 30,266 oz Au, 32,835 oz Ag 1990: 4,000 oz Au, 6,400 oz Ag	Natchez Pass Limestone, Grass Valley Formation	Cretaceous
Rochester	1989: <i>geologic resource</i> —94.5 million tons, 0.012 opt Au, 1.40 opt Ag 1993: 75 million tons, 1.32 opt Ag, 0.0113 opt Au	1986-88: 122,400 oz Au, 13 million oz Ag 1989: 76,032 oz Au, 4.63 million oz Ag 1990: 59,000 oz Au, 4.8 million oz Ag 1991: 61,000 oz Au, 5.8 million oz Ag 1992: 57,000 oz Au, 5.6 million oz Ag 1993: 66,412 oz Au, 5.9 million oz Ag 1994: 56,000 oz Au, 5.9 million oz Ag 1995: 59,226 oz Au, 6,491,167 oz Ag	Koipato Group, Weaver Rhyolite	Late Cretaceous
Rosebud project	1992: 570,000 oz Au (0.362 opt), 5.5 million oz Ag (5.5 opt) 1994: 512,000 oz Au 1995: 1.6 million tons, 0.36 opt Au, 2.3 opt Ag	1993: underground exploration	Tertiary volcanic rocks	Miocene
Standard	mined out	1932-51: 46,602 oz Au, 102,721 oz Ag	Natchez Pass Limestone, Grass Valley Formation	73 Ma

continued

MAJOR PRECIOUS METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
PERSHING COUNTY (continued)				
Tag-Wildcat	1989: <i>geologic resource</i> —1.5 million tons, 0.043 opt Au 1989: 416,000 tons, 0.076 opt Au	1989: exploration	Tertiary volcanic rocks	Miocene
Trinity	1988: 1 million tons, 5.25 opt Ag 1991: mined out	1988: mining ended August 1988, heap-leaching continuing 1989: 718,714 oz Ag, 70 oz Au	rhyolite plugs	Miocene
Willard	1989: 3.61 million tons 1993: mined out	1989: preproduction 1992-93: W	Triassic siltstone	Cretaceous
STOREY COUNTY				
Comstock heap leach project	1992: 475,000 tons, 0.072 opt Au, 0.60 opt Ag 1993: <i>geologic resource</i> —3.2 million tons, 0.05 opt Au, 0.5 opt Ag			
Flowery (Golden Eagle)	1989: 1 million tons, 0.037 opt Au 1990: 6.3 million tons, 0.043 opt Au <i>geologic resource</i> —1.16 million oz Au 1991: <i>geologic resource</i> —29.3 million tons, 0.04 opt Au 1993: 362,000 tons, 0.064 opt Au, 0.97 opt Ag, <i>geologic resource</i> —88,128 oz Au and 1 million oz Ag	1988: 836 oz Au, 9,473 oz Ag 1990: 6,000 oz Au, 70,000 oz Ag 1991: W 1992: 2,253 oz Au, 34,572 oz Ag 1993: 2,200 oz Au, 30,000 oz Ag 1994: 5,000 oz Au, 41,000 oz Ag 1995: 5,300 oz Au, 58,000 oz Ag	Alta Formation	12 Ma
Oliver Hills	1990: 3.37 million tons, 0.054 opt Au, 1.2 opt Ag 1991: <i>geologic resource</i> —8.5 million tons, 0.060 opt Au, 0.60 opt Ag 1993: 4 million tons, 0.05 opt Au, 0.5 opt Ag, <i>geologic resource</i> —225,000 oz Au and 2.25 million oz Ag	1991: 573 oz Au, 6,947 oz Ag		
WASHOE COUNTY				
Mountain View gold project (Deephole district)	1995: 19.5 million tons, 0.027 opt Au		rhyolite	Miocene
Olinghouse	1994: <i>geologic resource</i> —500,000 opt Au, 0.057 opt Au 1995: <i>geologic resource</i> —775,000 oz Au, <i>proven and probable reserves</i> —9,655,000 tons, 0.036 opt Au	preproduction	Miocene andesites	Miocene
Western Hog Ranch	1988: <i>reserves, proven and probable</i> - 5.5 million tons, 0.064 opt Au; <i>geologic resource</i> —20.1 million tons, 0.029 opt Au 1990: 1.1 million tons, 0.05 opt Au	1986: 50,000 oz Au 1988: 30,000 oz Au 1989: 25,000 oz Au, 4,000 oz Ag 1990: 25,000 oz Au, 4,500 oz Ag 1991: 18,700 oz Au, 2,100 oz Ag 1992: 30,000 oz Au, 10,000 oz Ag 1993: 9,295 oz Au, 2,500 oz Ag 1994: 7,000 oz Au, 2,000 oz Ag 1995: 3,000 oz Au, 300 oz Ag	rhyolite, explosion breccia, sinter	15-16 Ma
Wind Mountain	1988: 15 million tons, 0.021 opt Au, 0.42 opt Ag	1989: 30,900 oz Au, 335,000 oz Ag 1990: W 1991: 91,000 oz Au, 405,000 oz Ag 1992: 54,690 oz Au, 297,403 oz Ag 1993: 19,570 oz Au, 92,630 oz Ag	Tertiary sedimentary rocks	late Tertiary or Quaternary

MAJOR PRECIOUS METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
WHITE PINE COUNTY				
Alligator Ridge	1989: 1 million tons, 0.064 opt Au 1990: 624,000 tons, 0.059 opt Au, <i>geologic resource</i> —2.1 million tons 0.043 opt Au 1992: 11.5 million tons, 0.046 opt Au; <i>geologic resource</i> —661,888 oz Au, includes Casino/Winrock	1981-88: 560,000 oz Au, 70,000 oz Ag 1989: 54,057 oz Au, 10,188 oz Ag 1990: 18,000 oz Au, 4,000 oz Ag 1991: 17,000 oz Au 1992: 10,450 oz Au 1993: <i>see</i> Bald Mountain 1994: 40,000 oz Au 1995: idle	Pilot Shale	Mesozoic or early Tertiary
Bald Mountain (Top)	1989: 6.7 million tons, 0.069 opt Au 1990: 8.7 million tons, 0.062 opt Au 1992: <i>geologic resource</i> —600,000 oz Au	1986: 50,000 oz Au 1988: 48,619 oz Au 1989: 55,112 oz Au 1990: 60,000 oz Au, 5,000 oz Ag 1991: 55,000 oz Au, 12,000 oz Ag 1992: 81,500 oz Au, 33,600 oz Ag 1993: 90,610 oz Au, 26,145 oz Ag (includes Alligator Ridge and Yankee Projects) 1994: 80,000 oz Au 1995: 114,200 oz Au, 11,800 oz Ag	quartz porphyry, Cambrian shale and limestone	Jurassic?
Bellview	1988: 277,000 tons, 0.040 opt Au, <i>geologic resource</i> —1 million tons, 0.036 opt Au			
Casino/ Winrock	1989: Casino - 804,000 tons, 0.054 opt Au; Winrock 1.3 million tons, 0.037 opt Au 1990: Winrock - 993,000 tons, 39,000 oz Au 1992: <i>see</i> Alligator Ridge	1990: 7,000 oz Au 1991: 20,000 oz Au 1992: 19,800 oz Au	late Paleozoic sedimentary rocks	Eocene
Easy Junior (Nighthawk Ridge)	1989: 5.68 million tons, 0.031 opt Au 1991: 137,000 oz Au	1990: 11,500 oz Au, 900 oz Ag	Devonian and Mississippian rocks	Eocene
Golden Butte	1989: 4.23 million tons, 0.031 opt Au	1989: 12,187 oz Au, 1,448 oz Ag 1990: 22,362 oz Au, 7,700 oz Ag 1991: 8,970 oz Au, 7,763 oz Ag	Chainman Shale	Cretaceous or Eocene
Green Springs	1988: 1.25 million tons, 0.06 opt Au <i>additional possible resource</i> —500,000 tons, 0.036 opt Au 1992: mined out	1988: ~12,000 oz Au 1989: 30,000 oz Au, 5,000 oz Ag 1990: 16,000 oz Au, 4,000 oz Ag 1991: 5,000 oz Au	Paleozoic sedimentary rocks	Eocene?
Griffon Gold Property	1993: <i>geologic resource</i> —60,000 oz Au 1994: <i>geologic resource</i> —50,454 oz Au, 0.039 opt Au 1995: <i>proven and probable reserves</i> — 2,737,000 tons, 0.025 opt Au		upper Joana Limestone	
Horseshoe	1991: 1.5 million tons, 0.039 opt Au	exploration	Pilot Shale and intrusive quartz porphyry	36-38 Ma
Illipah	1988: mined out	1987: ~25,000 oz Au/year 1988: 25,324 oz Au, mining ended 1989: 3,874 oz Au, heap-leached	Paleozoic sedimentary rocks	Eocene?
Little Bald Mtn.	1989: 200,000 tons, 0.13 opt Au; <i>geologic resource</i> —260,000 tons, 0.127 opt Au 1993: 140,000 tons, 0.13 opt Au, <i>geologic resource</i> —21,800 oz Au	1985-88: 21,700 oz Au 1989: 5,500 oz Au, 1,500 oz Ag	Antelope Valley Formation	35-38 Ma
Mt. Hamilton	1988: 7.7 million tons, 0.05 opt Au, 0.5 opt Ag 1994: <i>reserve</i> —9.04 million tons, 0.052 opt Au, 0.38 opt Ag	1988: preproduction 1993: idle 1995: 52,000 oz Au, 100,000 oz Ag	Dunderberg Shale	Cretaceous
Pan	1989: 241,000 oz Au			
Robinson	1989: 46.0 million tons, 0.019 opt Au; <i>geologic resource</i> —1 million oz Au 1991: <i>geologic resource</i> —200 million tons 0.012 opt Au 1992: 1.2 million oz Au, <i>geologic resource</i> — 2.21 million oz Au 1994: <i>geologic resource</i> —252 million tons, 0.553% Cu, 0.0102 opt Au	1986: 48,000 oz Au, 96,000 oz Ag 1987: 50,207 oz Au 1988: 38,750 oz Au 1989: 78,828 oz Au, 66,340 oz Ag 1990: 75,000 oz Au, 55,000 oz Ag 1991: 21,674 oz Au 1992: 35,581 oz Au, 55,000 oz Ag 1993: 13,432 oz Au 1995: preproduction	Rib Hill Sandstone Riepe Spring Limestone	Cretaceous

continued

MAJOR PRECIOUS METAL DEPOSITS (continued)

Deposit name	Reserves/resources	Production	Host rock	Mineralization age
WHITE PINE COUNTY (continued)				
Sunnyside	1988: 32,000 oz Au at 0.187 opt Au gold equivalent			
Taylor	1980: 10 million tons, 3 opt Ag	1980: 1,200 tons/day 1995: idle	Guilmette and Joana Limestones, rhyolite dikes	Eocene or Oligocene
White Pine	1989: 63,000 oz Au, 0.04 opt Au	1989: 20,654 oz Au	Pilot Shale	Oligocene?
Yankee	1992: 683,000 oz Au	1990: ~15,000 oz Au 1992: 10,800 oz Au 1993: <i>see</i> Bald Mountain	Pilot Shale	36-38 Ma?

Extruded bentonite-saponite clay, IMV Division of Floridin Company Plant, Amargosa Valley, Nye County. *Steve Castor photo.*

Industrial Minerals

by Stephen B. Castor

Industrial minerals produced in Nevada in 1995 had an estimated value of about \$326 million, a slight increase from 1994. Increases in production and dollar values of barite, cement, dolomite, lime, magnesia, silica, perlite, and salt offset decreases in aggregate, clay, and diatomite in 1995. In order of estimated dollar value the most important Nevada industrial minerals produced in 1995 were aggregate, diatomite, lime, cement, barite, gypsum, lithium carbonate, silica, clay, and magnesia. Data used for these estimates, and data reported for individual commodities below, were obtained from the Nevada Department of Minerals or directly from companies that produced industrial minerals.

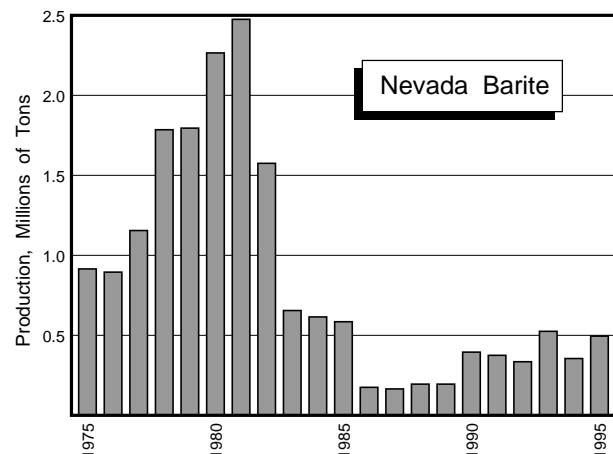
AGGREGATE (SAND, GRAVEL, AND CRUSHED STONE) In 1995, construction aggregate production in Nevada had an estimated total value of \$115 million and was ranked third among the state's mined commodities behind gold and silver. For 1995, statewide aggregate production is estimated at 25.5 million tons, down about 9% from 1994. Production in the Las Vegas area, which accounted for about 16.5 million tons, decreased about 11% from 1994, while production in the Reno-Sparks-Carson City area, estimated at 5 million tons, was slightly lower than in 1994. In 1995, crushed stone and lightweight aggregate accounted for about 15% of aggregate production statewide.

The downturn in aggregate production in the Las Vegas area in 1995 was mainly due to completion of a major highway construction project and work on McCarren Airport projects. Pending airport projects, including runway extensions and concourse additions may cause aggregate demand to increase in 1996 and 1997. Companies in the Las Vegas area that produced more than a million tons in 1995, ranked in approximate order of tonnage produced, were Nevada Ready Mix Corp., Bonanza Materials, Inc., WMK Transit Mix, Inc., Wells Cargo, Inc., and Las Vegas Paving Corporation. Las Vegas area community pits, which are administered by the U.S. Bureau of Land Management, provided a combined total of 2.6 million tons in 1995, up slightly from 1994. Most aggregate in the Las Vegas area was mined from alluvial sand and gravel deposits in the Lone Mountain, Henderson, and Spring Mountain Road areas. In 1995, crushed stone and lightweight aggregate accounted for about 8% of aggregate used in the Las Vegas metropolitan area. Major crushed stone producers in the Las Vegas area

were Frehner Construction Co. and Southern Nevada Lightweight, but neither produced more than a million tons in 1995.

In the Reno-Sparks-Carson City area, only Granite Construction Co. produced more than a million tons of aggregate in 1995. Companies that produced 500,000 or more tons in 1995 included Rocky Ridge Inc. and All-Lite Aggregate Co. In late 1995, Lost Dutchman Construction Inc. took over operation of the 102 Ranch pit (once a major aggregate source operated by R. L. Helms Construction) from Frehner Construction. Crushed rock operations of Granite Construction and Rocky Ridge Inc. and lightweight rhyolite aggregate from All-Lite Aggregate Co., Rilite Aggregate Co., and Naturalite Aggregate Corp. accounted about 50% of the aggregate used in 1995 in the Reno-Sparks-Carson City area.

BARITE In 1995, barite shipments from Nevada were about 514,000 tons, 43% more than in 1994. This increase is due to continued low rail freight rates for shipment to the Gulf Coast and to supply problems with barite from China and India. M.I. Drilling Fluids Co., a subsidiary of Smith International, was the largest producer in 1995, shipping nearly 300,000 tons of barite that included high-grade crude ore from the Greystone Mine and ground and bagged barite from its Battle Mountain plant, both in Lander County. At present mining rates, reserves at the Greystone Mine are thought to be adequate for 5-6 years. Baroid Drilling Fluids Inc. was the second largest Nevada producer in 1995, shipping barite from the Dunphy mill in Eureka County and the Rossi Mine in Elko County. Milpark, Inc. produced barite at its Argenta property



near Battle Mountain, Lander County. Standard Industrial Minerals resumed barite mining at the P and S Mine in Nye County on a small scale in 1995 after reaching an agreement with the U.S. Forest Service on reclamation. The company, which has not mined barite in Nevada since 1991, shipped about 1500 tons of relatively high-value, paint-grade, white barite from its processing plant in Bishop California in 1995. Circle-A Construction, Inc. did not produce barite from its Big Ledge/Snoose Creek operation in Elko County in 1995, and plans to get out of the barite business for good in 1996.

BORATE American Borate Co. produced colemanite concentrate in 1995 at the Lathrop Wells mill in Nye County from ore mined in Death Valley, California. Because the ore is from out of state, this production is not included in the estimate of total value of Nevada minerals.

BUILDING STONE Las Vegas Rock produced building and landscape rock from Cretaceous Aztec Sandstone at Goodsprings, Clark County. Nevada Neanderthal Stone, which quarries and cuts several varieties of Tertiary tuff near Beatty in Nye County, produced floor tile, wall panels, and other stone products in 1995.

CEMENT The Nevada Cement Co., a subsidiary of Centex Construction, is the only cement manufacturer in Nevada. Annual portland cement production at the company's plant near Fernley has increased steadily over the last four years to more than 500,000 tons. Raw materials for the cement include locally mined limestone along with regionally mined clay, iron ore, and gypsum.

CLAY IMV Division of Floridin Co., a subsidiary of the giant RTZ PLC through U. S. Silica, remained the largest producer of clay in Nevada in 1995. In late 1995, U.S. Silica was sold, but Floridin was retained and IMV remains part of the RTZ mineral empire. IMV mines sepiolite, montmorillonite, and saponite from several open pits and operates a processing plant in Amargosa Valley, Nye County. Sepiolite is the most important clay mineral produced in terms of both total tonnage and value, and more than 25% of IMV sepiolite products are sold overseas, particularly in the Orient. In 1995, the rate of sepiolite mining was increased, but large reserves of the mineral remain. The American Colloid Co. mined montmorillonite in Pershing County and hectorite in Humboldt County and shipped the clay to South Dakota for processing. Vanderbilt Minerals Co. shipped clay from sites in Pershing, Esmeralda, and Nye Counties. Vanderbilt's New Discovery Mine near Beatty in Nye County

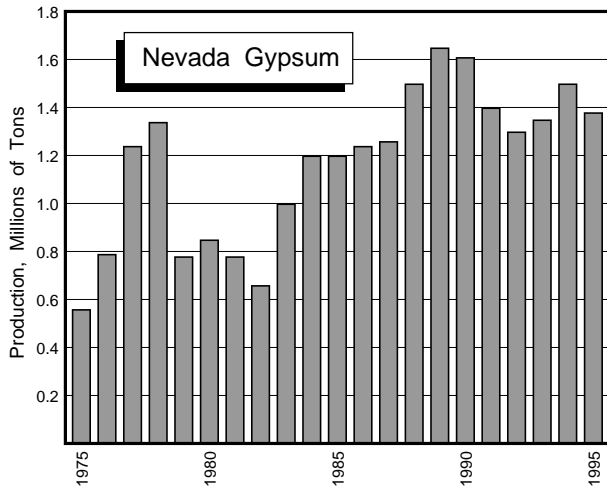
serves as the company's processing site for clay mined intermittently at several sites in Nevada. Minor Natural Minerals, Inc. of Pennsylvania mined clay from a montmorillonite deposit in Lyon County. It was mostly sold for agricultural uses. The Art Wilson Co. shipped a small amount of montmorillonite in 1995 from a clay mine in Lyon County. This clay is processed in California and sold into the Pacific rim aquaculture market. Although halloysite clay is mined in relatively large amounts from a deposit in Washoe County by Nevada Cement Co., this production is not reported as clay in NBMG mineral production figures because it is included in cement.

DIATOMITE Eagle-Picher Minerals, Inc. produces most of Nevada's diatomite, mining up to 250,000 tons annually. The company processes diatomaceous earth filtration products at its Colado plant in Pershing County from diatomite mined northwest of Lovelock. In addition, the company produces diatomite at its Clark plant and mine in Storey County and from a pit near Fernley in Lyon County. Eagle-Picher Industries Inc., the mother firm, emerged from chapter 11 bankruptcy in 1995. Other companies that produced diatomite in Nevada in 1995 were Grefco, Inc. at its Basalt operation in Esmeralda and Mineral Counties, Moltan Co. in Churchill County, and CR Minerals in Lyon County. In 1995, American Colloid Co. investigated diatomite deposits in the Eastgate area of Churchill County as a possible source of cat litter.

FLUORSPAR Minor amounts of fluorspar were sold from stockpiled ore in Beatty. The fluorspar was mined from the nearby Crowell Fluorspar Mine in Nye County, which closed in 1989.

GARNET The Hampton Creek garnet deposit on the east slope of Mount Moriah in White Pine County continued to be the subject of evaluation in 1995.

GYP SUM Total gypsum production in Nevada in 1995 was about 1.4 million tons, 8% less than in 1994. The Blue Diamond, Clark County, operation of James Hardie Gypsum was the largest producer at about 462,000 tons. Although PABCO Gypsum in Clark County east of Las Vegas mined more than 585,000 tons of ore in 1995, actual production of gypsum was less than 400,000 tons because the ore contains only 60 to 70% gypsum. U.S. Gypsum Corp., which mines gypsum in Pershing County and processes it at Empire in Washoe County, was the third largest producer in the state at 377,000 tons. Georgia Pacific Corp., which has a wallboard plant northeast of Las Vegas, mined some gypsum from a nearby quarry on Weiser Ridge, but most of the gypsum used at the plant was mined outside of Nevada. The Art Wilson



Co., Carson City, sells gypsum to cement and agricultural markets, mainly in California.

LIME AND DOLOMITE In 1995 lime production in Nevada, at over 550,000 tons, was at record levels. Chemical Lime Co. was the largest producer, making high-calcium lime at Apex northeast of Las Vegas and dolomitic lime at a plant in Henderson. Limestone is mined adjacent to the Apex plant, and dolomite is mined at Sloan south of Las Vegas. The Pilot Peak high-calcium lime operation near Wendover in Elko County, which is owned by Continental Lime, Inc., mainly sells lime to northern Nevada gold mining operations. In addition to dolomitic lime, Chemical Lime Co. produces non-calcined dolomite in Henderson that it sells to a glass manufacturer in California. Min-Ad, Inc. and Nutritional Additives Corp., both located near Winnemucca, produce ground dolomite, mainly for agricultural use. Min-Ad's production, about 50,000 tons in 1995, has increased steadily over the last six years.

LITHIUM CARBONATE Cyprus Foote Mineral Co., a subsidiary of Cyprus Amax Minerals Co., continued to produce lithium carbonate at its lithium brine operation

at Silver Peak in Esmeralda County, and worked toward consolidation of lithium hydroxide production at that facility. Because of increases in production from the company's Chilean lithium brine operation, the Silver Peak operation has been utilized as a swing producer in recent years. Earnings from the company's combined lithium operations, which include lithium compound plants in the southeastern United States as well as basic operations in Nevada and Chile, increased to a record level in 1995 at \$28 million.

MAGNESIA Annual production of magnesia from magnesite at Gabbs, Nye County, by Premier Services Corp. increased by approximately 30% in 1995 over previous years. The Gabbs operation mainly produces light-burned or caustic magnesia for use in the western United States.

PERLITE In 1995 Eagle-Picher Minerals Inc. produced expanded perlite from a popping plant that was brought on line in 1994 at the Colado diatomaceous earth mill in Pershing County. The perlite is hauled about 80 miles from the Popcorn Mine in Churchill County to the plant. The Wilkin Mining and Trucking Co. mined perlite from the Mackie Mine, Lincoln County.

SALT The Huck Salt Co. of Fallon produced about 13,000 tons of salt in 1995, a 30% increase over production in 1994. The salt, mined from Fourmile Flat in Churchill County, is mainly used as road salt in Nevada.

SILICA Simplot Silica Products at Overton, Clark County, produced nearly 700,000 tons of silica sand in 1995, up about 15% over 1994.

ZEOLITES In 1995, American Resource Corp. processed small amounts of clinoptilolite mined in California at its plant in Nye County. American Colloid Co. purchased the American Resource Corp. zeolite property near Eastgate in Churchill County in 1995.

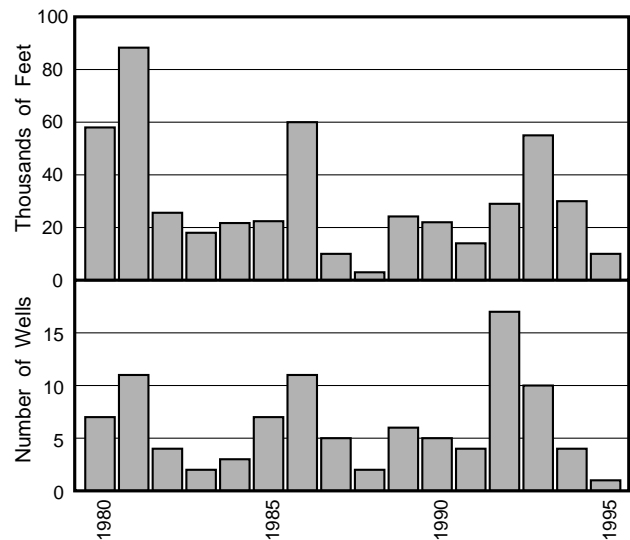
Geothermal Energy

by Ronald H. Hess

Geothermal development in Nevada has slowed over the past several years mainly due to the continuing low cost of conventional fossil fuels. At present low natural gas costs have made investment in new geothermal resource development and plant construction projects uncompetitive with fossil fuel power plants. This nationwide trend is obvious in Nevada where drilling has dropped to only two wells during 1995. Furthermore, it is expected that only one exploration well will be drilled in 1996. This well will be near the Fallon Naval Air Station, Churchill County, and may be the only geothermal exploration well drilled in the United States this year. This lull in the development of new geothermal resources will probably remain with us until the price of natural gas increases to a point that will make the cost of geothermal power production competitive. (Dick Benoit, Proceedings - Geothermal Program Review XIII, DOE, March 13-16, 1995)

Six geothermal power plants are currently planned for development in Nevada (see table on next page) but these await favorable power purchase agreements and increases in natural gas prices. If all of these plants are put on line over the next 6 years it would add approximately 190 megawatts (MW) of geothermal electrical production in Nevada. (Geothermal Resources Council Bulletin, May 1995, vol. 24, no. 5)

Nineteen geothermal well permits were issued during 1995 by the Nevada Division of Minerals: they include 12 industrial/commercial class wells, six observation or gradient wells, and one injection well. During this same period one industrial/commercial class well and one injection well were reported to have been drilled. Total footage drilled in 1995 was about 10,500 feet.



Industrial-class (power generating) wells drilled in Nevada, 1980-1995.

During 1995 there were 114 federal geothermal noncompetitive leases covering 163,000 acres and 35 competitive federal leases covering 49,000 acres in Nevada. This is a drop of 88,548 noncompetitive lease acres and 27,617 competitive lease acres from 1994 totals. The annual rental fee paid for these leases was \$212,500. Total gross electrical production from geothermal resources on public lands was 1,225,000 megawatt-hours (MWh); net production was 1,042,000 MWh. Gross electrical sales from federal lands was \$105.9 million. Production royalties on that amount

NONDOMESTIC GEOTHERMAL WELLS REPORTED AS DRILLED OR COMPLETED IN NEVADA DURING 1995

Area	Company	Well name	Permit no.	Location	Type
Churchill County					
Dixie Valley	Oxbow Geothermal	Production Well #73-7B	428	SE ¹ / ₄ NE ¹ / ₄ S7,T24N,R37E	Production
Washoe County					
Moana	Nevada Geothermal Utility Co.	Injection Well No. 4	410	SW ¹ / ₄ NW ¹ / ₄ S26,T19N,R19E	Injection

GEOTHERMAL PLANTS PLANNED FOR NEVADA				
Owner	Site	Plant	Type	Rating MW
Caithness	Dixie Valley	Caithness I	Dual Flash	25
San Emidio Resources	San Emidio Desert	San Emidio	Binary	30
Earth Power Energy and Minerals	Hot Sulfur Springs	HSS	N/A	9.9
Far West	Steamboat	SB 4	Binary	24
		SB 5	Kalina Cycle	12
Ormat Energy Systems Inc.	Rye Patch	Rye Patch	Binary	N/A
N/A	Fallon Naval Facility	Fallon	N/A	90
TOTAL:				190.9

Source: Geothermal Resources Council, May 1995, vol. 24, no. 5.

equaled \$4,748,000. By regulation, half of all rental fees and royalties are returned to the state and in 1995 the total amount of fees returned to the state was \$2,480,250.

Total Nevada geothermal electrical production from both federal and fee lands combined in 1995 was 1,642,201 MWh gross; net production was 1,360,107 MWh (Nevada Division of Minerals, 1996) with an approximate sales value of \$108,800,000. Production capacity from the currently developed geothermal resources at ten existing geothermal power plants in Nevada is 210.5 MW. Nevada is second only to California in total installed geothermal generating capacity.

Beowawe

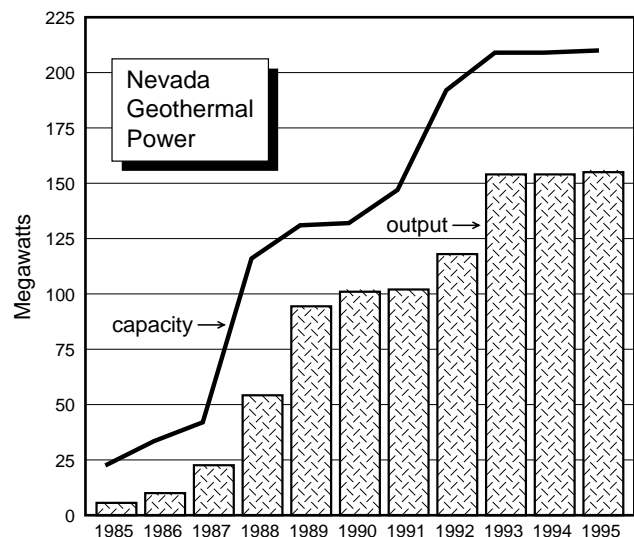
Oxbow/Beowawe Geothermal Power Co. production during 1995 was down because the plant at Beowawe was off line from October 14 to December 13, 1995 for major repairs on the main rotor and case. Net production for 1995 was 88,787 MWh as compared to 102,843 MWh for 1994. (Nevada Division of Minerals, 1996)

Desert Peak

The **Western States Geothermal Co., Desert Peak** plant went on line in 1985. Plant output during 1995 was down from 72,298 MWh net production in 1994 to 67,838 MWh net production for 1995. Production well 86-21 was worked over during February 1995 and has not yet returned to previous production levels. Overall on-line plant availability was 99.26% for 1995. (Nevada Division of Minerals, 1996)

Rye Patch

The **Rye Patch Limited Partnership (OESI)** has terminated work on the 95% complete 12.5-MW binary power plant at **Rye Patch**. At present they have only been able to identify a 6-MW proven resource. Sierra Pacific Power Co. has canceled the project's power purchase agreement, and with the project in default it



Rated capacity and average net output of Nevada geothermal plants, 1985-1995. Average net output is annual sales in megawatt-hours divided by the number of hours in a year (8,760). No commercial geothermal power was produced in Nevada before 1985.

is unlikely that further development work will take place in the near future. (Geothermal Resources Council Bulletin, May 1995, vol. 24, no. 5)

For those readers who are interested in discovering more about worldwide geothermal developments and have access to the Internet, the Geo-Heat Center, Oregon Institute of Technology - Klamath Falls,

Oregon now has a homepage on the Internet at <http://www.oit.osshe.edu/~geoheat>. This homepage contains an article on what geothermal energy is, a list of services offered by the Institute, a publications list, a description of the Collocated Resources Study of Ten Western States, and text-only versions of the articles that appear in the Geo-Heat Center Quarterly Bulletin.

NEVADA GEOTHERMAL POWER PLANTS 1995					
Plant name (year on line)	Production capacity ¹ (MW)	1995 Production (MWh)		Location	Operator
		Gross	Net (sales)		
Beowawe (1985)	16.7	104,966	88,787	S13,T31N,R47E	Oxbow/Beowawe Geothermal Power Co. HC 66, Unit 1, Box 16 Beowawe, NV 89821
Bradys Hot Springs (1992)	21.1	187,577	143,448	S12,T22N,R26E	Oxbow Power Services, Inc. P.O. Box 649 Fernley, NV 89408
Desert Peak (1985)	9.9	76,384	67,838	S21,T22N,R27E	Western States Geothermal Co. P.O. Box 2627 Sparks, NV 89432-2627
Dixie Valley ² (1988)	66.0	531,220	479,956	S7,T24N,R37E S33,T25N,R37E	Oxbow Geothermal Corp. 5250 South Virginia St. Suite 304 Reno, NV 89502
Empire (1987)	3.6	12,324	7,446	S21,T29N,R23E	Nevada Operations, Inc. P.O. Box 1650 Fallon, NV 89407
Soda Lake No. 1 (1987) and Soda Lake No. 2 (1991)	16.6	128,135	100,085	S33,T20N,R28E	Nevada Operations, Inc. P.O. Box 1650 Fallon, NV 89407
Steamboat I, I-A (1986) and Steamboat II, III (1992)	48	414,013	313,255	S29,T18N,R20E	S.B. Geo, Inc. P.O. Box 18087 1010 Power Plant Dr. Reno, NV 89511
Stillwater (1989)	13.0	102,833	82,668	S1,T19N,R30E S6,T19N,R31E	Nevada Operations, Inc. P.O. Box 1650 Fallon, NV 89407
Wabuska (1984)	1.2	1,674	1,674	S15,16,T15N, R25E	Tad's 10 Julian Lane Yerington, NV 89447
Yankee Caithness (1988)	14.4	83,075	75,336	S5,6,T17N,R20E	Yankee Caithness J.V.L.P. P.O. Box 18160 Reno, NV 89511
TOTAL	210.5	1,642,201	1,360,493		

¹Production capacity from currently developed geothermal resources.
²Gross output of the Dixie Valley plant occasionally exceeds 66 MW.
Sources: Nevada Division of Minerals, plant operators, and NBMG files.

Oil and Gas

by David A. Davis

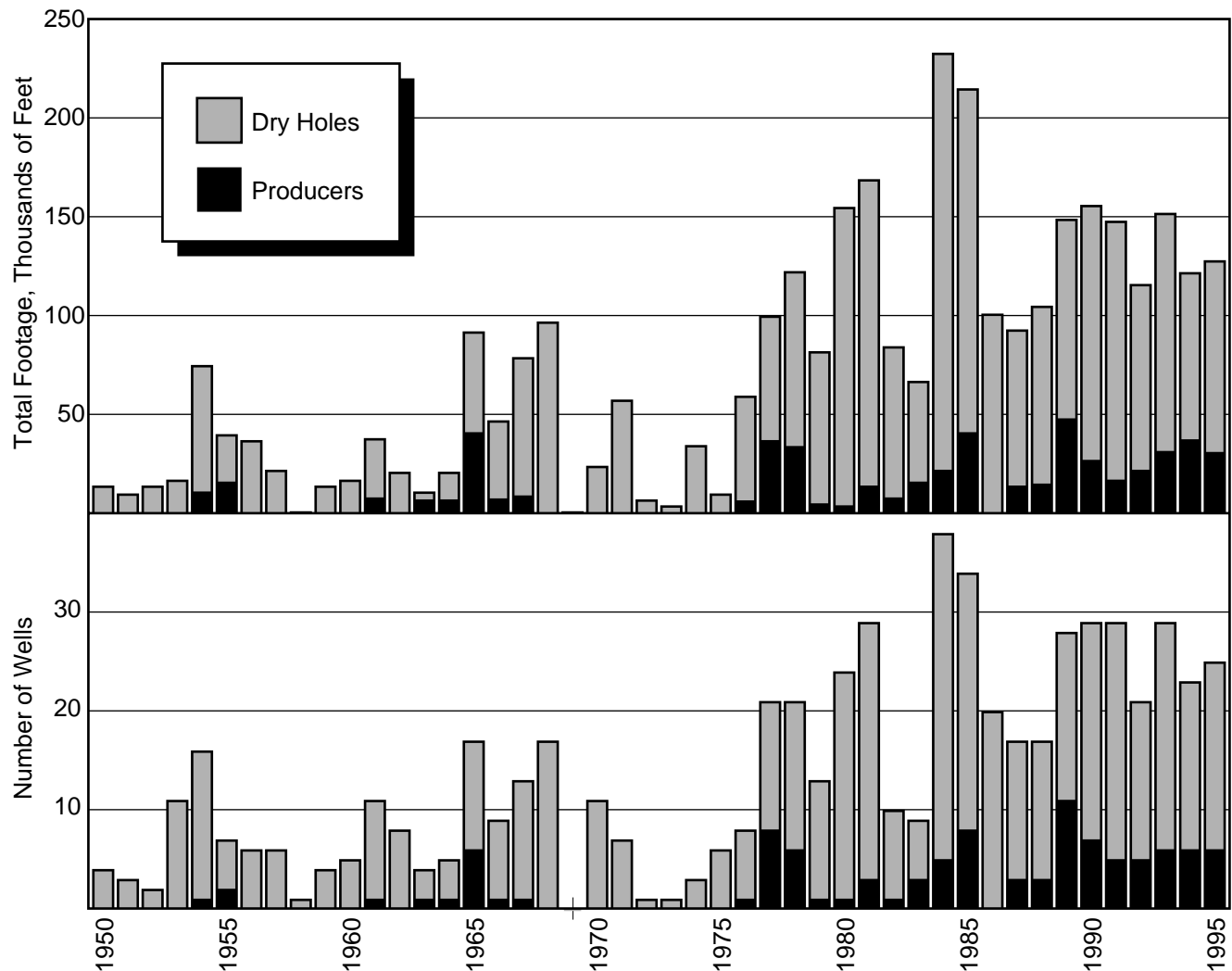
Production

Nevada currently produces oil from 11 fields in Nye and Eureka Counties. The total net oil production in 1995 was 1,342,000 barrels, with sales value estimated at \$15.9 million according to the Nevada Division of Minerals. The 21% decline in oil production from 1994 to 1995 is due to an overall drop in production in eight fields and the shutting in of one field. Production increased in three fields, one of which was previously shut in.

Nevada's highest volume producer in 1995, for the second year in a row, was Blackburn Unit No. 19

(Petroleum Corp. of Nevada), which averaged 790 barrels of oil and 280 barrels of water per day for the year. Nevada's second highest producer in 1995 was Grant Canyon No. 9 (Makoil, Inc.), which averaged 498 barrels of oil and 371 barrels of water per day. Nevada's previous second highest volume producer, Blackburn Unit No. 18 (Petroleum Corp. of Nevada), averaged 328 barrels of oil and 1,890 barrels of water per day.

Production from the Eagle Springs field in 1995 increased 144% over 1994, of which 40% was contributed by the addition of four new wells. Seven of the existing wells increased production and five decreased production in 1995 as compared to 1994.



OIL WELL DRILLING ACTIVITY IN NEVADA IN 1995

Company	Well	Permit no.	Location	Spud date	Depth (feet)	Status (31 Dec 95)
ELKO COUNTY						
Foreland Corp.	Deadman Creek No. 44-13 (Formerly Southern Pacific No. 3-13)	342	SE ¹ / ₄ SW ¹ / ₄ S13 T39N R55E	Nov 95	W	Drilling
EUREKA COUNTY						
Foreland Corp.	Hot Creek Wash Federal No. 15-1	745	SE ¹ / ₄ SW ¹ / ₄ SW ¹ / ₄ S15 T18N R50E	May 95	5940	P&A
Alpine, Inc.	Monte Federal No. 1-4	757	NW ¹ / ₄ SE ¹ / ₄ S4 T21N R54E	Aug 95	5885	P&A
LINCOLN						
Tide Petroleum Co.	Baseline Canyon Federal No. 1	756	NW ¹ / ₄ S3 T1N R59E	May 95	2010	P&A
Tide Petroleum Co.	Baseline Canyon Federal No. 2	762	NE ¹ / ₄ SW ¹ / ₄ SW ¹ / ₄ S21 T1N R59E	Nov 95	W	Suspended
Conley P. Smith Operating Co.	Cave Valley Federal No. 13-10	777	NW ¹ / ₄ SE ¹ / ₄ S13 T07N R63E	Dec 95	W	Drilling
NYE COUNTY						
Makoil, Inc.	Currant No. 1	241	SW ¹ / ₄ SE ¹ / ₄ SW ¹ / ₄ S26 T10N R57E	May 95	7115	Producer
Makoil, Inc.	Railroad Valley No. 3	305	C NW ¹ / ₄ S31 T9N R56E	Feb 95	3000	P&A
Makoil, Inc.	Munson Ranch No. 12-14	688	SW ¹ / ₄ SW ¹ / ₄ S12 T9N R56E	Apr 95	3457	Producer
Eagle Springs Production LLC	Eagle Springs/Plains Petroleum No. 23-36	733	NE ¹ / ₄ SW ¹ / ₄ NW ¹ / ₄ S36 T9N R57E	Aug 95	7140	Producer
CENEX, Inc.	Federal No. 14-11	736	SE ¹ / ₄ SW ¹ / ₄ S11 T7N R56E	Apr 95	6382	P&A
Eagle Springs Production LLC	Eagle Springs/Plains Petroleum No. 13-36	744	NW ¹ / ₄ SW ¹ / ₄ NW ¹ / ₄ S36 T9N R57E	Nov 95	W	Drilling
Apache Corp.	Railroad Stock Federal No. 12-34	746	SW ¹ / ₄ SW ¹ / ₄ NW ¹ / ₄ S34 T12N R57E	Dec 94	5048	P&A
CENEX, Inc.	Federal No. 8-7	749	SE ¹ / ₄ NE ¹ / ₄ S7 T8N R56E	Jan 95	2788	P&A
Amerada Hess Corp. of Nevada	Federal No. 11-14	750	NE ¹ / ₄ SW ¹ / ₄ S14 T7N R56E	Jan 95	11000	P&A
Frontier Exploration Co.	North Rim Federal No. 4-1	752	NW ¹ / ₄ NE ¹ / ₄ S4 T9N R57E	Jul 95	5473	P&A
Pioneer Oil and Gas Co.	Timber Mountain Unit No. 13-14	753	SW ¹ / ₄ SW ¹ / ₄ S13 T6N R56E	Jun 95	3943	P&A
Eagle Springs Production LLC	Eagle Springs/Plains Petroleum No. 83-35	754	NE ¹ / ₄ SW ¹ / ₄ NE ¹ / ₄ S35 T9N R57E	Jan 95	6888	Producer
Eagle Springs Production LLC	Eagle Springs/Plains Petroleum No. 64-35	755	SE ¹ / ₄ SW ¹ / ₄ NE ¹ / ₄ S35 T9N R57E	Jul 95	6863	Producer
Eagle Springs Production LLC	Eagle Springs/Plains Petroleum No. 55-35	761	SW ¹ / ₄ SW ¹ / ₄ NE ¹ / ₄ S35 T9N R57E	Sep 95	6890	Producer
Federal Petroleum Corp.	Federal No. 1-10	766	NE ¹ / ₄ NW ¹ / ₄ S10 T5N R56E	Oct 95	4139	P&A
Phillips Petroleum Co.	Three of a Kind No. 1	772	SE ¹ / ₄ NW ¹ / ₄ S21 T9N R56E	Dec 95	W	Drilling
Makoil, Inc.	Midland Trail No. 29-24	780	SE ¹ / ₄ SW ¹ / ₄ S29 T6N R56E	Dec 95	W	Drilling
Antelope Energy Co.	Cold Spring Federal No. 1	781	NE ¹ / ₄ NE ¹ / ₄ NE ¹ / ₄ S34 T8N R57E	Dec 95	3330	P&A
PERSHING COUNTY						
Ouida Oil, Inc.	Ouida Federal Dixie No. 1	743	NW ¹ / ₄ NW ¹ / ₄ S25 T25N R37E	Mar 95	4536	P&A
Evans-Barton, Ltd.	Kyle Spring No. 12-13D	759	NW ¹ / ₄ SW ¹ / ₄ S12 T29N R36E	Jul 95	1000	P&A
WHITE PINE COUNTY						
Davis Petroleum Corp.	Giroux Wash No. 1-29	715	SE ¹ / ₄ SW ¹ / ₄ S29 T16N R61E	Jul 95	5500	P&A
Trio Petroleum, Inc	Federal No. 54X-36	748	SW ¹ / ₄ SW ¹ / ₄ NE ¹ / ₄ S36 T19N R63E	Jan 95	7810	P&A
Foreland Corp.	Eldorado Federal No. 15-1	758	NE ¹ / ₄ SW ¹ / ₄ SE ¹ / ₄ S15 T16N R54E	Oct 95	4033	P&A
Pioneer Oil and Gas Co.	Grubstake Unit Federal No. 14-14	760	SW ¹ / ₄ SW ¹ / ₄ S14 ¹ / ₄ T21N R57E	Aug 95	W	TA
Williford Energy Co.	Steptoe Valley Federal No. 1	763	SE ¹ / ₄ NE ¹ / ₄ SE ¹ / ₄ S24 T15N R63E	Oct 95	3550	P&A
Williford Energy Co.	Steptoe Valley Federal No. 2	764	NE ¹ / ₄ NW ¹ / ₄ SE ¹ / ₄ S19 T15N R64E	Oct 95	4775	P&A
Medallion Oil Co.	Federal No. 1-18	767	SW ¹ / ₄ NW ¹ / ₄ NE ¹ / ₄ S18 T19N R58E	Oct 95	W	Suspended
Phillips Petroleum Co.	Sidewinder No. 1-1	769	SE ¹ / ₄ SW ¹ / ₄ S1 T22N R58E	Nov 95	W	Drilling

W: Depth information withheld in accordance with company requests and Nevada regulations.

P&A: Plugged and abandoned.

TA: Temporarily abandoned.

Drilling: Drilling not finished in 1995.

Three producers that came on line near the end of 1994 remained in production throughout 1995, and Eagle Springs No. 2-36 produced for 7 months in 1995 after being shut in since 1984.

Production from the two wells in the Tomera Ranch field decreased 29% and production from the two wells in the North Willow Creek field increased 72%.

Production from the Kate Spring field decreased 15%. One well shut in throughout 1994 produced briefly, and production increased from a second well, but the increase was offset by decreases in production at four wells.

Production from the Blackburn field decreased 25%. Production decreased at 24 wells, which more than offset an increase at 12 wells and the addition of a new producer. Production from the Grant Canyon field decreased 35% due to decreases at both producing wells.

Production from the one producer in the Duckwater Creek field decreased 48%. Production from the Sans Spring field decreased 50%. Only one of its two wells produced in 1994 and 1995. Production from the Bacon Flat field decreased 78%. Only one of

its three producing wells produced in 1994 and 1995. The Three Bar field was shut in throughout 1995.

According to the Nevada Division of Minerals, the average net wellhead price for Nevada crude oil in 1995 was about \$12.25 per barrel. Most Nevada oil is used to make such products as No. 1 and No. 2 diesel fuel, kerosene, stove oil, and asphalt. Nevada crude oil is transported by tank trucks to several refineries: the Petro Source Refining Corp. 8,000 barrel per day (capacity) refinery and asphalt storage plant near Currant in Railroad Valley; the Petro Source Refining Partners' asphalt storage facility and refinery (used only a few days per month for refining) at Tonopah; the Petro Source Refinery in Salt Lake City, Utah (presently refining only Pine Valley crude oil).

A total of 13,490 thousand cubic feet of gas was produced from the Kate Spring field in 1995 and was used to operate production and related equipment at the lease sites of Apache Corp. and Western General, Inc.

New Producers

Five new wells and one redrilled well were put into production in 1995, all in Railroad Valley in Nye

FEDERAL OIL AND GAS LEASES IN EFFECT IN FISCAL YEARS 1994 AND 1995¹

County	NUMBER OF LEASES						ACREAGE					
	Competitive		Noncompetitive		Simultaneous ²		Competitive		Noncompetitive		Simultaneous ²	
	FY94	FY95	FY94	FY95	FY94	FY95	FY94	FY95	FY94	FY95	FY94	FY95
Carson City	0	0	0	0	0	0	0	0	0	0	0	0
Churchill	0	0	3	2	2	2	0	0	5,085	3,805	5,278	5,278
Clark	0	0	5	2	4	2	0	0	3,103	1,262	6,441	5,761
Douglas	0	0	0	0	0	0	0	0	0	0	0	0
Elko	32	27	181	134	55	38	49,306	41,550	293,592	236,208	172,099	117,929
Esmeralda	0	0	7	7	0	0	0	0	18,574	20,549	0	0
Eureka	85	58	146	102	121	87	112,376	83,416	258,894	164,678	398,361	261,650
Humboldt	0	0	1	0	0	0	0	0	679	0	0	0
Lander	0	0	7	2	1	0	0	0	7,557	3,874	10,185	0
Lincoln	52	52	270	248	30	28	91,964	88,683	590,503	534,002	138,911	126,521
Lyon	0	0	0	0	0	0	0	0	0	0	0	0
Mineral	0	0	0	0	0	0	0	0	0	0	0	0
Nye	324	304	432	327	308	215	296,537	279,891	830,053	585,439	561,450	275,329
Pershing	19	19	27	16	0	0	40,399	40,399	56,740	32,009	0	0
Storey	0	0	0	0	0	0	0	0	0	0	0	0
Washoe	0	0	2	0	0	0	0	0	1,713	0	0	0
White Pine	179	136	348	260	171	108	266,298	205,666	736,375	507,320	548,425	272,573
TOTAL	691	596	1,426	1,100	692	480	856,880	739,605	2,800,476	2,089,148	1,841,150	1,065,041

¹Data from the U.S. Bureau of Land Management

FY94 = Oct. 1993-Sept. 1994; FY95 = Oct. 1994-Sept. 1995

²These are the remaining leases that were issued under the simultaneous leasing program that was terminated by the December 22, 1987 amendment to the 1920 Mineral Leasing Act.

PRODUCTION OF NEVADA'S OIL FIELDS (barrels)

Compiled from Producer's Reports filed with the Nevada Division of Minerals

Field (year discovered)	Thru 1988	1989	1990	1991	1992	1993	1994	1995	TOTAL
Eagle Springs (1954)	3,898,320	47,272	41,609	42,043	49,767	7,075	66,565	162,296	4,314,947
Trap Spring (1976)	7,666,559	629,281	939,792	690,257	554,410	427,150	378,955	362,985	11,649,389
Currant (1979)	641	0	0	0	0	0	0	278	919
Bacon Flat (1981)	314,660	0	0	0	178,845	102,030	192,601	43,057	831,193
Blackburn (1982)	1,633,385	272,119	238,240	203,023	231,719	599,857	576,853	435,975	4,191,171
Grant Canyon (1983)	9,762,396	2,076,272	2,345,858	2,124,021	2,499,831	495,934	308,709	202,129	19,815,150
Kate Spring (1986)	82,740	188,408	434,349	339,310	203,274	150,309	122,436	104,574	1,625,400
Tomera Ranch (1987)	6,253	225	2,605	3,067	2,295	2,140	1,970	1,405	19,960
N. Willow Creek (1988)	9,457	4,036	3,169	2,365	4,491	3,928	3,736	6,419	37,601
Three Bar (1990)			3,601	17,684	362	1,961	229	0	23,837
Duckwater Creek (1990)			3,095	4,190	2,764	2,256	1,269	655	14,229
Sans Spring (1993)						69,478	44,279	22,174	135,931
TOTAL	23,374,411	3,217,613	4,012,318	3,425,960	3,727,758	1,862,118	1,697,602	1,341,947	42,659,727
Change from previous year		0%	25%	-15%	9%	-50%	-9%	-21%	

County. The five new producers are Munson Ranch No. 12-14 (Makoil, Inc.), and Eagle Springs/Plains Petroleum Nos. 23-36, 55-35, 64-35 and 83-35 (Eagle Springs Production LLC). Currant No. 1 (Makoil, Inc.) was redrilled.

In the Trap Spring field, Munson Ranch No. 12-14 began production in May from one zone between 3,235 and 3,457 feet in poorly welded tuff in the upper part of the Tertiary Garrett Ranch Volcanics. Production peaked at 54.4 barrels of oil and 0.5 barrels of water per day in June, and was averaging 24.6 barrels of oil and 0.5 barrels of water per day during 10 days of production in December.

Redrilling of Currant No. 1 was completed in July 1995. It produced 91 barrels of oil in July and 187 barrels in November and December. Production averaged between 4 and 7 barrels of oil per day with no water at the end of 1995. This well, the only producer in the Currant field, was shut in in 1983.

Four new producers were in the Eagle Springs field and operated by Eagle Springs Production LLC:

1. Eagle Springs/Plains Petroleum No. 83-35 began production in July from two zones between 6,254 and 6,311 feet in Oligocene welded tuff and one zone between 6,728 and 6,744 feet in lacustrine carbonates in the Eocene Sheep Pass Limestone. Production peaked at 159 barrels of oil and 33 barrels of water per day in August, and was averaging 77 barrels of oil and 53 barrels of water per day in December.

2. Eagle Springs/Plains Petroleum No. 64-35 began production in September from three zones

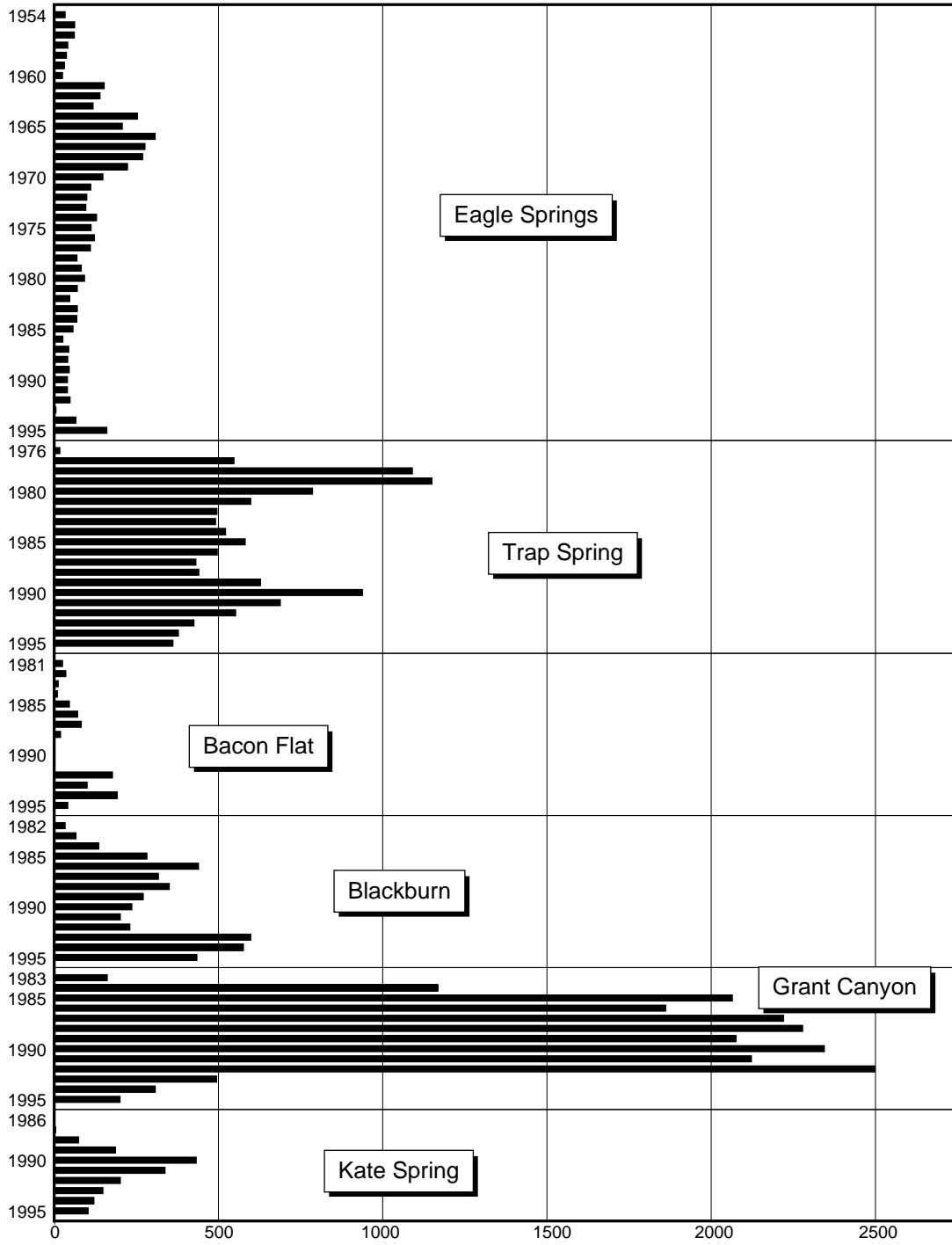
between 6,124 and 6,154 feet in welded tuff in the Tertiary Garrett Ranch Volcanics, 11 zones between 6,304 and 6,574 feet in lacustrine carbonates in the Eocene Sheep Pass Limestone, and one zone between 6,794 and 6,813 feet in dolomite in the Mississippian Chainman Shale. Production increased through to the end of the year and was averaging 45 barrels of oil and 98 barrels of water per day during 13 days of production in December.

3. Eagle Springs/Plains Petroleum No. 23-36 began production in October from four zones between 6,620 and 6,866 feet in lacustrine carbonates in the Eocene Sheep Pass Limestone. Production averaged 139 barrels of oil and 52 barrels of water per day through the end of the year.

4. Eagle Springs/Plains Petroleum No. 55-35 began production in November from 16 zones between 6,162 and 6,884 feet in interbedded poorly welded tuff and lacustrine carbonate in the Tertiary Garrett Ranch Volcanics and interbedded lacustrine shale and carbonate on the underlying Eocene Sheep Pass Limestone. Production averaged 14 barrels of oil and 17 barrels of water per day during 13 days of production in December.

Exploration

Thirty-four wells were spudded for oil and gas in 1995, up from 20 spudded in 1994. Also, one well spudded in 1994 was completed in 1995. Three were redrills of older wells, and six were still being drilled at year end.



Oil Production, in Thousands of Barrels

Drilling was completed on 25 wells totaling 128,495 feet during 1995. At year end, drilling was suspended at two wells, one well was temporarily abandoned, and no wells were shut in. The drilling rig count was six during January and February, varied between three and six through most of the year, and rose to nine during November and December.

The deepest well drilled in Nevada in 1995 was Nevada Federal No. 11-14 in Nye County, drilled to a depth of 11,000 feet by Amerada Hess Corp. No shows were reported.

Oil shows were reported for one dry hole in Eureka County. In its Hot Creek Wash Federal No. 15-1, Foreland Corp. reported dark brown oil stains and blebs in pores in Tertiary tuff between 4,810 and 4,822 feet and dark brown oil stains and chips saturated with brown oil in Paleozoic dolomite between 5,860 and 5,670 feet.

Oil shows were reported for four dry holes in Nye County. In its Railroad Stock Federal No. 12-24, Apache Corp. reported no visible oil shows, however, a number of gas peaks were present largely in black carbonaceous shale in the Mississippian Chainman Shale. Most notable were gas peaks ranging from 5 to 26 units at 1,870 feet and 2,004 feet between 2,220 and 2,224 feet, between 2,228 and 2,230 feet, and between 2,356 and 2,360 feet.

In its Federal No. 14-11, CENEX, Inc., reported seven oil shows with large gas peaks. Four shows consisted of dark brown stains in sandstone and conglomerate between 4,120 and 4,245 feet. Two shows consisted of brown stains in sandstone and conglomerate between 4,435 and 4,480 feet. These shows are in valley fill. The last show consisted of brown stains between 6,145 and 6,240 feet in tuff of the Tertiary Garrett Ranch Volcanics.

In its North Rim Federal No. 4-1, Frontier Exploration Co. reported minor brown stains and a minor gas peak at 4,770 feet in tuff of the Tertiary Garrett Ranch Volcanics.

In its Timber Mountain Unit No. 13-14, Pioneer Oil and Gas Co. reported dark brown to black oil stains on fracture surfaces between 3,800 and 3,820 feet, 3,830 and 3,840 feet, and 3,850 and 3,860 feet in dolomite of the Devonian Guilmette Formation.

Oil shows were reported for two dry holes in White Pine County. In its Federal No. 54X-36, Trio Petroleum, Inc., reported traces of dark brown and black dead oil stains between 5,645 and 5,655 feet and 5,690 and 5,700 feet in sandy carbonates in the Pennsylvanian Ely Limestone and traces of dark brown oil stains between 6,467 and 6,475 feet, traces of black, spotty dead oil stains between 7,146 and 7,149 feet, and traces of black oil stains between 7,329 and 7,335 feet in carbonates of the Mississippian Joana Limestone.

In its Eldorado No. 15-1, Foreland Corp. reported several shows. Spotty dark brown oil stains were reported in carbonates of the Mississippian Joana Limestone between 3,370 and 3,420 feet and 3,448 and 3,556 feet, dark brown stains and occasional oil drops were reported in dolomite and shale of the Devonian-Mississippian Pilot Shale between 3,740 and 3,904 feet, and traces of brown stains and black dead oil stains were reported in carbonates of the Devonian Devils Gate Limestone between 4,036 and 4,116 feet, between 4,282 and 4,428 feet, and between 4,510 and 4,522 feet. A faint to strong odor was also present between 3,448 and 4,116 feet.

Seven unit agreements and no development contracts were in effect with the Bureau of Land Management in Nevada during fiscal year 1995, which is unchanged from 1994. There were 3,893,148 acres under federal oil and gas leases in fiscal 1995, a decrease of 1,604,713 acres from 1994.

Transfers and Closures

In 1995, Davis Petroleum Corp. acquired Giroux Wash No. 1-29 (formerly Bobcat No. 1-29) from Arco Oil and Gas Co. Foreland Corp. acquired Southern Pacific No. 3-13 from Sun Exploration and Production Company. Makoil, Inc. acquired the following wells from Apache Corp.: Grant Canyon Nos. 1, 3, 7, 9, and 22-21; Kate Spring No. 12-2; Trap Spring Nos. 2-27, 3-34, 8-23, 9-26, 13, 16-23, 19-23, 20-X, and 23-41. Makoil, Inc. also acquired Railroad Valley No. 3 from Northwest Exploration Co..

Of the 87 wells listed as producers, 19 were shut in for 6 months or more in 1995. Several operators continued to suspend production on their various fields in both Railroad Valley and Pine Valley.

In the Eagle Springs field, Eagle Springs Ltd. suspended production for 6 months or more on Eagle Springs Unit Nos. 1-36, 15-35, and 35-35 in 1995. Eagle Springs Unit No. 15-35 was still shut in at the end of 1995.

In the Trap Springs Field, Makoil, Inc., continued suspension of production on Munson Ranch No. 12-23 and J.N. Federal No. 1, and Frontier Exploration Co. continued suspension of production on Munson Ranch Nos. 13-46 and 14-49X through 1995. Apache Corp. continued suspension of production on Trap Spring No. 8 through 1995 and also suspended production on Trap Spring No. 23-41 through 1995. David M. Evans continued suspending production of Trap Spring No. 12-13 through the 1995.

In the Bacon Flat field, Balcron Oil Co. continued suspension of production on Bacon Flat Nos. 1 and 32-17 through 1995. In the Currant field Makoil produced from Currant No. 1 for one day in July and 31 days spread through November and December. In the

Grant Canyon field, Apache Corp. and then Makoil, Inc., continued suspension of production on Grant Canyon Nos. 3 and 7 through 1995.

In the Kate Spring field, Western General, Inc., produced from Taylor Federal No. 2 for only 10 days in October. In the North Willow field, Foreland Corp. continued suspension of production on Foreland-Southern Pacific No. 5-27 through 1995. In the Three Bar field, Trail Mountain, Inc., continued suspension of production on Three Bar Unit Nos. 5 and 25-A, which effectively shut in the field through 1995.

U.S. Oil Production and Consumption

According to the Energy Information Agency (EIA) of the Department of Energy, petroleum imports accounted for 52.8% of U.S. consumption in 1995,

which surpasses the previous annual peak of 50.4% in 1994. Domestic crude oil production dropped to its lowest level since 1954 and dependence on imports reached a new high. U.S. crude oil production averaged about 6,530,000 barrels per day in 1995, a decline of 1.6% from the 1994 average of 6,662,000 barrels per day. Petroleum consumption increased by 0.4%. Oil provided slightly less than 40% of the nation's total energy supply in 1994, according to EIA. This percentage has remained about the same since 1991. Natural gas consumption increased by 3%, (0.7% for residential use and 6.9% for industrial use), which for the ninth year in a row was more than for petroleum. It also continued to increase more than any other energy sources. This was mainly due to the continued growth in the industrial use of natural gas, particularly for the generation of electricity.

Directory of Mining and Milling Operations

Compiled from information supplied by the Nevada Division of Mine Inspection, Nevada Division of Minerals, and U.S. Mine Safety and Health Administration. *Sand and gravel operations with less than 300,000 tons annual production are not listed.*

CIL = carbon-in-leach, CIP = carbon-in-pulp, EX = exploration, HL = heap leach, ML = mill, OP = open-pit mine, OS = other surface, PL = placer, UG = underground mine.

Mine/plant name	Operator	Location	Commodity	Type	Process/ activity	Employees	Address
CHURCHILL COUNTY							
Huck Salt	Huck Salt Co.	S12,T16N,R31E	salt	OS	solar evaporation	6	Tracy Huckaby 5033 Austin Highway Fallon, NV 89406
Moltan Mine and Plant	B. J. Gurley	S28,29,32,33, T23N,R27E	diatomaceous earth	OP,ML	single bench	74	Craig Paisley, Plant Manager P.O. Box 860 Fernley, NV 89408-0860
Popcorn Mine	Eagle-Picher Minerals, Inc.	S24,T16N,R28E S19,T16N,R29E	perlite	OP		1	Myron S. Burdette, Operations Manager P.O. Box 10480 Reno, NV 89510
CLARK COUNTY							
Apex Quarry and Plant	Chemical Lime Co.	S14,22,23,26,27,34,35 T18S,R63E	lime	OP,ML	multiple bench calcining hydrating	51	Bryan Nielson P.O. Box 3609 North Las Vegas, NV 89036
Blue Diamond Mine and Mill	James Hardie Gypsum, Inc.	S20,29-32, T21S,R59E; S5-8,T22S,R59E S24-26,T21S,R58E	gypsum	OP,ML	grinding calcining	122	Alex Beeman, Manufacturing Manager HCR 89033, Box 2900 Las Vegas, NV 89124
Bonanza Materials Pit and Plant	Bonanza Materials, Inc.	S9,16,T22S,R62E	sand gravel	OP,ML	single bench crushing screening	40	Dan Stewart, President 565 Lalif Road Henderson, NV 89015
Buffalo Road Pit and Mill	W.M.K. Transit Mix, Inc.	S21,T21S,R60E	sand gravel	OP,ML	single bench crushing screening	18	Peter Mahoney 6075 S. Eastern Avenue, Suite 11 Las Vegas, NV 89119
Georgia-Pacific Quarry and Wallboard Plant	Georgia-Pacific Corp.	S10,11,14,16,22, T16S,R66E S34,T18S,R63E	gypsum	OP,ML	crushing, calcining	72	Bob Shajary, Plant Manager P.O. Box 30006 North Las Vegas, NV 89030
Henderson Plant	Chemical Lime Co.	S18,T22S,R63E	dolomitic lime	ML	calcining	43	Dave Johnson, President P.O. Box 127 Henderson, NV 89015
Hollywood Pit and Henderson Mill	Nevada Ready Mix Corp.	S32,T21S,R63E; S11,T21S,R62E	sand gravel	OP,ML	single bench crushing screening	24	Richard Thornton General Manager-Vice President P.O. Box 42755 Las Vegas, NV 89104
Las Vegas Cement Plant	Las Vegas Cement, Inc.	S10,T15S,R67E	cement	ML	construction	13	Aldo Dinardo, Owner and President P.O. Box 380 Logandale, NV 89021
Lone Mountain Community Pit	Quality Sand and Gravel	S1,T20S,R59E	sand gravel	OS	single bench	2	Gary Vosburg, President P.O. Box 15476 Las Vegas, NV 89114
Lone Mountain Mendenhall Pit	Las Vegas Paving Corp.	S35,T19S,R59E	sand gravel	OP	single bench	7	Robert Mendenhall, Owner 4420 S. Decatur Boulevard Las Vegas, NV 89103
Lone Mountain Nevada Ready Mix Pit	Nevada Ready Mix Corp.	S36,T19S,R59E	sand gravel	OP,ML	single bench crushing screening	32	Darrel Thornton, President P.O. Box 42755 Las Vegas, NV 89104
Lone Mountain Stocks Pit	Southern Nevada Paving	S3,4,T20S,R59E; S34,35,T19S,R59E	sand gravel	OP	single bench	35	Floyd Meldrum, President 3555 Polaris Avenue Las Vegas, NV 89102
Money Pit	Southern Nevada Liteweight	S9,16,T25S,R61E	lightweight aggregate	OP	crushing screening	12	Spencer Apple 4675 Wynn Road Las Vegas, NV 89103

DIRECTORY OF MINING AND MILLING OPERATIONS (continued)

Mine/plant name	Operator	Location	Commodity	Type	Process/ activity	Employees	Address
CLARK COUNTY (continued)							
PABCO Gypsum Pit and Plant	Pacific Coast Building Products, Inc.	S7,T20S,R64E	gypsum	OP	single bench wash plant	83	Emil Kapilovich 1973 N. Nellis Boulevard #328 Las Vegas, NV 89115
Salt Lake Highway Pit	American Sand and Gravel	S25,T19S,R62E	sand gravel	OP	single bench	6	Art Melonas, Owner 5004 Stanley Avenue Las Vegas, NV 89115
Simplot Silica Products Pit and Mill	Simplot Industries	S30,T16S,R68E	silica sand	OP,ML	flotation drying screening	44	Jack Olsen, Manager P.O. Box 308 Overton, NV 89040
Sloan Mine	Chemical Lime Co.	S12,13,T23S,R60E	dolomite	OP	crushing	10	Bryan Nielson, Regional Operations Manager HCR 37, Box 2300 Las Vegas, NV 89124
Sloan rock pit	Frehner Construction Co.	S13,T23S,R60E	sand gravel	OS,ML	single bench crushing screening	11	Donald G. Groch, Vice President/ General Manager 124 West Brooks Avenue North Las Vegas, NV 89030
Spring Mountain Pit and Mill	Wells Cargo, Inc.	S15,T21S,R60E	sand gravel	OS,ML	single bench crushing screening	8	Howard Wells, General Manager P.O. Box 81170 Las Vegas, NV 89180

ELKO COUNTY

Big Springs Mine	Independence Mining Co.	S1,2,11,12 T42N,R53E	gold silver	HL	cyanide	5	Benjamin Guenther, Senior Vice President HC31, Box 78 Elko, NV 89801
Dunphy Mill	Baroid Drilling Fluids, Inc.	S26,T33N,R48E	barite	ML	grinding	33	Paul J. Mills P.O. Box 340 Battle Mountain, NV 89820
Dee Gold Mine	Rayrock Mines, Inc.	S33,34,T37N,R49E; S3,4,T36N,R49E	gold silver	OP,HL, ML	CIL cyanide	89	Keith Belingheri P.O. Box 1193 Elko, NV 89803
Jerritt Canyon Joint Venture	Independence Mining Co.	T39-41N,R52-54E	gold silver	OP,ML, UG,HL	CIP, CIL cyanide grinding	649	Ben Guenther, Senior Vice President HC31, Box 78 Elko, NV 89801
Kinsley Mountain Mine	Alta Gold Co.	S4,5,6,T26N,R68E	gold	OP	heap-leach	91	Joe Pecio, General Manager HC10, Box 10050 778 S. Pioche Highway Ely, NV 89301
Pilot Peak Lime Plant	Continental Lime, Inc.	S14,15,22,23,26, T34N,R68E	lime	OP,ML	multiple bench roasting grinding rotary kiln	49	Jack Elliott, Plant Manager P.O. Box 2520 Wendover, NV 89883
Rossi Mine	Baroid Drilling Fluids, Inc.	S14-16,21-23, 26-28,34-35; S15,21,22, T37N,R49E	barite	OP	multiple bench crushing	1	Paul J. Mills P.O. Box 340 Battle Mountain, NV 89820

ESMERALDA COUNTY

Basalt Mine and Mill	Grefco, Inc.	S29-32,T2N,R34E	diatomaceous earth	OP,ML	grinding	6	Robert A. Poelvoorde, Plant Manager P.O. Box 288 Mina, NV 89422
Blanco Mine	Vanderbilt Minerals Corp.	S22,T1N,R37E	clay	OP	grinding bagging	6	Jerry W. Lease 2320 Viking Road Las Vegas, NV 89109

continued

DIRECTORY OF MINING AND MILLING OPERATIONS (continued)

Mine/plant name	Operator	Location	Commodity	Type	Process/ activity	Employees	Address
ESMERALDA COUNTY (continued)							
Goldfield Operation	American Resource Corp.	S35,35,T2S,R42E; S1,2,T35,R42E	gold	OP,HL	cyanide	16	Tom Rinaldi, General Manager P.O. Box 160 Goldfield, NV 89013
Silver Peak operation	Cyprus Foote Mineral Co.	S22,T2S,R39E	lithium carbonate	OS	evaporation precipitation	64	C. B. Loundagin, Operations Manager P.O. Box 98 Silver Peak, NV 89047
EUREKA COUNTY							
Betze-Post Mine	Barrick Goldstrike Mines, Inc.	S12,20,29,30, T36N,R50E; S23-26,T36N,R49E	gold silver	OP,ML, HL	CIL cyanide milling	1,749	Ron Johnson P.O. Box 29 Elko, NV 89803
Gold Bar Mine	Atlas Gold Mining, Inc.	S26,27,T22N,R49E	gold	OP,ML, HL	CIL,CIP	7	Don Canepa P.O. Box 282 Eureka, NV 89316
Newmont Gold operations	Newmont Gold Co.	T31-36N, R49-53E	gold silver mercury	OP,ML, UG,HL	CIL, CIP cyanide	2,277	W. James Mullin, Vice President P.O. Box 669 Carlin, NV 89822-0669
HUMBOLDT COUNTY							
Bonanza Opal Mine	Lloyd H. Olds	S13,T45N,R25E	precious opal	OP	single bench	3	Lloyd H. Olds P.O. Box 13 Denio, NV 89404
Crofoot/Lewis Mine	Hycroft Resources & Development, Inc.	S24?,T35N,R29E; S19,20?, T35N,R30E	gold silver	OP,HL	crushing cyanide	242	Hank Lesinski, General Manager P.O. Box 3030 Winnemucca, NV 89446
Disaster Peak Clay Mine	American Colloid Co.	S26,T47N,R34E	hectorite	OP	single bench		Pete Maul 1500 West Shure Drive Arlington Heights, IL 60004
Getchell Underground Mine	FirstMiss Gold, Inc.	S33,T39N,R42E	gold silver	UG	grinding	550	Jim Harter, Mine Manager P.O. Box 220 Golconda, NV 89414
Kelley Mine	C. George Hewitt	S30,T45N,R26E	precious opal	OP		1	C. George Hewitt, Owner P.O. Box 33 Denio, NV 89404
Lone Tree Mine	Santa Fe Pacific Gold Corp.	S1,11,13,15,23, T34N,R42E	gold silver	OP,ML, HL	CIL cyanide	361	Ken Pavlich, General Manager P.O. Box 388 Valmy, NV 89438
Marigold Mine	Rayrock Mines, Inc.	S8,9,17-19, T33N,R43E	gold	OP,ML, HL	CIL cyanide	110	Keith Belingheri P.O. Box 160 Valmy, NV 89438
MIN-AD Mine and Mill	MIN-AD, Inc.	S25,T36N,R37E; S28,T35N,R38E	dolomite	OP	grinding air separation screening	20	Charles Evans, Superintendent 4210 W. Jungo Road Winnemucca, NV 89445
Pinson Mine	Rayrock Mines, Inc.	S28,29,32,33, T38N,R42E	gold silver	OP,ML, HL	CIL cyanide	105	Keith Belingheri P.O. Box 129 Winnemucca, NV 89445
Sexton Mill	Nutritional Additives Corp.	S20,T36N,R38E	dolomite	ML	crushing screening	6	W. Glen Sexton, CFO 1230 Bridge Street Winnemucca, NV 89445
Sleeper Mine	Nevada Gold Mining, Inc.	S16,17,20,21, T40N,R35E	gold silver	OP,ML, HL	CIP cyanide	124	Barry P. Olson, General Manager Manager 600 Sod House Road Winnemucca, NV 89445
Twin Creeks Mine	Santa Fe Pacific Gold Corp.	S5,T39N,R43E	gold silver	OP,HL	CIP, CIL Electrowinning Merrill-Crowe	730 (154)	Steve Lang, Mine Manager P.O. Box 69 Golconda, NV 89414

DIRECTORY OF MINING AND MILLING OPERATIONS (continued)

Mine/plant name	Operator	Location	Commodity	Type	Process/ activity	Employees	Address
LANDER COUNTY							
Argenta Mine and Mill	Baker Hughes INTEQ	S613,24,T32N,R46E; S6,18,T32N,R47E	barite	OP	gravity grinding	16	Keith S. Olson, Manager P.O. Box 277 Battle Mountain, NV 89820
Battle Mountain Complex (Fortitude)	Battle Mountain Gold Co.	S22,27,33,34, T31N,R43E	gold silver	OP,HL	cyanide	120	Ken Kluksdahl, Operations Manager P.O. Box 1627 Battle Mountain, NV 89820
Battle Mountain Grinding Plant	M-I Drilling Fluids LLC	S18,T32N,R45E	barite	ML	gravity grinding	22	Garry Thielen, Operations Manager P.O. Box 370 Battle Mountain, NV 89820
Clipper Mine	M-I Drilling Fluids Co.	S31,32,T28N,R46E	barite	OP,ML	gravity concentration crushing	15	Garry Thielen, Operations Manager P.O. Box 370 Battle Mountain, NV 89820
Cortez Gold Mines	Placer Dome U.S., Inc.	S33,34, T27N,R47E	gold silver	OP,ML, HL	CIP cyanide roaster	184	Quayle Lusty, Mine Manager HC66-50 Beowawe, NV 89821
Dean Mine	St. George Metals, Inc.	S36,T30N,R45E	gold silver	UG,OP	exploration development	29	Frank Varseveld, President 1140 Chukar Lane Battle Mountain, NV 89820
Greystone Mine	M-I Drilling Fluids LLC	S35,T28N,R45E	barite	OP,ML	multiple bench gravity concentration crushing	47	Garry Thielen, Operations Manager P.O. Box 370 Battle Mountain, NV 89820
McCoy/Cove Mine	Echo Bay Minerals Co.	S2,11,T28N,R42E; S36,T29N,R42E	gold silver	OP,ML, UG,HL	cyanide grinding flotation	479	Jeff C. Smith, General Manager P.O. Box 1658 Battle Mountain, NV 89820
LINCOLN COUNTY							
Mackie Mine and Caliente Plant	Wilkin Mining & Trucking Co.	S34,T4S,R62E (mine); S5,T4S,R67E (plant)	perlite	UG,ML	room pillar crushing expansion	5	Joseph D. Wilkin, Owner P.O. Box 472 Panaca, NV 89042
LYON COUNTY							
Adams Claim	Art Wilson Co.	S25,T16N,R20E	gypsum/ anhydrite	OP,ML	crushing	7	Art Wilson, President P.O. Box 1160 Carson City, NV 89702
Hazen Pit	Eagle-Picher Minerals, Inc.	S6,9,T19N,R26E	diatomite	OP	crushing drying calcining	2	Myron Burdette, Operations Manager P.O. Box 10480 Reno, NV 89510
Nevada Cement Mine and Plant	Nevada Cement Co.	S3-6,9,T19N,R25E S36,T40N,R24E; S31-33,T20N,R25E S2,3,10,11, T20N,R25E	limestone cement	OP,ML	rotary kiln	142	Allan Steagall, President P.O. Box 840 Fernley, NV 89408
Section 8 Mine and Fernley Mill	CR Minerals Corp.	S8,17,T19N,R26E S11,T20N,R24E	diatomaceous earth	OP,ML	grinding drying milling	17	Chris Harris, Manager of Operations P.O. Box 455 Fernley, NV 89408
Yerington and MacArthur Mines	Arimetco Inc.	S8,9,16,17,20,21, T13N,R25E S19,30,T14N,R25E	copper	OP	solvent extraction electrowinning	99	Rick Havenstrite, Project Manager 102 Burch Drive Yerington, NV 89447
MINERAL COUNTY							
Aurora Mine	Nevada Goldfields, Inc.	S8,17,18, T5N,R28E	gold silver	OP,UG, ML	crushing grinding CIL	46	Greg Blaylock, Mine Manager P.O. Box 3070 Hawthorne, NV 89415
Aurora Partnership	Electra Mining Corp.	S9,16,17, T5N,R28E	gold silver	OP,HL	multiple bench cyanide	20	James Burt, Mine Manager P.O. Box 1628 Hawthorne, NV 89415
Candelaria Mine	Kinross Candelaria Mining Co.	S32-34,T4N,R35E;	silver gold	OP,HL	cyanide Merrill-Crowe	142	Jeff W. Butwell P.O. Box 1240 Hawthorne, NV 89415

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DIRECTORY OF MINING AND MILLING OPERATIONS (continued)

Mine/plant name	Operator	Location	Commodity	Type	Process/ activity	Employees	Address
MINERAL COUNTY (continued)							
Denton-Rawhide Mine	Kennecott Rawhide Mining Co.	S4,5,8,16,17, T13N,R32E	silver gold	OP,HL	cyanide	175	D.H. Batchelor, General Manager P.O. Box 2070 Fallon, NV 89407
Santa Fe Mine	Corona Gold, Inc.	S6,T8N,R35E; S36,T9N,R34E; S31,T9N,R35E	gold silver	OP,HL	cyanide	14	Roy Cellan P.O. Box 3220 Hawthorne, NV 89415
NYE COUNTY							
Amargosa Valley Plant and pits	IMV Div. of Floridin Co.	S15,29,T17S,R49E; S6,21,T17S,R51E	clay minerals	OP	grinding drying	38	William T. Jacobs, Plant Manager Route Box 549 Amargosa Valley, NV 89020
Ash Meadows Plant	American Resource Corp.	S25,T18S,R50E	zeolite	ML	screening drying bagging	4	Dave Lewis State Route 15 P.O. Box 7006 Amargosa Valley, NV 89020
Barrick Bullfrog Mine	Barrick Bullfrog Inc.	S3,10,14,15,16,24, 26,27,T12S,R46E	gold silver	OP,UG	CIP	372	David McClure, General Manager P.O. Box 519 Beatty, NV 89003
Cinder Cone Pit	Cind-R-Lite Co.	S36,T14S,R48E; S1,T15S,R48E	cinder	OP	gravity	2	H.D. Allen, President 3333 Cinder Lane Las Vegas, NV 89103
Crown Mine/Lone Placer/ Primary Mill	Marshall Earth Resources	S28,34, T13N,R39E	gold silver	ML,OP	screening washing	15	Hugh Marshall, President Route 1, Box 29A Austin (Ione), NV 89310
Gabbs Mine and Mill	American Premier	S23,25-27,34-36, T12N,R36E	magnesite	OP,ML	calcining separation grinding packaging	90	Don Pressey, General Manager P.O. Box 177 Gabbs, NV 89409
Lathrop Mill	American Borate Co.	S36,T17S,R49E	calcium borate	ML	flotation calcination	9	Darrel Cypert, Vice President Star Route 15 Box 610 Amargosa Valley, NV 89020
Nevada Neanderthal Plant	Nevada Neanderthal Stone	S10,T11S,R47E	dimension stone	ML	stone cutting	6	Dave Spicer, President P.O. Box 897 Beatty, NV 89003
New Discovery Mine and Mill	Vanderbilt Minerals Corp.	S13-24,T12S,R46E; S18,19,T12S,R47E	clay	OP,UG, ML	grinding bagging	5	Jerry W. Lease, VP General Manager 2320 Viking Road Las Vegas, NV 89109
Paradise Peak Mine	FMC Gold Co.	S7,12,13,24, T10N,R36E; S3-22,T10N,R35E	gold silver	HL	cyanide Merrill-Crowe	28	William Scanlon P.O. Box 145 Gabbs, NV 89409
Round Mountain Mine	Echo Bay Mines Ltd.	S19,20,29,30, T10N,R44E	gold silver	OP,HL, ML	cyanide	540	Steve Mueller, General Manager P.O. Box 480 Round Mountain, NV 89045
Sterling Mine	Cathedral Gold US Corp.	S13,T13S,R48E	gold	UG,ML, HL	drifting cyanide	53	Chuck Stevens, Mine Manager P.O. Box 549 Beatty, NV 89003
PERSHING COUNTY							
Buff Mine	Vanderbilt Minerals Corp.	S2,T27N,R32E	clay	OP	grinding bagging	6	Jerry W. Lease 2320 Viking Road Las Vegas, NV 89109
Coeur Rochester Mine	Coeur D'Alene Mines Corp.	S9,10,11,15,16, 21,22,27,28, T28N,R34E	silver gold	OP,HL	cyanide Merrill-Crowe	293	Robert Martinez, Vice President P.O. Box 1057 Lovelock, NV 89419
Colado Mine and Plant	Eagle-Picher Minerals, Inc.	S6,7,16,18,21,25, T28N,R29E; S33,T28N,R32E	diatomite perlite	OP,ML	drying classification grinding calcining	141	Jack P. Richards, Operations Manager P.O. Box 959 Lovelock, NV 89419

DIRECTORY OF MINING AND MILLING OPERATIONS (continued)

Mine/plant name	Operator	Location	Commodity	Type	Process/ activity	Employees	Address
PERSHING COUNTY (continued)							
Empire Quarry	United States Gypsum Co.	S31,T31N,R24E	gypsum	OP	crushing calcining	11	Charles Colman, Plant Manager P.O. Box 130 Empire, NV 89405
Florida Canyon Mine	Florida Canyon Mining, Inc.	S2-4,9-11,14-16, 37-39,T31N,R33E	gold silver	OP,HL	cyanide	300	Doug Stewart, General Manager P.O. Box 330 Imlay, NV 89418
Section 8 Mine	American Colloid Co.	S8,T27N,R33E	clay	OP	single bench		Pete Maul 1500 West Shure Drive Arlington Heights, IL 60004
Sexton Mine and Mill	Nutritional Additives Corp.	S5,8,T34N,R38E	dolomite	OP	grinding	6	Donald Sexton, CEO 1230 Bridge Winnemucca, NV 89445
STOREY COUNTY							
All-Lite Pit and Plant	All-Lite Aggregate Inc.	S34,T19N,R21E	lightweight aggregate sand gravel	ML	multiple-bench crushing	16	Bill Poulter, Manager P.O. Box 10865 Reno, NV 89510
Clark Mine and Mill	Eagle-Picher Minerals, Inc.	S28,33,34, T20N,R23E; S35,T20N,R22E	diatomite	OP,ML	grinding drying	67	Myron S. Burdette, Operations Manager P.O. Box 10480 Reno, NV 89510
Golden Eagle Mine and Mill	American Eagle Resources, Inc.	S23,24,26, T17N,R21E	gold silver	OP,HL	cyanide	17	Bob Spengler, Manager of Operations P.O. Box 859 Virginia City, NV 89440
Lower Naturalite Pit and Plant	Naturalite Aggregate Corp.	S16,T17N,R22E	lightweight aggregate	OS,ML	multiple bench crushing screening	6	Fritz Anthes, General Manager 2600 Boeing Way Carson City, NV 89701
Patrick Pit	Granite Construction	S6,T19N,R22E	sand gravel	OP	single bench	11	Jim Roberts, Branch Manager P.O. Box 2087 Sparks, NV 89432
WASHOE COUNTY							
Clay Mine	Art Wilson Co., <i>contractor for</i> Nevada Cement Co.	S13,T27N,R19E	clay	OP	single bench	5	Art Wilson, Operator P.O. Box 1160 Carson City, NV 89702
Empire Mill	United States Gypsum Co.	S11,13,T31N,R23E	gypsum	ML	grinding calcining	122	Charles Colman, Plant Manager P.O. Box 130 Empire, NV 89405
Lockwood Quarry	Granite Construction Co.	S17,T19N,R21E	aggregate	OP	single bench crushing screening	7	Jim Roberts, Branch Manager P.O. Box 2087 Sparks, NV 89432
102 Ranch Pit	Lost Dutchman Construction Co.	S36,T20N,R22E	sand gravel	OS,ML	crushing screening	5	Jerry Helms P.O. Drawer 608 Sparks, NV 89432
Paiute Pit	Paiute Pit Aggregates, Inc.	S22,27,34, T21N,R24E	sand gravel	OP	single bench	7	Alex Karlshoet, Owner P.O. Box 159 Wadsworth, NV 89442
Rilite Aggregate Pitt	Rilite Aggregate Co.	S23,T18N,R20E	aggregate	OP	grinding crushing	8	Bruno Benna P.O. Box 11767 Reno, NV 89511
Sha-Neva Pits	Sha-Neva Inc.	S24,T21N,R19E; S17,T19N,R21E	aggregate	OP	screening	6	Pat Shane, President 10655 Sha-Neva Rd. Truckee, CA 96161
Sky Ranch Pit	Rocky Ridge, Inc.	S15,T21N,R20E	sand gravel	OS,ML	multiple bench crushing screening	15	Pat Shane, President 10655 Sha-Neva Rd. Truckee, CA 96161
Western Hog Ranch Mine	Western Mining Corp. USA	S24,25,T38N,R22E	gold silver	HL		24	C. A. Moore, Site Manager P.O. Box 9 Gerlach, NV 89412

DIRECTORY OF MINING AND MILLING OPERATIONS (continued)

Mine/plant name	Operator	Location	Commodity	Type	Process/ activity	Employees	Address
WHITE PINE COUNTY							
Bald Mountain Mine (Includes Alligator Ridge, Yankee Projects)	Placer Dome U.S. Inc.	T24N,R57E	gold	OP,HL	multiple bench cyanide	226	Doug Bailey, Mine Manager P.O. Box 2706 Elko, NV 89803
Easy Junior Project	Alta Gold Co.	S9,T15N,R56E	gold	OP	multiple bench heap leach	45	Gary Cummings, General Manager P.O. Box 324 East Ely, NV 89315
Mt. Hamilton Mine	Mount Hamilton Mining Co.	S5,6,7,8,16,17,21 T16N,R57E	gold silver	OP,HL	multiple bench	169	Todd S. Fayram, Vice President P.O. Box 150476 East Ely, NV 89315
Robinson Operations	BHP Copper North America	S8,9,16,T16N,R62E	gold silver copper	OP,ML, HL	flotation	1,113	Harry Smith, President P.O. Box 382 Ruth, NV 89319