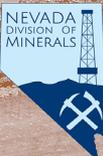


Major Mines of Nevada 2016

Mineral Industries in Nevada's Economy



University of Nevada, Reno

NEVADA COMMISSION ON MINERAL RESOURCES

Division of Minerals

The seven-member Commission on Mineral Resources is a public body appointed by the Governor that provides advice and recommendations to the Governor and Legislature on matters relating to mineral resources. The Division's mission is to encourage and assist in the responsible exploration for, and the production of, minerals, oil, gas, and geothermal energy which are economically beneficial to the State.

The Division is involved in activities relating to mineral, oil, gas, and geothermal development. Staff compiles annual data on all active mines in Nevada and maintains the State's mine registry. Information concerning mining operations and production is made available to the public through this yearly publication. Educational documents and materials concerning the minerals industry are also produced. The Division often acts as a cooperating agency in federal land use actions at the request of the Governor's office.

The Division is the fluid minerals permitting agency for drilling activities on both public and private lands in Nevada. Staff also monitors production of oil, gas, and geothermal resources to ensure proper management and conservation. Nevada is a member of the Interstate Oil and Gas Compact Commission.

The Division's abandoned mine lands program provides for public safety by identifying and ranking dangerous conditions at mines that are no longer operating, and by securing dangerous orphaned mine openings. The program continually urges the public to recognize and avoid hazardous abandoned mines.

Commission on Mineral Resources

Richard DeLong, Chairman (Large-Scale Mining)
Dennis Bryan, Vice-Chairman (Small-Scale Mining and Prospecting)
Nigel Bain (Large-Scale Mining)
Arthur Henderson (Oil and Gas)
Mary Korpi, (Public at Large)
David Parker (Exploration and Development)
John H. Snow (Geothermal Resources)

Division of Minerals Staff

Rich Perry - Administrator, Division of Minerals
Aubrey Bonde - Field Specialist, Las Vegas Office
Robert Ghiglieri - Chief, Abandoned Mine Lands Program
Valerie Kneefel - Administrative Assistant IV, Carson City Office
Lucia Patterson - GIS/Field Specialist
Lowell Price - Program Manager, Oil, Gas, and Geothermal
Deborah Selig - Administrative Assistant IV, Las Vegas Office
Mike Visher - Deputy Administrator
Garrett Wake - Chief, Southern Nevada Operations
Linda Wells - Program Officer II

Cover photo: Mineral Ridge Gold's Mineral Ridge mine (foreground) and Rockwood Lithium's Silver Peak lithium brine operations (background, upper right), Esmeralda County (Mike Visher photo).

Nevada Bureau of Mines and Geology

SPECIAL PUBLICATION P-28

Major Mines of Nevada 2016

Mineral Industries in Nevada's Economy

By Rich Perry and Mike Visher

The Nevada Division of Minerals

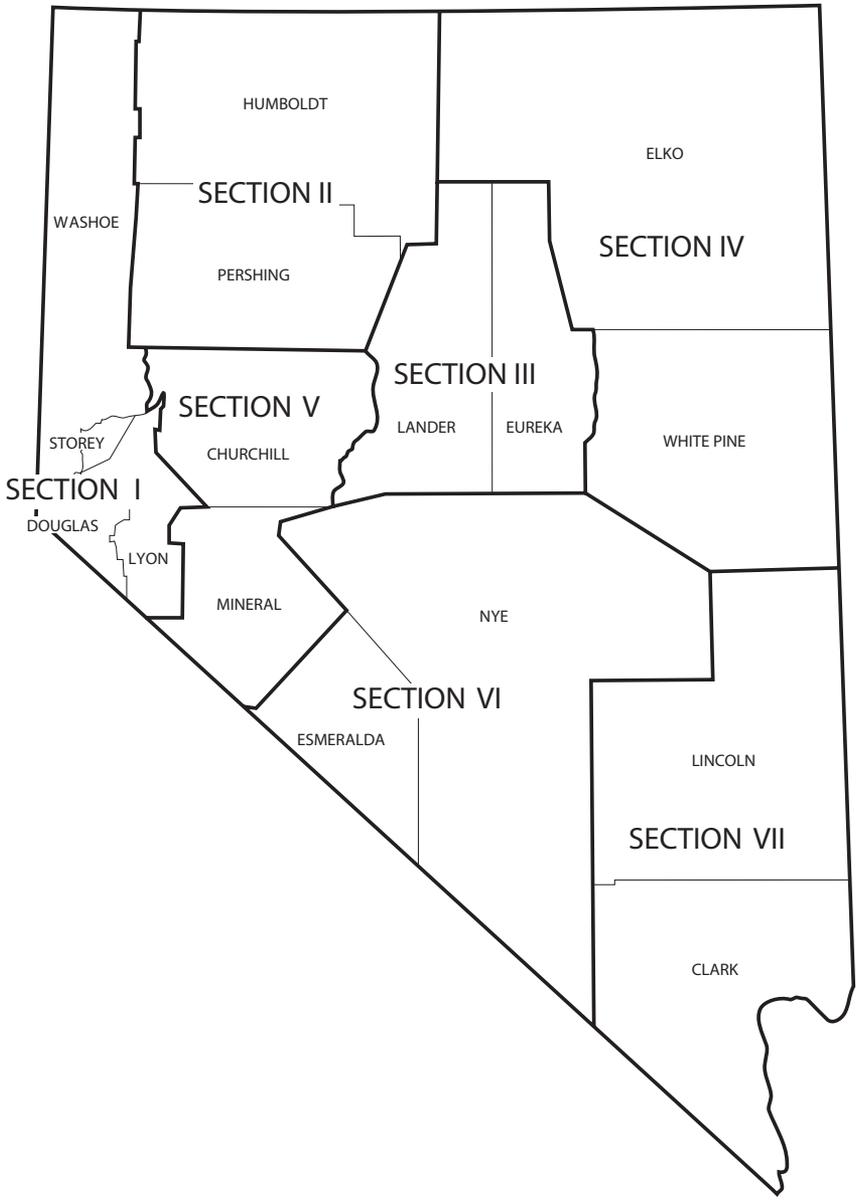
2017

This is the twenty-eighth of an annual series of summary reports on major mines of Nevada. Sand and gravel operations are not included. Information on employment and production for the calendar year 2016 was provided by the individual mine operators. The Nevada Division of Minerals maintains a complete register of Nevada mines. For further information, contact them at 400 W. King, Suite 106, Carson City, Nevada 89703 or call (775) 684-7040, fax (775) 684-7052, or visit their Web site at <http://minerals.nv.gov>.

College of Science
Mackay School of Earth Sciences and Engineering



University of Nevada, Reno



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Section I

Lyon County

Adams Claim Gypsum Mine (1)

Operator:

Art Wilson Co.
P.O. Box 20160
Carson City, NV 89721
775-882-0700 Fax: 882-0790
Company employees: 48

Production:

Gypsum - 416,898 tons
Limestone - 10,068 tons

NCC Fernley Operations (2)

Operator:

Nevada Cement Co.
P.O. Box 840
Fernley, NV 89408
775-575-2281 Fax: 575-4387
Company employees: 117

Production:

Limestone - 104,999 tons

Storey County

Clark Mine (3)

Operator:

EP Minerals, LLC
640 Clark Station Rd.
Sparks, NV 89434
775-824-7700 Fax: 824-7715
Company employees: 4

Production:

Diatomite - 62,972 tons

Lucerne Mine (4)

Operator:

Comstock Mining, Inc.
P.O. Box 1118
Virginia City, NV 89440
775-847-5272 Fax: 847-4762
Company employees: 25
Contract employees: 2

Production:

Gold - 4,086 oz
Silver - 75,657 oz

Washoe County

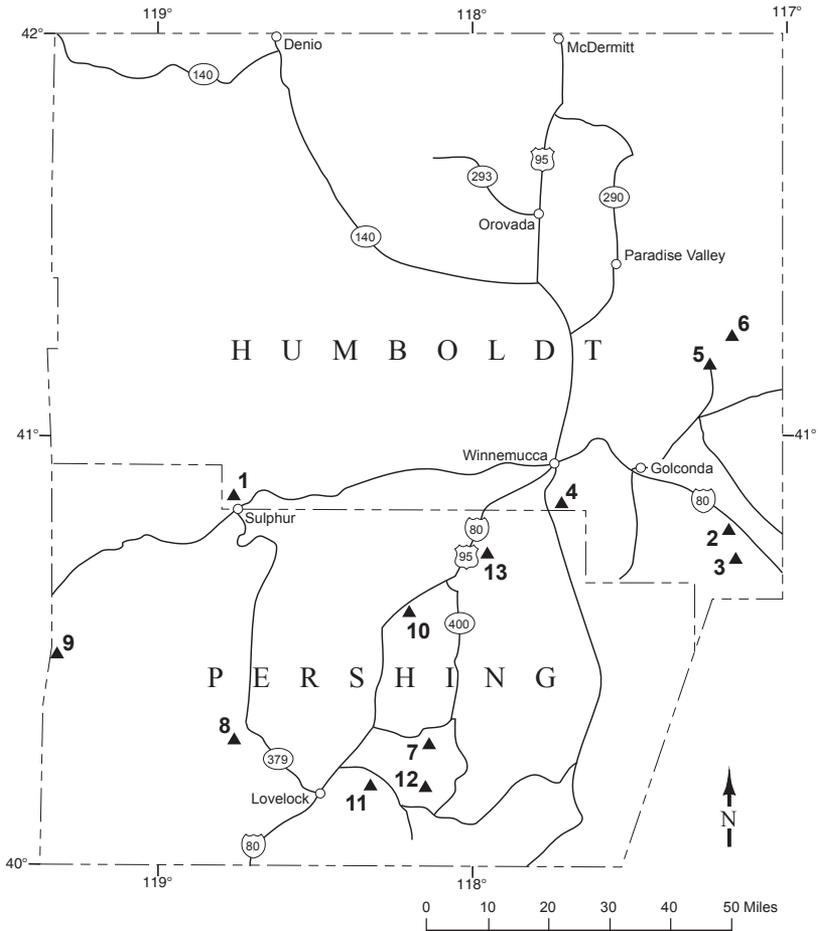
NCC Flanigan Mine (5)

Operator:

Nevada Cement Co.
P.O. Box 840
Fernley, NV 89408
775-575-2281 Fax: 575-4387

Production:

Specialty clays - 25,391 tons



Section II

Humboldt County

Hycoft Mine (1)

Operator:

Hycoft Mining Company
 P.O. Box 3030
 Winnemucca, NV 89446
 775-623-5260 Fax:623-0215
 Company employees: 66
 Contract employees: 21

Production:

Gold - 32,265 oz
 Silver - 235,934 oz

Lone Tree Complex (2)

Operator:

Newmont Mining Corp.
 1655 Mountain City Highway
 Elko, NV 89801
 775-778-4000

Company employees: 67
 Contract employees: 48

Production:

Gold - 31,884 oz

Marigold Mine (3)

Operator:

Silver Standard Resources, Inc.
P.O. Box 160
Valmy, NV 89438
775-635-2317 Fax: 635-2551
Company employees: 378
Contract employees: 7

Production:

Gold - 205,116 oz
Silver - 2,349 oz

MIN-AD Mine (4)

Operator:

MIN-AD, Inc.
P.O. Box 39
Winnemucca, NV 89446
775-623-5944 Fax: 623-9028
Company employees: 15

Production:

Dolomite - 44,452 tons (shipped)

Turquoise Ridge Joint Venture (5)

Operator:

Barrick Gold Corporation
2055 Getchell Mine Road
Golconda, NV 89414
775-529-5001 Fax: 748-3125
Company employees: 529
Contract employees: 89

Production:

Gold - 354,560 oz

Twin Creeks Mine (6)

Operator:

Newmont Mining Corp.
1655 Mountain City Highway
Elko, NV 89801
775-778-4000 Fax: 778-4360
Company employees: 490
Contract employees: 241

Production:

Gold - 367,528 oz
Silver - 227,814 oz

Pershing County

Coeur Rochester Mine (7)

Operator:

Coeur Rochester, Inc.
P.O. Box 1057
Lovelock, NV 89419
775-273-7995 Fax: 273-7423
Company employees: 302
Contract employees: 14

Production:

Gold - 50,750 oz
Silver - 4,564,139 oz

Colado Mine (8)

Operator:

EP Minerals, LLC
P.O. Box 959
Lovelock, NV 89419
775-824-7591 Fax: 824-7595
Company employees: 35

Production:

Diatomite - 194,974 tons

Empire Gypsum Mine (9)

Operator:

Empire Mining Co., LLC
P.O. Box 157
Gerlach, NV 89412
775-600-9886 Fax: 702-921-9552
Company employees: 50
Contract employees: 2

Production:

Gypsum - 95,722 tons

Florida Canyon Mine (10)

Operator:

Rye Patch Mining U.S.
P.O. Box 330
Imlay, NV 89418
775-538-7300
Company employees: 126
Contract employees: 30

Production:

Gold - 10,873 oz
Silver - 21,898 oz

Nassau Mine (11)

Operator:

American Colloid Company
P.O. Box 428
Lovell, WY 82431
307-548-6521 Fax: 548-6449
Company employees: 5

Production:

Bentonite - 4,486 tons

Relief Canyon Limestone Mine (12)

Operator:

Nevada Cement Company
P.O. Box 840
Fernley, NV 89408
775-575-2281 Fax: 575-4387
Company employees: 6

Production:

Limestone - 60,164 tons

Sunrise Placer Mine (13)

Operator:

Sunrise Minerals, LLC
9405 Betty Lane
Winnemucca, NV 89445
775-340-7044 Fax: 623-5043
Company employees: 5

Production:

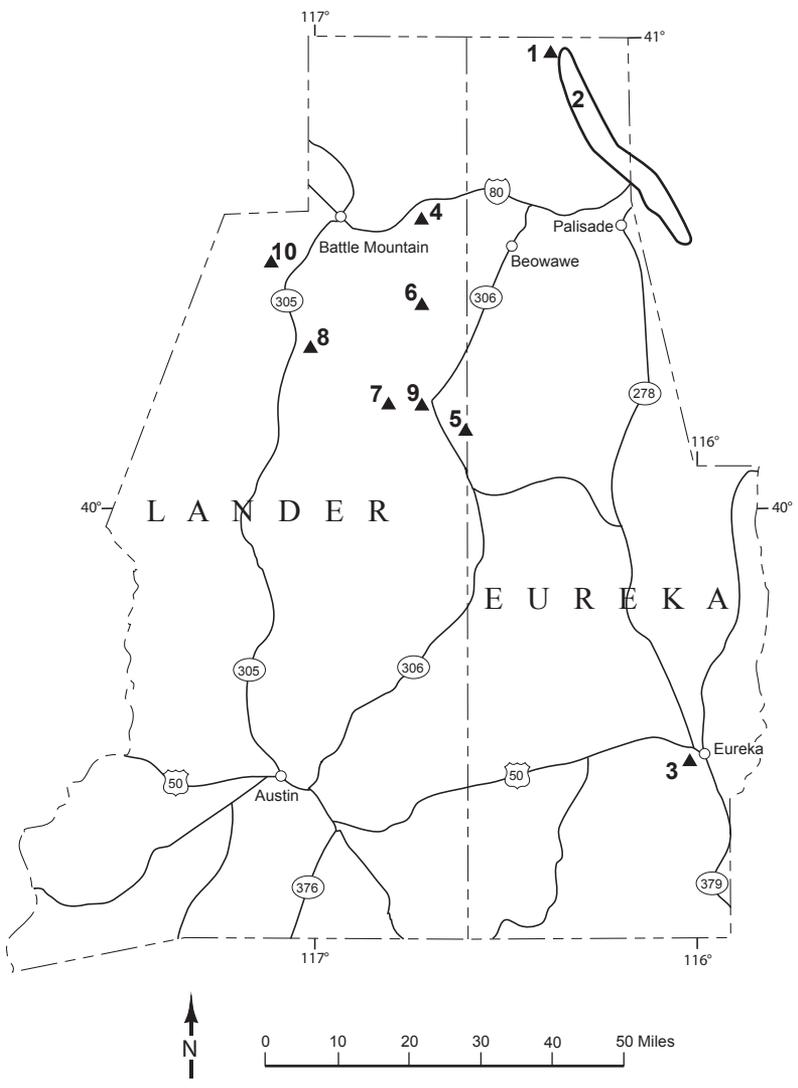
Gold - 668 oz
Silver - 121 oz



***Basalite's Naturalite aggregate quarry, Lyon County
(Mike Visser photo).***



***Silver Standard's Marigold Mine, Humboldt County
(Courtney Brailo photo).***



Section III

Eureka County

Betze-Post Mine (1)

Operator:

Barrick Goldstrike Mines, Inc.

P.O. Box 29

Elko, NV 89803

775-748-1001 Fax: 748-1240

Company employees: 1,045

Production:

Gold - 544,736 oz

Silver - 134,283 oz

Eastern Nevada Operations

(Carlin Operations) (2)

Operator:

Newmont Mining Corp.

1655 Mountain City Highway

Elko, NV 89801

775-778-4000 Fax: 778-4360

Company employees: 2,264

Contract employees: 476

Production:

Gold - 943,823 oz

Silver - 101,475 oz

Ruby Hill Mine (3)

Operator:

Ruby Hill Mining Co.

P.O. Box 676

Eureka, NV 89316

775-401-6435

Company employees: 14

Production:

Gold - 6,472 oz

Silver - 7,791 oz

Lander County

Argenta Mine (4)

Operator:

Baker Hughes, Inc.
P.O. Box 277
Battle Mountain, NV 89820
775-625-8700 Fax: 635-5455
Company employees: 17

Shipped:

Barite - 33,533 tons

Cortez Hills Mine (5)

Operator:

Barrick Cortez, Inc.
HC66 Box 1250
Crescent Valley, NV 89821
775-468-4400 Fax: 468-4496
Company employees: 322
Contract employees: 130

Production:

(underground only, excluding the open-pit)

Gold - 338,275 oz
Silver - 6,294 oz

Fire Creek Mine (6)

Operator:

Klondex Gold and Silver Mining Co.
P.O. Box 1867
Elko, NV 89803
775-738-6070
Company employees: 76
Contract employees: 110

Production:

Gold - 101,284 oz
Silver - 80,593 oz

Greystone Mine (7)

Operator:

M-I Swaco
P.O. Box 370
Battle Mountain, NV 89820
775-635-5135
Company employees: 6

Shipped:

Barite - 114,808 tons

Mountain Spring Mine (8)

Operator:

M-I Swaco
P.O. Box 370
Battle Mountain, NV 89820
775-635-5135
Company employees: 27

Shipped:

Barite - 62,487 tons

Pipeline Mine (9)

Operator:

Barrick Cortez, Inc.
HC66 Box 1250
Crescent Valley, NV 89821
775-468-4400 Fax: 468-4496
Company employees: 932
Contract employees: 425

Production:

(includes the Cortez Hills open-pit)

Gold - 850,312 oz
Silver - 22,565 oz

Phoenix Mine (10)

Operator:

Newmont Mining Corp.
P.O. Box 1657
Battle Mountain, NV 89820
775-635-9000 Fax: 778-4600
Company employees: 507
Contract employees: 275

Production:

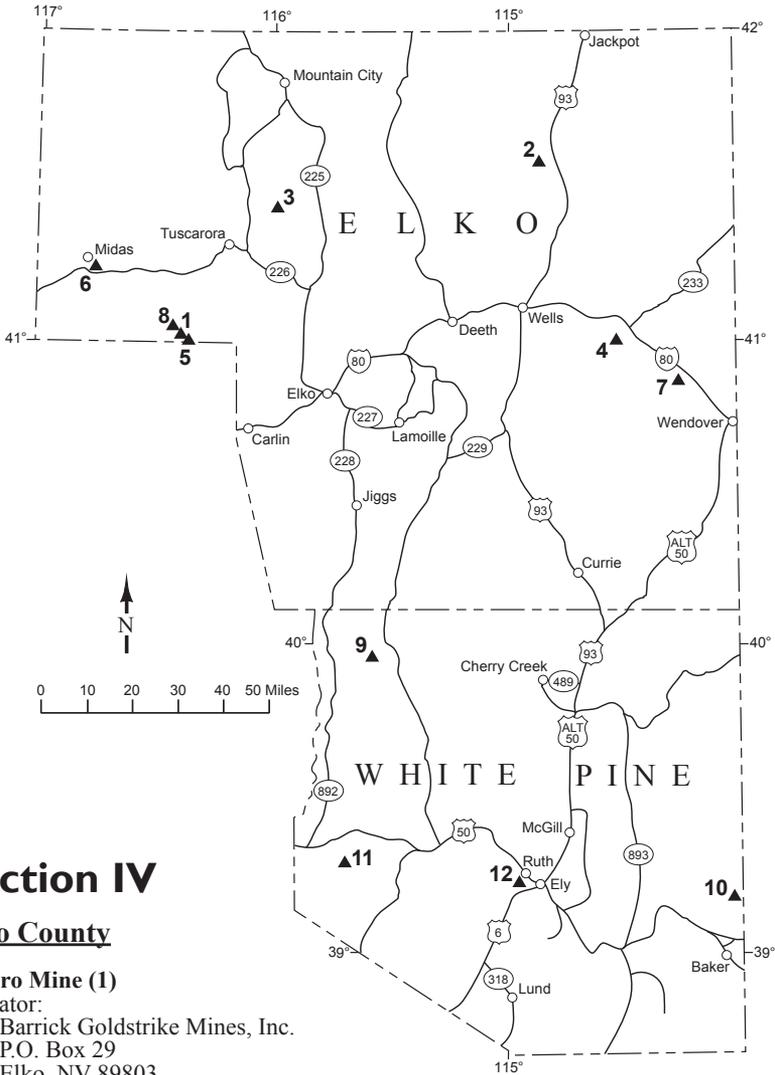
Gold - 176,756 oz
Silver - 1,175,126 oz
Copper - 41,806,950 pounds



Drill rigs at Ormat's McGinness Hills geothermal field, Lander County (Lowell Price photo).



Haul trucks at KGHM's Robinson Mine, White Pine County (Courtney Brailo photo).



Section IV

Elko County

Arturo Mine (1)

Operator:

Barrick Goldstrike Mines, Inc.
P.O. Box 29
Elko, NV 89803
775-748-1001

Company employees: 177

Production:

Gold - 223,145 oz

Big Ledge Mine (2)

Operator:

National Oilwell Varco
247 Bluffs Ave., Suite 101
Elko, NV 89801
775-738-7171 Fax: 738-7196

Company employees: 12

Shipped:

Barite - 19,286 tons

Jerritt Canyon Mine (3)

Operator:

Jerritt Canyon Gold, LLC
HC31 Box 78
Elko, NV 89801
775-738-5600 Fax: 758-9233

Company employees: 240

Contract employees: 210

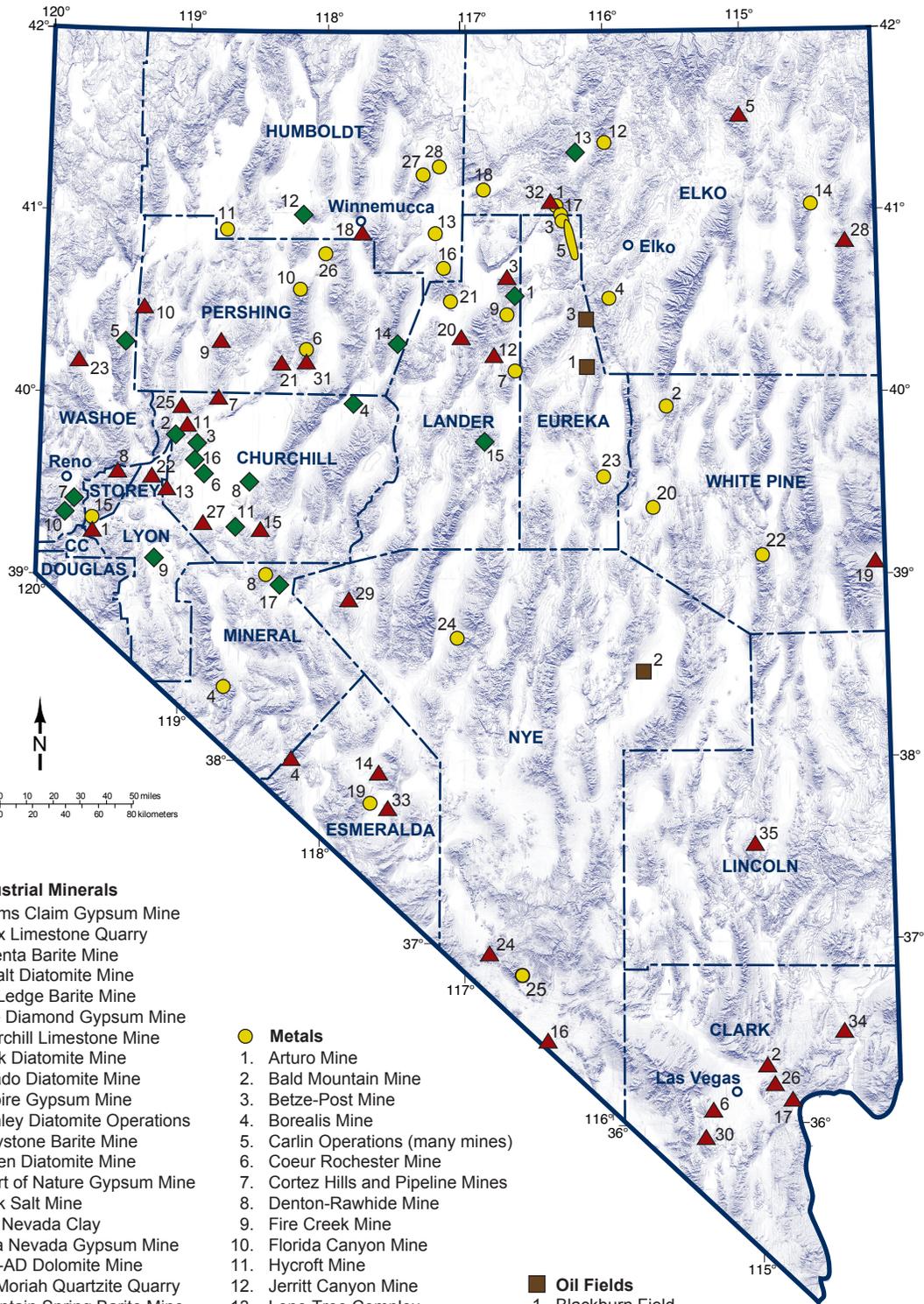
Production:

Gold - 140,990 oz

***Elko and White Pine continued on page 15
after the centerfold***



Rock bolting at Barrick's Turquoise Ridge Joint Venture underground gold mine, Humboldt County (Courtney Brailo photo).



▲ Industrial Minerals

1. Adams Claim Gypsum Mine
2. Apex Limestone Quarry
3. Argenta Barite Mine
4. Basalt Diatomite Mine
5. Big Ledge Barite Mine
6. Blue Diamond Gypsum Mine
7. Churchill Limestone Mine
8. Clark Diatomite Mine
9. Colado Diatomite Mine
10. Empire Gypsum Mine
11. Fernley Diatomite Operations
12. Greystone Barite Mine
13. Hazen Diatomite Mine
14. Heart of Nature Gypsum Mine
15. Huck Salt Mine
16. IMV Nevada Clay
17. Lima Nevada Gypsum Mine
18. MIN-AD Dolomite Mine
19. Mt. Moriah Quartzite Quarry
20. Mountain Spring Barite Mine
21. Nassau Bentonite Mine
22. NCC Fernley Limestone Ops.
23. NCC Flanigan Clay Mine
24. New Discovery Mine
25. Nightingale Diatomite Mine
26. PABCO Gypsum
27. Perlite Mine
28. Pilot Peak Limestone Quarry
29. Premier Magnesia
30. Rainbow Quarry
31. Relief Canyon Limestone Mine
32. Rossi Barite Mine
33. Silver Peak Lithium Ops.
34. Simplot Silica Products
35. Tenacity Perlite Mine

● Metals

1. Arturo Mine
2. Bald Mountain Mine
3. Betze-Post Mine
4. Borealis Mine
5. Carlin Operations (many mines)
6. Coeur Rochester Mine
7. Cortez Hills and Pipeline Mines
8. Denton-Rawhide Mine
9. Fire Creek Mine
10. Florida Canyon Mine
11. Hycroft Mine
12. Jerritt Canyon Mine
13. Lone Tree Complex
14. Long Canyon Mine
15. Lucerne Mine
16. Marigold Mine
17. Meikle Mine
18. Midas Mine
19. Mineral Ridge Mine
20. Pan Mine
21. Phoenix Mine
22. Robinson Mine
23. Ruby Hill Mine
24. Smoky Valley Common Ops.
25. Sterling Mine
26. Sunrise Placer Mine
27. Turquoise Ridge Joint Venture
28. Twin Creeks Mine

■ Oil Fields

1. Blackburn Field
2. Railroad Valley (Eagle Springs, Trap Spring, Sand Dune, Grant Canyon, Bacon Flat, Kate Spring, Sans Spring, and Ghost Ranch Fields)
3. Tomera Ranch Field

◆ Geothermal Power Plants

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

Major mines, oil fields, and geothermal plants, 2016.



Blasthole drilling at Barrick's Turquoise Ridge Joint Venture underground gold mine, Humboldt County (Courtney Brailo photo).

Section IV (continued)

Long Canyon Mine (4)

Operator:

Newmont USA, Ltd.
1655 Mountain City Highway
Elko, NV 89801
775-778-4000

Company employees: 216

Contract employees: 110

Production:

Gold - 22,500 oz

Meikle Mine (5)

Operator:

Barrick Goldstrike Mines, Inc.
P.O. Box 29
Elko, NV 89803
775-748-1001 Fax: 748-1240

Company employees: 595

Production:

Gold - 417,438 oz

Silver - 37,615 oz

Midas Mine (6)

Operator:

Klondex Mining Operations, Inc.
HC Box 125
Midas, NV 89414
775-299-5046

Company employees: 140

Contract employees: 14

Production:

Gold - 29,577 oz

Silver - 1,345,990 oz

Pilot Peak Quarry (7)

Operator:

Graymont Western US, Inc.
P.O. Box 2520
West Wendover, NV 89883
775-483-5460

Company employees: 66

Production:

Limestone - 1,236,227 tons

Rossi Mine (8)

Operator:

Halliburton Energy Services
912 Dunphy Ranch Rd.
Battle Mountain, NV 89820
775-468-0515 Fax: 468-2060

Company employees: 6

No mine production in 2016

White Pine County

Bald Mountain Mine (9)

Operator:

KG Mining (Bald Mountain), Inc.
P.O. Box 2706
Elko, NV 89803

775-237-7100 Fax: 237-7101

Company employees: 500

Contract employees: 205

Production:

Gold - 129,282 oz

Silver - 864 oz

Mt. Moriah Quarry (10)

Operator:

Mt. Moriah Stone Quarries
#10 Hatch Rock Rd.
Baker, NV 89311

435-855-2232 Fax: 855-2332

Company employees: 34

Production:

Quartzite - 2,831 tons

Pan Mine (11)

Operator:

GRP Pan, LLC
P.O. Box 150278
Ely, NV 89315

Company employees: 26

Contract employees: 127

Production:

Gold - 8,714 oz

Robinson Mine (12)

Operator:

KGHM International, Ltd.
P.O. Box 382
Ruth, NV 89319

775-289-7000 Fax: 289-7349

Company employees: 570

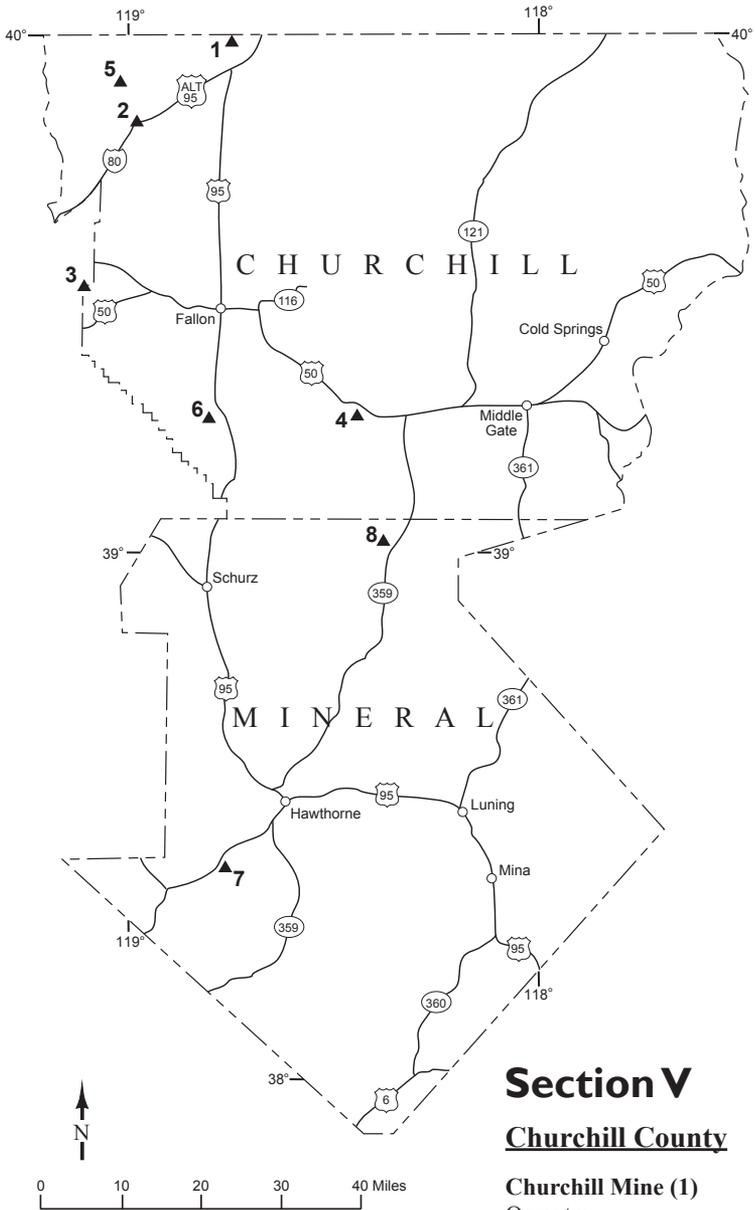
Contract employees: 8

Production:

Copper - 118,411,099 pounds

Gold - 49,217 oz

Molybdenite - 823,659 pounds



Section V

Churchill County

Churchill Mine (1)

Operator:

Nevada Cement Co.

P.O. Box 840

Fernley, NV 89408

775-575-2281 Fax: 575-4387

Company employees: 6

Production:

Limestone - 544,048 tons

Fernley Diatomite Operations (2)

Operator:

EP Minerals, LLC
 P.O. Box 860
 Fernley, NV 89408
 775-423-6668 Fax: 423-6411
 Company employees: 35

Production:

Diatomite - 31,486 tons

Hazen Mine (3)

Operator:

EP Minerals, LLC
 640 Clark Station Rd.
 Sparks, NV 89434
 775-824-7700 Fax: 824-7715
 Company employees: 2
 Contract employees: 4

Production:

Diatomite - 9,343 tons

Huck Salt (4)

Operator:

Huck Salt Company
 2900 Phritzie Ln.
 Fallon, NV 89406
 775-423-2055 Fax: 423-0467
 Company employees: 9

Shipped:

Salt - 19,110 tons

Nightingale Mine (5)

Operator:

Imerys Minerals California, Inc.
 100 Front Street
 Fernley, NV 89408
 775-575-2536 Fax: 575-1570
 Company employees: 15
 Contract employees: 5

Production:

Diatomite - 21,950 tons

Perlite Mine (6)

Operator:

EP Minerals, LLC
 640 Clark Station
 Sparks, NV 89434
 775-824-7700 Fax: 824-7715
 Company employees: 5

Production:

Perlite - 17,476 tons

Mineral County**Borealis Mine (7)**

Operator:

Borealis Mining Company, LLC
 P.O. Box 549
 Hawthorne, NV 89415
 775-826-7567
 Company employees: 6

Production:

Gold - 618 oz
 Silver - 1,511 oz

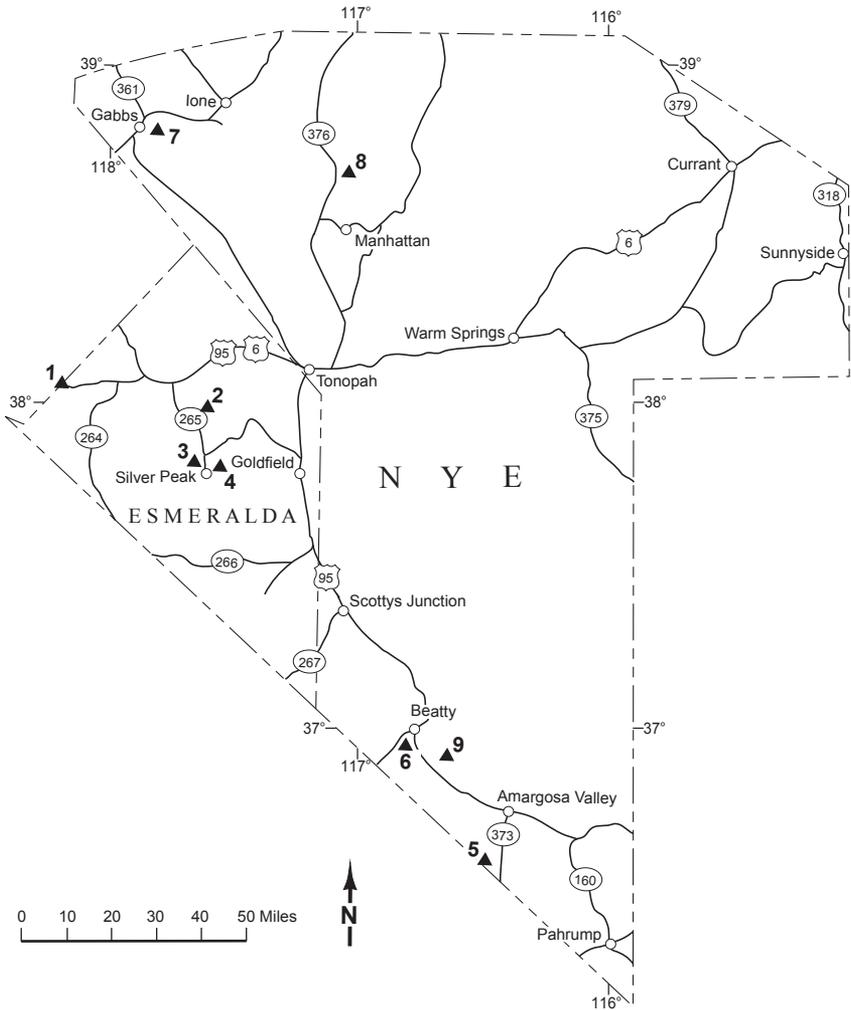
Denton-Rawhide Mine (8)

Operator:

Rawhide Mining, LLC
 P.O. Box 2070
 Fallon, NV 89407
 775-945-1015 Fax: 945-1213
 Company employees: 66
 Contract employees: 8

Production:

Gold - 17,972 oz
 Silver - 105,413 oz



Section VI

Esmeralda County

Basalt Diatomite Mine (1)

Operator:

Grefco Minerals, Inc.
 P.O. Box 278
 Dyer, NV 89010
 775-573-2422

Company employees: 15

Production:

Diatomite - 4,851 tons

Heart of Nature (2)

Operator:

Heart of Nature, LLC
 3055 Saint Rose Parkway #778203
 Henderson, NV 89052
 702-462-6690

Company employees: 1

Contract employees: 4

Production:

Gypsum/sulfur soil amendment
 - 24,632 tons

Mineral Ridge Mine (3)

Operator:

Mineral Ridge Gold, LLC
 1515 7th St.
 Elko, NV 89801
 702-799-9273 Fax: 775-753-4780

Company employees: 70

Contract employees: 20

Production:

Gold - 36,879 oz
 Silver - 16,950 oz

Silver Peak Lithium Operations (4)

Operator:

Rockwood Lithium, Inc.
 P.O. Box 98
 Silver Peak, NV 89047
 775-937-2222 Fax: 937-2250

Company employees: 68

Contract employees: 10

Shipped:

Lithium compounds - 9,334,629 lbs

Nye County**IMV Nevada (5)**

Operator:

Lhoist North America of Arizona
 P.O. Box 86
 Amargosa Valley, NV 89020
 775-372-5341 Fax: 372-5320

Company employees: 28

Contract employees: 6

Production:

Specialty clays - 68,870 tons

New Discovery Mine (6)

Operator:

Vanderbilt Minerals, LLC
 P.O. Box 6660
 Pahrump, NV 89041
 775-537-6976 Fax: 537-6879

Company employees: 4

Production:

Specialty clays - 1,700 tons

Premier Magnesia (7)

Operator:

Premier Magnesia, LLC
 P.O. Box 177
 Gabbs, NV 89409
 775-285-2601 Fax: 285-4021

Company employees: 115

Contract employees: 3

Shipped:

Magnesium compounds - 110,000 tons

Smoky Valley Common Operation (8)

Operator:

Round Mountain Gold Corp.
 P.O. Box 480
 Round Mountain, NV 89045
 775-377-2366 Fax: 377-3224

Company employees: 795

Contract employees: 227

Production:

Gold - 371,484 oz
 Silver - 721,465 oz

Sterling Mine (9)

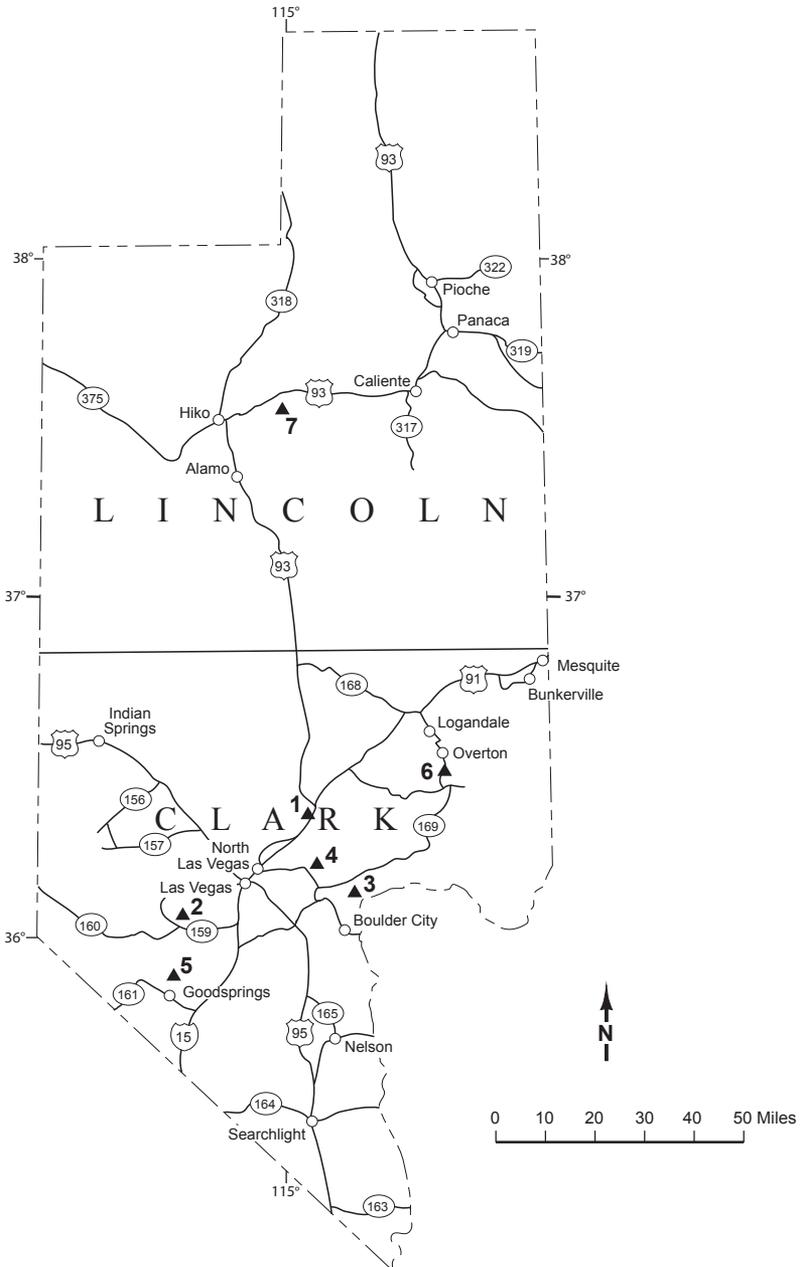
Operator:

Sterling Gold Mining Corp.
 P.O. Box 549
 Beatty, NV 89003
 866-608-4381 Fax: 775-981-9044

Company employees: 7

Production:

Gold - 350 oz



Section VII

Clark County

Apex Quarry (1)

Operator:

Lhoist North America
12101 N. Las Vegas Blvd.
North Las Vegas, NV 89165
702-643-7702 Fax: 643-9517
Company employees: 110
Contract employees: 2

Production:

Limestone - 1,260,000 tons
Dolomite - 283,000 tons

Blue Diamond Hill Mine (2)

Operator:

Gypsum Resource Materials, LLC
P.O. Box 147
Blue Diamond, NV 89004
702-830-3378 Fax: 441-7148
Company employees: 101
Contract employees: 1

Production:

Gypsum - 1,290,640 tons

Lima Nevada Gypsum Mine (3)

Operator:

H. Lima Nevada, LLC
704 E. Yosemite
Manteca, CA 95336
661-549-0784 Fax: 363-2294
Company employees: 8
Contract employees: 1

Production:

Gypsum - 72,000 tons

PABCO Gypsum Mine (4)

Operator:

PABCO Building
Products, LLC
P.O. Box 364329
North Las Vegas, NV 89036
702-407-3700 Fax: 643-6249
Company employees: 17
Contract employees: 1

Production:

Gypsum - 1,375,612 tons

Rainbow Quarry (5)

Operator:

Las Vegas Rock, Inc.
P.O. Box 19118
2 Jean Prison Rd.
Jean, NV 89019
702-791-7625 Fax: 896-4533
Company employees: 45

Production:

Meta-quartzite - 66,335 tons

Simplot Silica Products (6)

Operator:

J.R. Simplot Company
P.O. Box 308
Overton, NV 89040
702-397-2667 Fax: 397-2798
Company employees: 41

Shipped:

Silica sand - 754,852 tons

Lincoln County

Tenacity Perlite Mine (7)

Operator:

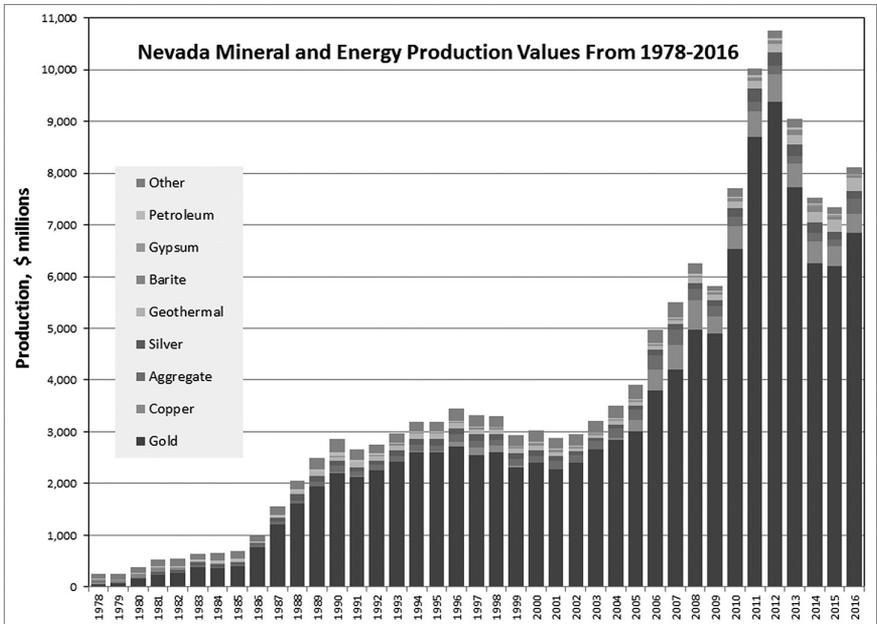
Wilkin Mining & Trucking, Inc.
HC 34 Box 199
Caliente, NV 89008
775-728-4463
Company employees: 13

Production:

Perlite - 2,408 tons

Summary of 2016 production

Gold	5,467,646	ounces
Silver	8,885,873	ounces
Barite (shipped)	230,114	tons
Copper	160,218,049	pounds
Diatomite	218,642	tons
Dolomite	323,483	tons
Gypsum	3,179,781	tons
Limestone	3,215,506	tons
Lithium compounds (shipped)	9,334,629	pounds
Magnesium compounds (shipped)	110,000	tons
Molybdenite	823,659	pounds
Perlite	19,884	tons
Salt (shipped)	19,110	tons
Silica sand (shipped)	754,852	tons
Specialty clay	98,747	tons



Economic Impacts of Mining in Nevada—2016

Nevada's mining industry recorded approximately \$8.14 billion in total value of all commodities in 2016, representing a 10.4% increase from the \$7.37 billion value in 2015. Nearly 86% of the value was driven by gold and silver, which contributed nearly \$7 billion, based on the actual gross proceeds reported to the Nevada Department of Taxation. According to Kitco Metals Inc. (www.kitco.com), the average prices for gold and silver in 2016 were \$1,250.74 and \$17.14 per troy ounce, respectively. Nevada led the nation in 2016 in the production of gold, barite, lithium compounds and magnesium compounds. Nevada produced a wide variety of other mineral and energy commodities such as clays, copper, diatomite, dolomite, geothermal energy, gypsum, lapidary and gem stones, limestone, molybdenite, oil, perlite, salt, silica sand, silver, and specialty aggregates. A summary of commodity production amounts, value, and year over year percentage changes can be seen in Table 1.

Production Highlights

Nevada's gold production was 5,467,646 troy ounces in 2016 compared to 5,339,659 troy ounces in 2015, a very slight increase of 0.02%. According to the USGS, Nevada remains the nation's top gold producer with about 81% (170 metric tons) of the U.S. total (209 metric tons) and would rank 4th in world gold production behind China, Australia and Russia. A summary of 2016 metal production, ranked by producer, is shown in Table 2.

Employment

According to the Nevada Department of Employment, Training, and Rehabilitation, the Nevada minerals industry, including support activities and oil and gas extraction, directly employed an average of 12,474 people in 2016. The average pay for mineral industry employees during this time was \$94,744 per year, the second highest average of any employment sector in the state. Mining employment has remained an important factor in Nevada.

Table 1. Summary of 2016 Nevada Mineral Commodity Production

Commodity	Production Amount	Unit	YOY		YOY Value Change (%)
			Change (%)	Value (\$)	
Gold	5,467,646	ounces	2.4%	\$6,838,603,558	10.4%
Silver	8,885,873	ounces	-6.4%	\$152,334,964	2.3%
Barite (shipped)	230,114	tons	-55.4%	\$22,023,940	-63.3%
Copper	160,218,049	pounds	-9.8%	\$370,610,759	-7.6%
Diatomite	262,604	tons	15.6%	\$44,195,420	2.5%
Dolomite	323,483	tons	-2.8%	\$4,194,360	11.4%
Gypsum	3,275,503	tons	-3.6%	\$37,247,488	-0.1%
Limestone	3,215,506	tons	-58.8%	\$34,456,064	-6.7%
Lithium compounds (shipped)	9,334,629	pounds	-20.3%	\$23,253,978	-9.2%
Magnesium compounds (shipped)	110,000	tons	1.0%	\$6,870,237	2.6%
Molybdenite	823,659	pounds	-9.0%	\$5,428,662	-25.9%
Perlite	19,884	tons	-23.3%	\$1,359,539	-50.9%
Salt (shipped)	19,110	tons	64.0%	\$611,526	34.6%
Silica sand (shipped)	754,852	tons	-3.0%	\$20,412,834	-3.7%
Specialty clays	98,747	tons	34.3%	\$8,013,613	6.5%
Geothermal energy (sold)	3,344,233	megawatt hours	7.4%	\$258,187,350	7.6%
Oil (sold)	278,599	barrels	-1.2%	\$10,333,936	-18.0%
Aggregates	37,800,000	tons	35.0%	\$298,000,000	146.3%
			Total Value	\$8,136,138,228	10.4%

Permitting and Reclamation

Before mining can begin, plans of operation must be submitted and permits obtained from federal and state agencies to ensure that resources such as wildlife, air, and water are protected. Nevada and federal laws and regulations require that lands disturbed by mining activities be rehabilitated so they can be used for other activities once mining is completed. This process, called reclamation, returns mined areas to other productive practices such as livestock grazing, wildlife habitat enhancement, recreation opportunities, or other natural resource uses. To ensure that reclamation is complete, mine operators are required to post reclamation bonds that are held by government agencies. The bonds are released only after the mined area is stabilized and the reclamation goals have been met. According to the Nevada Division of Environmental Protection, approximately \$2.66 billion in reclamation bonds and other financial assurance are currently posted. Mine

operators are proud of their efforts and are constantly seeking ways to enhance their reclamation technology.

Gold Reserves

Gold reserves are defined as that portion of a gold ore deposit known to be economically feasible for extraction. The amount of reserves is always in a state of flux, due to some reserves being lost to production, additions of new reserves through new discoveries, and changing economic conditions. The price of gold and the cost of production are the main factors in determining whether a reserve is really a reserve or just a sub-economic resource. Extensive gold resources, not currently economic, are known to exist at or near many mining operations in Nevada. An increase in the gold price with all else being equal would mean many companies would be able to reclassify their resources into a reserve category. An increase in the cost of regulatory compliance has the same effect as a lowering of the gold price, thus increasingly complex

Table 2. 2016 Nevada Metal Production, by Producer

Operator	Gold (ozs)	Silver (ozs)	Copper (lbs)	Moly (lbs)
Barrick	2,639,826	200,757		
Newmont	1,631,131	1,504,415	41,806,950	
Kinross	500,766	722,329		
Silver Standard Resources	205,116	2,349		
Jerritt Canyon	140,990	NR		
Klondex	130,861	1,426,583		
Coeur Rochester	50,750	4,564,139		
KGHM International	49,217	NR	118,411,099	823,659
Mineral Ridge Gold	36,879	16,950		
Hycroft	32,265	235,934		
Rawhide Mining	17,972	105,413		
Florida Canyon Mining	10,873	21,898		
GRP Pan	8,714	NR		
Ruby Hill Mining	6,472	7,791		
Comstock Mining	4,086	75,657		
Sunrise Minerals	668	121		
Borealis Mining	618	1,511		
Sterling Gold Mining	350	NR		
Dun Glen Mining	43	NR		
Geo-Nevada	24	18		
A.U. Mines	21	8		
Bernell Lloyd	4	NR		
Totals	5,467,646	8,885,873	160,218,049	823,659

and expensive regulations can reduce reserves. For the larger operating mines, the publically reported reserves for the year ending 2016 were approximately 56 million ounces of gold. Assuming similar economic conditions without any reserve replacement, current reserves are sufficient to sustain gold production near current levels in Nevada for about ten years (Table 3).

Exploration

Exploration for new deposits, particularly gold, is an ongoing effort by both the operating companies and many others who do not operate mines in the state. Exploration geologists, drillers, assayers, and others who support exploration activities represent a significant positive economic impact, particularly in Nevada's rural areas. Exploration activity and funding, like gold reserves, are closely tied to economic conditions and commodity prices. In order to quantify the level of exploration activity and the factors responsible for those levels, the Division contracted with the Nevada Bureau of Mines and Geology, who released the results of the biennial exploration survey in

early 2017 using 2015 and 2016 data. This informative report, which can be downloaded at <http://pubs.nbmg.unr.edu/NV-exploration-survey-2016-p/es2016.htm>, revealed that gold exploration accounted for 86 percent (\$278 million) of \$325 million total exploration spending, down slightly from \$348 million in 2015. Two large companies accounted for 38 percent of the total spending. Approximately 808 people were directly employed by companies doing exploration activities in Nevada in 2016, up from 745 in 2015. Interestingly, exploration for lithium was second in total exploration spending at \$20.9M in 2016, followed closely by exploration for geothermal energy at \$16.6M.

Oil and Geothermal Activity

Economic activity from oil and gas exploration and production is relatively minor when compared to mining, but are locally important to the economy of east-central Nevada. In oil field terms, Nevada is considered a frontier state, meaning its potential is yet to be realized. Exploration activity and production were both negatively impacted by the price of crude in 2016. According to the U.S.

Table 3. Nevada Mine Reserves (Proven and Probable) Reported for End of Year 2016

Company	Mine	Gold (ozs)	Silver (ozs)	Copper (lbs)
Newmont	Carlin Operations	15,000,000		
Newmont	Phoenix	4,340,000	60,910,000	1,260,000,000
Newmont	Twin Creeks	4,930,000		
Newmont	Turquoise Ridge (25%)	1,340,000		
Newmont	Long Canyon	1,170,000		
Barrick	Goldstrike (OP and UG)	8,077,000		
Barrick	Cortez	10,220,000		
Barrick	Turquoise Ridge (75%)	4,029,000		
Barrick	South Arturo (60%)	122,000		
Coeur	Rochester	803,000	112,045,000	
Kinross	Round Mountain (100% as of 1/11/16)	1,267,000	1,232,000	
Kinross	Bald Mountain (100% as of 1/11/16)	2,133,000		
Silver Standard	Marigold	2,840,000		
Klondex	Midas	140,000	2,475,000	
Klondex	Fire Creek	291,000	225,000	
KGHM	Robinson			565,400,000
Totals		56,702,000	176,887,000	1,825,400,000

Energy Information Administration, the price for a barrel of West Texas Intermediate crude in 2016 ranged from a monthly average low of \$26.11 to a high of \$43.90 and averaged \$36.86 for the year, versus \$44.54 in 2015. Nevada's oil production in 2016 was relatively unchanged from 2015 at 278,599 barrels (42 gallons per barrel), with 276,328 barrels sold worth approximately \$10.3 million. Table 4 summarizes the number of barrels sold and wells by operator and field in 2016.

Nevada is rich in geothermal resources and is second only to California in the production of geothermal energy. For 2016, Nevada had 24 plants at 16 fields that sold approximately 3.3 million megawatt hours of electricity worth approximately \$258 million (Table 5). According to the U.S. Energy Information Association, this is enough to power about 280,000

Nevada residential homes for a year. Geothermal heat is also used for a variety of commercial, domestic and public applications in Nevada. Schools in Elko County, a casino in Washoe County and homes in Lincoln and Washoe counties are examples of public and private facilities using this renewable energy resource.

Conclusion

Nevada's mineral industry continued to be a major economic force in the state with a total value of over \$8 billion in 2016. Given a stable price and regulatory environment this situation should continue for many years to come. Nevada is a major natural resource producer and has significant mineral and energy resources that can provide opportunities for economic development well into the future.

Table 4. Nevada Oil Production in 2016

Operator	Producing Field	# of Producing Wells	Total Barrels Sold
Makoil	Trap Spring	27	114,644
Grant Canyon	Blackburn	5	45,387
Grant Canyon	Grant Canyon	3	41,822
Kirkwood	Eagle Springs	10	26,897
Western General	Kate Spring	3	18,280
Kirkwood	Ghost Ranch	3	8,503
Makoil	Kate Spring	1	5,616
Grant Canyon	Bacon Flat	1	5,375
Makoil	Ghost Ranch	1	5,155
Western General	Taylor Federal	1	1,478
Frontier Exploration	Munson Ranch	5	1,433
Andromeda	Tomera	2	960
Grant Canyon	Sans Spring	1	531
Kirkwood	Sand Dune	1	246
Totals		64	276,328

Table 5. Nevada Geothermal Production in 2016 by Company

Company	Total Output (Sales) MWh
Ormat Nevada Inc.	2,016,715
Terra-Gen Power Holdings II, LLC	583,687
Enel North America Inc.	238,779
NGP Blue Mountain 1 LLC	234,904
Patua Project LLC	115,973
USG Nevada LLC	75,049
Cyrq Energy	70,002
Homestretch Energy	9,125
Total	3,344,233



***J.R. Simplot's silica sand quarry, Clark County
(Courtney Brailo photo).***



***Commission on Mineral Resources visit to lithium brine exploration project
at Columbus Salt Marsh, Esmeralda County (Rich Perry photo).***

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The Nevada Bureau of Mines and Geology

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