# Montana Mining and Exploration

# in 1997

by

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Mining in Montana had a year of conflicting perspectives. For the most part, conditions for industrial mineral companies were steady to stronger, with growth, good prices, and continually increasing markets. Coal companies indicated prices may have bottomed, and a cautious optimistism developed throughout the industry. Base-metal prices were steady to lower, creating an atmosphere of further "belt tightening" and resourcefulness. The gold industry experienced several direct impacts. First the BRE-X scandal, which severely limited the availability of venture capital, followed by Australia's announcement that it had sold the majority of its gold reserves, and then over the year, articles in financial papers and periodicals questioned the viability of gold as an investment and hedge against inflation. The central banks of Europe continued dispersing their gold reserves, and the price continued to decline, partly due to speculation and partly due to over supply. The year ended with gold prices nearly $100 per ounce less than in preceding years. This shift created significant stress among producers whose annual reports indicated production costs at or above the selling price. Price hedging in advanced sales at higher prices will delay critical decisions for many. Few companies are in a position to survive long periods of time while operating at a loss.

Montana's only platinum/palladium mine saw a reversal of the gold industry's problems as the price increased. It sold ahead at higher prices but underestimated the strength of the market and the selling price surpassed their contract price.

Small operators are largely gold producers and mostly involved in placer mining. All of these were impacted by the combination of the declining gold prices and inclement weather. Most operators found alternative work for their equipment.

Highlights of the industry were as follows:

**Western Region** (figure 1)

Near Libby, *Noranda Mineral's* ***Montanore*** project received favorable findings in the courts. In a long-standing court case, Sierra Club Legal Defense Fund vs. Department of Agriculture, the Sierra Club Legal Defense Fund challenged the validity of the initial pre-wilderness claims. The court found in favor of the USDA Forest Service, verifying Noranda's valid existing rights and strengthening the company's position for patenting the property. Because an appeal was not filed in the time allowed by law, the company is expected to persevere in the patenting process. An increase in silver prices and a patent would enhance the company's ability to procure a joint venture partner or buyer for the fully permitted mining venture.

At the **Gem Mountain** project, *American Gem Corporation*, readjusted its management personnel after stock prices declined to less than $.50 per share. Much of its mining equipment was sold in the spring to generate cash. A sincere reclamation effort was completed to minimize the environmental liability and prepare for future production.


**Figure 1. Mines and Mineral Development in the Western Region–1997.**

**Butte-Anaconda Region** (figure 2)

*Beal Mountain Mining,* a wholly owned subsidiary of Pegasus Gold, Inc., completed mining operations at its ***Beal Mountain*** mine. At year's end, the main pit was backfilled with dolomitic waste from the South Beal orebody, and most of the direct work had been completed in preparation for final reclamation. The pit floor has been sloped to create artificial wetlands that will passively treat runoff for any potential metals and sedimentation. Production from the South Beal orebody was completed in early October. The company has nearly completed the regrade of waste-rock dumps and the revegetation. The company will continue to leach the pads to recover the remaining available gold. It will then rinse them to strip remaining cyanide from the heaps before final pad reclamation. These operations are expected to take between 3 and 4 years. Waste rock from the South Beal pit will be used to cover the regraded leach pads during final reclamation.

Southeast of Deer Lodge, *Gem River Corporation* continued operations on its ***Dry Cottonwood*** sapphire deposit. The company has mined and reclaimed about half of the permitted ground and has submitted its operating plan for the entire deposit. This would allow the company a little more area for disturbance and more flexibility in how it deals with changing conditions at the mine. The operation is currently mining under a Small Miners' Exclusion Statement and is, therefore, limited to a total of five acres of disturbance at any given time. The company also has completed a new color treatment facility at the corporate office, which will allow for a faster turnover of gems between the mining and sales stages. If the market will absorb the increased sales, the company will have eliminated a bottleneck in its cash flow.

At Butte, *Montana Resources, Inc.,* completed reclamation of the Hillcrest dumps at its **Continental** pit. The ore in the pit has gradually changed from altered low- to medium-hardness rock into very hard rock. This has resulted in lower production through the mill. The company expanded the grinding circuit but in doing so, created a bottleneck in the crushing circuit. This problem should be alleviated in 1998 with new crushers. The company has continued with an aggressive reclamation program. Mine- waste dumps and tailings pond expansion areas have been pre-stripped of topsoil. Completed reclamation areas are demonstrating successful revegetation.

East of Dillon, *Barretts Minerals* brought the **Regal** mine back into production. The former talc-producing property will generate ore primarily for the company's flotation mill. Barretts also maintained production at its *Treasure State* orebody, which is located farther east of Dillon. A slide in the pit wall during the summer delayed production and increased the stripping ratio.

West of Norris, *Majesty Mining* produced gold from the crown pillar on the west side of the **Revenue** mine. Last year, the company discovered stacked ore zones in the deposit, which had already proven to be of a higher grade and thickness than was reported in historic records. Production is anticipated to expand during the coming year.

The **Sweetwater** garnet property, a new project owned by *Sweetwater Garnet,* approached completion of its processing facilities in Dillon. The mine, located east of town on the Sweetwater road, started seasonal production of industrial garnets a year ago but only in a test status. The company continues to develop the facilities and to investigate market opportunities.


**Figure 2. Mines and Mineral Development in the Butte-Anaconda Region–1997.**

Southwest of Alder, *Luzenac America* completed two crown pillars and advanced the decline 170 feet vertically at the ***Beaverhead*** mine. This work prepares the talc mine for at least 10 years of production and gives the capability of increased production rates. The property is the only underground talc mine in Montana and produces high brightness talc ore.

On the eastern edge of **Alder Gulch**, *Cominco American*, maintained steady production of industrial garnets from bucket-line dredge waste produced at the turn of the century. The company has found strong markets for the smaller size garnets and is continuing to develop sales for the remaining sizes. In the past year, the company has focused its attention on quality control and anticipates that soon it will have enough ground opened to allow it to begin concurrent reclamation of the mine area. The company plans to return the mined land to the mixed meadows and wetlands that existed before the turn of the century.

South of Ennis, *Luzenac America*, has completed mining and backfilling at its ***North 40*** pit. The reserve re-evaluation program was completed with a number of the holes bottomed in ore. A 12-year reserve was established with substantial years of resources identified. The company indicated the markets are strong with projections exceeded by nearly 10 percent.

Luzenac has established a pilot plant at the **Sappington mill**. This allows the company research capabilities on ore and ore processing. At the plant, the company has completed its noise suppression project, paved both plant areas and purchased sweepers to control dust. It also has constructed a crude ore storage facility that minimizes exposure to the elements and severely limits fugitive dust.

**Helena Region** (figure 3)

East of Lincoln, *Phelps Dodge* sold its interest in the ***McDonald Gold*** project to its joint venture partner, *Canyon Resources*. Permitting of the project has been extremely slow. Although the draft Environmental Impact Statement was started a year ago, a product is not expected in the near future.

*Clay Lewis* stripped a small area in the ***Sauerkraute Creek*** drainage just west of Lincoln, but as in most drainages, activity was limited.

At its **Montana City** project, *Ash Grove Cement West* maintained another year of production at plant capacity. The strong market is expected to continue into the next century.

West of Townsend, *Montana Tunnels Mining* maintained steady production at its ***Diamond Hill*** mine. The company has continued an aggressive diamond-drilling program to develop grade control and reserves. To date, four ore zones have been identified; however, development has been limited largely to only two zones and to only one-third of the known depth. *Small Mines Development* has the contract for production. The pipe-like bodies are mined remotely by long-hole method and the broken ore is mucked with radio-controlled Load Haul Dumps, also known as scoop trams. The ore is then trucked to the surface, loaded on highway trucks and transported to the Montana Tunnels' mill, west of Jefferson City. Twice a year, the ore is processed.

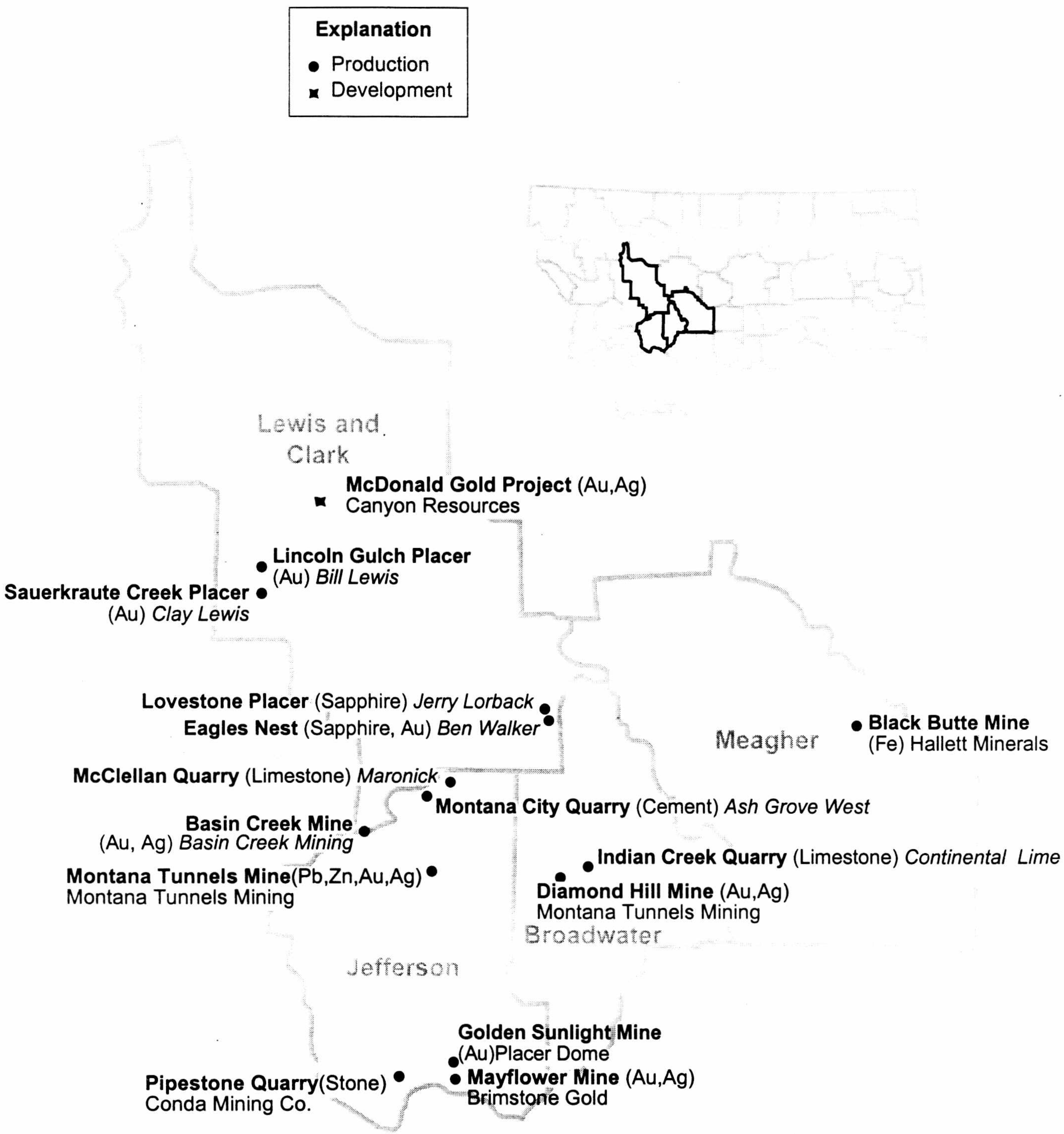


**Figure 3. Mines and Mineral Development in the Helena Region–1997.**

The company has enjoyed 90-91 percent recovery of the gold that occurs in the pyritic ore and in the free-milling state.

West of Jefferson City, *Montana Tunnels'* mining activity has produced ore at its lead-zinc-gold-silver diatreme. Production was interrupted by pit wall instability in midsummer when a slide on the north wall temporarily stopped production. Luckily, the mine had sufficient stockpiled ore from its Diamond Hill mine to maintain mill production. The waste-rock dump reclamation is showing good results with excellent revegetation in many areas. Much of the dump has been recontoured and covered with top soil. Although impacted with low gold prices as are the other gold producers, the **Montana Tunnels** mine sells co-products of lead and zinc. Increases in zinc prices have partially offset some of the gold losses. The company has applied for an expansion permit to strip oxidized waste from a slide on the west side of the pit. This rock will be used to buttress the tailings dam and flatten the overall slope angle of the dam face.

Northeast of Whitehall, *Golden Sunlight Mines* completed a full year of production with its new mine sequence at the **Golden Sunlight** mine. Costs are down but so is the price of gold. The dump expansion draft Environmental Impact Statement has been issued, and the company needs the permits by March. If the permits are not in hand at that time, the company will be out of dump space and will be forced to curtail stripping, which in turn, will damage the long-term profitability of the operation. Under the impact of low gold prices and profits, the company has placed the exploration and development of underground reserves on hold. The exploration of mineralized targets to the north of the orebody also has been delayed.

South of the Golden Sunlight mine and Cardwell, *Brimstone Mining* continued development and exploration of the ***Mayflower*** mine. The company brought power to the site; erected a headframe, hoist and hoist house; refurbished the shaft; and is in the process of dewatering the lowest levels. Currently, drilling continues off the 1,000- and 1,100-foot levels. Drill intercepts in the low-grade zone range in width from 1.4 feet to 6.3 feet, with grades ranging from 0.802 ounces per ton (opt) gold to 2.4 opt gold. Some holes indicate a potential for an additional orebody that had been previously overlooked. When the 1,300-foot level is dewatered, the drill will be moved to evaluate the high-grade ore shoot on the east that has historically produced mine grades of up to 5.0 opt Au. An additional ore zone is indicated by soils northeast of the present workings. The mine is one of the few in the state that historically has produced more ounces of gold than tons of rock.

### Central Region (figure 4)

West of Malta, *Zortman Mining's* plans for an expansion of its ***Zortman*** gold/silver operation were again put on hold. An appeal to the consent decree was filed by the *Island Mountain Protectors, National Wildlife Federation*, and the *Assinniboine, Gros Ventre, Fort Belknap Indian Council.* This placed the decision for the Zortman expansion back into the courts for an expected 2-3 years.

At its **Vortex** project, southwest of Lewistown, *Vortex Mining* deepened its shaft from 180 to 250 feet. Luckily, much of the distance was in ore, thus maximizing the cost recovery. The ore has yielded many good quality stones (sapphires), and the grade has been steady.

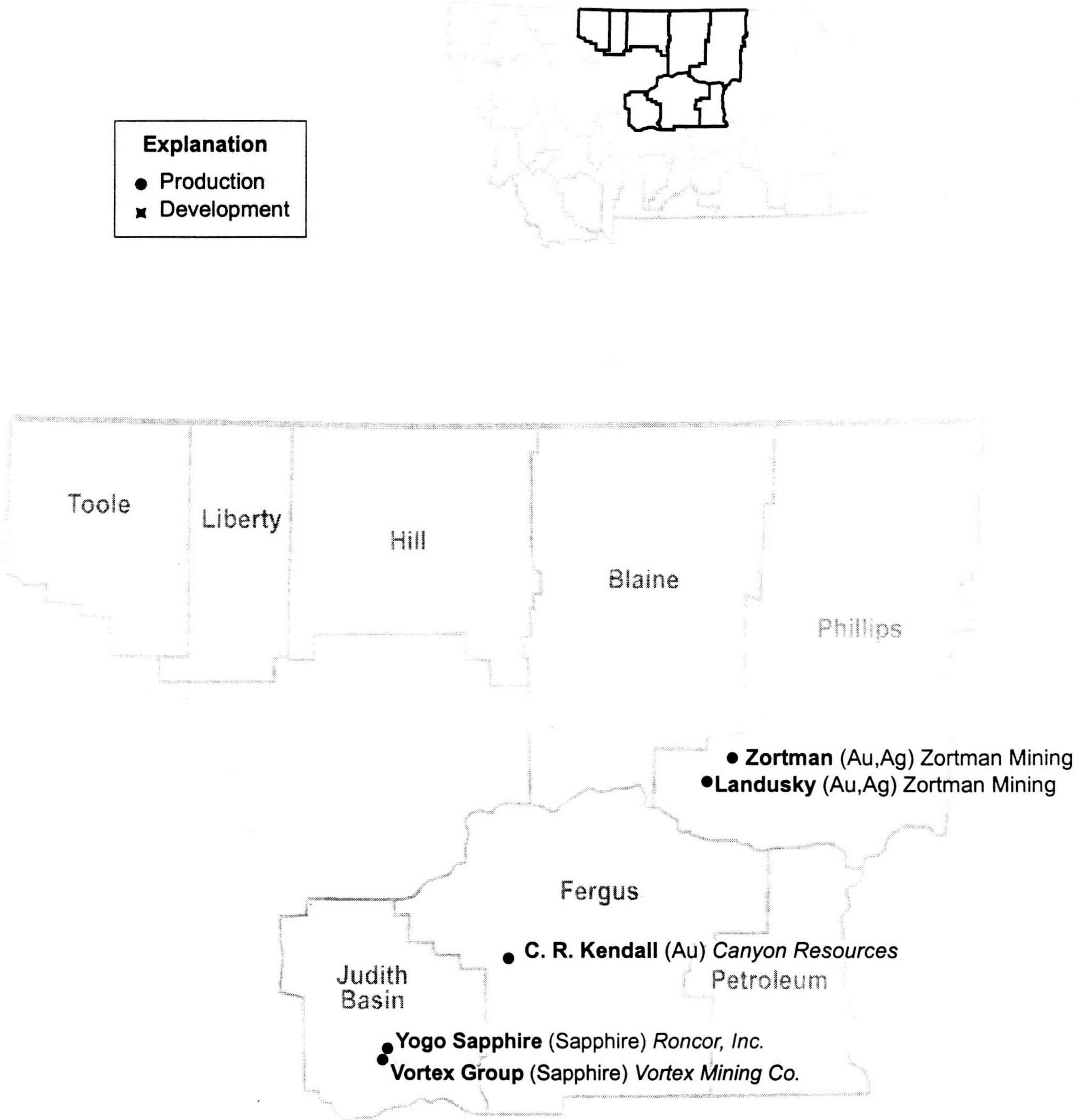


**Figure 4. Mines and Mineral Development in the Central Region–1997.**

The company expects to develop the 250-foot level in 1998 and then work from there up. Previous work has shown that the continuous/predictable ore stops at about the 150-foot level. Isolated pods occur above that point, but they are difficult and expensive to explore.

**Park Region** (figure 5)

East of Gardiner, *TVX Gold* maintained the ***Mineral Hill*** mine and the adjacent developments. After closure of the mine during the previous year, the company has had the property on the market. Many companies have reviewed the property package which includes approximately 20 sections of unexplored, high-potential land, a partially drilled, 500,000-ounce resource and a year's reserves of developed ore in the Ski Slope orebody. No exploration has evaluated the ground under the existing workings at greater depth. The property is currently under option.

Near Nye, the *Stillwater Mining Company* has nearly completed the production upgrade project started a couple of years ago at its **Stillwater** mine. The shaft has been completed, and production rates of 2,000 tons per day (tpd) are steady; although, the company is still plagued with a severe shortage of skilled miners and mine mechanics. The mill upgrade is complete as is the base-metal refinery. The smelter capabilities are being expanded from 24 to 32 tpd. Stillwater Mining has completed installing a leaky feeder communication system in the mine and holds permits to connect the shaft to the eastern workings under the Stillwater River. The company has completed lining the last lift on the tailings impoundment and expects the draft Environmental Impact Statement out early in 1998 on the new impoundment and slurry line to its Hertsler ranch. That project will allow the company to escape the constriction of the canyon and allow utilization of surplus water for irrigation on the ranch. The mine currently is treating 500 gallons per minute of nitrate-rich mine water with alcohol and bacteria. The system releases nitrogen gas and clean water during the process.

Prices are up and have remained steady. In November, the Board of Directors authorized the remainder of funds for completion of the Tunnel Boring Machine for the ***East Boulder*** project. Delivery is expected in May; the long access drift is expected to be completed in approximately 18 months. The development of the East Boulder project is scheduled to be paid for with profits generated from the existing mine.

Near Cooke City, the ***New World*** project has been mothballed. Congress and the present administration authorized the money for purchasing the property and the owners have agreed to accept the payment stipulating that future development may be possible under specific criteria and agreement.

**Montana Metals and Industrial Minerals Exploration in 1997** (figure 6)

Mineral exploration reached a new low as the last of the major companies closed its Montana offices. Many corporate geologists had no stateside office to retreat to and found themselves employed in foreign countries, if employed at all. The last of the grassroots (generative) funds disappeared this year, and it even seemed difficult for companies to generate funding for late-stage programs in light of the BRE-X scandal.

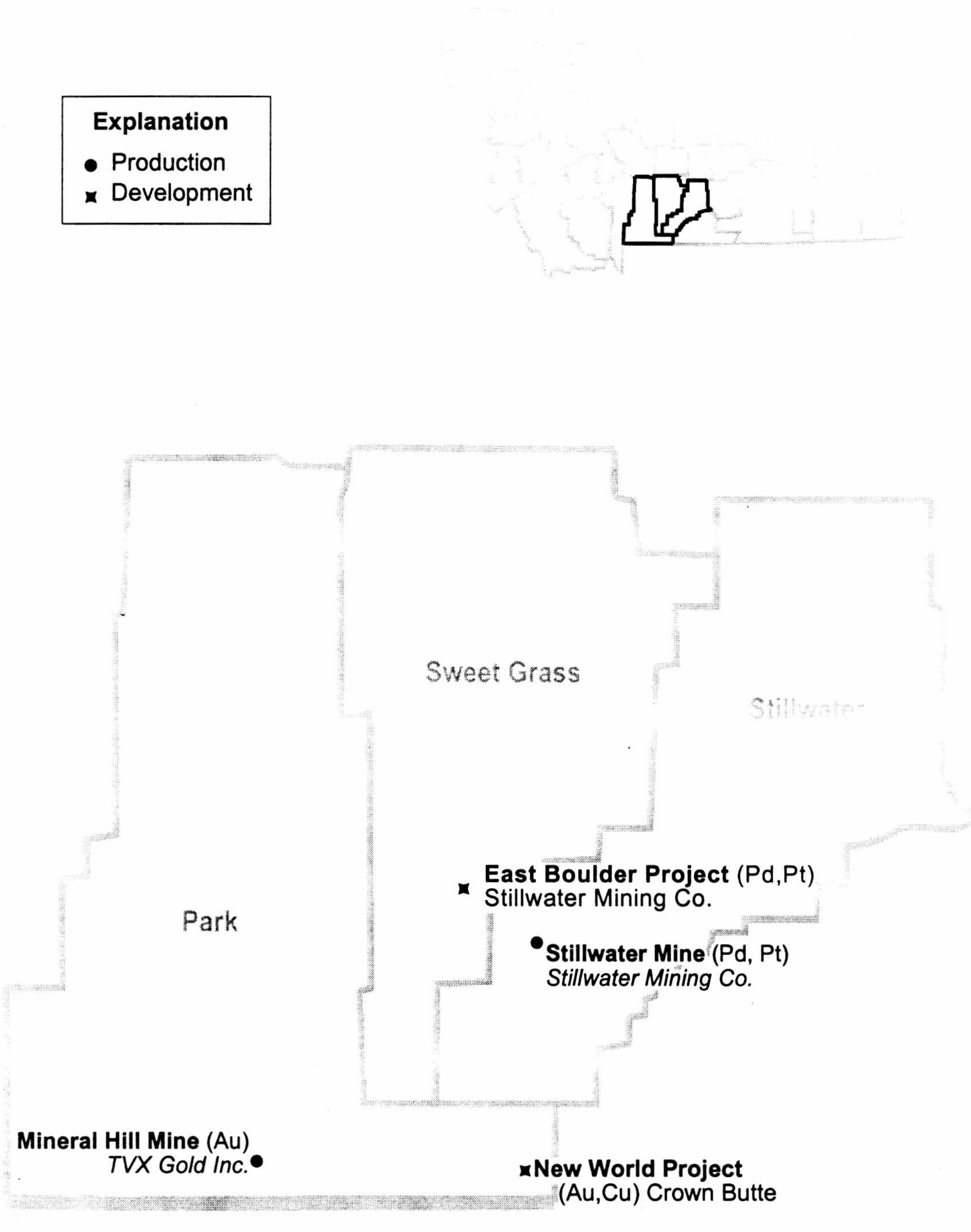


**Figure 5. Mines and Mineral Development in the Park Region–1997.**

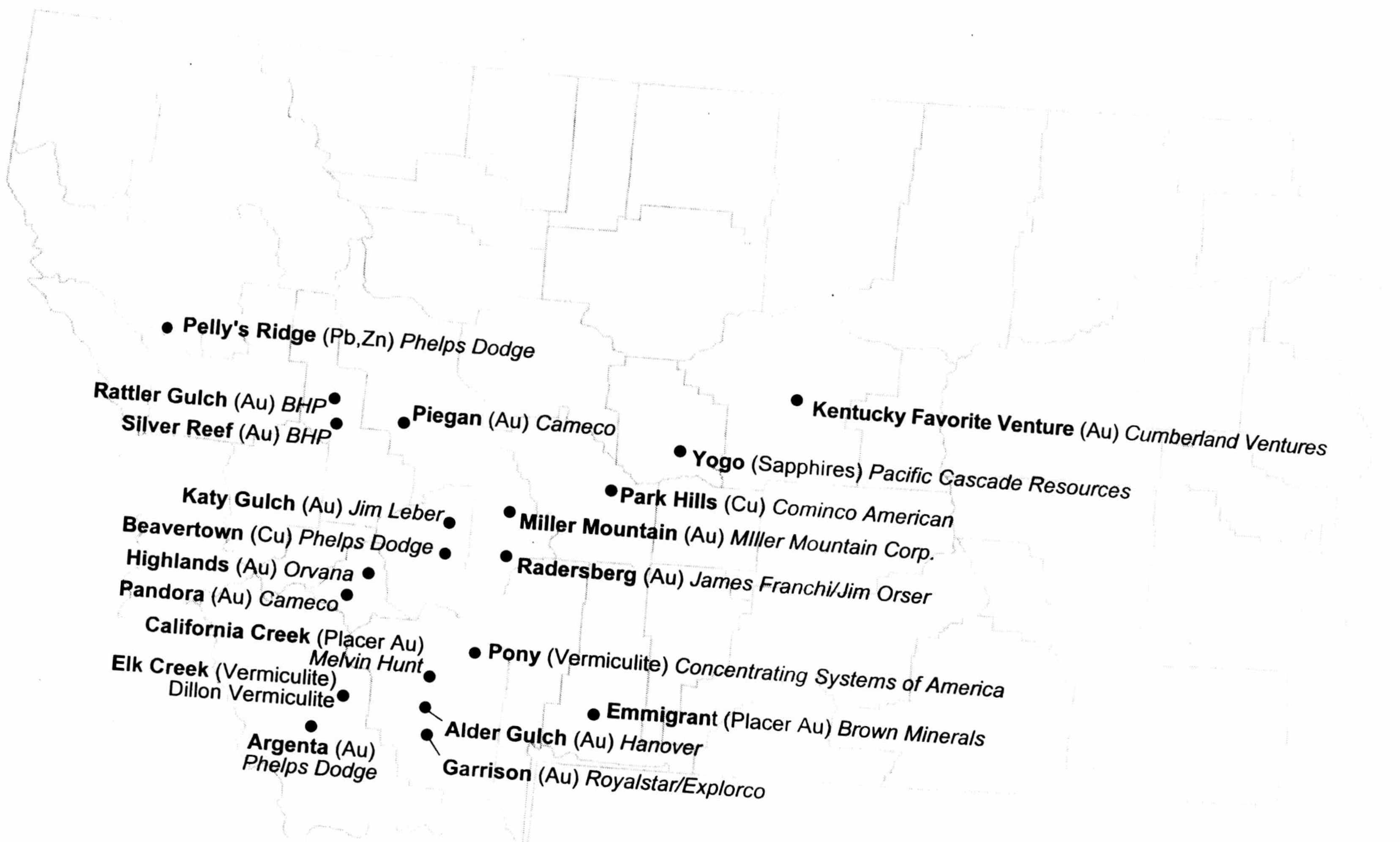


**Figure 6. Exploration–1997.**

Although the Canadian juniors showed enthusiasm early in the year, low gold prices and a general weakness in mining stocks suppressed its investment in the field.

The individual prospectors maintained very low levels of activity because the cost of holding claims remained high and the availability of potential buyers was low.

Internationally, mining companies have not seemed to prosper. Annual reports have shown relatively high production costs and low rates of return on corporate investments in general. Exploration is typically funded from a company's profits. It is anticipated that unless metal prices rise to compensate for the high costs, it is unlikely any significant exploration programs will be developed. An additional deterrent to new exploration is the length of time it takes to permit a property. In times of minimal available exploration funds; the industry appears reluctant to invest without confidence that the potential to recapture its investment is possible.

In the northwest corner of the state near Plains, *Phelps Dodge* concluded its ***Pelly's Ridge*** project. The company stated insufficient lead-zinc reserves as its reason for reluctance to pursue further work on the property.

North of Garrison, *BHP* completed and reclaimed the ***Rattler Gulch*** and ***Silver Reef*** projects on the east end of the Garnet Range.

West of Jefferson City, *Phelps Dodge* completed and reclaimed its ***Beavertown*** project. The drilling program evaluated an old copper target of the Anaconda Company but did not discover sufficient resources to justify further expenditures.

North of Melrose in the Soap Gulch area, *Cameco* completed a drilling program for gold on its **Pandora** project. The property was subsequently reclaimed and dropped.

South of Butte, *Orvana Resources* continued work on the ***Highlands*** project. This year, the effort was concentrated on expanding the mapping and general reconnaissance programs.

Southwest of Dillon, *Phelps Dodge* claimed a large block of ground between **Badger Pass** and **Argenta**. Drilling results from the late season program are not yet available.

Southwest of Virginia City, *Hanover Gold* invested heavily in geologic mapping and data consolidation. With the merger of Easton Pacific and Riverside and Hanover Gold, the property package now contains a major portion of the significant properties in Browns, Alder and Barton Gulches. The 1997 season revealed numerous promising targets. At the upper end of **Alder Gulch**, *Royalstar* and *Explorco* continued drilling on and adjacent to the **Garrison** prospect.

Near Marysville, *Cameco* drilled and reclaimed its ***Piegan*** project. The company was exploring structures adjacent to the inactive Gloster mine.

Northeast of Townsend on the **Miller Mountain** project, *Miller Mountain Corporation* completed its drilling program that was initiated in 1997.

*Cominco American Resources* completed evaluating and reclaiming its ***Park Hills*** project located just east of White Sulphur Springs.

West of Radersburg, *James Franchi* and *Jim Orser* drilled two holes.

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Northwest of Pony, *Concentrating Systems of America* drilled numerous holes in the vermiculite deposit. The company had promising results but encountered financial difficulties before the end of the project.

Northeast of Gardiner, *Brown Minerals* drilled the upper ***Emigrant Creek*** placer to delineate boundaries and determine the strength of the partially cemented gravels. The project appears to be expanding to include some lode exploration in 1998.

Northeast of Lewistown, *Cumberland Ventures* drilled several targets for gold on a land package held by **Kentucky Favorite Venture** project. The results are rumored to have been disappointing.

West of Lewistown, *Pacific Cascade Resources* evaluated sapphire-bearing deposits on and adjacent to the Yogo dike.

## Coal and Lignite

### Southeastern Region (figure 7)

The coal industry, although steady in appearance from the outside, operates in an intensely competitive market. Profit margins are measured in pennies per Btu. Contracts are short in duration with no room for mistakes. The market appears to have minimal growth potential with the companies competing for market share. Gains made by one company are measured as losses by its competitors. Although efforts have been made to expand into international markets, success has been limited.

A few of the companies indicated optimistically that it appears the prices reached the bottom in what had been a continuing deterioration. Montana's remoteness also played a part in this, as transportation costs are often times two-to-three times the value of the coal. The companies indicated that last year up to one-third of the working time of its professional staff was dedicated to 'permitting and compliance' issues of the regulatory state and federal agencies.

With the lower prices and higher costs, companies have severely limited investments in equipment and have tried to schedule mining in the lowest strip ratio areas possible and in areas of contract compliance only.

Production in 1997 rose 7.7 percent from 37,841,117 tons to 40,766,320 tons. This production level was only exceeded in 1994 when the industry produced 41.5 million tons, setting a record between the years 1986 and 1996. The **Absaloka** mine, operated by *Morrison-Knudsen*, enjoyed a 51 percent increase in production in 1997, reaching 7 million tons. A large portion of the increase was a new three-year, 1.5-million ton contract. Other customers increased orders, subsequently increasing stockpiles after the preceding hard winter. Production is anticipated to remain steady for another year and then return to historic levels.

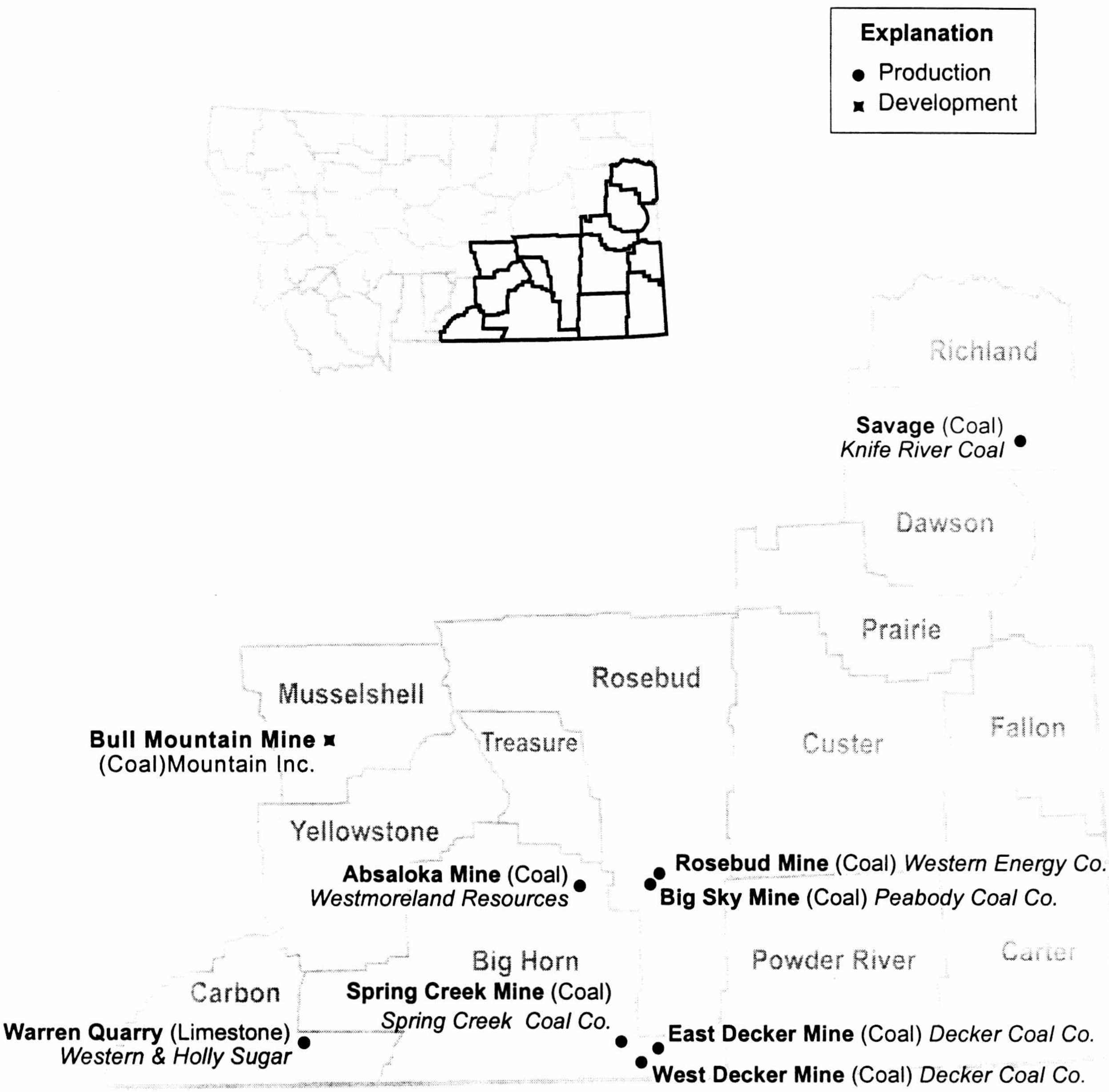


**Figure 7. Mines and Mineral Development in the Southeastern Region–1997.**

The **Big Sky** mine, operated by *Peabody Coal Company,* had a 13 percent increase in production, reaching 4.3 million tons. Their production costs were temporarily higher due to increased stripping ratios. The company anticipates lower level sales over the next two years.

**Bull Mountain Coal**, the state's only underground coal operation, closed after only a few month in production. Speculation is that commodity prices would not support the operating costs incurred through underground mining.

**Decker Coal**, operated by *Decker Coal Company*, had an 8% increase in coal production after receiving an unexpected three-year contract. The company's production reached 11.8 million tons. Sales should have been higher, but some of the company's clients had problems at their facilities receiving coal, thereby reducing the contracted amount. The company anticipates a relatively static production over the next two years.

**Rosebud Coal**, operated by *Western Energy*, had a 14.8 percent increase in production, reaching 8.9 million tons. Although they do not have any export sales, the power generation facilities supplied by this operation, came back on line after reduced production for the last few years. The synfuel plant is going to build a pneumatic transport system to transfer its production directly to the power generation facilities. In light of the deregulation of the energy industry, Western Energy has received over 200 inquiries about the purchase of its power generating facility.

The **Savage Coal** mine, operated by *Knife River Coal Mining Company*, had a 2.7 percent decrease in production bringing its total to 248,593 tons. At this facility, mine production is totally dependent on the coal-fired power plant located in Sidney. This is the only mine in the state that produces lignite.

**Spring Creek Coal,** operated by *Spring Creek Coal Company*, experienced a 7.9 percent decrease in production (8.3 million tons). Company officials indicated that sales were down.