

# **Montana Mining and Exploration**

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**By**

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## **Introduction**

Commodity prices were high but so were costs, particularly for fuel and explosives. Equipment continues to be in short supply with limited amounts of used equipment available and delivery dates on some new equipment between one year and sometime in the future.

Tire prices on the large haul-truck tires (57 to 63-inch rims) have increased from \$10,000-\$12,000 in years past to \$65,000 per tire or more. Most Montana mines are limited to four new tires per month. The quality of some of the tires has been questionable depending on the manufacturer. In some situations, haul speed and payloads have been reduced to keep the delivery and rate of demise of the tires in balance. Local contractors have reported that unless a tire source could be found, many of their trucks would have to be parked. Engineering and Mining Journal (October 2006, Vol. 206, Issue 8) reported that even though initial reports indicated the shortage would be solved by 2007, the industry now anticipates the shortfall to continue into 2010.

Cement rationing seemed to be less severe this year. Skilled miners continue to be in short supply along with many equipment operators, construction personnel, engineers, and geologists. Competition for skilled labor and professionals is fierce within the industry.

## **Producing Mines**

In the northwest corner of the state, Genesis (owned by Revett Silver Company) continued production of copper and silver at the Troy mine at a rate of 2,500 Tpd. Production rates have been limited by limited skilled labor, scattered ore bodies, and lower equipment availabilities.

The company has initiated an extensive drilling program near the south adit, targeting the two lower mineralized zones successfully drilled at other locations in the mine. Preliminary results have expanded the reserve base to seven years. The company is reported to be looking into the feasibility of backfilling the mined areas to facilitate pillar recovery.

The Rock Creek mine (owned by Revett Silver Company) has once again been permitted. Initially, permits were provided but threats from the environmental groups caused the U.S. Fish and Wildlife Service to withdraw their permits until a more defensible position was developed. In receiving the permits, Revett Silver has agreed to fund a number of projects to assist grizzly bears and bull trout.

The company is planning to start a decline into the ore body in the spring of 2007. Development of the property is expected to cost \$165 million and will take five years. Several environmental groups seem to have singled out this project for continued lawsuits to prevent development.

The Montanore mine, located in southwestern Montana and owned by Mines Management, is continuing to re-permit their property. Noranda relinquished the original permits when they decided not to develop the mine. Recently the company acquired the portal property for the decline as well as the Hard Rock Operating permit, and MPDES permit by acquiring Noranda Minerals Corporation and Norwin Resource Corporation from Noranda Finance Inc. This purchase enabled the company to accelerate the timetable to dewater the decline and continue the project Noranda Minerals started. The company is planning to advance their decline 3,000-ft and then drift an additional 10,000 ft while developing drill stations for 51 drill holes. A total of 45,000 ft of diamond drilling is planned. Current reserves, without this additional drilling, are 81,506,000 tons grading 2.04 opt Ag and 0.75% Cu.

In Butte, Montana Resources continued to upgrade facilities and equipment. This year they focused on mine support equipment and finishing the electronic improvements for their mill controls. The company completed testing for development of the supergene zone located northeast of the concentrator. Large-diameter core drill holes were completed to gather metallurgical samples to confirm the proposed milling process. The Pittsmont crosscut to the adjacent Berkeley pit was grouted shut and a pump test was successfully completed to confirm that the deposit could be mined below the water level of the Berkeley pit with the inflow of water controlled by pumps. The company has indicated that

equipment costs and the shortage of haul-truck tires, make it unlikely that development of the supergene zone will occur in the near future.

The current operation has a projected mine life of 16-17 years while the development of the supergene zone would more than triple that life. Additional ore was discovered in an area north of the Continental pit. Montana Resources has initiated a push back to the north to access the newly discovered resources. The company completed regrading 80 acres of the waste rock dumps adjacent to Interstate 15. In the coming year, they will regrade the dumps on the south and west sides. Over the next two years, these slopes will be re-soiled and seeded.

Near Alder, Ruby Valley Garnet, LLC continued to modify their mill to decrease the hornblende content in their concentrates from their Red Wash deposit. Additional spirals in the mill circuit have produced garnet concentrates in excess of 92% for the coarser sizes. In the smaller-sized material for the water-jet market, the company continues researching the problem in hopes that additional spirals may solve the problem. The company initiated exploration of the dredge tails in upper Alder Gulch during the summer. Initial test results indicated 6-7% recoverable-garnet grades, similar to the lower end of the drainage.

Near Nevada City, Zane Pazma completed mining the gold placer in the lower third of the Browns Gulch. Reclamation was started and will be completed next summer. Upstream resources are, as yet, untested.

East of Dillon, Barretts Minerals (Minerals Technology) produced steadily at both the Treasure and the Regal talc mines. An environmental assessment for relocating the county road, which would isolate the road from the public, and redesign the waste dumps at the Regal mine is in review. They also completed a number of ore definition holes at the Regal mine. At the Treasure mine, the company completed a long term reclamation project of their waste-rock dumps that resulted in a bond reduction of \$0.5 million. In August, they had a fire that destroyed their 1500 Hitachi production shovel.

Barretts' improvements included a new thickener, jet mill, and silos. They have increased their workforce by 2%.

South of Melrose, Apex Abrasives Company permitted the reprocessing of the garnet-rich tailings from the former General Electric tungsten mill. The company will mine the sand dry and produce tungsten and garnet concentrates. The garnet sand will be sold as water-jet, cutting media and the small amount of remaining waste material will be incorporated into the reclamation of the old ponds of the old tungsten mill. In this case, the waste of one mine has become the ore of another and the environment will benefit.

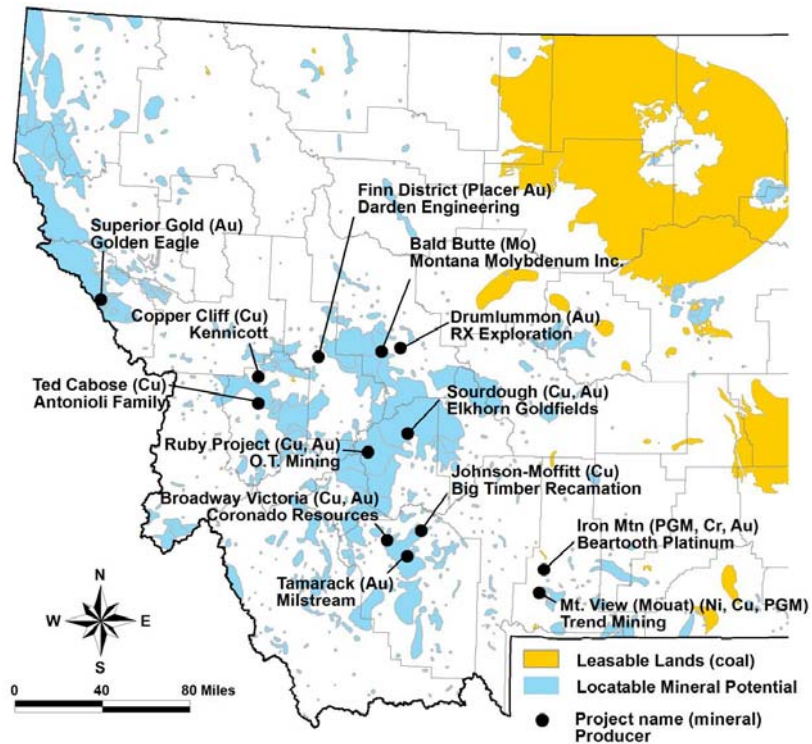
Near Jefferson City, Montana Tunnels (Apollo Gold) reopened in the fall with a loan from Calum Private Equity, LLC through Elkhorn Tunnels, LLC. a Calum affiliate. Elkhorn Tunnels is providing \$13 million for up to 50% interest in Montana Tunnels. After milling resumes, Elkhorn Tunnels and Montana Tunnels will split the profits at a 60:40 rate until the investment and interest is recovered. After that, the profits will be split evenly.

Milling at the Montana Tunnels open pit resumed in February 2007 following a stripping program that laid back the pit walls to a more stable slope angle. The company removed 5 million tons from the upper benches and 2.5 million tons of waste from the pit floor. The operation has permitted reserves for two years and has applied for a mine expansion to the north that would extend the mine life by four additional years. The EIS has been slow in coming and, given the short time frame, delays could have a disastrous result.

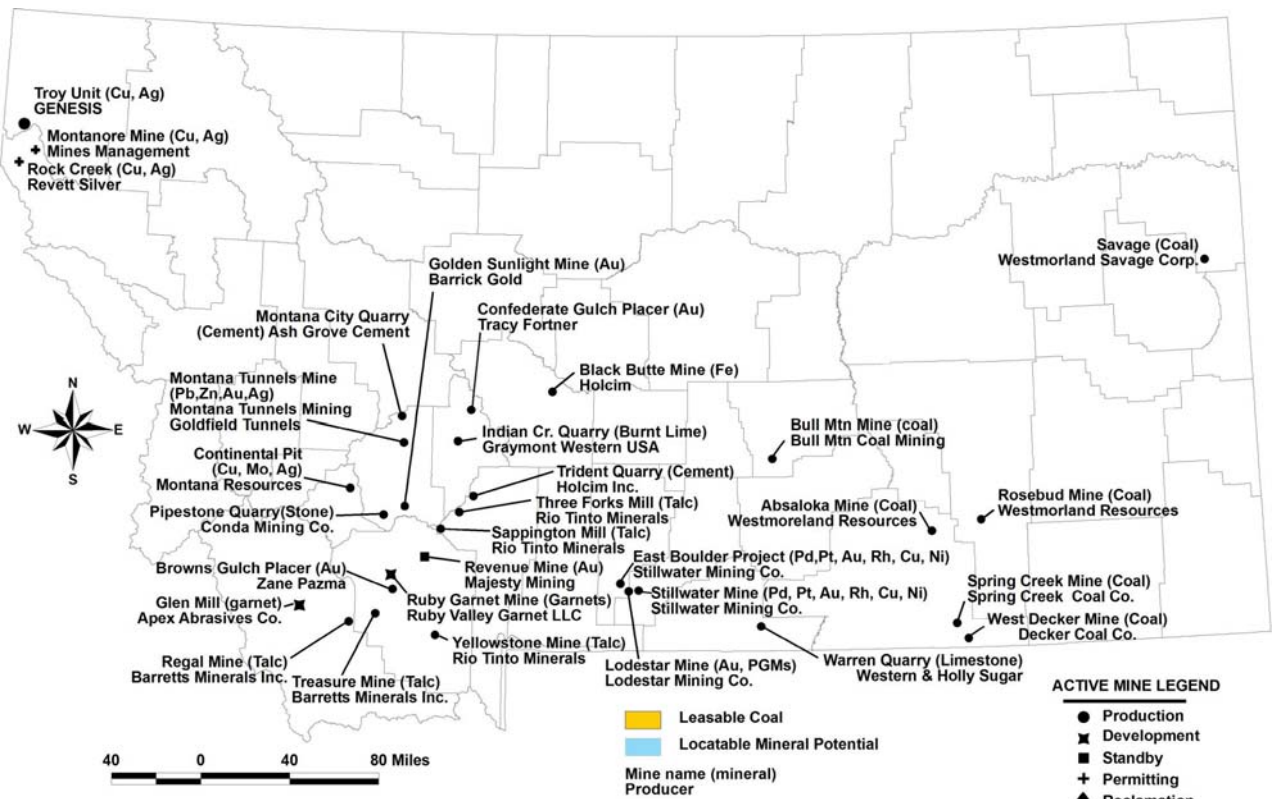
Near Townsend, Graymont Western USA has maintained near capacity production at their burnt lime plant. A recently completed drill program revealed that the thickness of the minable zone doubles to the south of current operations. The purity of the limestone is sufficiently high to meet the requirements of the precipitated calcium carbonate (pcc) market. The company is permitting a life-of-mine expansion of 1,840 acres and is developing a haul road west of the boundary of the National Guard Firing Range.

The plant is operating at close to capacity and has added six new positions. The mining contractor, Quarry Services, is upgrading their fleet from 35-ton to 50-ton trucks and is planning to purchase two more this year. Tires have been a concern for this operation as they have for many of the companies.

## Leasable lands and locatable mineral potential in Montana.



## Active mines in Montana



The government has continued in their process to transfer the National Guard Firing Range management that includes some of Graymont's mine area, from the Bureau of Land Management to the Department of Defense. The Legislative Environmental Impact Statement necessary to do this has not been completed at this time.

North of Townsend, Tracy Fortner continued mining bench gold placer above Confederate Gulch. The reserves he had developed on the north side of the drainage were nearly exhausted but those on the south side have not been developed.

At Whitehall, the Golden Sunlight mine (Barrick Gold) was included in the purchase of Placer Dome by Barrick Gold. Current operations are focused on the stage 5b open pit that will last until 2008. Surface production has been maintained at about 30,000 Tpd. At the same time, the company has hired a contractor to re-open the underground mine that exists below the bottom of the pit. The original portal is currently buried from a pit wall failure. A new portal will be developed at a higher elevation. The decline will be driven to intersect the existing workings so that remaining reserves that are uneconomic to mine by open pit methods can be developed from the underground, anticipated in May 2007.

In addition to the existing reserves, Placer Dome had discovered three additional deposits outside of the current mine. The East, North, and Rattlesnake deposits have been identified but not delineated. Additional targets are also identified but Barrick has not indicated an interest in further exploration or development at this time.

The final EIS on backfilling the Golden Sunlight pit is in the final review and will be available by spring. The conclusion of the report and the affected agencies is that pit backfill would only augment the ground water problems and should not be attempted.

South of Ennis, Luzenac America became part of Rio Tinto Minerals operations through a management consolidation of three industrial minerals companies. Although this was completed in 2005, the past year has been spent

working out the details. The reserves and production at the Yellowstone talc mine has been steady. Although they sell a broad range of products to diverse markets, the general trend of demand is steady to increasing. Their workforce is steady at all locations. At the Three Forks mill, their only union operation, a four-year contract was signed. From the state government, they received a MPDES permit for discharging water and a permit for additional overburden storage.

Near Three Forks, Holcim (U.S.), Inc. maintained steady cement production. The market has softened slightly to where production is roughly equal to the demand and cement rationing is not anticipated for 2007. Their proposal to partially substitute tires for coal as a fuel has received a draft EIS. The final EIS is anticipated in the first half of 2007. Their flue dust-recycling project has been completed resulting in less waste produced and increased cement production.

Montana's largest underground mining operation, Stillwater Mining Company (platinum, palladium copper, rhodium, gold, nickel, cobalt), reported a net income of \$5.1 million over nine months. They purchased a portion of Pacific Northwest Capital Corporation (a platinum and base metal exploration company). At the smelter complex in Columbus, the company hired a new manager for the Base Metal Refinery and is planning to upgrade their laboratory facilities. At the smelter, plans are being developed to expand the smelting capabilities as well as their recycling of catalytic converters.

At Nye, the Stillwater mine utilizes a number of mining methods. There has been an effort to shift to more cut and fill stopes to reduce dilution of the ore. The production ore grade has risen and costs have declined. Currently 40-50% of their production is from this method. They have installed rail haulage in the lower levels and completed a new sand plant and distribution system in the upper west area. A new exhaust ventilation raise was completed on the West Fork of the Stillwater River from inside the mine to minimize environmental changes for the area.

They have established a new policy of maintaining 40 months of proven reserves and are working on a policy for developed reserves.

At the East Boulder mine near Big Timber, fifteen shifts were lost to a nearby forest fire in August. They completed the second ventilation raise and expanded the tailings pond to stage II.

Because of a 55° dip of the ore body, they have started a 3-5 year transition to primarily a cut-and-fill method. This has significantly reduced the amount of waste that is brought to the surface.

As with the Nye side, the company has significantly expanded their reserve base. In anticipation of increased production, they are planning to expand the dry (shower facilities) and the associated building. Because of the shortfall of miners, they are looking into changing from the longer shifts of 10 and 12 hours to three eight-hour shifts per day. Early indications are that the workforce is not welcoming the proposed change.

They started a miner-training program to fulfill their internal needs and have maintained classes of over 50% local residents. This may eventually lead to a more stable workforce.

### **Mineral Exploration**

Southwest of Superior and St. Regis, Golden Eagle Mining continued a mapping and sampling program in the Superior Gold Belt. The soils have yielded numerous 300-500 ppb gold samples along identifiable zones. The company hopes to expand into some trenching and drilling programs in the coming year.

Near Clinton, Kennecott Exploration completed an IP/resistivity survey on the Copper Cliff property. The results indicated a good target at a depth of about 1,000 ft. The first diamond drill hole was completed to 1800 ft with favorable results. The company has continued drilling through the winter.

North of Butte, O.T. Mining spent \$2.6 million in their search for Butte-type porphyry system. An extensive IP/ resistivity survey has identified a number of deep sulfide targets (1,100 ft) beneath the Lowland Volcanics. Drilling somewhat south of the northern most target has revealed sub-economic mineralization.

A single drill hole exploring for precious metals on a southern target (2006) was completed to 2,438 ft. It revealed chloritic alteration and

disseminated pyrite/chalcopyrite veinlet sulfide mineralization. The company interpreted this intercept as the fringe of a copper-molybdenum system rather than an epithermal precious metal system.

After a year of delays from appeals by environmental groups, the company plans to drill 18 deep diamond-drill holes on the northern target in 2007. Many, if not all, will be angled. Consequently, the coming year will certainly be significant for this small company.

Near Silver Star, Coronado Resources, Ltd. completed an additional eight holes on their Madison copper-gold project. This drill program augmented extensive drilling by other companies and a very successful program in 2005. A report commissioned by the company verifies the existence of four skarn zones and a massive sulfide zone. The company has contracted with Blue Range Engineering of Butte to drive a 700 ft decline at 15 percent grade into the zones to facilitate further definition drilling. A permit has been secured to allow water to be pumped from the old workings and land applied at a lower elevation. This will allow the company to develop areas below the water table. The company is calculating reserves in preparation of a future mine plan.

At Sheridan, Millstream Mines Ltd. drove a 205 ft decline at 15 percent grade at the Tamarack mine. At 138 ft, they drifted 30 ft and intercepted a gold-bearing structure that was previously intercepted by a diamond-drill hole. A 1.5 ft wide channel sample assayed 10.84 ounces per ton gold. The company has stockpiled 900 tons at the portal and has been developing a small mill nearby. At this time, no reserve or grade numbers have been released.

At Philipsburg, the Antonioli family drilled one hole on their Ted Caboose project but didn't reach the copper target they had predicted.

At Marysville, Rx Exploration drilled six holes at the Drumlummon mine; initial reports are that the results were favorable. On the other side of the divide, Montana Molybdenum completed a mill test with disappointing results from the Bald Butte mine. Low recovery was blamed on mineralogy problems from mixed oxide/sulfide ores. The company has indicated that an extensive drilling program is planned in the coming season.

Near Helmville, Darden Engineering has identified previously unknown Tertiary channels of gold-bearing gravels in the foothills of the Finn District. Although the sampling is not complete, the gravels indicate the gold is from an epithermal source on the southern end of the mining district. On the north end, mapping has shown that a skarn source is indicated. The lode target may be the contact between Proterozoic middle Belt carbonates and the granitic intrusive exposed at the top of the range.

Near Elkhorn, Elkhorn Goldfields further defined their current ore body with diamond-drill angle holes but limits are still undefined on the north and east sides. They have a permit for an exploration decline that will allow for definition drilling and a bulk sample for milling test. They have purchased the Diamond Hill mill and mine from Montana Tunnels Mining. Pump tests for de-watering the ore zone were completed this summer. They are developing their funding for the next step prior to production. Projected work for the coming year includes drilling the Mt. Haggin and Gold Hill ore zones.

Northeast of Twin Bridges, Big Timber Reclamation (BTR) is developing a plan for mining the Johnson-Moffit copper skarn deposit. The ore body is garnet-chalcopyrite skarn along a highly altered granitic intrusive and limestone contact. Drilling by the US Geological Survey and US Bureau of Mines during World War II outlined an ore reserve that was further drilled by companies after the war. BTR has completed a number of metallurgical tests that were favorable. The company is planning a small open pit with a heap-leach recovery of the copper oxides. The sulfide zone is being looked at as an underground target with a conventional flotation mill.

Near Big Timber, Lodestar mine and mill/smelter management was taken over by the principle investors. Drilling during the summer on the property failed to confirm an ore body. In the fall, a forest fire burned out most of the portal sets in the decline. At the conclusion of these events, the new management initiated reclamation of the mine and mill and is selling the equipment.

Near Nye, Beartooth Platinum drilled eleven core holes in the Iron Mountain area. The intercepts in the “B” chromite zone were 2-4 ft wide with grades of 0.1 opt Au+PGMs. The highest was 0.393 opt Au+PGMs.

Trend Mining continued work on a property southwest of the Stillwater mine in the Beartooth uplift, but had to suspend exploration because of a forest fire. They will be reopening the Mouat portal (Mountain View) in the coming year and will expand their focus to portions of the Cu-Ni zone in the Stillwater Complex that they control.

## **Coal**

Coal production in Montana increased three percent to 41,768,710 tons. This is the third year of increases as the production approaches the rate experienced during 1997 through 1999.

In the Powder River Basin near Decker, Decker Coal Company increased production 1.8 percent to 7,044,266 tons from their West Decker mine. Spring Creek Coal Company experienced an 11 percent increase in production to 14,561,848 tons. This is the third year of increased production for the mine following a long period of static or declining production. The increase at Spring Creek may be in part associated with the closure of TransAlta’s Centralia coal mine in Centralia, Washington. After two pit wall collapses, TransAlta has chosen to purchase its power plant feed from Rio Tinto Energy America through the Spring Creek mine and Peabody’s Coalsales unit through their Rawhide mine in Wyoming.

Near Colstrip, Westmoreland Resources decreased in production by 4.8 percent from its Rosebud mine to 12,527,789 tons. The waste coal process plant (CELP) decreased production by 3.6 percent to 203,914 tons.

At the Absaloka mine, Washington Group International and Westmoreland Resources, Inc. increased production 1.8 percent to 6,782,935 tons.

Lignite production near Sidney was up 17 percent to 378,601 tons. Westmoreland Savage Corporation trucks their product to a mine-mouth power generation plant.

Near Roundup, the Bull Mountain mine increased production 60.3 percent to 269,397 tons. This small underground coal operation is run by Bull Mountain Coal Mining, Inc. and produces a cleaned coal fuel for the cement and lime industry along with other sales. Originally permitted for a power generation facility, the company has changed its focus to a possible solid-to-liquid fuels plant. To date it has not initiated construction on any plant nor the rail spur that was planned. The operation announced closure early in 2007 pending a transfer in ownership.