

**SOUTH DAKOTA – 2001 Mineral Summary  
Production, Exploration and Environmental Issues**

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<http://www.state.sd.us/denr/DES/mining/mineprg.htm>

**Production**

*Gold:* Despite low gold prices, gold production and value increased in South Dakota for the first time in five years in 2001. Homestake Mining Company and Wharf Resources Inc. produced 289,326 ounces of gold in 2001. This represented an 8.4 percent increase in the amount of gold produced compared to 2000. Gold continued to remain the leading mineral commodity in South Dakota in terms of value. The average price of gold in 2001 was \$271.02, yielding a gross value of about \$78.4 million. This was 5.6 percent higher than the 2000 gross value of \$73.9 million. Table 1 compares gold production for 2000 and 2001 from the active large scale gold operations in South Dakota. The mines are surface heap leach operations, with the exception of Homestake.

<b>Table 1 – Gold Production in South Dakota – 2000 and 2001</b>		
Company	2001 Production (ounces)	2000 Production (ounces)
Homestake Mining Company	185,307 <sup>1</sup>	170,906 <sup>1</sup>
LAC Minerals (USA), LLC	0	292
Wharf Resources (USA), Inc.	104,019	93,814
<b>Total</b>	<b>289,326</b>	<b>265,012</b>
<b>Estimated Value</b>	<b>\$78,413,133</b>	<b>\$73,967,499</b>

<sup>1</sup>All production came from Homestake’s underground mine

Homestake and Wharf also produced silver as a by-product in the gold recovery process. A total of 156,592 ounces of silver was recovered in 2001. At an average price of \$4.37, the value of the silver was \$684,307. This is an increase from the 79,842 ounces and \$395,218 value reported in 2000.

Homestake Mining Company, which has been a part of South Dakota history for 125 years, mined its last ton of gold ore on December 14, 2001. The mine, which was once the largest gold mine in the Western Hemisphere, is now beginning closure activities that will include dismantling buildings and reclaiming areas associated with its 125-year mining history. In anticipation of mine closure, Homestake completed several of these reclamation activities prior to and during 2001.

In addition to the mine closure, Homestake announced a merger with Barrick Gold, making the new company the third largest gold mining company in the world. The merger was completed on December 14, 2001, the same day the last ton of gold ore was mined at the Homestake Mine. Homestake Mining Company was also removed from the New York Stock Exchange on that date. It was originally listed on the exchange on January 25, 1879. The parent company will operate under the Barrick Gold name. Barrick Gold also owns the Richmond Hill Mine (LAC Minerals) in South Dakota, which has been in reclamation for the past eight years.

Wharf Resources announced that it would close the Golden Reward Mine and begin final reclamation in 2002. The mine is owned by Wharf Resources and has been in temporary cessation for the past five years. Final reclamation will consist of backfilling pits in the western part of the mine, reconstructing the upper Fantail Creek drainage, and completing topsoil placement and revegetation. Most of the backfilling and regrading work will be completed by October 2002. About 2.5 million cubic yards will be moved during reclamation.

There are currently 11 mine permits that cover seven large scale gold mining operations in South Dakota. No new mine permits or mine permit amendments were issued to large scale gold operations in 2001. One permit was closed in 2001. The Board of Minerals and Environment released Dakota Placer's reclamation bond for its Red Placer Mine near Deadwood.

*Industrial and Other Minerals:* Industrial and other mineral production for 2001 is summarized in Table 2. During the 2001 reporting period, 493 companies had active mine licenses in South Dakota. An operator must obtain a license to mine for sand, gravel, pegmatite minerals, materials used in the process of making cement or lime, and rock to be crushed and used in construction. There were also 35 mine permits that covered the mining of other minerals such as slate, bentonite, placer gold, and dimension stone.

<b>Table 2 – 2001 Non-Metallic Mineral Production</b>	
Mineral	Production (Tons)
Bentonite	38,000
Dimension Stone	350,190
Gypsum	65,852
Iron Ore	17,301
Limestone	3,945,031
Mica Schist	5,910
Pegmatite Minerals	10,889
Placer Gold Ore	74
Quartzite	3,056,337
Shale	225,432
Slate	1,147
Sand & Gravel	15,363,175

Source: Annual reports submitted by mining companies

Sand and gravel was the major non-metallic mineral commodity produced with 15,363,175 tons reported. Sand and gravel is produced in nearly every county in South Dakota and is used mainly for road construction projects.

The second largest non-metallic mineral commodity produced in 2001 was limestone with 3,945,031 tons reported. GCC Dacotah (formerly Dacotah Cement) alone produced 1,339,129 tons of limestone used to make cement. It also produced 220,152 tons of shale, 44,000 tons of gypsum, and 45,965 tons of sand. Sioux quartzite was the third largest non-metallic mineral commodity produced with 3,056,337 tons reported. It is quarried from four locations in southeastern South Dakota. Most of the quartzite is crushed and used in construction. Some larger blocks are used for rip-rap, railroad ballast, and occasionally for decorative purposes.

A total of 350,190 tons of granite was mined by Dakota Granite Company and Cold Spring Granite Company from quarries near Milbank, South Dakota. Due to its beauty and distinctive red color, the mahogany granite is used primarily for floor tiles, monuments, and building construction. Much of it goes to international markets.

Other minerals produced in lesser amounts in 2001 include bentonite, iron ore, mica schist, pegmatite minerals (feldspar, mica, rose quartz), placer gold, and slate.

### **Exploration**

Gold exploration activities in South Dakota were limited due to continued low gold prices and other factors. Wharf Resources (USA) Inc. completed 57 exploration drill holes in the vicinity of its existing operation in Lawrence County. These holes tested an extension of Wharf's Trojan deposit

that occurs in Deadwood Formation sedimentary units, and associated intrusions of monzonite porphyry.

### **Environmental Issues**

*Brohm Mine:* Reclamation activities at the Gilt Edge Mine, which began in the fall of 2000, continued throughout 2001. EPA took over management of the mine from the state of South Dakota on July 31, 2000, and the mine was placed on the Superfund National Priority List on December 1, 2000. Through an interagency agreement, EPA retained the US Bureau of Reclamation to manage the site and develop closure plans. Reclamation efforts have concentrated on getting the Ruby Gulch waste rock dump, the major source of acid mine drainage at the site, ready for capping. About 1.4 million cubic yards of material was moved on the dump in order to reduce slopes to a 3.5:1 slope. The Bureau also constructed ditches to divert water around the dump. At the end of 2001, earthmoving activities were nearing completion, with all earthmoving scheduled to be completed by February 2002. Plans are to place a geomembrane (plastic) liner and rock drainage layer over the regraded waste dump in summer 2002.

Water treatment continued at the mine site in 2001. Over 235 million gallons of acid water have been treated and discharged since the state of South Dakota took over the mine in July 1999. Acid water stored in the pits has been reduced from 150 million gallons in July 1999 to 90 million gallons at the end of the year.

*Reclamation at Richmond Hill Mine:* The Richmond Hill Mine continues to show improvement since major reclamation activities were completed in the mid-1990's. The performance of the pit impoundment, backfilled with acid-generating rock and covered with a low permeability capping system, continued to surpass expectations again in 2001. Monitoring data shows that only minimum amounts of oxygen and water are being detected in the impoundment. This indicates the cap is effective in limiting oxygen and water infiltration and is preventing acid generation.

The capped leach pads also continue to perform well. Monitoring data shows the capping systems are effective in reducing water infiltration into the spent ore. Water draining from the leach pads is being treated in an innovative passive wetland treatment system constructed in 2000. Passive treatment systems allow naturally occurring biological processes to treat mine drainage in a controlled environment. Results from 2001 show that the passive treatment system is effective in reducing nitrates, sulfates, and selenium. LAC plans to adjust the system in 2002 to improve removal rates.

Ground and surface water quality around the mine site is closely monitored. Ground water impacted by acid rock drainage prior to mine reclamation is steadily improving. Monitoring wells generally show decreasing trends in sulfate and metal concentrations and increasing pH. Biological assessments of Squaw Creek below the mine show that the stream remains healthy and supports a viable cold water fishery.

*Inactive and Abandoned Mines:* The South Dakota Department of Environment and Natural Resources worked with the US Forest Service and EPA to reclaim the historic Minnesota Ridge Mine in the summer of 2001. This mine is located about 14 miles south of Lead in Lawrence County. In the fall of 2000, buildings at the site were demolished in preparation for reclamation activities. Reclamation activities in 2001 included removing acid-generating rock from a drainage, placing the rock in a capped facility on a nearby ridge, and reconstructing the drainage. The Forest Service plans to conduct other activities at the site in 2002 to complete reclamation.

The state of South Dakota is also involved in a partnership with the Western Governors Association and the US Forest Service to obtain additional funding to reclaim the King of the West and Yellow Bird Mines through the Abandoned Mined Land Initiative. The initiative is a partnership created in 1997 between the Western Governors Association and the National Mining Association to address obstacles to abandoned

mine reclamation. These mines are located about 3 miles southwest of Rochford in Pennington County. Hazards at the sites include acid-generating tailings, open shafts, collapsed buildings, and other structures. The US Forest Service is currently developing a plan to reclaim the site with reclamation scheduled to start later in 2002 or 2003.