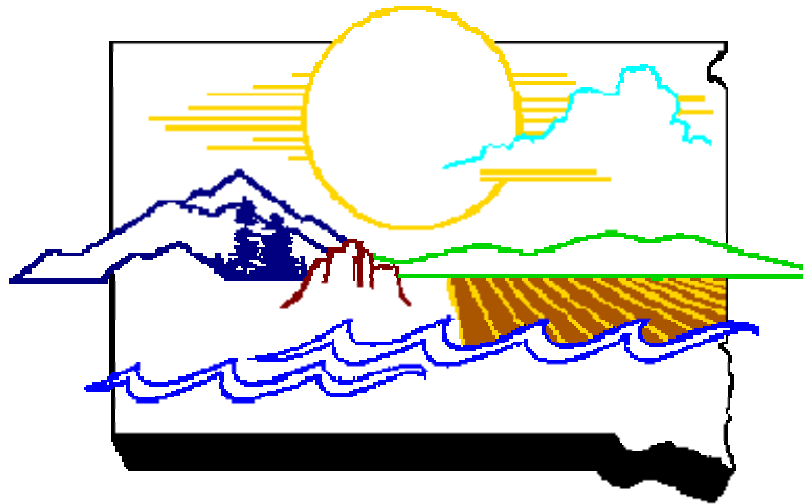


**SUMMARY OF  
THE MINING INDUSTRY IN SOUTH DAKOTA**

**2006**



*Protecting South Dakota's Tomorrow ... Today*

**PREPARED BY  
THE MINERALS AND MINING PROGRAM  
SD DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
MAY 2007**

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# INTRODUCTION

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The Department of Environment and Natural Resources is required by state law to prepare a "Summary of the Large Scale Gold Surface Mining Industry in the Black Hills" and a "Publication of Surface Mine Disturbed Land and Reclamation Acreages under Chapter 45-6B." These two reports have been combined into a single report entitled "Summary of the Mining Industry in South Dakota." This report covers mining activities from January 1 to December 31, 2006. The information in this report is based on annual reports and other information submitted by mining operations permitted under Chapter 45-6B.

## 2006 Summary

A major milestone was reached in 2006 as Homestake Mining Company became the first major large scale gold mine to have liability released for reclaiming land it mined. In April, the Board of Minerals and Environment granted Homestake partial release of reclamation liability for 499.74 acres of affected land at its Open Cut surface mine in Lead. This is the single largest block of acreage the board has ever released from reclamation liability.

Gold production and value increased in 2006, mainly due to higher gold prices. Wharf Resources was the only company to report gold production in 2006, with 63,039 ounces produced, a slight increase from the 62,470 ounces reported in 2005. Wharf currently plans to continue mining until mid-2008.

With the recent increase in uranium prices, there is a growing interest from companies wanting to conduct uranium in situ leach mining in South Dakota. To get prepared for that possibility, the 2006 Legislature passed a bill authorizing the Board of Minerals and Environment to promulgate rules for the construction, operation, monitoring, and closure of uranium and other in situ mines. The department subsequently prepared a draft set of rules. The board adopted the rules on January 18, 2007 following a public hearing. On a related matter, Powertech (USA) Inc. submitted an application in July 2006 to explore for uranium north of Edgemont. This was the first uranium exploration application that was processed by the department in more than 25 years. In January 2007, the board unanimously approved Powertech's uranium exploration permit following a contested case hearing.

\S/

Steven M. Pirner  
Secretary

**SUMMARY OF THE LARGE SCALE GOLD MINING INDUSTRY IN THE  
BLACK HILLS**

**2006**



Photo 1.1 – Reclaimed top of East Waste Rock Facility (foreground) and reclaimed Sawpit Waste Rock Facility (background) that were released by the Board of Minerals and Environment

# MAJOR EVENTS IN 2006

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## Board Grants Homestake Partial Release of Reclamation Liability

On April 20, 2006, the Board of Minerals and Environment granted Homestake's request for partial release of reclamation liability for 499.74 acres of affected land at its Open Cut surface mine in Lead. This is the single largest block of acreage the board has ever released from reclamation liability. These acres are now under postclosure status.



Photo 1.2 – Released Highland Waste Rock Facility



Photo 1.3 – Pine trees on East Waste Rock Facility Slope.

An additional 13.08 acres will be released when Homestake completes weed spraying on a portion of the East Waste Rock Facility and wildlife habitat mitigation work on portions of the Sawpit Waste Rock Facility. Weed spraying has been completed except for an area with some cheatgrass. Wildlife habitat projects completed include aspen treatments, brush piles for wildlife habitat, snags for raptors and other birds, and the development of a new seed mix that will be used during reclamation of remaining disturbed areas around the Sawpit Waste Rock Facility. A wildlife water source and associated riparian habitat development will be completed after removal of topsoil from a borrow area west of the Sawpit Waste Rock Facility is completed. The topsoil will be used in the Grizzly Gulch Tailings Facility reclamation project.

Under its mining permits, Homestake still has 108 acres that need further reclamation work prior to release of the company's remaining reclamation liability. A \$1,246,000 reclamation bond was submitted to cover the remaining reclamation activities. The board also accepted Homestake's postclosure plan and set a 100-year period for postclosure care and maintenance. The 100-year period is necessary for long-term water treatment of mine runoff for selenium and total dissolved solids. Homestake submitted a \$38.22 million letter of credit to cover water treatment and monitoring costs during the postclosure period.

Homestake completed construction of a water treatment plant at the toe of its East Waste Rock Depository near Central City. The plant was constructed to treat water seeping from the toes of the East and Sawpit Waste Rock Depositories during the postclosure period. By November 2006, the plant began treating water with elevated levels of total dissolved solids and selenium to meet surface water standards in the company's surface water discharge permit. The treated water is being discharged to Deadwood Creek or the Lead-Deadwood Sanitary District's treatment plant.

## **Homestake Lab Update**

Work continued in 2006 on the conversion of the Homestake underground mine into a national underground science laboratory. In May, ownership of the underground mine was transferred from Barrick Gold Inc. to the South Dakota Science and Technology Authority. In June, conceptual designs for a deep underground lab were submitted to the National Science Foundation. The Authority has plans in 2007 to begin rehabilitating the mine shafts and tunnels and pumping water out of the mine in preparation for an interim lab on the 4850 level.

## **Gilt Edge Update**

EPA continued acid water treatment at the Gilt Edge Superfund Site in 2006. A total of 99.7 million gallons were treated and discharged in 2006, and water treatment will continue in 2007. EPA and the state continue to prepare plans to reclaim the rest of the site, including the mine pits and heap leach pad. A feasibility study outlining reclamation options is scheduled to be completed in October 2007.

## **Mitigation Update at Richmond Hill Mine**

Reclamation activities at the Richmond Hill Mine, an open pit heap leach gold mine that developed an acid mine drainage problem during operations in the early 1990's, continue to be successful. Most of the reclamation was completed by the mine operator, LAC Minerals (USA), LLC, in the mid-1990s. The pit impoundment, backfilled with acid-generating rock and covered with a low permeability capping system, continues to perform as designed. 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. Most chemical parameters in the pad effluent continue to improve.

Ground and surface water quality around the mine site is closely monitored. Monitoring wells continue to show decreasing or steady trends in sulfate and metal concentrations and increasing pH. Biological assessments of Cleopatra Creek below the mine show that the stream remains healthy and supports a viable cold water fishery despite low flows due to drought conditions in the Black Hills.

In 2006, LAC ran two pilot plants to test the effectiveness of two different media types in the biological treatment process for selenium removal. Testing will continue in 2007. If successful, LAC will construct a full-scale biological treatment plant capable of treating the entire leach pad effluent to discharge standards. The biological treatment system would operate on a year-round basis to reduce the volume of water in the storage ponds and ultimately reducing the required holding capacity of the storm water pond.

## **Wharf Extends Mine Life**

The department approved technical revisions in 2006 to allow Wharf to expand its mine near Lead and extend the life of the mine. Wharf requested approval to develop the Deep Portland Pit and expand portions of the existing Trojan Pit. Higher gold prices have allowed the expansion areas to become economical to mine. An additional 4.2 acres of land within the current permit boundary will be affected by the pit expansion. Mining will now continue until mid-2008. Wharf also plans to apply for an additional technical revision and permit amendment in 2007 to expand into the American Eagle pushback in the northwest corner of the Trojan Pit. This would further extend the life of the mine into 2010. The company is also exploring other areas of the mine for possible expansion.

## **Technical Revisions Approved by the Department in 2006**

January 31	Golden Reward – Terminate water quality sampling at Monitoring Well DM-17 and plug well.
May 8	Wharf Resources – Inoculation of wells in the process area to lower nitrate levels in ground water.
May 24	Golden Reward – Revise measurements for reclamation success and establish vegetation sampling points and wildlife observation parameters for 2006 monitoring to determine reclamation success.
May 31	Wharf Resources – Construct Ross Valley Holding Pond located on top of the Ross Valley Spent Ore Depository.
June 8	Wharf Resources – Add additional affected acreage for the Deep Portland and Summit Flats Pits and to construct the Polo Spent Ore Impoundment.
June 12	Homestake Mining – Modify seed mix for Sawpit Waste Rock Facility wildlife enhancement plan and for remaining reclamation at the facility.
June 15	Homestake Mining – Create a topsoil borrow area west of the Sawpit Waste Rock Facility for use in the Grizzly Gulch Tailings Facility reclamation project.

- June 15 Wharf Resources – Add an upgraded settling/aeration tank, sand filter, and clarifier building to the Ross Valley water treatment circuit.
- August 2 Wharf Resources – Construct a new bio-treatment facility in the process area.
- September 12 Homestake Mining – Modify surface water quality monitoring plan.
- November 21 Wharf Resources – Add additional affected acreage for the Deep Portland and Trojan Pits and modify the design of the Polo Spent Ore Impoundment.
- December 22 Wharf Resources – Reduce water level monitoring at the North Foley Spent Ore Impoundment from daily to weekly.



Photo 1.5 – Reclamation at the Golden Reward Mine.



# **LARGE SCALE GOLD MINE ACREAGE AND PRODUCTION TABLES**

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The following tables were developed by compiling information from operator annual reports, supplemental information submitted to the department by the large scale gold mines, inspection reports, and other available information. Acreage from the Gilt Edge Superfund site that was previously mined by Brohm is included in the tables to show the progress being made to reclaim the mine site.

Various charts and graphs comparing total affected, total reclaimed, and released acreage are in Appendix 1. The bar chart on page A-2 compares affected acreage, reclaimed acreage, and released acreage for each company. The graph on page A-2 shows the trend of total affected acres, total reclaimed acres, and released acres for the large scale gold industry from 1990 to 2006. The pie chart on page A-3 shows total reclaimed acres, total unreclaimed acres, and released acres for the large scale gold mine industry in 2006.



Photo 1.5 – Reclaimed pit impoundment slope at the Richmond Hill Mine.

**TABLE 1.1 – AFFECTED MINED LAND ACREAGE**

<b>Permit Number</b>	<b>Operator</b>	<b>Permitted Affected Acres</b>	<b>Acres Affected Year 2006</b>	<b>Total Acres Affected as of Dec. 31, 2006</b>
439 & 462	Brohm Mining Corp.	564.00	0.00	263.00
416	E4 Energy, Inc. (formerly Southpoint Resources)	122.00	0.00	0.00
450	Golden Reward Mining Co., LP	493.62	0.00	408.44
332 & 456	Homestake Mining Company	177.50	3.72	136.20
445	LAC Minerals (USA), LLC	439.10	0.00	337.83
356, 434, 435, & 464	Wharf Resources (USA), Inc.	1005.37	5.79	961.73
<b>TOTALS</b>		2801.59	9.51	2107.20

**Definitions:**

**Permitted Affected Acres** - As defined in SDCL 45-6B-3(1), permitted affected land involves all lands permitted to be affected by a mining operation. This includes land from which overburden is to be or has been removed; land upon which overburden, waste rock, mine spoil, or mill tailings are to be or have been deposited; land disturbed by the building of access roads, railroad loops, warehouses, storage areas, or other support facilities for the purpose of mining; and land affected by surface subsidence, unstable slopes, and other surface effects caused by underground mine workings. Released acres are not included.

**Acres Affected Year 2006** - Previously unaffected acres disturbed from January 1 to December 31, 2006. This acreage is also included in "Total Acres Affected as of Dec. 31, 2006."

**Total Acres Affected as of Dec. 31, 2006** - All land currently affected by the large scale gold and silver operations under permit as of December 31, 2006. This includes all lands described above in "Permitted Affected Acres." Released acres are not included.

<b>TABLE 1.2 – SURFACE MINING DISTURBED LAND ACREAGE</b>			
<b>Permit Number</b>	<b>Operator</b>	<b>Surface Mining Disturbed Acres Year 2006</b>	<b>Total Surface Mining Disturbed Acres as of Dec. 31, 2006</b>
439 & 462	Brohm Mining Corp.	0.00	202.10
416	E4 Energy, Inc. (formerly Southpoint Resources)	0.00	0.00
450	Golden Reward Mining Co., LP	0.00	368.16
332 & 456	Homestake Mining Company	0.51	107.31
445	LAC Minerals (USA), LLC	0.00	190.13
356, 434, 435, & 464	Wharf Resources (USA), Inc.	5.79	860.50
<b>TOTALS</b>		6.30	1728.20

**Definitions:**

**Surface Mining Disturbed Acres Year 2006** - Previously unaffected surface mining land disturbed from January 1 to December 31, 2006. This acreage is also included in "Total Surface Mining Disturbed Acres as of Dec. 31, 2006."

**Total Surface Mining Disturbed Acres as of Dec. 31, 2006** - As defined in SDCL 45-6B-3(15), surface mining disturbed land is land from which overburden has been removed; land upon which overburden, waste rock, mine spoil, or mill tailings have been deposited; land mined which has no overburden; heap leach pads; and process ponds. Surface mining disturbed lands include overburden and waste rock dumps, spent ore dumps, tailings impoundments, heap leach pads, open pits, process ponds, haul roads in pit areas, or haul roads constructed largely of waste rock, spent ore, or overburden. Surface mining disturbed lands **do not** include access roads, haul roads constructed from normal cut and fill methods, railroad loops, utility corridors, buildings including process plants, land application areas, topsoil stockpiles, ore stockpiles, crusher areas, storage areas, sediment and erosion control structures, and land affected by surface subsidence, unstable slopes, and other surface effects caused by underground mine workings. Released acres are not included.

**TABLE 1.3 – INTERIM RECLAIMED ACREAGE**

<b>Permit Number</b>	<b>Operator</b>	<b>Interim Reclaimed Acres Year 2006</b>	<b>Total Interim Reclaimed Acres as of Dec. 31, 2006</b>
439 & 462	Brohm Mining Corp.	0.00	0.95
416	E4 Energy, Inc. (formerly Southpoint Resources)	0.00	0.00
450	Golden Reward Mining Co., LP	0.00	0.00
332 & 456	Homestake Mining Company	0.00	0.00
445	LAC Minerals (USA), LLC	0.00	17.90
356, 434, 435, & 464	Wharf Resources (USA), Inc.	0.00	22.64
<b>TOTALS</b>		0.00	41.49

**Definitions:**

**Interim Reclamation** - As defined in ARSD 74:29:01:01(17), interim reclamation is reclamation performed during a mining operation or between mining phases to stabilize affected land by regrading and revegetating to control erosion, improve aesthetics, and minimize hazards. It can be construed to be temporary reclamation or soil stabilization for affected land that will be disturbed again.

**Interim Reclaimed Acres Year 2006** - Acres under interim reclamation from January 1 to December 31, 2006. These acres are also included in "Total Interim Reclaimed Acres."

**Total Interim Reclaimed Acres as of Dec. 31, 2006** - The total number of acres under interim reclamation as of December 31, 2006. Acres redisturbed or now considered as final reclamation are not included in these totals.

<b>TABLE 1.4 – FINAL RECLAIMED ACREAGE FOR YEAR 2006</b>			
<b>Permit Number</b>	<b>Operator</b>	<b>Final Reclaimed Acres Year 2006 that Meet Post-Mine Land Use<sup>1</sup></b>	<b>Final Reclaimed Acres Year 2006 that Do Not Meet Post-Mine Land Use</b>
439 & 462	Brohm Mining Corp.	0.00	0.00
416	E4 Energy, Inc. (formerly Southpoint Resources)	0.00	0.00
450	Golden Reward Mining Co., LP	77.28	0.00
332 & 456	Homestake Mining Company	0.00	39.54
445	LAC Minerals (USA), LLC	0.00	0.00
356, 434, 435, & 464	Wharf Resources (USA), Inc.	117.46	10.89
<b>TOTALS</b>		194.74	50.43

<sup>1</sup>The final reclaimed acres during the past year that meet the post-mining land use in this table are industry figures. The department may not necessarily agree with the reported acreage and will need to confirm in the field that these acres do meet the post-mine land use criteria.

**Definitions:**

**Final Reclaimed Acres Year 2006 That Meet Post-Mine Land Use** – Affected land reclaimed prior to 2006, previously considered as not meeting the post-mine land use, that met the post-mine land use in 2006. These acres meet the requirements of the reclamation plan, SDCL 45-6B, and ARSD 74:29, and can be considered for bond release. Released acres are not included.

**Final Reclaimed Acres Year 2006 That Do Not Meet Post-Mine Land Use** - Affected land reclaimed between January 1 and December 31, 2006, that does not meet the requirements of the approved reclamation plan and the reclamation requirements of SDCL 45-6B and ARSD 74:29. Final grading, topsoil placement, erosion and drainage control, and seeding and planting have been conducted on these acres. However, these acres cannot be considered for bond release since they have not met the post-mining land use criteria.

**TABLE 1.5 – TOTAL FINAL RECLAIMED AND RELEASED ACREAGE****As of December 31, 2006**

<b>Permit Number</b>	<b>Operator</b>	<b>Final Reclaimed Acres that Meet Post-Mine Land Use<sup>1</sup></b>	<b>Final Reclaimed Acres that Do Not Meet Post-Mine Land Use</b>	<b>Final Reclaimed Acres that Have Been Released</b>
439 & 462	Brohm Mining Corp.	0.00	79.50	0.00
416	E4 Energy, Inc. (formerly Southpoint Resources)	0.00	0.00	0.00
450	Golden Reward Mining Co., LP	282.94	119.02	0.00
332 & 456	Homestake Mining Company	13.08	114.18	499.74
445	LAC Minerals (USA), LLC	244.95	19.97	0.00
356, 434, 435, & 464	Wharf Resources (USA), Inc.	323.35	129.91	0.00
<b>TOTALS</b>		864.32	462.58	499.74

<sup>1</sup>The final reclaimed acres that meet the post-mining land use in this table are industry figures. The department may not necessarily agree with the reported acreage and will need to confirm in the field that these acres do meet the post-mine land use criteria.

**Definitions:**

**Final Reclaimed Acres That Meet Post-Mine Land Use** - Affected land reclaimed as of December 31, 2006, that has a permanent, self-sustaining vegetative cover which meets the requirements of the approved reclamation plan and meets the reclamation requirements of SDCL 45-6B and ARSD 74:29. These acres can be considered for bond release. Released acres are not included.

**Final Reclaimed Acres That Do Not Meet Post-Mine Land Use** - Affected land reclaimed as of December 31, 2006, that does not meet the requirements of the approved reclamation plan and the reclamation requirements of SDCL 45-6B and ARSD 74:29. Final grading, topsoil placement, erosion and drainage control, and seeding and planting have been conducted on these acres. However, these acres cannot be considered for bond release since they have not met the post-mining land use criteria.

**Final Reclaimed Acres that Have Been Released** – Final reclaimed acres that meet the post-mine land use and have been released by the Board of Minerals and Environment. These acres are now under postclosure status.

**TABLE 1.6 – SURFACE MINED RECLAMATION ACREAGE AND  
RECLAMATION CREDITS  
As of December 31, 2006**

<b>Permit Number</b>	<b>Operator</b>	<b>Surface Mined Acres Reclaimed (SDCL 45-6B-86)</b>	<b>Total Affected Acres Reclaimed that Apply as Reclamation Credit per 1992 Mining Initiative (SDCL 45-6B-97)</b>
439 & 462	Brohm Mining Corp.	65.00	73.20
416	E4 Energy, Inc. (formerly Southpoint Resources)	0.00	0.00
450	Golden Reward Mining Co., LP	361.68	401.96
332 & 456	Homestake Mining Company	104.46	127.26
445	LAC Minerals (USA), LLC	160.32	264.92
356, 434, 435, & 464	Wharf Resources (USA), Inc.	442.74	453.26
<b>TOTALS</b>		1134.20	1320.60

**Definitions:**

**Surface Mined Acres Reclaimed** - Total amount of surface mining disturbed acres under final reclamation as of December 31, 2006. The department is required to report these acres under SDCL 45-6B-86. Final grading, topsoil replacement, erosion and drainage control, and seeding and planting have been conducted on these acres. Released acres are not included.

**Total Affected Acres Reclaimed That Apply as Reclamation Credit per 1992 Mining Initiative** - Affected land under final reclamation as of December 31, 2006, that can be considered for reclaimed acreage credit as provided under SDCL 45-6B-97. Pursuant to SDCL 45-6B-97, reclamation is performed when the operator completes required grading, topsoil placement, erosion and drainage control, and seeding and planting. Released acres are not included.

**TABLE 1.7 - ORE AND WASTE ROCK PRODUCTION  
January 1 to December 31, 2006**

<b>Permit Number</b>	<b>Operator</b>	<b>Tons of Ore Mined Year 2006</b>	<b>Tons of Ore Processed Year 2006</b>	<b>Tons of Waste Rock and Overburden Mined Year 2006</b>
439 & 462	Brohm Mining Corp.	0	0	0
416	E4 Energy, Inc. (formerly Southpoint Resources)	0	0	0
450	Golden Reward Mining Co., LP	0	0	0
332 & 456	Homestake Mining Company (Open Cut)	0	0	0
445	LAC Minerals (USA), LLC	0	0	0
356, 434, 435, & 462	Wharf Resources (USA), Inc.	3,271,600	3,351,479	3,168,629
<b>TOTALS</b>		3,271,600	3,351,479	3,168,629



**TABLE 1.8 – GOLD AND SILVER PRODUCTION  
January 1 to December 31, 2006**

<b>Permit Number</b>	<b>Operator</b>	<b>Ounces of Gold Produced Year 2006</b>	<b>Ounces of Silver Produced Year 2006</b>
439 & 462	Brohm Mining Corp.	0	0
416	E4 Energy, Inc. (formerly Southpoint Resources)	0	0
450	Golden Reward Mining Co., LP	0	0
332 & 456	Homestake Mining Company	0	0
445	LAC Minerals (USA), LLC	0	0
356, 434, 435, & 462	Wharf Resources (USA), Inc.	63,039	184,444
<b>TOTALS</b>		63,039	184,444
<b>ESTIMATED VALUE<sup>1</sup></b>		\$38,041,515	\$2,130,328

<sup>1</sup>Based on 2006 average gold price of \$603.46/oz and 2006 average silver price of \$11.55/oz.

**TABLE 1.9 – WATER AND CYANIDE USE  
January 1 to December 31, 2006**

<b>Permit Number</b>	<b>Operator</b>	<b>Gallons Ground Water Withdrawn Year 2006</b>	<b>Gallons Surface Water Withdrawn Year 2006</b>	<b>Pounds of Cyanide Used Year 2006</b>
439 & 462	Brohm Mining Corp.	0	0	0
416	E4 Energy, Inc. (formerly Southpoint Resources)	0	0	0
450	Golden Reward Mining Co., LP	22,650 <sup>1</sup>	0	0
332 & 456	Homestake Mining Company	0	0	0
445	LAC Minerals (USA), LLC	631,260	0	0
356, 434, 435, & 462	Wharf Resources (USA), Inc.	42,227,100	0	663,474
<b>TOTALS</b>		42,881,010	0	663,474

<sup>1</sup>Golden Reward pumped its Bonanza well and discharged the water. None of the water was used at the mine.

<b>TABLE 1.10 – BOND AMOUNTS FOR LARGE SCALE GOLD MINES</b>				
<b>Permit Number</b>	<b>Operator</b>	<b>Reclamation Bond</b>	<b>Postclosure Bond<sup>1</sup></b>	<b>Cyanide Spill Bond<sup>2</sup></b>
439 & 462	Brohm Mining Corp.	\$6,131,704 <sup>3</sup>	\$0	\$0
416	E4 Energy, Inc. (formerly Southpoint Resources)	\$661,800 <sup>4</sup>	\$0	\$0
450	Golden Reward Mining Co., LP	\$1,549,000 <sup>5</sup>	\$132,000 <sup>5</sup>	\$0
332 & 456	Homestake Mining (Open Cut)	\$1,246,000	\$38,220,000	\$0
445	LAC Minerals (USA), LLC	\$10,700,000 <sup>6</sup>	\$0	\$0
356, 434, 435, & 464	Wharf Resources (USA), Inc.	\$10,730,400 <sup>6</sup>	\$8,120,700 <sup>6</sup>	\$469,000

<sup>1</sup> Postclosure bonds are not generally required to be submitted until the reclamation bond is released. However, by condition to Mine Permit No. 464, Wharf was required to submit a postclosure bond prior to closure. Golden Reward submitted a postclosure bond as per agreement for drainage control work in the West Liberty Pit.

<sup>2</sup> Financial assurance, or “cyanide spill bonds” are required under SDCL 45-6B-20.1. This financial assurance covers the cost of remediating accidental releases of cyanide or other leaching agents to the environment if a mine fails to do so. Wharf is the only mine where cyanide heap leaching is being done at this time. Wharf’s cyanide bond was updated in April 2006.

<sup>3</sup> Because of Dakota Mining Corp’s bankruptcy, Brohm’s reclamation bond has been placed in a state account for use in reclamation of the Gilt Edge Mine. \$2 million was used for reclamation expenses in March 2002. Interest from the bond is compounded and applied to the bond. The bond amount shown is current as of December 31, 2006.

<sup>4</sup> E4 Energy, Inc. is required to submit a reclamation bond in the amount of \$661,800 before the commencement of mining.

<sup>5</sup> The department will update the reclamation and postclosure bonds for Golden Reward in 2007 after the release of liability petition and postclosure plan are submitted.

<sup>6</sup> The department is in the process of reviewing reclamation bond calculations for LAC Minerals and reclamation and postclosure bond calculations for Wharf Resources. Any revisions to the calculations will be completed in 2007.

# **OPERATIONAL PLANS FOR 2007**

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## **Brohm Mining Corp.**

EPA will continue water treatment at the site in 2007. Routine operation and maintenance activities will continue through the year. The department will also continue to work with EPA on a feasibility study to develop reclamation plans for the remainder of the site, including the mine pits and the leach pad. The remaining reclamation activities are anticipated to begin when federal Superfund money becomes available.

## **E4 Energy, Inc.**

E4 Energy has no activities planned for the Johnson Gulch area in 2007 under Large Scale Mine Permit No. 416, formerly held by Southpoint Resources. The company changed its name from Southpoint to E4 Energy, Inc. in 2006.

## **Golden Reward Mining Company, LP**

In November 2007, Golden Reward plans to ask the Board of Minerals and Environment for liability release on the reclaimed mine site. Vegetation studies were conducted during summer 2006, and the data from the studies will be included in the release of liability petition which will be submitted in summer 2007. The department will conduct a final inspection of the reclaimed area after the release petition is submitted. Golden Reward also plans to complete removal of sediment from the PMP Pond. Sediment from the pond will be placed in the Surge Pond which will be reclaimed after sediment disposal is completed. The company will also continue environmental maintenance and monitoring.

## **Homestake Mining Company (Barrick Gold Corp.)**

Homestake will continue reclamation and closure activities in 2007. Postclosure monitoring, maintenance, and water treatment activities will continue in the released areas. The company plans to remove a portion of the Deadwood Creek crossing in 2007 that was part of the haul road to the Sawpit Waste Rock Facility.

## **LAC Minerals (USA), LLC (Richmond Hill Mine)**

LAC Minerals will continue monitoring and active water treatment at the Richmond Hill Mine. The company will continue testing a pilot biological water treatment system in 2007. The company plans to construct a full-scale biological water treatment system after the pilot system testing is completed.

## **Wharf Resources (USA), Inc.**

Mining in the Trojan pit will continue with the addition of the American Eagle pushback area in the northwest corner of the pit. Wharf will continue mining the Deep Portland pit through 2007. The company plans to reclaim about 5 to 10 acres in the Trojan pit and 5 to 6 acres along the west wall of the Deep Portland pit.



Photo 1.6 – Concurrent reclamation completed on backfilled Portland Pit (foreground) and on Reliance Depository (background) at the Wharf Mine.

**SUMMARY OF SURFACE MINED DISTURBED AND RECLAMATION  
ACRES UNDER SDCL 45-6B-86**

**2006**



Photo 2.1 – Concurrent reclamation at Pete Lien and Sons' Black Hawk Quarry.

# **SUMMARY OF ALL MINE PERMITS**

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This portion of the report summarizes information on the number of acres of surface mining disturbed land and the amount reclaimed as required by SDCL 45-6B-86 and as defined in section 45-6B-83.1 for the period January 1 to December 31, 2006. This does not include acreages for mining operations regulated under SDCL Chapter 45-6 (515 licensed mine operators and 1,898 active licensed sites), mineral exploration regulated under SDCL Chapter 45-6C (10 operators and 23 permits, excluding oil and gas), or uranium exploration regulated under SDCL Chapter 45-6D (1 operator, 1 permit.) Sources for this information include permit applications, operating and reclamation plans, annual reports, department inspections, and operator information.

## **New Mine Permits**

Cold Spring Granite Company submitted additional information in 2006 to complete its small scale mine permit application. The application was originally submitted by the company on August 9, 2005 to expand its existing granite quarry covered under Large Scale Mine Permit No. 8. The 6.79 acre area will be used to store granite blocks. The reclamation plan for the area is based on a postmine land use of cropland. The department granted the permit on February 22, 2007.

American Colloid Company also submitted additional information in late 2006 to complete its large scale mine permit application for the Kudlock project near Belle Fourche. About 71.9 acres will be mined and 144.3 acres will be affected during the operation. The area will be reclaimed to rangeland for livestock grazing. The permit was granted by the department on March 15, 2007.



Photo 2.2 – American Colloid Kudlock Project area.

## **Special or Unique Land Determinations**

The department received one request for the determination of special, exceptional, critical, or unique lands for a small scale placer mining operation in 2006. In March 2006, J. R. Merchant submitted a request for determination for a proposed placer mining operation along Bear Butte Creek about 6.5 miles southeast of Deadwood. Mr. Merchant plans to use a highbanker dredge, sluice box, shovels,

and pans during the placer mining operation. The department will make its determination on whether the area has special, exceptional, critical, or unique attributes sometime in 2007.

## **Board Grants Powertech Uranium Exploration Permit**

Powertech (USA) Inc. submitted a uranium exploration permit application in July 2006 for an area in the southern Black Hills located northwest of Edgemont. This is the first application the department received for a uranium exploration operation since the uranium exploration statutes (SDCL 45-6D) were adopted in the early 1980's. Powertech plans to drill 155 exploration holes for uranium and conduct two pump tests to evaluate the ground water hydrology in the area. Each hole will be 500 to 600 feet in depth and will be plugged in accordance with state plugging regulations. On January 17, 2007, the Board of Minerals and Environment unanimously approved the application. Powertech plans to begin exploration in spring 2007. The company also plans to submit a mine permit application for an in-situ mining operation sometime in 2007.



Photo 2.3 – Powertech exploration area.

## **In Situ Leach Mining Rules Adopted by Board**

Due to growing interest in uranium mining and to prepare for the possibility of uranium in situ leach mining operations moving into South Dakota, the 2006 Legislature passed a bill authorizing the Board of Minerals and Environment to promulgate rules for the construction, operation, monitoring, and closure of uranium and other in situ leach mines. In response to this legislation, the Department of Environment and Natural Resources prepared a draft set of rules. On January 18, 2007, the board held a public hearing on the new in situ leach mining rules. The hearing was attended by representatives of the uranium mining industry, environmental organizations, and Native American groups. After considering written and oral comments from the public and the department, the board adopted the rules.



<b>Table 2.1 – Number of Mine Permits and Permitted Affected, Total Affected, and Surface Mine Disturbed Acreage</b>				
	<b>All Small Scale Permits</b>	<b>All Non-Gold Large Scale Permits</b>	<b>Large Scale Gold Permits<sup>1</sup></b>	<b>All Mine Permits</b>
Number of Permits	17	19	11	47
Permitted Affected Acres	719	2,992	2,801	6,512
Total Affected Acres	54	1,670	2,107	3,831
Surface Mining Disturbed Lands Acres	40	1,368	1,728	3,136

<sup>1</sup> The acreage figures for large scale gold mines are separated for clarification purposes. The large scale gold mine statistics are not included in the figures for all non-gold large scale permits.

**Definitions:**

**Small Scale Mining Permit** - Permit for operations that extract less than 25,000 tons of ore or overburden per calendar year and disturb less than 10 acres of land.

**Large Scale Mining Permit** - Permit for operations that extract more than 25,000 tons of ore or overburden per calendar year and disturb more than 10 acres.

**Permitted Affected Acres** - Pursuant to SDCL 45-6B-3(1), this involves all lands permitted to be disturbed by a mining operation, including land from which overburden is to be or has been removed, and land upon which overburden, waste rock, mine spoil, or mill tailings is to be or has been deposited; land which is disturbed by the building of access roads, railroad loops, warehouses, storage areas, or other support facilities for the purpose of mining; and land affected by surface subsidence, unstable slopes, and other surface effects caused by underground mine workings.

**Total Affected Acres** - This includes all the land currently affected by the mining operations under permit. The total affected acres statistics are included in the figures for permitted affected acres.

**Surface Mining Disturbed Lands Acres** - Pursuant to SDCL 45-6B-3(15), this includes all the land from which overburden has been removed, land upon which overburden, waste rock, mine spoil, or mill tailings have been deposited, land mined which has no overburden, heap leach pads, and process ponds. The surface mining disturbed lands statistics are included in the figures for total affected acres.

<b>Table 2.2 – Reclaimed and Released Reclaimed Acres</b>				
	<b>All Small Scale Permits</b>	<b>All Non-Gold Large Scale Permits</b>	<b>Large Scale Gold Permits<sup>1</sup></b>	<b>All Mine Permits</b>
Total Reclaimed Acres	24	1,003	1,321	2,348
Reclaimed Surface Mining Disturbed Acres	13	893	1,134	2,040
Releasable Reclaimed Acres	5	241	864	1,110
Released Reclaimed Acres in 2006	0	0	500	500

<sup>1</sup> The acreage figures for large scale gold mines are separated for clarification purposes. The large scale gold mine statistics are not included in the figures for all non-gold large scale permits.

**Definitions:**

**Total Reclaimed Acres** - This includes all the land for which the operator completes required grading, topsoil replacement, erosion and drainage control, and any required planting and seeding that the department finds has resulted or will later result in final reclamation. For large scale gold mines, these acres can be applied toward reclamation acreage credit as provided under SDCL 45-6B-97.

**Reclaimed Surface Mining Disturbed Acres** - Pursuant to SDCL 45-6B-86, this includes all surface mining disturbed lands for which the operator has completed required grading, topsoil replacement, erosion and drainage control, and any required planting and seeding that the department finds will later result in final reclamation.

**Releasable Reclaimed Acres** - This includes all the reclaimed land for which reclamation surety and liability can be released as determined by the department. Such land must meet the minimum reclamation standards pursuant to ARSD 74:29:07. These figures do not include any acreage for which release of surety or liability has been granted by the Board of Minerals and Environment. The releasable reclaimed acres statistics are included in the figures for total reclaimed acres.

**Released Reclaimed Acres** - This includes all the reclaimed land for which reclamation surety and liability has been released by the Board of Minerals and Environment in 2006. This land has met the minimum reclamation standards pursuant to ARSD 74:29:07. The released reclaimed acres statistics are included in the figures for total reclaimed acres.

# **APPENDIX 1**

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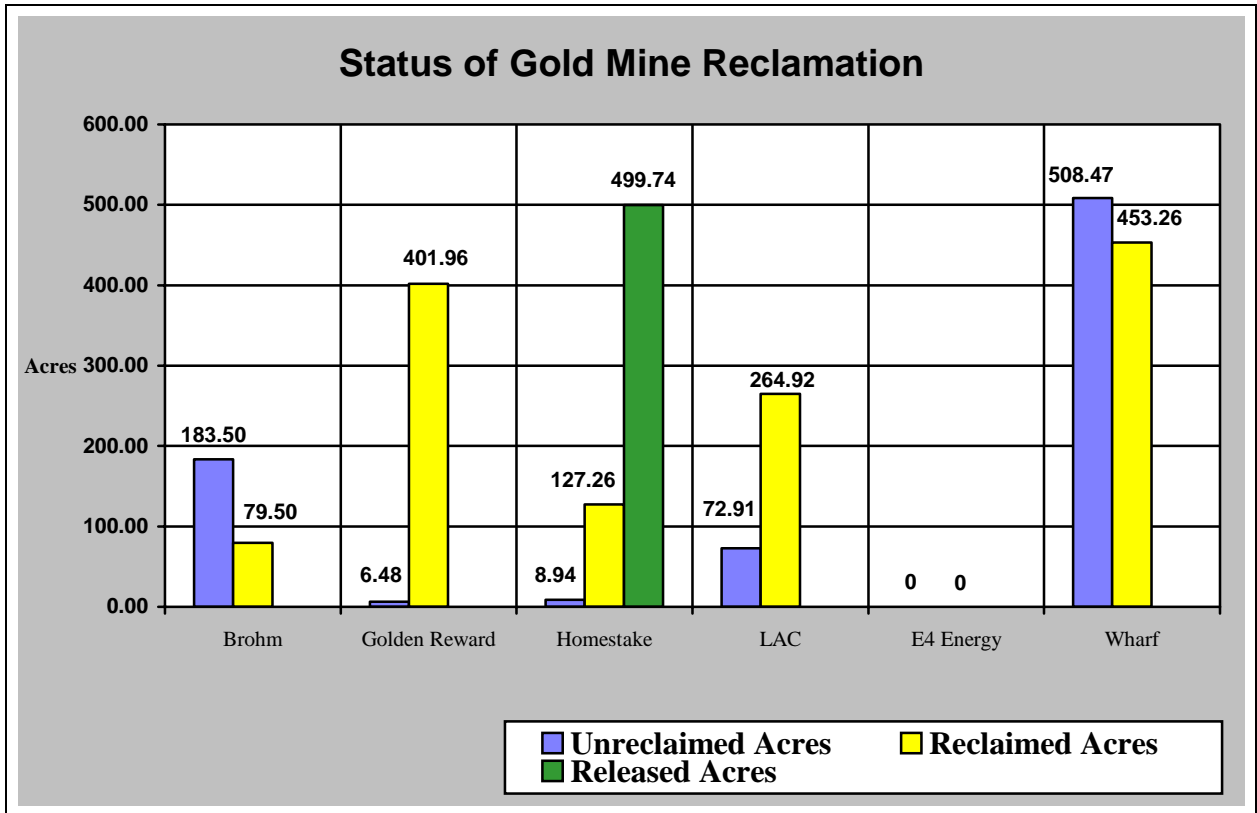


Figure 1A – Unreclaimed, Reclaimed, and Released Acres at Large Scale Surface Gold Mines as of December 31, 2006.

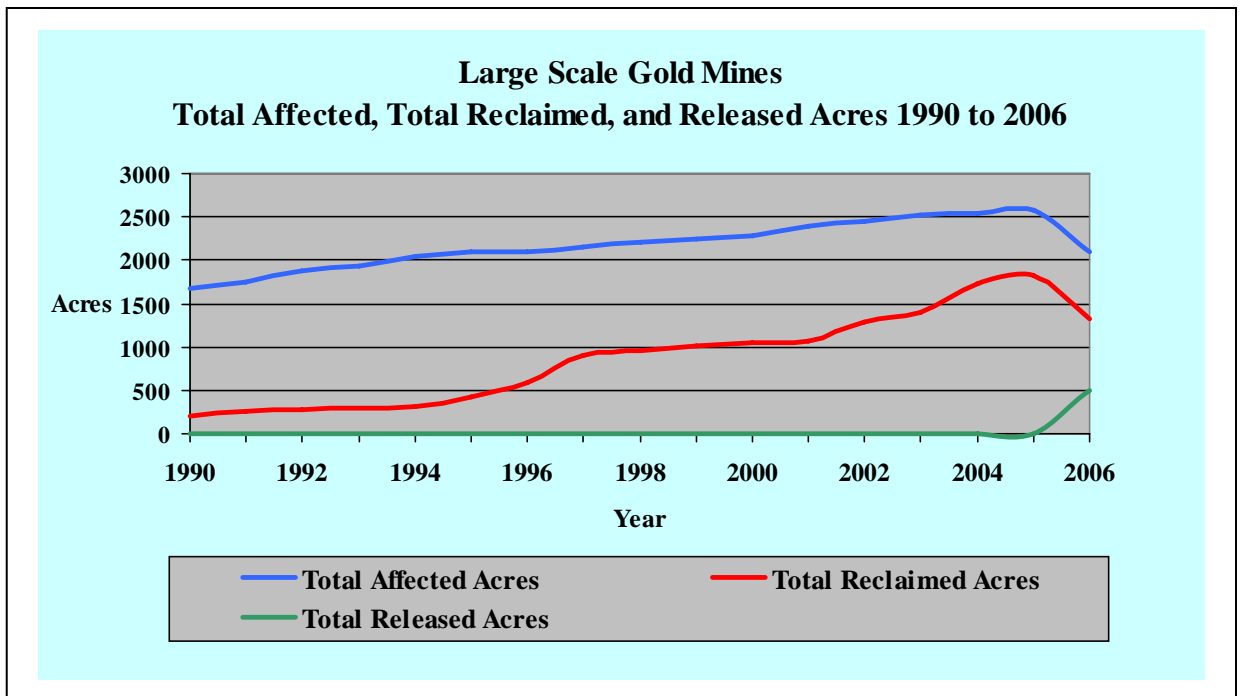


Figure 2A – Total Affected, Total Reclaimed, and Released Acreage at Large Scale Surface Gold Mines from 1990 to 2006.

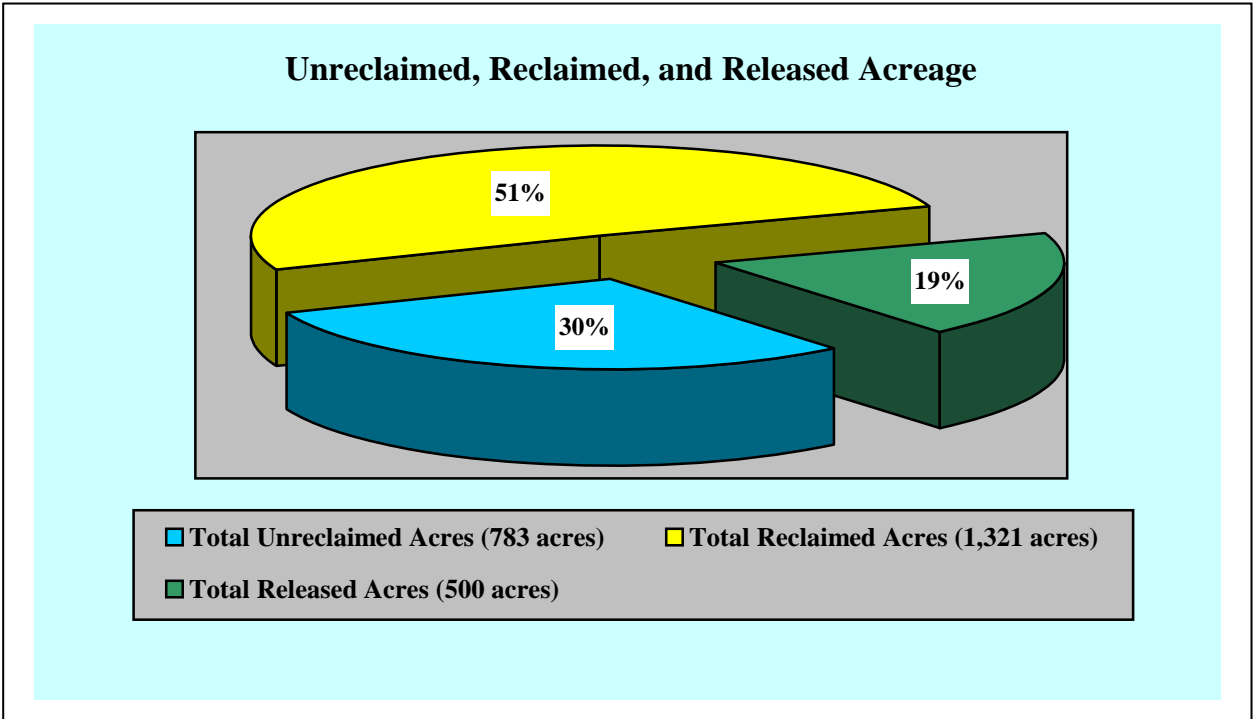


Figure 3A – Comparison of Unreclaimed, Reclaimed, and Released Acreage at Large Scale Surface Gold Mines in 2006.