SUMMARY OF
THE MINING INDUSTRY IN SOUTH DAKOTA

1995

Protecting South Dakota's Tomorrow… Today

PREPARED BY THE MINERALS AND MINING PROGRAM
S.D. DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
MARCH 1996

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INTRODUCTION

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 the "Publication of Surface Mined Disturbed Land and Reclamation Acreages under Chapter 45-6B." This year, the department is combining these two reports into a single report entitled "Status of the Mining Industry in South Dakota." This report covers mining activities from January 1 to December 31, 1995. The information in this report is based on mine operators' annual reports and other information submitted by permitted small and large scale mine operators.

1995 Summary

The large scale gold mines made significant progress in 1995 toward reclaiming 500 acres of surface mining disturbed land that must be completed by September 1, 1997. At years end, approximately 303 of the 1,618 acres of surface mine disturbed land have been reclaimed to date as defined in SDCL 45-6B-90. Also, about 316 of the 2,097 acres of affected land have been reclaimed and can be considered for reclamation credit as defined in SDCL 45-6B-97.

Although some previously reclaimed areas were redisturbed this year, there are several large reclamation projects started in 1994 and 1995 that will either be continued or completed in 1996. Homestake will complete the reclamation of the East Waste Rock Disposal Facility. Golden Reward will plant trees and complete reclamation of the backfilled Pet Hill Pit.

In 1995, LAC Minerals reached a milestone in their acid rock drainage mitigation plan. LAC Minerals completed the pit impoundment and completed reclamation of the former waste rock disposal area in Spruce Gulch. Acid-generating rock was placed in the impoundment and was capped with a low-permeability soil liner. LAC Minerals also plans to submit a mitigation and closure plan for the leach pad area in 1996.

Brohm Mining was issued a mine permit on January 26, 1996 to mine the Anchor Hill area just north of the present Gilt Edge Mine covered under Mine Permit No. 439. This project will provide non-acid rock for the acid rock drainage mitigation plan approved in March 1995. It will also give Brohm the money necessary to complete the various portions of the mitigation plan.

The Board of Minerals and Environment released American Colloid's liability on 162.5 acres of reclaimed land in 1995. This is the largest block of acreage released under a mine permit since mine permitting began in the early 1970's.

\S/

Nettie H. Myers
Secretary

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

1995

Photo 1.1 - Completed Richmond Hill Pit Impoundment (Photo courtesy of LAC Minerals)

MAJOR EVENTS IN 1995

Gold Mines Making Progress Toward 500 Reclamation Acres

The large scale gold mines are making progress toward reclaiming 500 acres of surface mined disturbed land. In accordance with SDCL 45-6B-90, if 500 acres of surface mining disturbed land attributed to large scale gold surface mining are not reclaimed by September 1, 1997, no new permits or amendments to existing permits for any large scale gold mining operation can be issued. As of December 31, 1995, about 303 acres of surface mined disturbed land have been reclaimed. This is an increase of about 60 acres over the 1994 total of 243 acres and leaves a total of 197 acres that need to be reclaimed by September 1, 1997. The department plans to work with the mines in documenting reclamation progress in the summer of 1996.

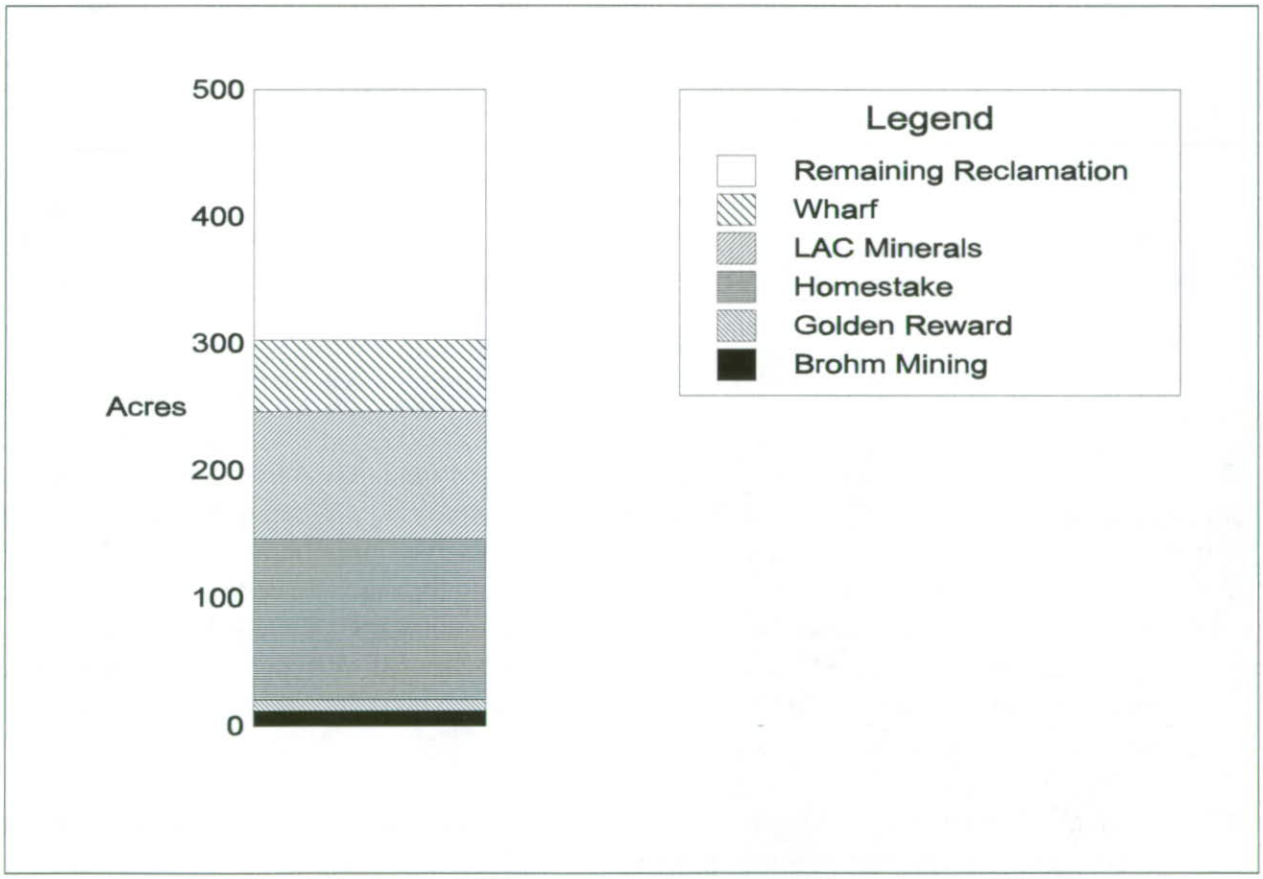

Figure 1.1 - Status of 500 acre reclamation goal as of December 31, 1995

Acid Mine Drainage Mitigation

LAC Minerals/Richmond Hill

LAC Minerals reached a milestone in 1995 by completing the Richmond Hill pit impoundment and reclamation of the former waste rock disposal facility in Spruce Gulch. This project is part of LAC Minerals' acid rock drainage mitigation plan approved by the Board of Minerals and

Photo 1.2 - Spruce Gulch Waste Dump as Waste Rock is Being Removed

Environment on February 16, 1994. The project was resumed in April 1995, after it was suspended during the winter in late 1994. All of the waste rock was removed from the waste depository and the cap on the pit impoundment was completed in late summer 1995. Monitoring devices to measure oxygen, carbon dioxide, temperature, and moisture concentrations were placed in the impoundment. In the former waste rock disposal area in Spruce Gulch, LAC returned the area to original contours, added limestone to the soils underneath the waste dump, and placed topsoil over the amended areas. In October, LAC planted about 10,700 trees in the Spruce Gulch area to complete reclamation activities for the year.

LAC Minerals is currently working on a final mitigation plan for the leach pad area. The plan will be submitted to the department sometime in 1996. In 1995, the company completed blending the spent ore on Pad 3 with limestone to neutralize any acid generated from reactive sulfides on the pad. Most of the more reactive sulfide spent ore was removed and placed in the pit impoundment before capping. Geochemical testing of the amended spent ore on Pad 3 and the spent ore on Pads 1 and 2 is ongoing.

Photo 1.3 - Spruce Gulch After Waste Rock Removed

Brohm Mining Company/Gilt Edge

On March 16, 1995, the Board of Minerals and Environment approved an acid rock drainage mitigation plan for Brohm. As part of the plan, Brohm was required to construct a wastewater treatment plant to treat acid drainage from the site. Brohm completed construction of the treatment plant in August 1995. They are presently treating acid water and discharging treated water that meets standards into Strawberry Creek. Brohm also upgraded its retention ponds and pump back capabilities in both Ruby Gulch and Strawberry Creek.

Water quality in Strawberry Creek improved in 1995 after Brohm removed relic tailings from Strawberry Creek in 1994. The stream met water quality standards for the first time in many years. The improved water quality resulted in the establishment of populations of periphyton (algae) and macroinvertebrates (insects) in the creek.

New Permits

Brohm Mining Corporation submitted a large scale permit application in May 1995 to mine gold from the Anchor Hill area just north of the present Gilt Edge Mine covered under Large Scale Mine Permit No. 439. The Board of Minerals and Environment unanimously approved the application for Mine Permit No. 462 on January 26, 1996. Brohm will disturb about 145 acres during the life of the project and will conduct the project in two phases. Phase I will be on private lands and Phase II includes US Forest Service lands. Brohm is currently permitted to conduct

only Phase I activities. Brohm cannot begin Phase II until it receives US Forest Service approval and conducts additional acid rock drainage testing in the Phase II pit area. The permit can be reopened after testing is completed, and conditions can be added to the permit to address any identified problems that may result from potentially acid generating material from the Phase II Pit.

The Anchor Hill Project will allow Brohm to enhance the acid rock drainage mitigation plan approved in March 1995. Non-acidic waste rock and spent ore from the Phase I and II Pits will be used as backfill and cap material on the Ruby waste rock depository. The permit will also provide Brohm with the cash flow necessary to complete the acid rock drainage mitigation plan.

Wharf Resources originally planned to submit a permit application for its proposed Clinton Project north and east of the present Annie Creek mine in 1993. However, submission of the application has been delayed until sometime in 1996.

Permit Amendments

The Board of Minerals and Environment approved Brohm Mining Corporation's acid rock drainage permit amendment in March 1995. The amendment application was originally submitted in June 1993, and outlined a long-term acid mine drainage mitigation plan.

Brohm plans to regrade and cap about twelve million tons of waste rock and spent ore in its "valley fill" waste rock dump located in the headwaters of Ruby Gulch, an intermittent tributary to Bear Butte Creek. The Dakota Maid and Sunday pits will be partially backfilled, and caps will be installed over the backfilled pits. The leach pad will be regraded and capped. The caps are being constructed to reduce the infiltration of water and air into the reactive sulfide rocks to minimize sulfide oxidation and acid generation. A water treatment plant will ensure that any acid drainage is brought up to water quality standards before it is discharged. Brohm will be required to operate the treatment plant as long as contaminated water flowing from the reclaimed facility requires treatment.

The Anchor Hill Permit (see New Permits above) modifies portions of the acid rock drainage mitigation plan. The Anchor Hill Mine will provide more non-acid generating material for backfill and cap construction during acid rock drainage mitigation activities. It also reduces the need to regrade or move waste rock in the current waste rock depository.

On December 30, 1994, Wharf Resources submitted a permit amendment application that would allow them to stockpile and process ore and waste rock generated from the Terry Peak Road (State Highway 473) Improvement Project near the Wharf Mine. Early in 1995, a landowner next to the project intervened and requested a contested case hearing in the amendment process. This hearing was continued through 1995 as Wharf and the landowner negotiated a settlement. The two parties reached a settlement agreement in early 1996, and the department plans to issue the

permit amendment in the spring of 1996. Wharf plans to start construction on the road project during the summer of 1996 after the amendment is approved by the department.

May Flood Event

Unusually heavy rains soaked the northern Black Hills from May 7 to May 9, resulting in the second 100-year storm event to hit the area in less than a year. The first event occurred in October 1994. The heavy rains caused various problems at each of the large scale gold mining operations. The problems that occurred in May were worse than those that resulted from the October storm due to spring runoff from heavy snowfall that occurred in the area.

LAC Minerals

A retention pond at the base of the waste rock dump in Spruce Gulch at the Richmond Hill Mine overflowed during this event. After the October 1994 storm, LAC Minerals installed a pump back system, enlarged the retention and sludge ponds, and created a new sedimentation pond. This new system was designed to hold a 100-year, 24-hour storm event (five inches of rain in 24 hours). However, over eight inches of rain and six inches of wet snow fell from May 7 through May 9 that greatly exceeded the 100-year storm event. This precipitation overwhelmed the system, and runoff from the retention pond flowed into Spruce Gulch, a tributary of Squaw Creek. During the storm event, LAC treated runoff with caustic to neutralize acid in the storm waters.

Brohm Mining

A retention pond at the Gilt Edge Mine overflowed and acid drainage entered Ruby Gulch and Bear Butte Creek. The overflow was caused by the failure of a pump at the pond. At the time of the storm, Brohm was enlarging the retention pond in Ruby Gulch. The retention pond, along with the pump back system, was designed to handle a 100-year 24-hour storm event. During the storm, Brohm's main electric pump failed, and the pond started overflowing. Brohm replaced the electric pump with a backup diesel powered pump, and after pumping resumed, the pond stopped overflowing.

After the storm, Brohm installed additional backup pumps and backup generators and increased the capacity of the pumpback system. The company also enlarged the retention pond to provide additional water storage during storm events. These actions will help prevent water from overflowing the pond during future storm events.

Wharf Resources

The May storm event caused water balance problems at Wharf Resources. The process ponds were almost full from the October storm and runoff from the heavy winter snowfall. After the May storm, water from the overflow pond entered the unlined contingency pond. During the summer, cyanide was detected in a well downgradient from the pond. Also, during the treatment of storm water in August, cyanide and ammonia was discharged into Annie Creek (see Notices

of Violation). To prevent future discharges of cyanide and ammonia into surface and ground water, Wharf installed a high density polyethylene (HDPE) liner in the contingency pond and implemented improved monitoring and analytical procedures.

During the storm event, the Ross Valley sediment containment pond also overflowed. After water levels receded, Wharf added to an existing HDPE liner in this pond that increased the lined capacity of the pond. The storm and a thunderstorm in June caused major erosion along reclaimed areas of the Ross Valley spent ore disposal facility. Wharf plans to repair the eroded areas and redesign the drainage along this facility to prevent future erosion problems during heavy precipitation events.

Homestake Mining Company

The heavy May rains caused localized erosion at Homestake's east waste rock disposal facility. Overapplication of topsoil on the steep 1.5:1 (H:V) slopes resulted in slippage of the upper layers of soil and grass, affecting about 60 acres. Sufficient soil was retained on the slope to facilitate reseeding, and those areas reseeded in late spring exhibited excellent regrowth by mid summer. Homestake plans to modify the design of the east waste rock disposal facility to provide for 2.5:1 (H:V) slope angles on the upper benches to facilitate revegetation. The seed mix has also been modified to enhance revegetation.

Golden Reward

Heavy rains during May and June caused sedimentation problems and minor water balance problems at Golden Reward. As with all the gold mines, sediment control structures needed to be cleaned out and repaired where necessary.

Dakota Placers

Flood waters from the May storm exceeded the capacity of the channel that diverted Whitewood Creek through the Red Placer Claim. This resulted in the rerouting of the creek back into the natural channel area of the floodplain.

Notices of Violation

The department issued two Notices of Violation to Wharf Resources in 1995 for discharging cyanide and ammonia into Annie Creek from August 21 through August 28, 1995. This discharge caused a fish kill in Annie Creek.

Heavy rains in May 1995 filled the process ponds at Wharf to capacity. Wharf obtained a reverse osmosis unit to treat the water in the ponds to reduce the volume of water in the ponds. In late August, Wharf placed draindown solution from one leach pad into the neutralization pond since the other ponds were full. This solution was treated by the reverse osmosis unit and discharged into Ross Valley, a tributary of Annie Creek.

Due to inadequate treatment of the solution, cyanide and ammonia levels increased in Annie Creek from August 21 to August 28, 1995. On August 28, 1995, Wharf personnel reported a fish kill in Annie Creek to the department. They immediately stopped the discharge from the reverse osmosis unit. During an inspection on August 29, 1995, staff from the department and the Department of Game, Fish, and Parks found 295 mountain suckers and four brown trout dead in Annie Creek. Spearfish Creek was apparently not affected by this discharge.

On September 28, 1995, the department issued two notices of violation to Wharf Resources for the discharge of cyanide and ammonia into Annie Creek and the subsequent fish kill. On October 12, 1995, a settlement agreement was reached between Wharf and the department. Wharf was required to pay a fine of $150,000 and comply with the following conditions:

- Wharf must operate in compliance with all permits;
- Wharf must line the contingency and Ross Valley sediment ponds;
- Wharf must submit a standard operating procedure for its water treatment system;
- Until further notice, Wharf must also obtain permission from the department to discharge treated wastewater to ensure that water quality laws are being met;
- Wharf must update its Spill Contingency Plan to show how Wharf will respond to spills or releases of toxic substances; and
- Wharf must meet additional monitoring and sampling requirements for its waste water discharge to ensure no adverse impacts are occurring from the discharge.

Major Technical Revisions Conditionally Approved by The Department

January 12	Wharf Resources - Establish a current baseline map and recalculate the reclamation surety.
February 2	Brohm Mining - Upgrade Pond E and build a pump station on the Strawberry Creek Drainage.
February 14	Golden Reward - Use spent ore as a road bed material within 100 feet of streams.
March 29	Wharf Resources - Construct a haul road to the low grade stockpile and remove low grade stockpile and replace with topsoil pile.
April 26	Golden Reward - Use a 1.5:1 (h:v) slope for final reclamation of the east Liberty highwall by the northwest corner of the cemetery.

June 22	Golden Reward - Add an additional 7.2 acres of contiguous affected land to the permitted Hannibal Pit.
June 22	Brohm - Use liquid sodium cyanide as a leaching agent.
August 11	Golden Reward - Change permitted nurse, general, and final reclamation seed mixes.
August 11	Homestake Mining - Construct a dust control holding pond along the Sawpit Haul Road.
August 28	LAC Minerals - Construct a sludge pond in limestone quarry at the Richmond Hill Mine.
September 5	LAC Minerals - Locate about 40,000 cubic yards of potentially acid generating material from the Spruce Gulch area onto Pad No. 3.
October 11	LAC Minerals - Change the permanent reclamation grass seed mix for Permit Numbers 445 and 460.
November 29	Homestake Mining - Improve the seed mix used on upland waste rock disposal areas covered under Permit Numbers 332 and 456.

Special, Exceptional, Critical, or Unique Land Determinations

The department received one Request for Determination of Special, Exceptional, Critical, or Unique Lands for potential large scale gold mines in 1995. On April 10, 1995 the department determined that the Brohm Mining Corporation's proposed Anchor Hill Project was not eligible for inclusion on the preliminary list of special, exceptional, critical, or unique lands.

Homestake Hits 38 Million Ounce Milestone

On November 23, 1995, the Homestake Mine in Lead reached a milestone by pouring a gold bar containing its 38 millionth ounce of gold. It took over 120 years to reach this milestone, dating back to the discovery of the Homestake Lode by Moses and Fred Manual on April 9, 1876. Homestake Mining Company was incorporated in California on November 5, 1877, twelve years to the day before South Dakota was admitted as a state. At a gold price of $400 per ounce, the 38 million ounces represents over $15 billion in gold.

ACREAGE AND PRODUCTION TABLES

The following tables were developed by compiling information from annual reports and supplemental information submitted to the Department by the large scale gold mines. The Department also used inspection reports and other records in completing these tables.

Since the annual reports for these operations were required to be submitted by January 1, 1996, some production information in those reports was estimated for the month of December. This information has since been updated, and this updated information is included in these tables.

The graph in Appendix 1 shows a comparison of reclaimed versus affected acreage for each large scale gold mine company.

TABLE 1.1 - AFFECTED MINED LAND ACREAGE				
Permit Number	**Operator**	**Permitted Affected Acres**	**Additional Acres Affected Past Year**	**Total Acres Affected as of Dec. 31, 1995**
439	Brohm Mining Corp.	406.00	0.00	184.90
208	Dakota Placers, Inc.	81.00	0.00	16.10
450	Golden Reward Mining Co., L.P.	493.62	29.24	438.42
332 & 456	Homestake Mining Company	665.40	5.90	532.80
445	LAC Minerals (USA), Inc.	431.80	2.30	311.60
416	Naneco Minerals, Inc. (formerly Minerva Explorations)	122.00	0.00	0.00
356, 434, & 435	Wharf Resources	685.62	5.59	613.29
TOTALS		2,885.44	43.03	2,097.11

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.

Additional Acres Affected Past Year - Previously unaffected acres disturbed from January 1 to December 31, 1995. This acreage is also included in "Total Acres Affected as of Dec. 31, 1995."

Total Acres Affected as of Dec. 31, 1995 - All land currently affected by the large scale gold and silver operations under permit as of December 31, 1995. This includes all lands described above in "Permitted Affected Acres."

TABLE 1.2 - SURFACE MINING DISTURBED LAND ACREAGE			
Permit Number	**Operator**	**Additional Surface Mining Acres Disturbed Past Year**	**Total Surface Mining Disturbed Acres as of Dec. 31, 1995**
439	Brohm Mining Corp.	0.00	161.80
208	Dakota Placers, Inc.	0.00	15.90
450	Golden Reward Mining Co., L.P.	28.76	255.61
332 & 456	Homestake Mining Company	0.00	503.70
445	LAC Minerals (USA), Inc.	2.30	192.90
416	Naneco Minerals, Inc. (formerly Minerva Explorations)	0.00	0.00
356, 434, & 435	Wharf Resources	4.14	487.87
TOTALS		35.20	1,617.78

Definitions:

Additional Surface Mining Acres Disturbed Past Year - Previously unaffected surface mining land disturbed from January 1 to December 31, 1995. This acreage is also included in "Total Surface Mining Disturbed Acres as of Dec. 31, 1995."

Total Surface Mining Disturbed Acres as of Dec. 31, 1995 - 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, and haul roads in pit areas or 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.

TABLE 1.3 - INTERIM RECLAIMED ACREAGE			
Permit Number	**Operator**	**Additional Interim Reclaimed Acres Past Year**	**Total Interim Reclaimed Acres as of Dec. 31, 1995**
439	Brohm Mining Corp.	0.00	0.55
208	Dakota Placers, Inc.	0.00	0.00
450	Golden Reward Mining Co., L.P.	0.81	20.98
332 & 456	Homestake Mining Company	0.00	67.60
445	LAC Minerals (USA), Inc.	1.50	32.30
416	Naneco Minerals, Inc. (formerly Minerva Explorations)	0.00	0.00
356, 434, & 435	Wharf Resources	0.00	23.22
TOTALS		2.31	144.65

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.

Additional Interim Reclaimed Acres Past Year - Acres under interim reclamation from January 1 to December 31, 1995. These acres are also included in "Total Interim Reclaimed Acres."

Total Interim Reclaimed Acres as of Dec. 31, 1995 - The total number of acres under interim reclamation as of December 31, 1995. This is only a cumulative total of interim reclaimed acres since the permits were issued. Some of these acres have already been redisturbed or have been counted as final reclamation.

TABLE 1.4 - FINAL RECLAIMED ACREAGE FOR PAST YEAR			
Permit Number	**Operator**	**Final Reclaimed Acres Past Year that Meet Post-Mine Land Use**	**Final Reclaimed Acres Past Year that Do Not Meet Post-Mine Land Use**
439	Brohm Mining Corp.	0.00	6.70
208	Dakota Placers, Inc.	0.00	0.00
450	Golden Reward Mining Co., L.P.	2.09	25.96
332 & 456	Homestake Mining Company	5.60	21.14
445	LAC Minerals (USA), Inc.	13.10	84.00
416	Naneco Minerals, Inc. (formerly Minerva Explorations)	0.00	0.00
356, 434, & 435	Wharf Resources	0.00	2.49
	TOTALS	20.79	140.29

Definitions:

Final Reclaimed Acres Past Year That Meet Post-Mine Land Use - Affected land under final reclamation from January 1 to December 31, 1995, 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.

Final Reclaimed Acres Past Year That Do Not Meet Post-Mine Land Use - Affected land under final reclamation from January 1 to December 31, 1995, that may have a permanent, self-sustaining vegetative cover which does not meet the requirements of the approved reclamation plan and does not meet the reclamation requirements of SDCL 45-6B and ARSD 74:29.

TABLE 1.5 - TOTAL FINAL RECLAIMED ACREAGE As of December 31, 1995			
Permit Number	**Operator**	**Final Reclaimed Acres that Meet Post-Mine Land Use**	**Final Reclaimed Acres that Do Not Meet Post-Mine Land Use**
439	Brohm Mining Corp.	0.00	12.00
208	Dakota Placers, Inc.	0.00	0.00
450	Golden Reward Mining Co., L.P.	8.83	66.64
332 & 456	Homestake Mining Company	38.30	131.01
445	LAC Minerals (USA), Inc.	17.70	85.50
416	Naneco Minerals, Inc. (formerly Minerva Explorations)	0.00	0.00
356, 434, & 435	Wharf Resources	44.30	25.38
TOTALS		109.13	320.53

Definitions:

Final Reclaimed Acres That Meet Post-Mine Land Use - Affected land under final reclamation as of December 31, 1995, 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.

Final Reclaimed Acres That Do Not Meet Post-Mine Land Use - Affected land under final reclamation as of December 31, 1995, that does not meet the requirements of the approved reclamation plan and the reclamation requirements of SDCL 45-6B and ARSD 74:29. These acres also include areas graded and seeded that may or may not have a vegetative cover.

TABLE 1.6 - RECLAMATION ACREAGE GOAL AND CREDITS As of December 31, 1995			
Permit Number	**Operator**	**Surface Mined Acres Reclaimed that Apply Toward Sept. 1, 1997, 500-Acre Reclamation Goal (SDCL 45-6B-90)**	**Total Affected Acres Reclaimed that Apply as Reclamation Credit in 1992 Mining Initiative (SDCL 45-6B-97)**
439	Brohm Mining Corp.	12.00	12.00
208	Dakota Placers, Inc.	0.00	0.00
450	Golden Reward Mining Co., L.P.	8.60	8.80
332 & 456	Homestake Mining Company	125.46	125.46
445	LAC Minerals (USA), Inc.	100.40	100.40
416	Naneco Minerals, Inc. (formerly Minerva Explorations)	0.00	0.00
356, 434, & 435	Wharf Resources	56.15	69.61
TOTALS		302.61	316.27

Definitions:

Surface Mined Acres Reclaimed That Apply Toward Sept. 1, 1997, 500 Acre Reclamation Goal - Total amount of surface mining disturbed acres under final reclamation as of December 31, 1995. These acres can be counted toward the 500 acres required under SDCL 45-6B-90 to be reclaimed by September 1, 1997. Final grading, topsoil replacement, erosion and drainage control, and seeding and planting have been conducted on these acres.

Total Affected Acres Reclaimed That Apply as Reclamation Credit in 1992 Mining Initiative - Affected land under final reclamation as of December 31, 1995, that does and does not meet the requirements of the approved reclamation plan and the reclamation requirements of SDCL 45-6B and ARSD 74:29. These acres can be considered for reclaimed acreage credit as provided under SDCL 45-6B-97. Final grading, topsoil placement, erosion and drainage control, and seeding and planting have been conducted on these acres.

TABLE 1.7 - ORE AND WASTE ROCK PRODUCTION FIGURES January 1 to December 31, 1995				
Permit Number	**Operator**	**Tons of Ore Mined Past Year**	**Tons of Ore Processed Past Year**	**Tons of Waste Rock and Overburden Mined Past Year**
439	Brohm Mining Corp.	0.00	572,490.00	0.00
208	Dakota Placers, Inc.	0.00	0.00	0.00
450	Golden Reward Mining Co., L.P.	1,636,606.00	1,681,584.00	4,925,728.00
332 & 456	Homestake Mining Company	1,217,189.00	1,008,764.00	8,931,497.00
445	LAC Minerals (USA), Inc.[1]	58,496.00	0.00	0.00
416	Naneco Minerals, Inc. (formerly Minerva Explorations)	0.00	0.00	0.00
356, 434, & 435	Wharf Resources	4,648,010.00	4,497,890.00	8,722,752.00
TOTALS		7,560,301.00	7,760,728.00	22,579,977.00

[1] 58,496 tons of ore mined was limestone used for acid rock drainage mitigation work

Definitions:

Tons of Ore Mined Past Year - Tons of ore mined at each operation from January 1 to December 31, 1995.

Tons of Ore Processed Past Year - Tons of ore processed at each operation from January 1 to December 31, 1995.

Tons of Waste Rock and Overburden Mined Past Year - Tons of waste rock and overburden mined at each operation from January 1 to December 31, 1995.

TABLE 1.8 - GOLD AND SILVER PRODUCTION January 1 to December 31, 1995			
Permit Number	**Operator**	**Ounces of Gold Produced Past Year**	**Ounces of Silver Produced Past Year**
439	Brohm Mining Corp.	10,011.00	17,647.00
208	Dakota Placers, Inc.	0.00	0.00
450	Golden Reward Mining Co., L.P.	49,569.00	15,638.00
332 & 456	Homestake Mining Company	91,845.00	19,498.00
445	LAC Minerals (USA), Inc.	0.00	0.00
416	Naneco Minerals, Inc. (formerly Minerva Explorations)	0.00	0.00
356, 434, & 435	Wharf Resources	96,608.00	23,728.00
SUBTOTAL		248,033.00	76,511.00
N.A.	Homestake Underground	311,022.00	65,276.00
TOTALS		559,055.00	141,787.00

Definitions:

Ounces of Gold Produced - Ounces of gold produced at each operation from January 1 to December 31, 1995.

Ounces of Silver Produced - Ounces of silver produced at each operation from January 1 to December 31, 1995.

TABLE 1.9 - WATER AND CYANIDE USE[1] January 1 to December 31, 1995				
Permit Number	**Operator**	**Gallons Ground Water Withdrawn Past Year**	**Gallons Surface Water Withdrawn Past Year**	**Pounds of Cyanide Used Past Year**
439	Brohm Mining Corp.	1,200,000.00	0.00	371,300.00
208	Dakota Placers, Inc.	0.00	0.00	0.00
450	Golden Reward Mining Co., L.P.	10,721,900.00	0.00	372,002.00
332 & 456	Homestake Mining Company	0.00	37,902,000.00[2]	1,291,954.00
445	LAC Minerals (USA), Inc.	4,976,213.00	46,805,026.00	0.00
416	Naneco Minerals, Inc. (formerly Minerva Explorations)	0.00	0.00	0.00
356, 434, & 435	Wharf Resources	20,248,557.00	0.00	601,160.00
TOTALS		37,146,670.00	84,707,026.00	2,636,416.00

1 Water and cyanide use by Homestake's underground mine is not included in this table.

2 Homestake used 5,664,000 gallons of fresh water and 32,238,000 gallons of recycled treated water from its waste water treatment plant for its Open Cut operations in 1995.

Definitions:

Gallons Ground Water Withdrawn - The amount of ground water withdrawn by each operation from January 1 to December 31, 1995.

Gallons Surface Water Withdrawn - The amount of surface water withdrawn by each operation from January 1 to December 31, 1995.

Pounds of Cyanide Used - The amount of cyanide used at each operation from January 1 to December 31, 1995.

TABLE 1.10 - RECLAMATION BOND AMOUNTS FOR LARGE SCALE GOLD MINES				
Permit Number	**Operator**	**Original Bond Amount**	**Current Bond Amount**	**Type of Bond**
439	Brohm Mining Corp.	$672,376	$8,517,000[1]	See Note 1
208	Dakota Placers, Inc.	$32,715	$27,000	Certificate of Deposit
450	Golden Reward Mining Co., L.P.	$954,384	$1,149,009	Certificates of Deposit
332 & 456	Homestake Mining Company	$928,790	$1,737,000	Surety Bond
445	LAC Minerals (USA), Inc.	$656,000	$10,700,000	Irrevocable Letter of Credit
416	Naneco Minerals, Inc. (formerly Minerva Explorations)	$661,800	$0[2]	See Note 2
356, 434, & 435	Wharf Resources	$732,800	$1,686,000	Certificate of Deposit

[1] The $8,517,000 bond for Mine Permit No. 439 consists of the following:

Reclamation Surety:	$1,230,876 certificate of deposit
Environmental Surety:	$1,000,000 certificate of deposit
	$6,286,124 demand note based on net worth

The reclamation surety covers basic site reclamation costs. The environmental surety covers costs of the acid rock drainage mitigation plan. Interest from the two certificates of deposit is applied toward the cash portion of the environmental bond. The demand note amount will decrease over time as the cash portion of the environmental bond increases.

[2] Naneco Minerals is required to submit a reclamation bond in the amount of $661,800 before the commencement of mining

OPERATIONAL PLANS FOR 1996

Brohm Mining Corporation/Gilt Edge Mine

The Anchor Hill permit application was approved by the Board of Minerals and Environment on January 26, 1996, and Brohm Mining plans to start mining Phase I of the Anchor Hill pit this year. Static and kinetic testing of both Phase I and Phase II material will continue throughout the year. Plans are to disturb 94 acres in this area in 1996.

Brohm will also continue working on the acid rock drainage mitigation plan. Water will continue to be treated and some capping may begin on the lower Ruby waste rock disposal facility. Brohm plans to use non-acidic waste rock and spent ore for the Anchor Hill pit for reducing the slope of the waste dump and for capping materials. Plans are to reclaim 78 new acres in 1996.

Dakota Placers, Inc.

Brightwater Inc., an affiliate of the Dunbar Resort, purchased the Red Placer and Excelsior Claims permitted under Dakota Placers Mine Permit No. 208 in 1995. Dakota Placers and Brightwater Inc. are currently in litigation over the ownership of the Excelsior Claim and are awaiting a court decision regarding the ownership of this claim. Meanwhile, Dakota Placers has submitted a Notice of Temporary Cessation for Permit No. 208. If the court determines that Dakota Placers owns the Excelsior Claim, they plan to continue operations on that claim. Brightwater, with Homestake Mining, is planning to reclaim the Red Placer Claim. Neither Brightwater nor Homestake have any plans to mine this area.

Golden Reward Mining Company, L.P.

Golden Reward will mine three pit areas within its permit boundary in 1996. These include the South and West Liberty, and the Hannibal pits. About 1.3 million tons of ore and 4.4 million tons of waste rock will be removed this year. About 1.2 million tons of ore will be crushed, processed, and off-loaded.

Golden Reward will backfill the Bonanza pit and partially backfill the Liberty, Harmony, and Hannibal Pits in 1996. Golden Reward also plans on planting about 8,000 trees and shrubs on the previously backfilled Pet Hill pit and the East Stewart waste rock disposal area.

Golden Reward has announced that they are going to mine on a care and maintenance basis when mining of permitted reserves is completed. This may happen in the fall of 1996. The company is continuing efforts to find and permit additional ore reserves. Wharf Resources, the managing partner of Golden Reward, announced in December 1995, that it is taking a $9 million after tax writedown on its investment in Golden Reward. This is due to uncertainty over ore reserves near the Terry Cemetery and near the Terry Peak ski area. These reserves contain about 314,000 ounces of gold.

Homestake Mining Company

Homestake Mining plans to continue mining the west and south sides of the Open Cut in 1996. Waste rock disposal will continue in the Sawpit waste rock disposal facility. Homestake plans to submit a technical revision to reduce the bench heights from 80 feet to 40 feet and to reduce bench face slopes from angle of repose to 2.5:1 (h:v) to enhance reclamation of the facility. The waste rock area will continue to be reclaimed concurrently with operations as benches are completed.

The east waste rock disposal facility was completed in 1995. Final grading and topsoil application were largely complete at the end of 1995 with final reclamation planned for 1996. About 15,000 trees will be planted in the spring of 1996.

LAC Minerals (USA), Inc./Richmond Hill Mine

Because mining and ore processing have ceased, LAC Minerals has applied to place the mine site under temporary cessation in 1996. Plans are to review the mineable reserves within the current property and to make a decision concerning future mining on the property later in 1996. A closure plan for the leach pads and process area will be submitted to the department in 1996. If additional mineable reserves do not exist, LAC Minerals may begin reclamation of the leach pads in 1996.

LAC Minerals also plans to continue water treatment at the mine and conduct general site reclamation. LAC will also begin monitoring waste rock backfilled and capped in the pit impoundment for oxygen and moisture content.

Naneco Minerals, Inc.

Naneco Minerals LTD. changed the name of its subsidiary, Minerva Explorations, Inc. to Naneco Minerals, Inc. in late 1995. Naneco Minerals' operation is covered under Mine Permit No. 416 and is located in the Ragged Top area along the rim of Spearfish Canyon. There has been no

mining activity under this permit since it was originally granted to Homestake in 1984. The permit was transferred from Homestake to Minerva Explorations in 1991.

After the mine permit was transferred to Minerva Explorations, the Lawrence County Commission denied a transfer of the county conditional use permit to Minerva. Minerva applied for a new county conditional use permit, and on January 4, 1994, the Lawrence County Commission voted 3-2 to deny the new application. Naneco Minerals presently has no mining plans until a conditional use permit is granted by Lawrence County.

Wharf Resources

Wharf Resources plans to mine the North Foley, 33 Vertical, Vulcan, and 4A pits and develop the Maria pit in 1996. Plans are to remove about 3.8 million tons of ore and 6.6 million tons of waste rock in 1996. About 4.5 million tons of ore will be moved to the leach pad.

Photo 1.4 - Reclaimed buckwall on the Reliance Waste Rock Dump at Wharf

As mentioned earlier, Wharf will work with the South Dakota Department of Transportation on a project to eliminate safety hazards on Terry Peak Road. This project was scheduled to start in 1995, but is now scheduled to start in 1996. Wharf will conduct construction activities for the Department of Transportation from May through September. Rock from the construction project that contains gold ore will be transported to the Wharf Mine for processing. Underground mine

openings will be collapsed and the waste rock from the project will be used to bring the new road up to final grade.

Wharf plans to repair a previously reclaimed area at the Ross Valley waste rock depository in 1996. This area suffered major erosion damage during the two 100 year storm events in 1994 and 1995. Wharf also plans to conduct additional reclamation on the east side of the depository. The Whiteside pit and the Reliance buckwalls will be developed for reclamation in 1996. About 1,700 trees will be planted on the Ross Valley and Reliance waste rock depositories.

SUMMARY OF SURFACE MINE DISTURBED LAND AND RECLAMATION ACRES UNDER SDCL 45-6B-86

1995

Photo 2.1 - Granite quarry near Milbank, SD

SUMMARY OF ALL MINE PERMITS

In accordance with SDCL 45-6B-86, the Department of Environment and Natural Resources has compiled information regarding the number of acres of surface mining disturbed land and the amount of such land that has undergone reclamation as defined in Chapter 45-6B and in section 45-6B-83.1 for the period January 1 to December 31, 1995. This does not include acreages for mining operations regulated under SDCL Chapter 45-6 (373 active licensed mine operators, 1,414 active licensed sites), mineral exploration regulated under SDCL Chapter 45-6C (15 operators, 112 permits, excluding oil and gas), or uranium exploration regulated under SDCL Chapter 45-6D (no current operators or permits). Sources for these statistics are permit applications, operating and reclamation plans, annual reports, departmental inspections, and operator information.

The Board of Minerals and Environment released American Colloid's liability for 162.5 acres of reclaimed mined land in 1995. American Colloid mined these acres under Large Scale Permit No. 6. This is the largest block of reclaimed land released under a mine permit by the board since permitting began in the 1970's. The released area is about 9 miles northwest of Belle Fourche, South Dakota and is just north of Highway 212. The department commends American Colloid for the excellent reclamation done in the released area.

Photo 2.2 - Reclaimed American Colloid Mine Area

Table 2.1 - Number of Mine Permits and Permitted Affected, Affected, and Surface Mined Disturbed Acreage				
	All Small Scale Permits	All Large Scale Permits	Large Scale Gold Permits[1]	All Mine Permits
Number of Permits	24	28	10	52
Permitted Affected Acres	930	5,823	2,885	6,753
Total Affected Acres	71	3,737	2,097	3,808
Surface Mining Disturbed Land Acres	63	2,950	1,618	3,013

[1] The acreage figures for large scale gold mines are separated for clarification purposes. The large scale gold mine statistics are included in the figures for all 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 Land 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 land statistics are included in the figures for total affected acres.

Table 2.2 - Reclaimed and Released Reclaimed Acres				
	All Small Scale Permits	All Large Scale Permits	Large Scale Gold Permits[1]	All Mine Permits
Total Reclaimed Acres	40	1,361	316	1,401
Reclaimed Surface Mining Disturbed Acres	34	1,143	303	1,177
Releasable Reclaimed Acres	18	148	109	166
Released Reclaimed Acres	0	162.5	0	162.5

[1] The acreage figures for large scale gold mines are separated for clarification purposes. The large scale gold mine statistics are included in the figures for all 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 1994. 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

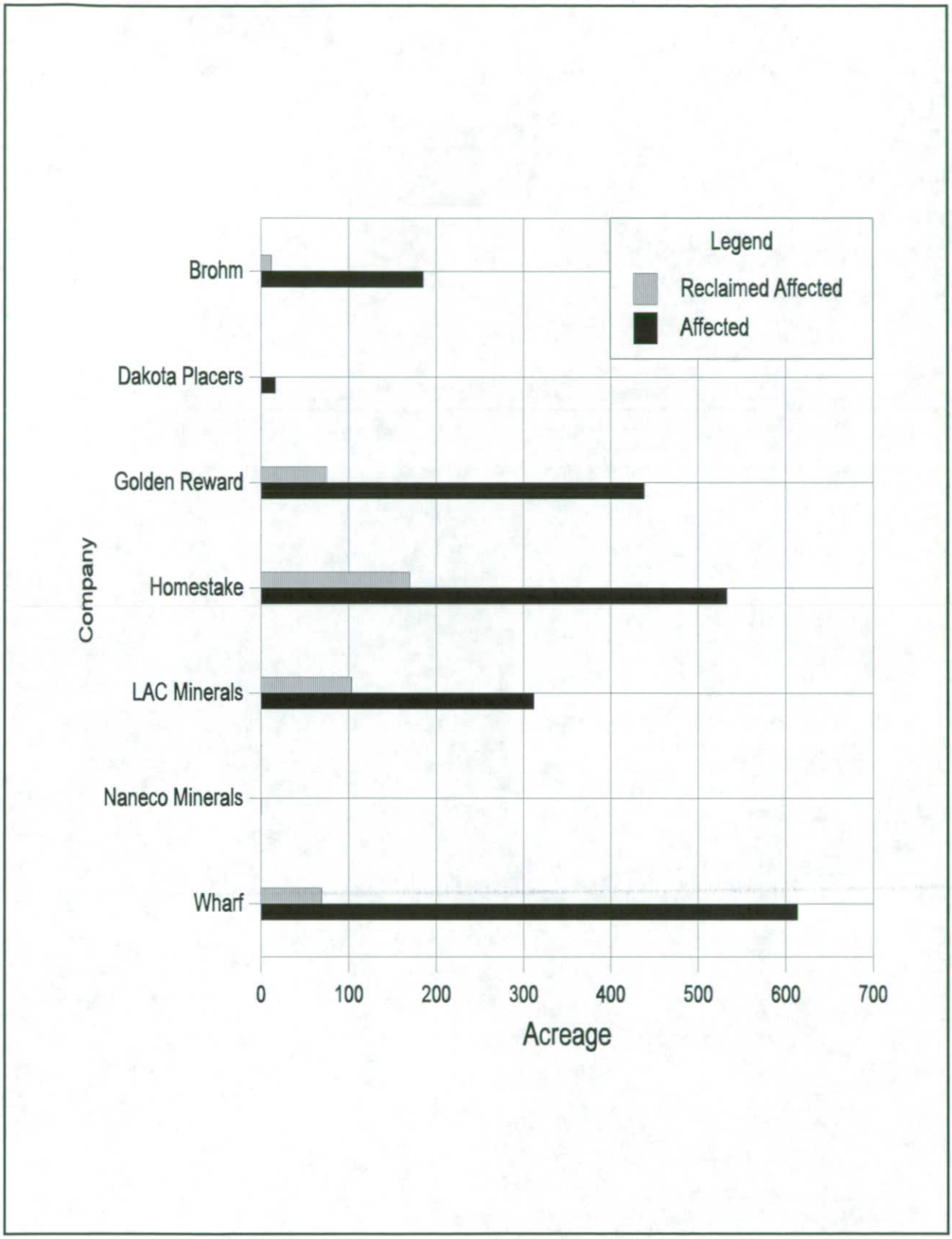

Figure 1A - Reclaimed vs. Affected Acreage at Large Scale Surface Gold Mines as of December 31, 1995