

REVIEW OF HARD ROCK MINING RECLAMATION BOND REQUIREMENTS

Legislative Request #98L-36
Legislative Audit Division
December 4, 1997

INTRODUCTION

The Legislative Audit Division (LAD) was asked to examine overall compliance of Department of Environmental Quality (DEQ) mine bonding procedures under current statutes and review methodology for determining hard rock mine performance bond amounts. To conduct this review, we obtained information from various sources including department records and staff, surety and insurance companies, other states' hard rock permitting agencies, legal documents, federal agency guidelines and various national publications. The following sections outline information and questions asked by legislators and the available data compiled in response to these questions.

WHAT IS A RECLAMATION BOND?

A reclamation bond is assurance by an independent third party that they will be responsible for insuring the mining company identified in the bond will meet certain performance requirements. The third party assures compliance with all requirements of the operating permit, reclamation plans, statutes, and rules. These performance bonds are payable to the state of Montana. According to current statute, a bond may not be less than the estimated cost to the state to ensure compliance and must be based upon reasonably foreseeable activities. The bonds are issued by surety companies authorized by the State Auditor to conduct business in the state of Montana.

When purchasing reclamation bonds from surety companies, mining firms must provide documentation of their financial strength, plans for financial continuity, and future bonding needs. Bond amounts are generally tied to the amount of disturbed land within the permitted area, and this amount can be adjusted as the disturbed acreage changes. DEQ currently administers 86 operating permits and their respective reclamation bonds. Bond amounts can be changed or released as situations change or as reclamation criteria are met. (See Attachment for bond details of all permitted mines.) Statutes and department policy provides a bond will not be released or changed until the public has been provided an opportunity for a hearing. Statutory requirements for surety companies are outlined in sections 33-2-109 through 33-2-111, MCA.

In lieu of a bond, a mining company may file with the department a cash deposit, an assignment of a certificate of deposit, or other surety acceptable to the department as outlined in statute.

WHO ADMINISTERS HARD ROCK RECLAMATION PLANS IF MINES ARE ABANDONED?

Generally reclamation plans are administered by the mining firm designated in the operating permit. In the event a company is unable to meet those obligations, the surety company responsible for the reclamation bond could administer the reclamation plan or forfeit the bond to the state of Montana, and DEQ staff would be responsible for administration duties.

WHAT IS THE REQUIRED BONDING METHODOLOGY FOR RECLAMATION?

According to statute, an application for a hard rock mine operating permit consists of three major parts: 1) operating plan, 2) reclamation plan, and 3) environmental baseline. Our review focused on the development of the reclamation plan and related activities. Prepared by the applicant, the reclamation plan includes information such as intended land use and methodologies and procedures for implementing reclamation requirements. Reclamation means the return of disturbed land, in terms of stability and utility, to a comparable pre-mining condition. To understand department bond methodology, we interviewed DEQ Environmental Management Bureau engineering staff and reviewed reclamation bond calculations.

Reclamation Cost Requirements

Statute requires reclamation be conducted simultaneously with operations on portions of the mine not subject to further disturbance. The reclamation plan serves as the basis for the department's determination of the amount of the reclamation bond. Section 82-4-338, MCA, indicates the bond may not be less than the estimated cost to the state to ensure compliance with Metal Mine Reclamation Act (MMRA), administrative rules, and permit requirements. According to ARM 17.24.140 (1), the bond shall include estimated costs for reclamation, contingencies, and associated monitoring activities. These rules, approved by the Board of Environmental Review, address the following areas:

- Designation of land use.
- Proposed topography.
- Vegetative cover.
- Provisions to prevent acid drainage or sedimentation.
- Flood/washout prevention.
- Solid waste restrictions.
- Siltation, erosion, or pollution controls.
- Road use/removal.
- Fire avoidance.
- Archeological/historical value.
- Mosquito control.
- Wind erosion.
- Disposal of mining debris.
- Surface water diversion.

ARMs also require the calculation of reclamation bond amounts using current machinery production handbook/publications and other documented cost sources. In addition to estimated cost of reclamation and a five year inflation factor, rules require the bond amount to include costs for engineering and design work, contracting requirements, or the need to move people or equipment to support reclamation (mobilization). Department policy, based on ARMs criteria, currently requires reclamation bonds to include the following components:

- Estimated cost of reclamation.

- 15 percent administrative fee.
- 3 percent annual inflation factor.
- 2 percent engineering and design fee.
- 1 percent mobilization factor.

This is comparable to factors used in other states and to federal guidelines prescribed in the Department of Interior’s Office of Surface Mining and Reclamation (OSMR) handbook on bond amount calculations. Similar to Montana statutory criteria, the federal handbook requires a bond sufficient to cover the cost of reclamation in accordance with the reclamation plan if performed by the regulatory authority in the event of forfeiture. Federal criteria also recommends determining reclamation bond amounts using those conditions which “define the point in the mining operation that presents the greatest estimated reclamation costs for the permit term.” According to the handbook, reclamation bonds should include cost factors for the following:

Direct Reclamation Costs	- Calculated, using conditions which represent the maximum reclamation cost.
Indirect Reclamation Costs	- Contract preparation and administration costs for staff time. Calculated by project staff and site specific.
Mobilization	- 1 to 5 percent of direct reclamation cost.
Contingencies	- Project uncertainties and unexpected natural events, 2 to 10 percent of direct cost.
Engineering and Design	- Redesign to reflect current conditions, 2 to 10 percent of direct cost.
Profit and Overhead	- Contractor profit and overhead not included in direct cost calculations, 3 to 14 percent of direct cost.
Reclamation Management	- Project inspection and supervision, 2 to 7 percent of direct cost.

DEQ’s Methodology

To examine compliance with ARMs requirements, we reviewed a draft DEQ checklist and a sample of reclamation plans currently in place. Other supporting documentation was also examined. For example, department staff developed spreadsheets for reclamation cost calculations. Copies of these spreadsheets showing methodology and the factors used in the calculations become part of the mine permit file when the reclamation bond is approved.

Our review indicates the department utilizes two primary sources of information in developing bond amounts. For machinery operations and/or labor rates, the department uses various accepted industry handbooks. For specific distance and volume requirements such as the distance top soil material is located from a waste dump, the department uses information from the permittee's reclamation plan.

According to DEQ staff, other factors such as land stability or hydrology can be included when data indicates a potential risk such as an earthquake. Material volume and thickness factors can be increased to reduce the associated risk. Similarly, for an item such as re-vegetation, cost per acre can be doubled or tripled when staff anticipate two or three growing seasons and plantings may be necessary.

All reclamation plan work tasks are calculated for a total reclamation cost. Using this as the base amount, administration (15%), annual inflation (3%), engineering and design (2%), and mobilization (1%) factors are added to establish an initial bond amount. At this point, a copy of the spreadsheet is provided to mining company officials for review. Their review can result in negotiation on items of contention such as hauling distances from soil or fill material sites to the location required. Staff indicated it was not unusual to make minor changes to the bond amount following review by mining company officials.

Bond Methodology Calculation Consistently Applied

Due to time restrictions, we did not attempt to verify all calculations or confirm a source for each factor used in the bond determination spreadsheets we reviewed. We evaluated a sample of the reclamation work tasks contained in mine spreadsheets. For the files examined, calculations were accurate. Staff provided valid source documents for the factors reviewed. We noted bond documentation historically does not include the engineering and design, and/or mobilization factors. For example, we found one spreadsheet which did not include factors for engineering design or mobilization. According to staff, these two factors were recently added to bond determinations based on problems encountered by other states in the reclamation of mines. Based on our review of selected spreadsheets, the department's methodology is applied consistently between permit files.

IS THE CURRENT PERFORMANCE BONDING METHODOLOGY IN COMPLIANCE WITH THE LAW?

To answer this question, we compared statutes and rule requirements to department procedures and bonding documentation. File reviews were conducted to examine methodologies followed and determine if they were consistently applied. Department staff and bonding officials were interviewed to verify procedures and documentation. DEQ and LAD legal staff were interviewed to examine statutory intent. Montana's methodology was compared to other states' methods and federal guidelines.

Based on our statutory review we found the requirements include the following:

- > Section 82-4-338, MCA, provides the bond may not be less than the estimated cost to the state to ensure compliance with MMRA, administrative rules, and permit requirements.
- > Section 82-4-341, MCA, states when conducting reclamation the department shall keep a record of necessary expenses for state personnel, equipment and materials.
- > ARMs 17.24.140 (1), states the bond will include estimated cost for reclamation, contingencies, and associated monitoring activities.
- > ARMs requires the bond include costs for engineering and design work, contracting requirements, or the need to move people or equipment to support reclamation (mobilization).

One area not included in the current methodology is a separate cost for interim management and/or maintenance activities required to support an abandoned site. According to department officials, this is an area that has not been separately considered in the past.

There are examples of interim site management and maintenance costs incurred by state and federal agencies. For example, a worst case scenario occurred in Summitville, Colorado in 1992. This mine was abandoned and state officials found maintenance of a cyanide heap leach site and pumping stations had not been effective for some time. As a result, the state of Colorado and EPA had interim site management and maintenance costs for more than three years. This example illustrates the possibility a state could incur costs not covered by the 15 percent administration fee.

If this happened in Montana, interim management and maintenance costs could be incurred by the state prior to getting a contract in place to perform the reclamation required by the operating permit. This time period could be lengthy. Site management and maintenance costs could be a significant immediate expense to the state to assure on-going compliance with environmental statutes.

Conclusion: DEQ Bonding Requirements Do Not Include Interim Site Management and Maintenance Costs

Program documentation and staff interviews confirmed the department currently requires reclamation bond methodology to include all expected expenses except for interim site management and maintenance costs until reclamation resumes.

DOES BOND AGREEMENT LANGUAGE PROTECT THE STATE'S INTERESTS?

The department has standard boiler-plate language forms for performance bonds, letters of credit, and certificates of deposit. To evaluate the protection of the state's potential liability, we compared these forms to language in statutes and forms used in other states. In addition, we conducted legal and financial reviews. Based on this comparison, we did not identify any concerns.

DOES DEQ HAVE A SYSTEM IN PLACE TO EFFECTIVELY TRACK & ADMINISTER BONDS?

During the course of our review, we identified several potential control weaknesses which affect the department's ability to effectively manage performance bonds. One issue was identified previously in a LAD financial compliance audit of DEQ in March 1996. LAD recommended the department adequately safeguard reclamation bonds and establish a system to inventory and reconcile the bonds on a regular basis. We found the issues noted in the 1996 report are still a concern. File documentation does not necessarily reconcile with computer system information. We noted instances of bonds without department signatures. A department administrative support officer is responsible for the filing, data entry, and securing of actual bond documents. We found this staff has recently been assigned responsibilities for signing bond documents as approved and accepted by the department. In the past, this function was performed by the bureau chief.

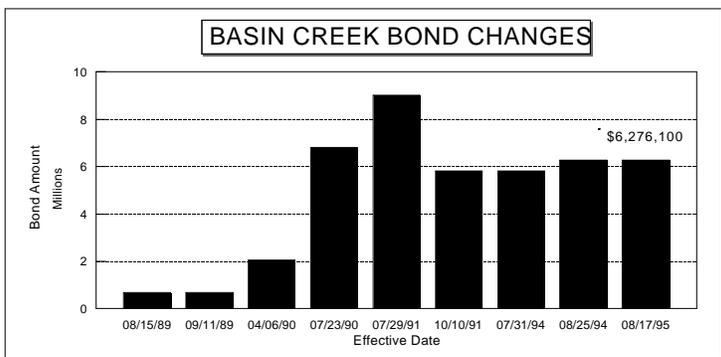
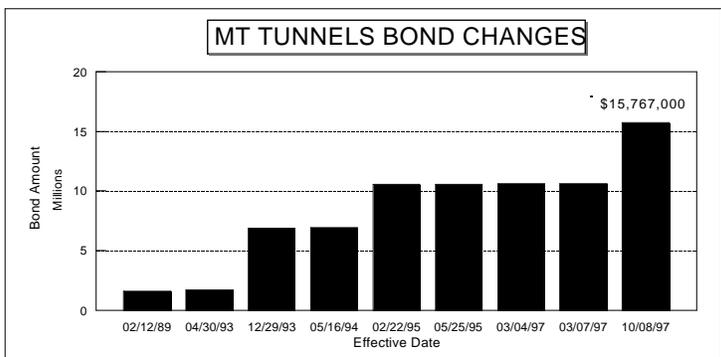
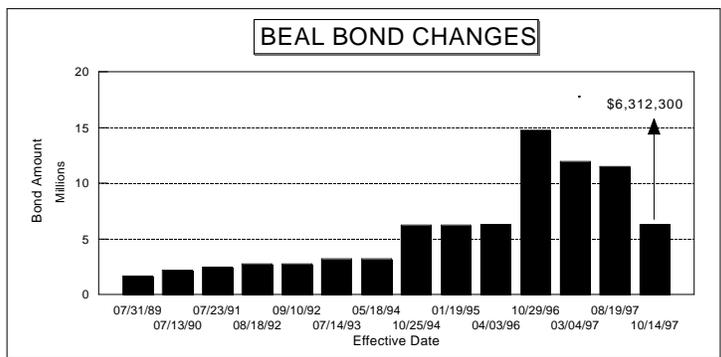
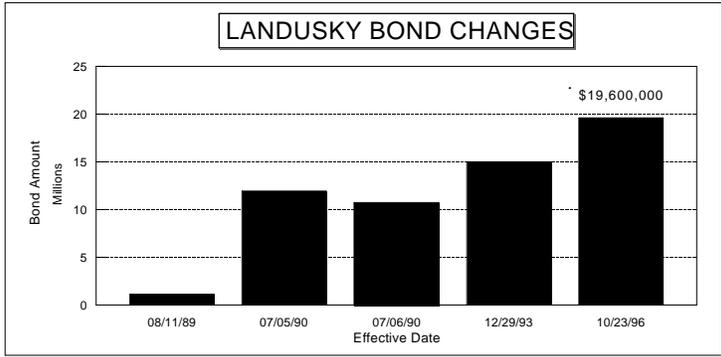
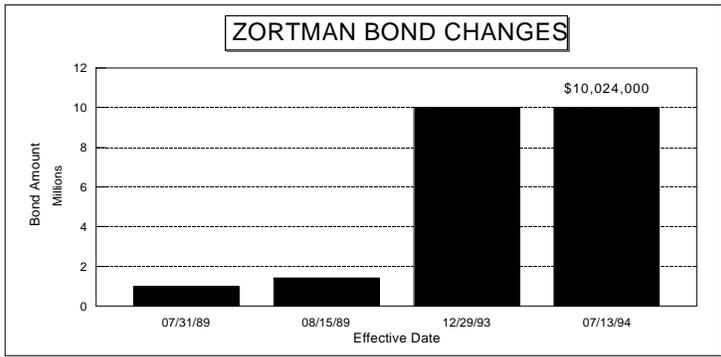
Another potential weakness noted is the lack of separation of duties for bond releases. The assigned engineer who is responsible for developing bond costs also has authority to adjust the amount of a bond at any time. Although the department has rules and procedures in place to address these duties, we found there is no supervisory review or other control in place to ensure compliance. The department relies on public comment and scrutiny as a control measure.

Conclusion: System Could Be Improved

Based on these findings, we conclude the department could improve their system to more effectively manage the reclamation bond process. A performance audit of the Permitting and Compliance Division has been scheduled for 1998. These issues will be examined and further tested during the course of that audit.

DO PEGASUS MINING BOND AMOUNT CALCULATIONS FOLLOW DEQ METHODOLOGY?

There are six operating permits issued to Pegasus Gold Operations in the state of Montana. These include Beal Mountain, Diamond Hill, Montana Tunnels, Basin Mining, Zortman, and Landusky. We examined portions of reclamation plans and current calculation spreadsheets for the Pegasus mines. Diamond Hill is a relatively new operation which was bonded on April 25, 1996 for \$520,000. The total reclamation bond amounts for current Pegasus hard rock mining operating permits are \$58.5 million. The attached charts illustrate current bond levels and bond changes resulting from mine expansion and/or completion of reclamation plan tasks for five of these operations since 1989.



Conclusion: Pegasus Calculations Consistent with DEQ Methodology

Based on our review, we conclude Pegasus bond amount calculations are consistent with DEQ methodology.

WHAT ARE THE TERMS OF THE ZORTMAN/LANDUSKY SETTLEMENT?

Based on a court decision relative to Zortman and Landusky operations, a separate group of bonds was established to be used for designated purposes as outlined in a Consent Decree signed in July 1996. These financial assurance agreements were put in place in October 1996 and are primarily for water quality improvement facilities for the Zortman and Landusky mines. The facilities are needed principally to address problems with acid rock drainage, to construct various drainages to capture mine waste water, and to treat the water prior to release to state waters. In general, the financial agreements include four bond agreements and a trust agreement. The bonds and trust agreement are outlined below:

- 1) Construction Operations & Maintenance Bond - This bond is in the amount of **\$340,000** and is to assure operations and maintenance of water treatment until construction of the new water treatment facilities at Zortman. This bond could have been released as of June 30, 1997.
- 2) Construction Assurance Bond - This bond is in the amount of **\$10.1 million** and is to assure the construction of the water quality capture system and treatment facilities. Construction of these facilities is scheduled to be completed by January 31, 1998 and the bond could be released at that time.
- 3) Assurance Bond-operations & Maintenance - This bond's initial amount was approximately **\$14.6 million** and is designated for assurance over expenses for the operation and maintenance of the water treatment facility for a 20 year time period starting June 30, 1997 and ending June 30, 2017. The amount of this bond decreases 5 percent each year. In June, 1998 the bond balance will be approximately \$13.8 million.
- 4) Trust Agreement - The trust is to be funded by Pegasus Gold Corporation with U.S. Treasury "zero coupon" bonds with maturity dates between January 1 and December 31, 2017 and has a maturity value of **\$15 million**. The purpose of this trust to assure funds for the operation and maintenance of the water treatment systems and facilities from June 2017 until water from the mine no longer requires treatment. A series of five annual deposits of securities with a stated maturity value based on the schedule are outlined in the trust agreement. To date, the two required annual deposits in the amounts of approximately \$790,000 and \$810,000 respectively, have been made as required by the Consent Decree. The agreement also outlines specific termination articles and the procedures to follow in the event of termination. Department legal counsel indicated in the event of termination, the securities will revert to the department and could be sold for market value as needed.

- 5) Financial Guarantee Bond Assurance - This bond provides assurance that designated payments to the trust will be made during the five years after the trust agreement was established. The bond amount is a maximum of **\$5 million** which corresponds to the maximum amount of payment needed each year to assure a maturity value of \$15 million in the year 2017.

WAS THE DEPARTMENT IN COMPLIANCE WITH THE RECENT CHANGES IN THE PERFORMANCE BOND AMOUNT FOR THE BEAL MOUNTAIN PERMIT?

Several legislators have requested information in regard to recent changes to the performance bond for the Beal Mountain operating permit. These questions focused on the timing of the public notice given for these changes. During our review, we examined file documentation, public notices, laws and rules, and applicable department policies. We found department policy is to provide a thirty-day notice period for all bond changes. This policy was followed for the Beal bond changes. Although bond documents were signed prior to the end of the one public notice period, the effective date for the bond changes was designated for a later date which allowed for the thirty-day public notice period. We did not identify any noncompliance in this area.

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HARD ROCK MINE OPERATING PERMITS AND BOND AMOUNTS
As November 24, 1997

	Permit #	Mine Name	Acres Bonded	Type of Mine/Mill	Bond Amount	Bond Per Acre	Type
1.	00002	Maiden Rock	3.40	Open Pit	\$2,000	\$588.24	Surety
2.	00002A	Maiden Rock Extension	21.00	Open Pit	\$36,000	\$1,714.29	Surety
3.	00003	Clark Gulch/Ash Grove.	75.00	Open Pit	\$17,250	\$230.00	Surety
4.	00004	Ideal Basic	288.00	Open Pit	\$544,000	\$1,888.89	LOC
5.	00005	Yellowstone	166.51	Open Pit	\$83,500	\$501.47	Surety
6.	00005A	Yellowstone Extension	786.60	Open Pit	\$1,034,300	\$1,314.90	Surety
7.	00006	Beaverhead	42.92	Open Pit	\$20,960	\$488.35	Surety
8.	00008	Warren Quarry	107.00	Open Pit	\$207,000	\$1,934.58	Surety
9.	00009	Treasure Mine & Barretts	88.25	Open Pit	\$132,061	\$1,496.44	Surety
10.	00010	Kootenai Development	1,025.00	Open Pit	\$472,000	\$460.49	Surety
11.	00012	Anaconda	145.00	Open Pit	\$83,000	\$572.41	Surety
12.	00013	Regal Mine	2.00	Open Pit	Not Available	Not Available	Not Available
13.	00013A	Regal Mine	65.92	Open Pit	\$71,000	\$1,077.06	Surety
14.	00015	McQuarry Quarry	60.40	Open Pit	\$178,000	\$2,947.02	Surety
15.	00019	McCellan Creek Quarry	9.00	Open Pit	\$4,500	\$500.00	Surety
16.	00022	Drummond Quarry	16.40	Open Pit	Not Available	Not Available	Surety
17.	00023	Gardiner Quarry	19.90	Open Pit	\$13,740	\$690.45	CD
18.	00027	Willow Creek	320.00	Open Pit	\$350,000	\$1,093.75	LOC
19.	00030	MRI	5,867.00	Open Pit/Mill/	\$9,486,464	\$1,616.92	Surety
20.	00039	A.L. Comer & Mining	3.00	Open Pit	\$1,500	\$500.00	CD
21.	00042	Crystal Mine	0.00	OpenPit/	Not Available	Not Available	Not Available

Source: Compiled by Legislative Audit Division from DEQ records

HARD ROCK MINE OPERATING PERMITS AND BOND AMOUNTS
As November 24, 1997

	Permit #	Mine Name	Acres Bonded	Type of Mine/Mill	Bond Amount	Bond Per Acre	Type
22.	00044	Skalkaho	6.00	Placer/Dredge	\$18,500	\$3,083.33	CD
23.	00045	Essex Quarry	44.00	Open Pit	\$120,000	\$2,727.27	Surety
24.	00045A	U.S. Antimony	24.00	Underground	\$47,200	\$1,966.67	CD
25.	00054	Hemphill Brothers	18.50	Open Pit	\$9,500	\$513.51	Surety
26.	00054A	Hemphill Brothers	8.00	Open Pit	\$30,000	\$3,750.00	Surety
27.	00063	Black Pine	28.67	Underground	\$70,000	\$2,441.58	Surety
28.	00065	Golden Sunlight	4,112.00	Open Pit/ Leach	\$38,043,902	\$9,251.92	Surety
29.	00071	Black Butte	20.05	Open Pit	\$26,400	\$1,316.71	Surety
30.	00073	Fly Ash Pond	114.90	Fly Ash Pond	\$115,000	\$1,000.87	Surety
31.	00075	Beaverhead Mine	116.00	Open Pit	\$116,000	\$1,000.00	Surety
32.	00077	Quarry	5.00	Open Pit	\$5,000	\$1,000.00	Surety
33.	00078	Treasure - Stoney Creek	961.59	Open Pit	\$1,054,479	\$1,096.60	Surety
34.	00079	Choteau County	2.00	Open Pit	Not Available	Not Available	Not Available
35.	00082	St. Regis	1.50	Open Pit	\$1,500	\$1,000.00	Surety
36.	00087	Sauerkraut Creek	7.00	Placer	\$5,600	\$800.00	CD
37.	00089	Merriman Quarry	60.00	Open Pit	\$60,000	\$1,000.00	CD
38.	00090	Ash Grove Cement West	145.00	Open Pit	\$145,000	\$1,000.00	Surety
39.	00093	Troy	2,752.00	Underground/	\$2,763,500	\$1,004.18	Surety
40.	00094	Stansbury	7.00	Open Pit	\$20,000	\$2,857.14	Cash
41.	00095	Landusky	887.00	Open Pit/Leach	\$19,600,000	\$22,096.96	Surety
42.	00096	Zortman	1,493.00	Open Pit/Leach	\$10,024,000	\$6,714.00	Surety

Source: Compiled by Legislative Audit Division from DEQ records

HARD ROCK MINE OPERATING PERMITS AND BOND AMOUNTS
As November 24, 1997

	Permit #	Mine Name	Acres Bonded	Type of Mine/Mill	Bond Amount	Bond Per Acre	Type
43.	00098	Clarks Gulch	700.00	Open Pit	\$340,000	\$485.71	Surety
44.	00100	Jardine JV	412.00	Underground/	\$1,300,775	\$3,157.22	Surety
45.	00105	Indian Creek Plant	1,695.00	Open Pit	\$700,000	\$412.98	Surety
46.	00109	Antler Chlorite	122.00	Open Pit	\$191,125	\$1,566.60	Surety
47.	00113	Montana Tunnels	1,117.20	Open Pit/Flotation	\$15,767,000	\$14,112.96	Surety
48.	00118	Stillwater	255.00	Underground/ Flot.	\$3,174,000	\$12,447.06	Surety
49.	00122	North Moccasin	537.50	Open Pit/Leach	\$1,869,000	\$3,477.21	Surety
50.	00123	Hog Heaven	270.00	Open Pit/	\$54,000	\$200.00	CD
51.	00124	Elk Creek	3.10	Underground	\$6,200	\$2,000.00	CD
52.	00125	Coloma	4.94	Open Pit	\$10,000	\$2,024.29	CD
53.	00126	Maronick	22.00	Open Pit	\$22,000	\$1,000.00	Surety
54.	00127	Montana Talc/Westmont	189.00	Open Pit	\$254,758	\$1,347.93	Surety
55.	00129	Belmont	10.00	Underground	\$21,950	\$2,195.00	Cash
56.	00130	Barnard	1.00	Open Pit	\$1,000	\$1,000.00	Surety
57.	00131	Bon Accord Placer	4.00	Placer	\$6,325	\$1,581.25	CD
58.	00132	Paupers Dream	1,323.00	Open Pit/ Leach	\$6,276,100	\$4,743.84	Surety
59.	00134	Cable	34.80	Placer	\$128,000	\$3,678.16	CD
60.	00135	German Gulch	429.00	Open Pit/ Leach	\$6,312,300	\$14,713.99	Surety
61.	00138	Lexington	89.20	Underground/Flot.	\$124,000	\$1,390.13	LOC
62.	00139	Silica Quarry	7.60	Open Pit	\$20,000	\$2,631.58	Surety
63.	00140	Fish Creek	15.00	Placer	\$29,429	\$1,961.93	CD

Source: Compiled by Legislative Audit Division from DEQ records

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As November 24, 1997

	Permit #	Mine Name	Acres Bonded	Type of Mine/Mill	Bond Amount	Bond Per Acre	Type
64.	00141	Geis & Virgin Gulch	310.00	Underground/	\$33,200	\$107.10	Surety
65.	00142	Opportunity Quarry	63.00	Open Pit	\$30,000	\$476.19	Surety
66.	00145	Seahawk Placer	150.00	Placer	\$235,000	\$1,566.67	CD
67.	00146	Washington Gulch	38.10	Placer	\$206,000	\$5,406.82	CD
68.	00147	Bahny	180.00	Open Pit	\$15,000	\$83.33	LOC
69.	00148	Pipestone Quarry	32.20	Open Pit	\$280,500	\$8,711.18	Surety
70.	00149	East Boulder	50.00	Underground/Flot.	\$805,192	\$16,103.84	Surety
71.	00150	Montanore	1,272.00	Underground/Flot.	\$192,000	\$150.94	Surety
72.	00151	Weaver Gravel	51.00	Open Pit	\$24,100	\$472.55	LOC
73.	00152	M & W	8.00	Flotation/Cyanide	\$35,500	\$4,437.50	Surety
74.	00153	Sapphire Village	10.00	Open Pit	\$5,700	\$570.00	CD
75.	00154	Bon Accord Mine	18.50	Placer	\$27,000	\$1,459.96	CD/Cash
76.	00155	Spokane Hill Quarry	49.00	Quarry	\$36,000	\$734.69	CD
77.	00157	Alder Gulch	506.00	Placer	\$465,000	\$918.97	Surety
78.	00158	Sweetwater Garnet	42.10	Placer	\$68,000	\$1,615.20	Cash
79.	00159	Sieben Ranch Quarry	8.00	Open Pit	\$12,100	\$1,512.50	Surety
80.	00160	Diamond Hill	122.00	Flotation	\$520,000	\$4,262.30	Surety
81.	00161	Iron Horse	45.25	Open Pit	\$25,500	\$563.54	CD

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Source: Compiled by Legislative Audit Division from DEQ records