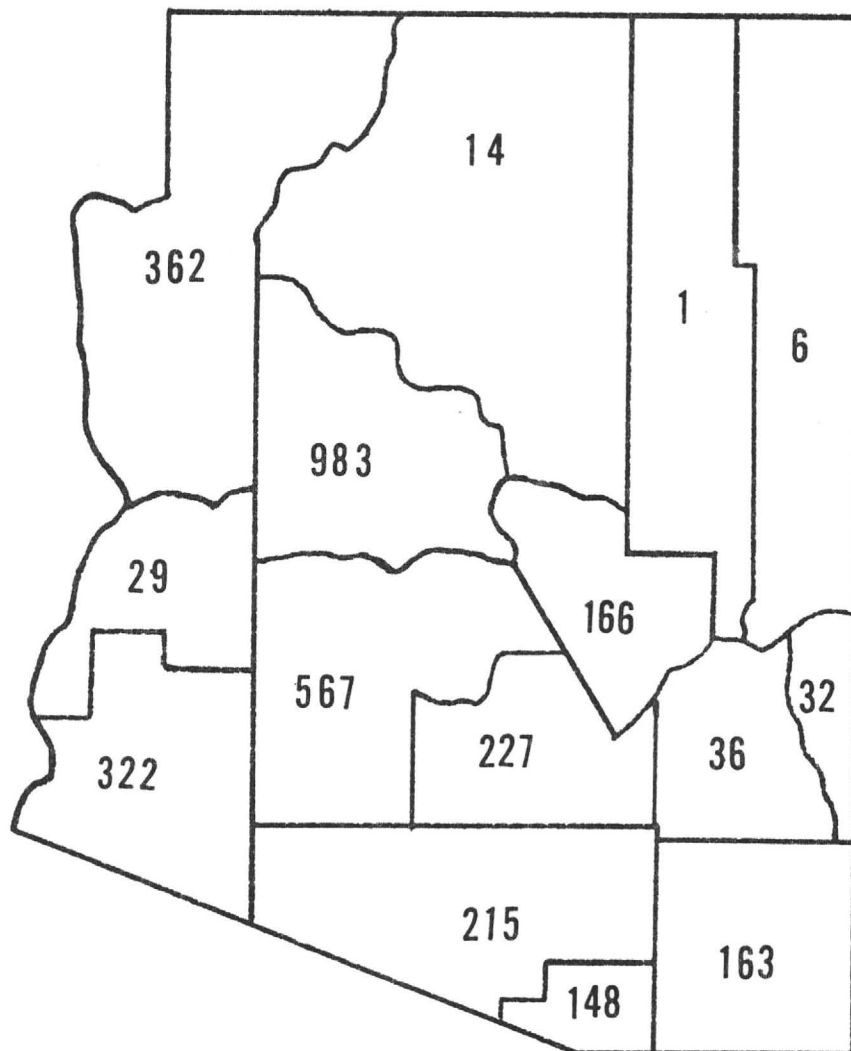


**STATE OF ARIZONA**  
**DEPARTMENT OF MINERAL RESOURCES**  
**45TH ANNUAL REPORT**  
**FOR**  
**FISCAL YEAR 1983-1984**



**JOHN H. JETT**  
**DIRECTOR**



STATE OF ARIZONA

DEPARTMENT OF MINES AND MINERAL RESOURCES

Mineral Building, Fairgrounds, Phoenix, Arizona 85007 • (602) 255-3791

September 28, 1984

The Honorable Bruce Babbitt  
Governor of the State of Arizona  
West Wing, Capitol Bldg.  
Phoenix, Arizona 85007

Dear Governor Babbitt:

In accordance with A.R.S. 27-106, we are pleased to submit the Annual Report of the Department of Mines and Mineral Resources. The Arizona Mineral Museum is a function of the Department and its activities are included.

The report lists the duties of the Department as established under its new enabling legislation passed by the Thirty-sixth Legislature, Second Regular Session. The activities of the Department for Fiscal 1983-1984 are summarized with each duty.

The Department of Mines and Mineral Resources objectives are to gather, develop, interpret and disseminate mineral information and provide technical assistance to encourage interest and investment in Arizona's mineral resources. The mineral information applies to and is used by land use planners and resource management groups.

Respectfully yours,

*Edna Vinck*

BOARD OF GOVERNORS  
DEPARTMENT OF MINES & MINERAL RESOURCES

Edna Vinck, Chairman  
Brian Donnelly, Vice Chairman  
Richard C. Cole, Secretary  
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### STAFF PERSONNEL

Phoenix Office - Mineral Building, Fairgrounds, 85007 255-3791

John H. Jett . . . . .	Director
Ken A. Phillips . . . . .	Mineral Resource Engineer
Richard R. Beard . . . . .	Mining Engineer
Nyal J. Niemuth . . . . .	Mineral Resource Specialist
Arthur W. Bloyd . . . . .	Museum Curator
Ann Turney. . . . .	Administrative Assistant
Diane Bain . . . . .	Secretary
Susie Kile. . . . .	Secretary
Connie Morgan . . . . .	Maintenance

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Michael N. Greeley . . . . .	Mining Engineer
Clifford J. Hicks . . . . .	Geological Engineer
Frances Derrick . . . . .	Secretary

## FORWARD

The Department of Mines and Mineral Resources was created to promote the development of the mineral resources of the state of Arizona.

The Department is controlled by a Board of Governors consisting of five members from various parts of the state. These members are appointed for five year terms by the Governor of Arizona. The Board of Governors serves without compensation other than their actual expenses incurred when attending board meetings which are required by law to be held quarterly. The Board of Governors outlines the policies of the department and employs the director, who by law must be a registered mining engineer. To carry out the policies established, the director in turn employs such field and office personnel as is consistent with the appropriation and with the policies of the board.

The Annual Report is a report on the activities of the department and is supposed to include copies of the Director's Quarterly Report to the Board of Governors. With the intent of saving on mailing and reproduction costs, the reports have been abstracted and condensed. Copies of the complete reports will be furnished to any that request them. A financial statement is included.

## GENERAL

The promotion or development of any mineral deposit must start with its being "found" or located. Therefore, prospecting and/or exploration are the first steps on the way to starting a viable profitable mining operation. Each step taken in exploration, if not resulting in an immediate operation, leaves us better equipped with knowledge and skills to do better and more advanced work in exploration and evaluation in the future.

To encourage the prospecting for mineral ore deposits, there must be a ready market and the right price for the end products. Ore can be elementarily defined as something that can be mined at a profit. If there is no profit the deposit is only a resource - something that has no present value but which may have some potential for the future.

Therefore, it becomes very necessary to obtain for permanent files, all data possible on these resources and have it available when the right time arrives in the future. It is a major activity of the Department to collect, develop, analyze, file and disseminate all information possible on each and every mineral occurrence.

The possible development of mineral resources attracts many different types of people such as prospectors, explorationists, mine promoters, investors, end product users and others, all usually referred to as "Prospectors or Small Miners". This is usually an optimistic type of person and it is their eternal optimism and hope of making the "big strike" that keeps mineral prospecting and exploration quite active and at a high level. His activities will hopefully lead to the discovery of prospects that can be sold for possible development in the future. Perhaps better yet, his activities will lead to a precious metal deposit or a small vein with either a metallic or nonmetallic mineral that can be economically mined by the small miner.

## DEPARTMENT ACTIVITIES

Four Board of Governors' meetings were held during the fiscal year. Minutes of these meetings are available to the public at the Department's offices. Budget restrictions, new building for the Department, seminars, sales shop in the museum, enabling legislation, Sunset Review process, Bureau of Land Management proposed increase in assessment work, support of a nominee to the Bureau of Land Management National Public Lands Advisory Board, proposed new private agency to promote the Department, unsolicited project proposals to the Bureau of Land Management, election of new officers, restructuring personnel by upgrading of technical staff and creation of chief engineer, imposed copper tariff or quotas and 1984-85 budget were some of the topics for review and discussion by the board. One of the major projects of the Board of Governors is to obtain a new location for the Department. It was determined to be in the best interest of the Department and the public it serves to be located in the Capitol Complex area. Many meetings have been held and proper budget requests have been made. Much work still remains to be done.

The details of the various types of activity, different minerals discussed, names of other governmental agencies assisted, news media assisted, mineral commodities discussed, type of meetings attended, groups who were presented programs, out-of-state and out-of-country visitors, lists of small mine and prospect activity, known out-of-state and out-of-country companies doing development work in Arizona, are all in the quarterly reports. However, the statistics (numbers) are provided in this report. Complete quarterly reports are available to anyone who may want one.

The Department was the subject of a financial audit and a performance audit by the Auditor General's office. No financial discrepancies were found. The Sunset Review audit made several recommendations which the Department has followed when possible. Copies of both audits are available

to the public from the Auditor General's Office or may be inspected in the Department's offices.

As a result of the Board's action, new enabling legislation was developed and introduced into the legislative process as Senate Bill 1048.

Senate Bill 1048 was introduced and passed by the Thirty-sixth Legislature, Second Regular Session. This legislation was a restructuring of the enabling legislation of the Department. The legislation states:

**"A DEPARTMENT OF MINES AND MINERAL RESOURCES IS ESTABLISHED."**

The objectives of the Department are established by the following statement:

**"THE OBJECTIVES OF THE DEPARTMENT ARE TO PROMOTE THE DEVELOPMENT OF THE MINERAL RESOURCES OF THIS STATE THROUGH TECHNICAL AND EDUCATIONAL PROCESSES."**

The legislation continues by listing the methods to be used:

**"...INCLUDING FIELD INVESTIGATIONS, PUBLIC SEMINARS, PUBLICATIONS, CONFERENCES, MINERAL DISPLAYS AND BY PROVIDING MINING, METALLURGICAL AND OTHER TECHNICAL INFORMATION AND ASSISTANCE."**

The major changes in the new enabling legislation include a name change to the "Department of MINES and Mineral Resources". This is to make the agency more identifiable as a "mining" agency as well as mineral resources. There has been confusion as to what the agency did. The public often did not know if it could be of help to them on mining questions.

Another major change was the establishing of a printing revolving fund for the sale of publications and other items consistent with the Department fulfilling its statutory promotional duties. A second fund was established and is to be called the "Department of Mines and Mineral Resources Fund". It was established to permit acceptance of donations, grants and contract funds which can be expended as directed by the donor and in accordance with the statutory duties of the Department.

The duties of the Department were modified to be more consistent with the current methods of promoting mineral resources. One of the new duties is to maintain a mineral museum as the State's depository of mineral specimens, ores, gemstones and lapidary material. However, this is not a new activity. It has been a continuing activity of the Department going back almost to its inception.

There are thirteen (13) DUTIES listed. There are no activities included that were not being previously carried out. They were inserted in the new legislation for clarification of duties. There were no duties or activities added that required any new funding. Of course, as we have been doing the past several years, we are requesting additional total resources in the budget so we can more effectively and efficiently respond to the requests for the Department's services.

These duties are listed with added comments on how the Department responded to the duty:

#### DUTIES

1. PROMOTE THE DEVELOPMENT OF THE MINERAL RESOURCES AND INDUSTRY OF THIS STATE BY PARTICIPATING IN CONFERENCES, SEMINARS, FORUMS, SPEAKING ENGAGEMENTS, PUBLIC NEWS MEDIA AND OTHER FUNCTIONS NECESSARY TO ACHIEVE ITS OBJECTIVES.

There were 15 technical programs provided to prospectors-small miners and others. They were presented in many communities throughout the state such as Arivaca, Tombstone, Globe, Prescott, Congress and other areas. These were presented through mineral resource conferences and Arizona Prospector Small Mine Operator Associations. In addition the museum presented 129 programs to school children, adult groups, Boy Scouts, hospital groups and others.

2. CONDUCT STUDIES OF THE ECONOMIC PROBLEMS OF PROSPECTORS AND OPERATORS OF SMALL MINES FOR THE PURPOSE OF ASSISTING IN THEIR SOLUTION AND INVESTIGATE THEIR PROPERTIES TO ASSIST IN DEVELOPMENT.

The field engineers made field visits to 153 properties and attended 69 meetings discussing various mineral issues. There were 140 mine reports written on specific mineral properties and added to the files. There were 87 field interviews conducted



by the staff with people who have mineral interests.

3. MAINTAIN:

- (a) AN INFORMATION BANK AND LIBRARY OF MINERAL AND MINING INFORMATION INCLUDING BOOKS, PERIODICALS, FILMS, VIDEO TAPES AND INDIVIDUAL MINE FILES.
- (b) UNDERGROUND MINE MAP REPOSITORY FILES, MINING DISTRICT DATA AND AN ARCHIVE OF MINE DATA.
- (c) A MINERAL MUSEUM AS THE STATE DEPOSITORY FOR COLLECTING, CATALOGING AND DISPLAYING MINERAL SPECIMENS OF VARIOUS ORES, GEMSTONES, LAPIDARY MATERIAL AND OTHER VALUABLE MINERAL SPECIMENS.

There is no complete inventory on the Department's information bank and library. We are continually adding to the library by subscriptions, developing new data and by encouraging and soliciting those in the industry to donate their library and files to the Department. The single largest contribution in recent time has been one donation of over 1,000 mine files and one library collection of over 600 books, maps, information circulars, periodicals and other publications. A large increase was the recent completion of almost a three-year Bureau of Mines contract. Data on over 10,000 mineral occurrences was developed and is being turned into mine files.

Mining maps are collected, a few at a time. However, one large collection was over 700 maps. Maps have been put on microfiche through an U.S. Bureau of Mines grant.

Last year there were over 1,240 items checked out of the library. This included publications of the Arizona Bureau of Geology and Mineral Technology, U.S. Bureau of Mines, U.S. Geological Survey, maps, technical books, trade journals and others. In addition 2,445 individual mines files were researched.

The mineral museum has a continuing cataloging program. There are over 10,000 mineral specimens cataloged. Displays are on loan to Northern Arizona University, State Capitol, House of Representatives, and intermittently at libraries, schools,

rock shows and others. Last year 1,545 new mineral specimens were donated to the Department. They are valued at \$40,376. Other donated items included \$182 (for paint), \$25.00 cash, two slide programs, four mosaic mineral masks (\$1,900), mining artifacts, display case and glass shelves and 98 lbs. of minerals for educator's kits.

4. PROVIDE QUALITY MINING DATA, EVALUATION AND ASSISTANCE RELATING TO MINERAL DEVELOPMENT TO THE LEGISLATURE AND OTHER STATE AND COUNTY AGENCIES.

Other state agencies assisted last year included: Mine Inspector, Arizona Bureau of Geology and Mineral Technology; Office of Economic Planning and Development; a city manager; State Land Department; two (2) community colleges; Phoenix Police; University of Arizona; Outdoor Recreation Coordinating Committee; Department of Health Services; Joint Legislative Budget Committee, Financial Advisor; County Law Library; County Planning and Zoning; County Sheriff; University of Arizona, Office of Economic and Business Research; Securities Division, Corporation Commission; Tucson Unified School District; public library; Pima County Health Department; Board of Technical Registration; and several county recorders. Some county recorders were provided with copies of mineral maps and an index.

5. MAKE SURVEYS OF POTENTIAL ECONOMIC MINERAL RESOURCES AND CONDUCT FIELD AND OTHER INVESTIGATIONS WHICH MAY INTEREST CAPITAL IN THE DEVELOPMENT OF THE STATE'S MINERAL RESOURCES.

This is a continuing activity. However, lack of sufficient resources prevents detailed studies and written publications.

Recent studies were made on beryl, basalt and precious metals.

6. SERVE AS A CENTER OF MINING INFORMATION FOR THIS STATE IN MATTERS RELATING TO ITS MINERAL RESOURCES AND MONITOR CURRENT MINING AND EXPLORATION ACTIVITIES.

Over 10,000 telephone calls, over 4,000 office visitors, almost 6,000 school children, over 17,000 other museum visitors, over 3,300 mineral properties researched and/or discussed with the engineers, publication of a Directory of Active Mines, a Directory of Exploration Companies, Earth Science Clubs Directory and Directory of Exploration and Mineral Development, and over 126

other governmental agencies contacting the department all attest to our responding to this duty.

7. PUBLISH AND DISSEMINATE INFORMATION AND DATA NECESSARY OR ADVISABLE TO ATTAIN ITS OBJECTIVES. THE DIRECTORY MAY ESTABLISH REASONABLE FEES FOR PUBLICATIONS.

Mineral reports, directories, information circulars, special reports and other periodicals are being developed or reprinted for sale. The publication Laws and Regulations Governing Mineral Rights in Arizona is being revised by an attorney and the revised edition will be for sale next year. There were 1,991 publications sold this past year. We expect to produce sufficient revenue the first year to meet the maximum allowed in the new publishing revolving funds.

8. COOPERATE WITH STATE LAND DEPARTMENT TO ENCOURAGE MINING ACTIVITY ON STATE LANDS.

The State Land Department often forwards letters to the ADMMR for answering. The inquiries usually relate to Arizona minerals and laws and regulations concerning same. State Land Department mineral personnel sometime research our files. This past year the ADMMR obtained a microfilm copy of over 10,000 mineral occurrences for the State Land Department. This data will be put into their computer and used for land use and potential exchanges. The Land Department was unable to obtain the microfilm so the ADMMR made the arrangements at no cost to the State. The State Land Department does not make their mining laws and regulations readily available to the public. ADMMR publishes the rules and regulations and makes them available. The State Land Department sends their visitors to the Department to obtain copies.

9. COOPERATE WITH THE CORPORATION COMMISSION IN ITS INVESTIGATIONS AND ADMINISTRATION OF LAWS RELATING TO THE SALE OF MINING PROPERTIES.

This is willingly done. This past year, in addition to the Arizona Corporation Commission, the Department assisted the Internal Revenue Service (Los Angeles and Phoenix); Assistant Director, Illinois Mines and Mineral Resources; Phoenix Police; Comptrollers Office of Florida Securities Division; Yukon Securities Division, all concerning the sale of mining securities.

10. COOPERATE WITH THE BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY AND DELIVER TO THE BUREAU PROBLEMS WHICH THE FIELD WORK OF THE DEPARTMENT SHOWS TO BE WITHIN THE SCOPE OF THE ACTIVITIES OF THE BUREAU.

The Department works with the geology division, refers prospectors to them for geologic data and mineral analysis, distributes their publication list and promotes their publications. However, the mineral technology branch has not existed for several years. This was a much needed activity. As a result, the ADMMR's engineers have had to develop their own metallurgical expertise by home study, seminars and research in order to provide the metallurgical expertise to the small miner.

11. COOPERATE WITH FEDERAL AND OTHER AGENCIES IN MATTERS RELATED TO DEVELOPING MINERAL RESOURCES IN THIS STATE.

We have had several grants or contracts from the U.S. Bureau of Mines to do projects on resources. We provide data to the U.S. Forest Service and Bureau of Land Management to assist their evaluating for mineral potential on Federal lands. We have provided seminars and field trips to educate the Federal people on mineral activities. We work with the Department of Health Services, Water Department and State Mine Inspector to help provide a good climate for development.

12. OPPOSE CONGRESSIONAL ACTS FAVORING RECIPROCAL OR DUTY FREE IMPORTS OF FOREIGN MINERALS.

We do not have sufficient resources to properly maintain this activity.

13. USE ITS AUTHORITY IN OTHER WAYS TO ASSIST IN MORE EXTENSIVE EXPLORATION AND DEVELOPMENT OF THE MINERAL RESOURCES OF THE STATE.

This permits the Board of Governors to develop new internal policies when the need arises. In this dramatically changing mineral world, new policies and activities are discussed and developed as needed.

Statistics are a good record of the public demands on the Department's staff and the variety of services used. Activities representing these statistics are in the quarterly reports.

#### PUBLIC CONTACTS

Telephone contacts	11,139
Office visitors	<u>4,045</u>
TOTAL	15,184

#### MUSEUM ATTENDANCE

	<u>No. of groups</u>	<u>Visitors</u>
School groups	129	5,490
Other groups	11	405
Curator	1	18
Public	<u>          </u>	<u>16,849</u>
TOTAL	141	22,762

#### MISCELLANEOUS STATISTICS

Educator's kits	145
Field trip information - collecting	475
Programs provided	25
Meetings attended	69
Mine visits	153
Mine reports written	140
Field interviews	87
Conferences & APSMOA	15
New mine files developed	147
Publications printed	7
Publications sold	1,991
Library used	1,116
Other government agencies assisted	126
Mineral identification	839
Mine files used (mineral properties)	2,602
Mineral properties discussed with engineers	669

Mine or mineral occurrence files and activities are of great importance to the promotion of mineral resources. There were 2,602 files researched and 669 technical discussions of individual files with the engineers this past fiscal year. It is interesting to note how this activity is in many areas away from the heavily populated urban areas. The tens of millions of dollars being expended on this activity is of great help to outlying areas. This activity is listed by counties:

<u>COUNTY</u>	<u>MINE FILES</u> <u>STUDIED</u>	<u>DISCUSSIONS WITH</u> <u>ENGINEERS</u>	<u>TOTAL</u> <u>ACTIVITY</u>
Apache	6	0	6
Cochise	113	50	163
Coconino	11	3	14
Gila	139	27	166
Graham	25	11	36
Greenlee	25	7	32
La Paz	8	21	29
Maricopa	457	110	567
Mohave	287	75	362
Navajo	1	0	1
Pima	163	52	215
Pinal	176	51	227
Santa Cruz	83	65	148
Yavapai	825	158	983
Yuma	<u>283</u>	<u>39</u>	<u>322</u>
TOTALS	2,602	669	3,271

## FUTURE ACTIVITIES

Consistent with good forward planning processes, a long-term view must be maintained. Therefore, additional objectives have been established for future activities. However, they may be modified as industry needs, technology or regulations change. They have not been placed in a specific planning cycle at this time.

These future activities include:

1. Establish a mineral exploration program data depository and maintain a composite map of location and type of exploration activity.
2. Develop a mineral property sampling capability, including equipment to collect and analyze samples with emphasis on non-metallic minerals. Necessary equipment will include hand-sampling tools, a core drill, a bulk sample analytical and processing plant such as a small portable mill.
3. Establish an ore buying station so there will be a market for small lots of ore minerals.
4. Develop a regional mineral resources evaluation program to study groups of old properties for suitability for cooperative development (custom mill-type studies) or as a mineral exploration target.
5. Develop an active "abandoned mines" safety and environmental hazard program to:
  - (a) Locate and map abandoned shafts, adits, open pits and caved areas.
  - (b) Evaluate them for mineral potential or as anchor points for sophisticated mineral exploration programs.
  - (c) Propose solutions to the safety hazard presented by abandoned shafts, adits, open pits and caved areas.
  - (d) Assist in environment clean-up programs by filling excavations found to be of no value with waste and tailings.
6. Function as an administering agency for federal and state mineral lands reclamation plans.
7. Establish a touring mineral museum to provide statewide educational programs, lectures and displays.
8. Establish a position of Public Information Officer in the department's Phoenix office.
9. Prepare an inter-library cross reference index of publications on Arizona's mineral resources and mines.

DEPARTMENT OF MINES & MINERAL RESOURCES

Year End Financial Statement

Fiscal Year 1983-84

Personal Services	\$270,200	264,200.30	5,999.70
Employee Related Expenses	60,200	56,992.90	3,207.10
Travel (In-State)	6,800	6,943.92	(143.92)
Travel (Out-of-State)	Ø	92.30	(92.30)
Operating Expenses	22,100	28,380.80	(6,280.80)
Communication		5,401.72	
Insurance		1,611.18	
Lease Rental Other		334.13	
Printing & Photography		1,245.67	
Repair/Maint. Equipment		3,860.83	
Operating Supplies		1,975.26	
Repair & Maint. Supplies		2,207.40	
Utilities		6,484.47	
Miscellaneous		5,260.14	
Equipment	Ø	2,241.84	(2,241.84)
TOTALS	\$359,300	358,852.06	447.94