



STATE OF ALASKA  
Department of Natural Resources

# Division of Mines & Geology

# MINES BULLETIN

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### IN THIS ISSUE

HUMBLE OIL NEAR WRANGELL

AMENDED ASSAY LAW

DIVISION GEOCHEM WORK

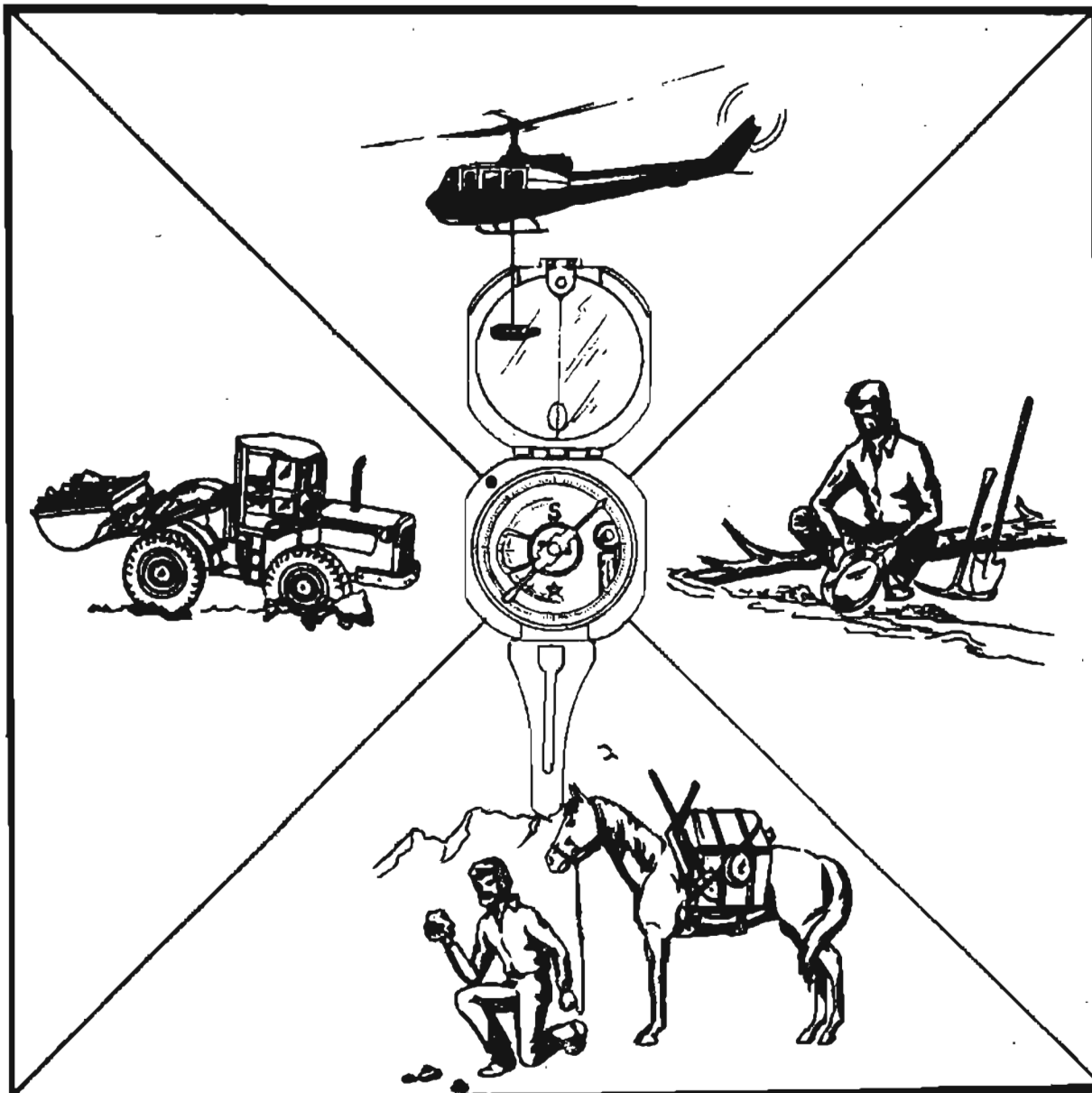
DIVISION VACANCIES

MINING CLAIMS

NEW PUBLICATIONS

MIRL MAP RELEASE

METAL MARKET

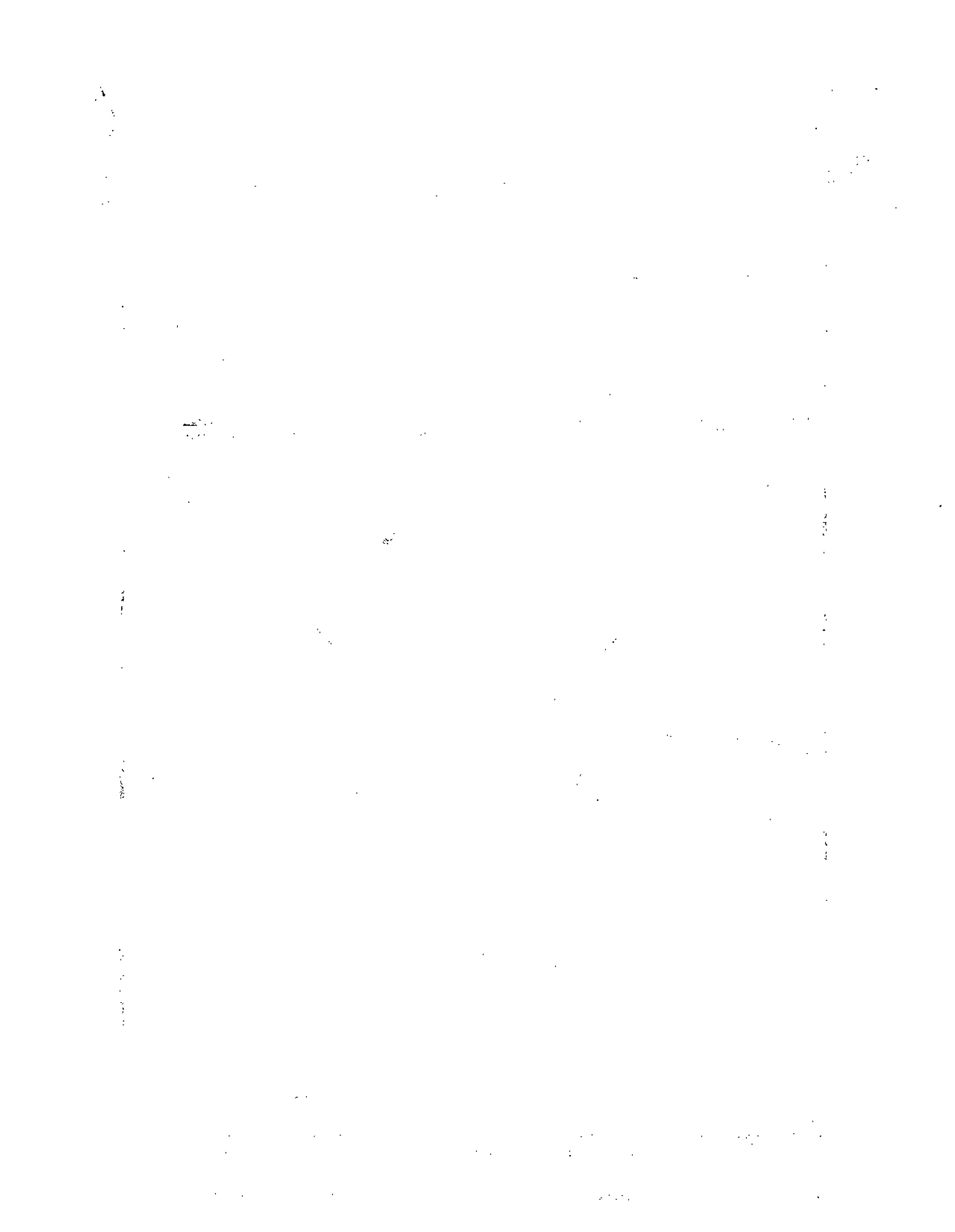


Published to Accelerate the Development of the Mining Industry in Alaska

Keith H. Miller - Governor

Thomas E. Kelly - Commissioner

James A. Williams - Director



## HUMBLE OIL NEAR WRANGELL

Humble Oil and Refining Company is setting up a 16-man camp in the Groundhog Basin area, approximately 12 miles southeast of Wrangell. Prospecting in the area will be carried out for three or four months and will include the use of numerous drill rigs. A mapping program was carried out last summer, and this summer's schedule calls for test holes and sampling for copper, zinc, and lead. Alcan Explorations of Canada will be the contracting firm for the operation, and will be using helicopters as the prime means of support.

## AMENDED ASSAY LAW

Section 27.05.090 of the Alaska Statutes has been amended by the Legislature and signed by Governor Miller. It now reads as follows:

Sec. 27.05.090. APPOINTMENT OF ASSAYERS, INFORMATION AND PROCEDURE. The department shall appoint for each public assay office a competent person to make assays and analyses of Alaskan ores and minerals. No charge shall be imposed for an assay or analysis. When an assay and analysis are made the person requesting them shall state upon forms furnished by the department: (1) his permanent residence address; (2) a description, as precise as possible, of the location where the sample was taken; and (3) other information that the department by regulation may require that may be beneficial toward evaluation of the state's mineral resources. Information received and assay results shall be kept confidential for a period of two years. At the end of that period the information and results shall be open to public inspection and may be published by the department.

This amended law will become effective on July 15, 1970. After that date we will require the information, as stated above, on forms to be provided by us. We will catalog the information systematically and incorporate it with our mineral and mining claim Kardex files for public reference at the end of the two-year confidential period.

## DIVISION GEOCHEM WORK

Upon his return from an international geochemical symposium at Toronto last month, a University of Alaska representative informed us that our Division is ahead of any other similar agency in the development and use of geochem data. Though our program is not yet fully developed, perhaps it is time to give our readers a detailed accounting of it.

To begin with, the guiding philosophy of the Division's field work is to make ore province evaluation studies for the encouragement of exploration by private industry. This work is mainly mile-to-the-inch geologic mapping and geochemical stream sediment sampling of favorable areas with mapping in greater detail where warranted. The mapping is directed at evaluating the ore potential and producing a maximum amount of knowledge useful for exploration.

The recently-passed HB 481 to create a State Division of Geological Survey will change the name and expand the duties and personnel of the present Division when additional funds are obtained. Emphasis of geologic mapping will continue to be economic because of the following language in the Act: "The division of geological survey is authorized to make a complete geological survey of the state, giving special attention to all natural products of economic importance...." (underlining supplied)

The Division selects the favorable areas for work chiefly from evaluation of the basic regional data published by the U.S.G.S. Our aim is to point out target areas for further investigation by private parties within the areas we map and give suggestions for prospecting where possible. We also map known mineral deposits encountered within the area so as to determine their relationships to the regional geology.

Our ends are accomplished through applied geology and geochemistry. We are showing how basic scientific data published by the U.S.G.S. can best be used to serve the residents of the State. We fill the gap between the U.S.G.S. quadrangle maps and the exploration targets needed by industry and prospectors. Geochemistry is and will continue to be an integral part of our field programs with the understanding that (1) without detailed geology to back it up, geochemistry loses much of its value, and (2) geochemistry helps interpret the geology. Except under rare or unusual circumstances, we plan no geochemistry beyond the limits of our geological projects.

A continued program of mapping by a single geologist or party in one district or region is usually preferable to mapping areas of perhaps 10-30 square miles scattered about the State so long as the foregoing aims are satisfied and the information gained is published each year. Examples are Rose's Alaska Range reports, Richter's Slana reports, and Herreid's Sinuk reports.

Our geochem samples are analyzed for four or five elements by atomic absorption and for 30 elements by emission spectrograph. Some may ask, "Why so many elements? How is all this analytical work justified?" Experience near Granite Mountain on the Seward Peninsula points out the need for the extensive analyses. A division project there several years ago reported copper and molybdenum anomalies based on the standard wet analyses for copper, lead, zinc, and molybdenum. In the winter of 68-69, the U.S.G.S. released a report that covered part of our Granite Mountain project area. Because of 30-element analyses, the GS was able to point to significant anomalies of silver, bismuth, and molybdenum. The division probably missed a significant silver anomaly because of incomplete data extraction from our samples.

Handling and interpreting the data presents a problem. Analyses for 30 to 35 elements for each sample plus several items of field data pertaining to the environment where it was taken multiplied by hundreds of samples taken by each of several parties creates a mass of information that could be only partially interpreted without computer assistance. The University of Alaska Mineral Industry Research Lab personnel, chiefly Lawrence E. Heiner, has provided this assistance.

A special form to record sampling data was devised for use in the field, the lab, and for IBM card-punching at the computer center. The completed card is then stored for easy retrieval of the information.

A computer program was written for us by MIRL to perform basic statistical analyses of the data as well as printing them out in tabular form. Print-outs are shown in our reports. Threshold and anomalous values are computed for each element. The threshold value is taken as the mean plus two standard deviations and the anomalous value is taken as the mean plus three standard deviations. Calculating the standard deviation by hand is a six-step process (including square roots) for each element in each sample after the mean for each element is computed. Even with a desk calculator this would become very tedious and in fact probably wouldn't be done except for a few key elements.

Providing data on anomalous values is an additional service to the reader of the report. Geochem sample data without a definition of background, threshold, and anomaly lose much of their value. Each year will require minor modifications in the basic program until the maximum in convenience to the user is attained. We plan to continue this practice in the years ahead and eventually build up a state-wide card file of geochem data that is immediately available to the exploration man or the basic researcher. The computer can retrieve any desired information from this file.

This will prove to be a valuable service in the future as more is learned about the significance of metal ratios and mineral associations. Eventually the data will be stored on tape. When the file of data is of sufficient size, we will be able to publish quadrangle maps showing geochem data for individual quadrangles in addition to the geology. The computer can be programmed to do the plotting for us.

## DIVISION VACANCIES

The Division has openings for two mining geologists, a mining engineer, a geochem analyst, a lab supervisor, and a mineral lab technician. Recruitment for the latter two positions is closed and they will be filled within two months. Details on the other four vacancies are as follows:

### Mining Geologist III: Minimum required qualifications:

Graduation from college with a master's degree in geology, geophysics, mining engineering, mineralogy, economic geology, stratigraphy, structural geology, geochemistry or closely related field and three years of experience as a professional geologist, geophysicist, or mining engineer in metallic or nonmetallic mineral exploration and/or development. The required experience must have been within eight years of the date of application. Applicants must have a thorough background in petrology, structure, and ore deposits. Must be physically capable of arduous and extended field work in inclement weather.

Substitution: Graduation from college with an appropriate bachelor's degree and two additional years of qualifying experience with demonstrated report preparation ability may be substituted for the master's degree.

Additional graduate work beyond the master's degree in an appropriate major may be substituted for the required technical experience to a maximum of three years for a Ph.D. degree.

Note: Recruitment is open outside the State of Alaska. Residents shall receive preference. Starting salary is \$1412 per month.

### Mining Geologist I: Minimum required qualifications:

Graduation from college with a bachelor's degree in geology, geophysics, mining engineering or closely related field.

Note: Recruitment is restricted to individuals residing in Alaska and Alaskan residents. Recruitment closes June 5, but probably will be reopened. Starting salary is \$913 per month.

### Mining Engineer: Minimum required qualifications:

Three years of recent professional mining engineering experience and graduation with an appropriate major from an approved college. The required experience must have been within eight years of the date of application. Must be physically capable of arduous and extended field work in inclement weather.

Substitution: Additional appropriate experience may be substituted for the required education on a year-for-year basis.

Note: Recruitment is open outside the State of Alaska. Residents shall receive preference. Starting salary is \$1312 per month.

### Geochemical Analyst: Minimum required qualifications:

College graduation with a major in geology, mineralogy, or chemistry, including one year each of chemistry, physics, and mathematics beyond the introductory level. Two years of progressively responsible experience in analytical work in an appropriate field. Must be able to use the typical geological laboratory analytical instruments such as x-ray spectrography, optical emission spectrograph, atomic absorption spectrophotometer, x-ray diffraction, and other related laboratory equipment.

Substitution: Graduate work in geology, mineralogy, or chemistry with emphasis on material analysis may be substituted for the required experience on a year-for-year basis.

Note: Recruitment is open outside the State of Alaska. Residents shall receive preference. Recruitment closes June 26. Starting salary is \$1133 per month.

The above salaries may be increased by the Legislature. If so, the new rates will likely be effective July 1, 1970. The positions are all at College, Alaska. For further information or application forms, write to James A. Williams, Director, State of Alaska, Department of Natural Resources, Division of Mines and Geology, Box 5-300, College, Alaska 99701.

**MINING CLAIMS**

<u>NUMBER OF CLAIMS</u>	<u>CREEK OR AREA</u>	<u>QUADRANGLE</u>	<u>DATE NOTICE POSTED</u>
26	Slippery Creek, Birch Creek	Mt. McKinley	Mar., 1970
42	Between Cripple and Sinuk Rivers	Nome	Mar., 1970
1	Jump Creek	Candle	Apr., 1970
10	South of Stewart River	Nome	Apr., 1970
4	Iyoukeen Cove	Sitka	Apr., 1970
132	Rainbow Creek	Anchorage	Apr., 1970
1	Palmer Creek	Seward	Apr., 1970
2	Bradfield Canal	Bradfield Canal	Apr., 1970
20	McCarthy Creek	McCarthy	Dec., 1969
4	Ahtell Creek	Gulkana	1969
1	Grubstake Gulch	Anchorage	Mar., 1970
1	Knik River	Anchorage	Mar., 1970
2	Auk Bay	Seward	Feb., 1970
1	Bear Creek	Mt. Hayes	Apr., 1970
60	Kimball Pass and Kenney Lake	Valdez	Feb., 1970
5	Fox Creek	Livengood	Apr., 1970
1	Tenderfoot Creek	Big Delta	Apr., 1970
14	White and Rex Creek	McCarthy	Mar., 1970
9	Williams Peak	McCarthy	Mar., 1970

## NEW PUBLICATIONS

The following open file reports have been released by the U.S. Geological Survey and are available for consultation in the Alaska U.S.G.S. and State Division of Mines and Geology offices. Material from which copies of these open file reports can be made at private expense is available only at the Alaska Geology Branch, U.S.G.S., 345 Middlefield Road, Menlo Park, California 94025.

Gold resource potential of the Denali bench gravels, Alaska, by Thomas E. Smith. 19 p. (includes 6 text figs.).

Analyses of bedrock and stream-sediment samples from the Haines-Porcupine region, southeastern Alaska, by G. R. Winkler and E. M. MacKevett, Jr. 11 p., plus 81 p. tabular material, 1 pl.

Reconnaissance geologic map of the Nabesna A-3 quadrangle, Alaska, by D. H. Richter. Map, explanation, cross section (1 sheet), scale 1:63,360.

Reconnaissance geologic map of the Nabesna B-4 quadrangle, Alaska, by D. H. Richter. Map, explanation, cross section (1 sheet), scale 1:63,360.

Chemical analyses of stream sediment samples from the Sadlerochit-Jago Rivers area, Mt. Michelson and Demarcation Point quadrangles, Alaska, by W. P. Brosge, H. N. Reiser, and M. B. Estlund. 6 p. text plus 38 p. tabular material, 1 fig.

## MIRL Map Release

The Mineral Industry Research Laboratory has a limited supply of mineral commodity maps of Southeastern Alaska available for distribution. These maps are printed at approximately 1"=20 miles to be used as overlays to "Geological Map of Southeastern Alaska" printed by C.I.M. and contained in C.I.M. Special Volume Number 8. The geological map is included with eight commodity maps, one currently active claim map, and one sheet delineating major faults. Data for the commodity maps was taken from the Division of Mines and Geology Kardex files and plotted by computer. These maps may be obtained from the Mineral Industry Research Laboratory, University of Alaska, College, Alaska 99701 at no charge.

## Preliminary Report Release

On May 11, 1970, the Division of Mines and Geology released a brief summary of results of A Geological and Geochemical Investigation in the Southeast Quarter of the Eagle A-1 Quadrangle, Alaska. The summary discusses anomalies in lead and zinc found in the area. The preliminary report is available free of charge from the Division offices in College (University and College Avenues), Anchorage (3001 Porcupine) and Juneau (Goldstein Bldg.).

METAL MARKET

	<u>May 25</u>	<u>Month Ago</u>	<u>Year Ago</u>
Antimony ore, stu equivalent			
European ore	\$38.39-40.17	\$38.39-40.17	\$7.86-7.95
Barite (drilling mud grade from E/MJ April)	\$12-16	\$12-16	
Beryllium powder 98%	\$54-66	\$54-66	\$54-66
Chrome ore long ton	\$31-35	\$31-35	\$31-35
Copper per lb.	59.7¢	59.7¢	46.1¢
Gold per oz.	\$36.17	\$36.65	—
Lead per lb.	16.5¢	16.5¢	14.3¢
Mercury per flask	\$430-440	\$467-473	\$512-520
Molybdenum conc. per lb.	\$1.72	\$1.72	\$1.72
Nickel per lb.	\$1.28	\$1.28	\$1.03
Platinum per oz.	\$130-135	\$130-135	\$120-125
Silver, New York, per oz.	166.7¢	185.9¢	175.1¢
Tin per lb.	179.8¢	187.0¢	157.1¢
Titanium ore per ton	\$30-35	\$30-35	\$20-21
Tungsten per unit	\$50-55	\$43.00	\$43.65
Zinc per lb.	16.0¢	16.0¢	14.5¢

