



STATE OF ALASKA
Department of Natural Resources



Division of Geological & Geophysical Surveys

MINES BULLETIN

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TWO STRIP MINING BILLS INTRODUCED IN THE HOUSE

The Mining Record

January 17, 1973

Two bills affecting strip mining of coal were introduced this week in the House during the first two days of the 93rd Congress. Rep. Wayne Hays (D-Ohio) reintroduced the bill that the House passed last year, and Rep. Ken Hechler (D-W. Va.) came in with another bill to abolish strip mining.

The Hays bill would impose strict controls on strip mining, including a ban on all such mining on slopes greater than 20 degrees unless the coal operators can prove in advance that the land can be sufficiently reclaimed.

Rep. Hays said he thought the House Interior Committee would get his bill out promptly but added that it may be amended. "No legislation is perfect," he said. He also said that he had no desire to stop strip mining "because I realize the need for coal".

The Hays bill was cosponsored by Reps. Thomas Morgan (D-Pa.) and John Helcher (D-Mont.).

Rep. Hechler, who sought a total abolition of strip mining within six months in the last Congress, introduced a new bill that would ban strip mining within six months in mountainous areas where contour mining is practiced but allow 18 months for phasing out stripping in flatter terrain where the area method is used. He said he did not believe that complete restoration of strip-mined lands was possible "except at a prohibitively high economic cost".

The Hechler bill, which was joined by 16 Democratic and eight Republican members, includes a provision advanced last year by Rep. John Seiberling (D-Ohio) for cash payments to miners displaced by the strip mining ban, and also gives ousted miners job priority in reclamation work.

BRITISH USE NEW CONCENTRATOR ON WHEAL JANE

Consolidated Gold Fields' Wheal Jane tin mine was opened formally on October 1, 1971. It is the first new major tin mine to be brought to production in Europe for over 50 years. While the Cornwall area has been a source of tin in the British Isles since the time of the Phoenicians, the number of active tin mines in Cornwall dropped in the last century from over 300 to only two. This emphasizes the importance of the present revival of mining activity in the area.

Built by the Ortech Division of West's (Manchester) Limited, a WGI-Company, the Wheal Jane Concentrator is designed to treat 600 tons of ore per day and to recover tin, copper and zinc from the mine's complex ore.

Flow through the plant is as follows: Run of mine ore, crushed to minus 6", is fed to a crushing-screen plant including two cone crushers, screens and a 72" WEMCO Classifier. The crushed product is stockpiled and fed at 25 TPH to a 6' WEMCO Rotary Sieve which operates in closed circuit with a ball mill. The sieve is the first to be installed in the United Kingdom.

The minus 52 mesh product from the sieve is thickened and the underflow passes to the sulphide flotation circuit which includes twelve No. 66 WEMCO Rougher Flotation Cells, a re-grind mill, twelve No. 66 WEMCO Cleaner Cells and twelve No. 44 WEMCO copper-zinc Flotation Cells. The resulting copper-zinc sulphide concentrate is thickened, filtered and dried.

The non-sulphide tailing from the rougher cells is pumped to cyclones which make a separation at 200 mesh. Oversize is pumped to a hydrosizer which feeds thirty shaking tables arranged to allow maximum flexibility. Table concentrate is ground in a vibrating mill and is upgraded to 50% tin by floating away residual sulphides in a three cell No. 44 WEMCO Flotation Machine. The resulting high-grade tin concentrate is filtered and dried. Table tailings, after a regrind, are sent with cyclone undersize to a desliming circuit where twelve No. 66 WEMCO cells scavenge sulphides, ten No. 66 WEMCO cells are used for rougher tin flotation and eight No. 44 WEMCO cells clean the low-grade tin concentrate which is thickened, filtered and dried.

In addition to WEMCO Agitators and Conditioners, the following WEMCO mixers are used for reagent preparation and storage: Conditioners: three 3', two 5', one 6' and one 8'; Agitators: two 16' for storage.

The above recovery process produces approximately 7 tons per day of +50% tin, a low-grade tin concentrate of about 13 TPD of +20% tin and approximately 28 TPD copper-zinc concentrate.

Gold Fields worked closely with the local authorities and conservation organizations to avoid undue harm to the beautiful Cornish countryside. All buildings are architect-designed and sighted inconspicuously, wherever possible. Waste materials, mixed with water, flow to a dam in the valley where solids settle out. The face of this dam is being screened with trees and grassed over to ensure it blends with the landscape.

MINING EXTENSION COURSES

The remaining scheduled Mining Extension courses, to be taught by Willow M. Burand and Leo MarkAnthony, will be held at the following state locations:

<u>Location</u>	<u>Date</u>	<u>Title</u>	<u>Instructor</u>
Anchorage	March 19 - April 6	Rock Identification	MarkAnthony
Anchorage	April 9 - April 23	Geochemical Prospecting	MarkAnthony
Nome	April 23 - May 4	Geophysical Prospecting	MarkAnthony
Fairbanks	May 7 - May 18	Geophysical Prospecting	MarkAnthony
Eielson	March 12 - April 6	Basic Prospecting	Burand
Glenallen	April 9 - May 1	Basic Prospecting	Burand
Glenallen	May 7 - May 18	Rock Identification	Burand

Any questions concerning the courses should be addressed to the instructor:

Mr. Willow M. Burand

Mr. Leo MarkAnthony

Division of Statewide Services

2020 Lake Otis Parkway

Box 95204 - U. of A.

Anchorage, Alaska 99504

Fairbanks, Alaska 99701

CONGRESSIONAL HEARINGS TO REVISE MINING LAW SCHEDULED FOR NEXT YEAR

Engineering and Mining Journal

December, 1972

Despite opposition from some quarters, the Mining Law of 1872 is going to be revised, John B. Rigg, assistant secretary of the Department of Interior told a Mineral Conference in Los Angeles. "A lot of people in California don't want the 1872 law changed, but after 100 years, we are in a different world," he told his audience. He advised attendees: "If you don't want it changed in a way not in accordance with your wishes, you had better make yourselves heard." Rigg said hearings to revise the Mining Law and the 1920 Mineral Leasing Act would start in the next session of Congress.

The conference, jointly sponsored by the Bureau of Land Management and the California Mine Operators Association, covered problems encountered in developing and producing minerals from the public domain.

Rigg, who is responsible for minerals programs within the Department of Interior, also said the creation of a Department of Natural Resources is inevitable, since too many Government departments are currently involved in this field. He added that "there are far more laws pending on environmental protection than anything else. There is going to be more conservation."

Both Rigg and Harrison Loesch, the Interior Department's assistant secretary for public land management, noted that the 1970 National Environmental Policy Act (NEPA) gave the Government stronger control over mining than ever, and that the Government's role would increase.

"NEPA deserves credit for helping bring into focus an even more fundamental need - land use planning", Loesch told the meeting. He pointed out that President Nixon had given this high legislative priority, and had proposed a Bureau of Land Management Organic Act to improve the ability of land managers to serve national needs. Noting that recommendations for a Department of Natural Resources, the National Land Use Policy, and the BLM Organic Act had been put over to the next Congress, Loesch said public land management had been vitally affected by the delay because NEPA is already functional. He cited the oil pipeline in Alaska as an example.

"For over two years we were enjoined from even issuing a permit to survey access roads needed in connection with planning and constructing a pipeline," he said. Beyond this we

were also enjoined, until August 15, from issuing a pipeline permit." However, he added that "a better job may well be the result."

Loesch said the effect of the three pending pieces of legislation, when they become law, would be to provide a more efficient, effective leadership and co-operation in assuring that public and private land management better meet the challenge of balancing natural resource utilization with environmental protection.

The challenge for the mineral industry, he said, is to secure more minerals, for energy and other purposes, in an environmentally sound framework, making better use and reuse of all resources. He gave the following outline of reforms proposed in the Natural Resource Land Management Act and revisions which have been proposed in the mining and mineral leasing laws:

The "Natural Resource Land Management" proposal would remove from the books numerous outmoded, archaic, and inconsistent laws, setting forth a modern, forward-looking policy. It would direct an inventory of public lands and comprehensive land use plans, create discretionary authority to dispose of lands and provide authority to block up public holdings, and it contains management direction with powers of enforcement.

The Mineral Leasing reform would incorporate specific environmental protection provisions, consolidate statutes, consolidate leasing authority in the Interior Department, extend leasing to deposits on certain land not now covered, extend the leasing principle to certain minerals, and extend competitive bidding procedures.

The Mining Law revision is tandem legislation. It retains the basic patent-location concept to all the hard rock minerals it would cover, but commercial prospecting would have to be preceded by a permit which would authorize exclusive prospecting.

The latter would be an advantage for the prospector over existing law, Loesch said. It includes rent and royalty provisions. Environmental protection would be specifically directed. Where permits are sought on land believed to contain commercially valuable minerals, permits would be issued after competitive bidding. Upon discovery of a mineral deposit capable of commercial development, a patent to the minerals would be issued.

"While the 1872 law would be repealed, valid rights existing on the date the new law is enacted would be preserved," Loesch said, but he added that "unpatented claims will be conclusively presumed abandoned if not recorded with Interior within a year."

Dr. Russel G. Wayland, chief of the Division of Conservation, US Geological Survey, said the current trend is toward more leasing of mineral rights for minerals that are borderline cases between leasable and locatable. As an example, he cited the case of bentonite, noting that "there has never been any push to examine bentonite to determine whether it should have been leasable all this time." Following his talk, he said that borderline minerals, such as potassium and sodium minerals, now fall under the Mineral Leasing Act if rights are not already established under the Mining Law. He added that if the proposed law to amend the Mineral Leasing Act is passed in its present form, gypsum will be leasable and not locatable.

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ORV-MANAGEMENT NEEDS YOUR INPUT

The Land

January, 1973

Executive Order 11644, signed by President Richard M. Nixon on February 8, 1972, requires all federal agencies to issue regulations regarding the use of off-road vehicles (ORV) on federal lands.

In Alaska, federal lands are managed primarily by the Bureau of Land Management, the

U. S. Forest Service, the National Park Service, the Bureau of Sport Fisheries and Wildlife, the U. S. Army and the U. S. Air Force. Representatives from these agencies met informally on November 21 to discuss common problems with ORV management.

Although regulations will soon be required, none of the agencies had received draft regulations on which they could comment. Agency representatives said they expected regulations would preserve the status quo in Alaska -- probably causing little actual change in the pattern of ORV use.

BLM and the Forest Service expect their draft regulations to apply to all but mining vehicles, and both agencies expect most of their lands to be open to ORV use as now is the case. The Bureau of Sport Fisheries and Wildlife regulations are expected to prohibit ORV use on wildlife refuges and ranges, as now is the case. National Park Service regulations now in force allow no ORV use in National Parks unless specific areas are opened, and the effect of the Executive Order on these regulations is not known as yet. ORV use on most military lands is expected to continue to be prohibited in most cases.

BLM, as noted previously, expects its draft regulations to arrive at any time. These draft regulations are proposed rulemaking, and there will be a period of approximately 30 days for the public to comment on the rules which are proposed. This gives ORV owners, special-interest groups and others a period to examine the proposed regulations, discuss them, and make any comments. This vital information will be sent to Washington and will be considered in the writing of final ORV regulations.

Actual designation of specific areas as open, open with restriction, or closed to off-road vehicles is impossible until final regulations take effect. Also, BLM must consider the effect of ORV use in specific areas in terms of protecting the resources of those lands, minimizing conflicts among the various users of those lands, and promoting the safety of all users of public lands.

After final regulations have been published and ORV effects for specific areas have been determined--then BLM's planning system, which incorporates public comment, will be used to determine which specific areas should be closed or restricted.

It's too early to talk about ORV use in specific areas. BLM's draft regulations can cause no changes in the present use of off-road vehicles on BLM lands. When BLM's draft regulations arrive, BLM will need help to decide how best to manage ORV use. This will mean looking at the proposed rules, with the goal of improving the rules if possible.

ED NOTE: In a May 5, 1972 memorandum from Rogers C. B. Morton, Secretary of the Interior, off-road vehicles were defined as: "...any motorized vehicle (including the standard automobile) which is used off established roadways and is designed for, or capable of, travel on or immediately over land, water, sand, ice, marsh, swampland, and or other natural terrain".

GEODES HAVE CLUES

Industrial Research

January, 1973

When a geode grows, it grows from its outer shell inward. During this time it forms a record of its origin which may provide clues to the location of important mineral deposits.

As things have worked out, says USGS geologist Robert B. Finkelman, "Until recently the scientific community has virtually ignored the common geode. Now the use of new analytical tools, such as are being applied to studies of lunar soil, has revealed some unknown and unexpected information geodes.

Studying hundreds of geodes from the Chihuahua area, northern Mexico -- the most common variety found in rock and hobby shops -- Finkelman and his colleagues have made special use of

the scanning electron microscope. "The magnificent microcrystals we observed," the Survey scientist said, "were instrumental in helping to identify some of the seven manganese minerals in these Mexican geodes.

"The area in Mexico in which the geodes are found has long been an important manganese mining district," Finkelman noted. "This definitely raises the possibility that the minerals in geodes may be indicators of potential deposits in any locale containing geodes, and therefore may be another tool in geochemical exploration."

"Although geodes are found the world over," he said, "only in a few localities are they sufficiently abundant to be of commercial interest to collectors. The best known localities are the Keokuk area at the juncture of Iowa, Illinois and Missouri and the Chihuahua area in Mexico.

Examining the minute crystals growing on or included in the quartz or calcite, the USGS scientists have so far identified nine minerals never before reported in geodes.

"As more is learned about geodes, it appears that classical concepts and definitions will have to be revised," Finkelman said.

BUNKER HILL PRESIDENT RAPS ENVIRONMENTAL MISCARRIAGES

The Mining Record

January, 1973

Miscarriages of environmental concern were recently described by Bunker Hill Co. president Frank Woodruff.

Woodruff discussed several targets for environmental improvement including sulfur dioxide, a major pollutant of his company's plants. He said that sulfur dioxide alone has never been demonstrated to be the culprit in any respiratory disease or in any pollution episode.

"In fact, implant industrial experience demonstrated that SO₂ levels much higher than any found in the vicinity of industrial plants are not harmful," he said.

"However," he continued, "the smell and taste of even small amounts of SO₂ are disagreeable, and no one seriously questions the need for the primary standards for SO₂. On the contrary, industry has accepted them as goals."

The company president then attacked the Environmental Protection Agency's restrictions on meeting these standards, calling it "the ripoff of the century."

"In our own plants we can meet these primary standards by the judicious use of the twenty million dollars worth of control equipment we have installed during the past two decades, coupled with occasional temporary shutdown of some of our SO₂ emitting facilities," he said.

Woodruff said that the federal EPA has admitted that Bunker Hill has the best available control equipment, but that they presently stand on their policy that a temporary shutdown of an SO₂ emitting facility is not an acceptable way of meeting the primary SO₂ standards.

"This policy means that we along with all other American industry, are required to install control equipment (not yet developed or available) capable of meeting the primary standards on the worst day of the year at full production rather than by reducing production on those days of unusual climatic conditions," he said.

"If this folly persists," he explained, "it will cost industry hundreds of millions of extra dollars to try to meet the standards on a few days each year when they could be met at a much lower cost simply by temporarily reducing production."

He said these high extra costs will in turn be passed on to the consumer.

"The result is again unnecessary equipment, increased maintenance costs, increased energy consumption, and less responsive and possibly more dangerous industrial plants," he added.

Woodruff said an alternative solution already reluctantly accepted by many plants is complete and total shutdown.

He closed his message with the wish "May your yule log burn brightly without violating the environmental quality of your life."

NEW PROPERTY EXAMINATION

Property examination 75-4 on the Grandview Exploration Company Tin and Silver Prospects in the Talkeetna D-5 Quadrangle, by C. N. Copwell, is now on open file at the Division's Mining Information Offices located at College, Anchorage, Juneau, and Ketchikan.

NEW MINING CLAIMS

Number of claims	Creek or Area	Quadrangle	Date Notice Posted
3	Craigie Creek	Anchorage	June 1972
3	Harriman Fjord	Anchorage	July 1972
4	Knik River	Anchorage	July & Nov. 1972
2	Alfred Creek	Anchorage	July 1972
2	Gunsight Mountain	Anchorage	September 1972
5	Caribou Creek	Anchorage	June 1972
2	Old Glory Creek	Bendeleben	August 1972
5	Rainy Creek	Bethel	July 1972
1	Birch Creek	Circle	September 1972
4	Smith Creek	Eagle	August 1972
6	Fortymile River	Eagle	August 1972
12	Hall & Canyon Creeks	Eagle	November 1972
1	Bonanza Creek	Fairbanks	September 1972
1	Daniels Creek	Fairbanks	August 1972
1	Nelchina River	Gulkana	June 1972
16	Little Creek	Iditarod	June 1972
200	Otter Creek	Iditarod	May 1972
2	Salmon River	Juneau	July 1972
1	Bessie Creek	Juneau	July 1972
2	Wilson Creek	Livengood	August 1972
1	Twin Creek	Livengood	September 1972
1	Radar Gulch	McCarthy	November 1972
3	Calamity Gulch	McCarthy	July & Aug. 1972
18	Smith Lake & Sheep Creek	McGrath	June & Aug. 1972
5	Mudslide Creek	Mt. Fairweather	October 1972
1	Stampede Creek	Mt. McKinley	July 1972
2	Christian Creek	Nome	September 1972
12	Graham & Bear Creeks	Ophir	December 1972
2	Hunt Creek	Selawik	May 1972
2	Juneau & Mills Creek	Seward	October 1972
6	Marsha Bay	Seward	September 1972
1	Sixmile Creek	Seward	April 1972
2	Goulding Harbor	Sitka	August 1972
8	Porcupine Creek	Skagway	July & Sept. 1972
12	Cache & Gold Creek	Talkeetna	July & Oct. 1972

Number of claims	Creek or Area	Quadrangle	Date Notice Posted
1	Poorman Cr. & Dandy Gulch	Talkeetna	September 1972
4	Bird Creek	Talkeetna	July 1972
2	Nugget Creek	Talkeetna	July 1972
2	Peters Creek	Talkeetna	July 1972
1	Chunilna Creek	Talkeetna Mountains	September 1972
1	Skookum Creek	Tanana	May 1972
1	Slate Creek	Tanana	August 1972
10	Alder Creek	Tyonek	May 1972

NEW REPORTS ON ALASKAN GEOLOGY

The Bibliography and Index of Geology (v. 36, no. 10, October 1972) published by the Geological Society of America contains the following Alaskan entries:

- Adams, W. D., 1972, Developments in Alaska in 1971: Am. Assoc. Pet. Geol., Bull., Vol. 56, No. 7, p. 1175-1187, illus. (incl. sketch maps) Petroleum and gas exploration
- Boyd, W. L.; Boyd, J. W., 1972, Microorganisms in frost scars: Arct. Alp. Res., Vol. 4, No. 3, p. 257-260, illus. Soils from 10 frost scars, microbiological survey, variations in chemical composition of soils, Barrow, Alaska
- Brosge, W. P.; Reiser, H. N., 1972, Geochemical Reconnaissance in the Wiseman and Chandalar Districts and Adjacent Region, Southern Brooks Range, Alaska: U. S. Geol. Surv., Prof. Pap., No. 709, 21 P., sketch maps Gold and silver mineralization, associated base metal anomalies, stream-sediment, rock and soil sampling
- Buckley, D. E., 1972, Geochemical interaction of suspended silicates with river and marine estuarine water (abstr.): Int. Geol. Congr. Abstr.-Congr. Geol. Int., Resumes No. 24, p. 296-297
- Clark, A. L.; Greenwood, W. R., 1972, Geochemistry and distribution of platinum-group metals in mafic to ultramafic complexes of southern and southeastern Alaska (abstr.): Int. Geol. Congr. Abstr.-Congr. Geol. Int., Resumes, No. 24, p. 297
- Davies, W. E., 1972, The Tintina trench and its reflection in the structure of the Circle area, Yukon-Tanana upland, Alaska (abstr.): Int. Geol. Congr. Abstr.-Congr. Geol. Int., Resumes, No. 24, p. 72-73
- Day, J. H.; Everett, K. R., 1972, (Composition and genesis of the organic soils of Amchitka Island, Aleutian Islands, Alaska; discussion and reply): Arct. Alp. Res., Vol. 4, No. 3, p. 283-284 For reference to article under discussion (by Everett), see this Bibliography Vol. 35, No. 2, 18 E71-04833
- Foster, H. L., 1972, Metamorphic facies of the Yukon-Tanana Upland, east-central Alaska (abstr.): Int. Geol. Congr. Abstr.-Congr. Geol. Int., Resumes, No. 24, p. 41-42
- Kanno, Saburo, 1971, Tertiary molluscan fauna from the Yakataga district and adjacent areas of southern Alaska: Palaeontol. Soc. Jap., Spec. Pap., No. 16, 142 p., illus. (incl. geol. map 1:375,000) Systematic descriptions, mostly pelecypods and gastropods, 62 genera and 104 species (nine new species), Kulthieth Formation (Paleocene-Eocene), Poul Creek Formation (Oligocene-Miocene), and Yakataga Formation (Miocene-Pliocene), paleoecology, paleoclimatology
- Kleist, J. R., 1972, Kink Bands Along the Denali Fault, Alaska: Geol. Soc. Am., Bull., Vol. 83, No. 11, p. 3487-3490, illus. (incl. geol. sketch map) Application in dynamic structural analysis, two stress patterns during history of fault, one compatible with thrust faulting, other with strike-slip movement

- Okamoto, Yoshifumi, 1972, Piedmont glaciation in the Taiga forests of ice ages in Japan and northern Italy similar to those now present in southern Alaska (abstr.): Int. Geol. Congr. Abstr.-Congr. Geol. Int., Resumes, No. 24, p. 374
- Ovenshine, A. T.; Brew, D. A., 1972, Separation and history of the Chatam Strait fault, southeast Alaska (abstr.): Int. Geol. Congr. Abstr.-Congr. Geol. Int., Resumes, No. 24, p. 24-95
- Pewe, T. L.; Reger, R. D., 1972, Wisconsin and modern snowline in Alaska (abstr.): Int. Geol. Congr. Abstr.-Congr. Geol. Int., Resumes, No. 24, p. 375
- Smiley, C. J., 1972, Applicability of plant megafossil biostratigraphy to marine-non-marine correlations; an example from the Cretaceous of northern Alaska (abstr.): Int. Geol. Congr. Abstr.-Congr. Geol. Int., Resumes, No. 24, p. 24
- Wendler, C.; Fahl, C.; Corbin, S., 1972, Mass balance studies on McCall Glacier, Brooks Range, Alaska: Arct. Alp. Res., Vol. 4, No. 3, p. 211-222, illus. (incl. sketch maps) Results for 1968-1972; studies on two other glaciers indicate recession for past 60 years

NEW OPEN-FILE REPORTS ON ALASKAN GEOLOGY

U. S. Geological Survey open-file reports concerning Alaskan geology are listed here in a form suitable for inclusion in the next volume of the Bibliography of Alaskan Geology published by the Alaska Geological Survey. The numbers assigned to these reports are informal ones used by the Alaskan Mineral Resources Branch of the USGS at Menlo Park, California. New reports are as follows:

Tailleur, I. L., 1972, Possible rift origin of the Canada basin, Arctic Ocean: U.S. Geol. Surv., Alaskan open-file rept. #552, 14 p., 6 figs.

UNDERWATER MINING INSTITUTE

The Marine Research Laboratory of the University of Wisconsin will hold the 1973 Underwater Mining Institute in Milwaukee on April 12, 13, and 14. The program has been carefully planned to bring key speakers from the ocean minerals industry, including exploration and metal recovery technology mining of manganese nodules, and applied exploration research. Focus this year will be on early commercial production of deep sea nodules and a special one-day short course covering the latest procedures in underwater minerals exploration. For more information, write:

Gregory Hedden, Program Coordinator
Sea Grant Advisory Services
610 Langdon Street - U. of Wisconsin
Madison, Wisconsin 53706

1973 AEROMAGNETIC PROGRAM

Invitation-to-Bid on State of Alaska 1973 Aeromagnetic Survey work mailing date is March 5. Bids will be opened publicly in Anchorage March 22. Survey area includes all or parts of Big Delta, Fairbanks, Mt. Hayes, Shungnak and Teller Quads. Copies of the Invitation-to-Bid may be obtained from the State of Alaska Division of Geological and Geophysical Surveys, Box 80007, College, Alaska, 99701.

METAL MARKET

Metals	March 2, 1973	Month Ago	Year Ago
Antimony ore, stu equivalent, European ore	\$9.20-10.20	\$7.60-8.60	\$8.64-10.00
Bauxite (drilling mud grade) per ton	\$18-22	\$18-22	\$18-22
Beryllium powder, 98%, per lb.	\$54-56	\$54-66	\$54-66
Chrome ore per long ton	\$24-27	\$24-27	\$25-27
Copper per lb.	56.7¢	53.08¢	52.5¢
Gold per oz.	\$84.58	\$65.59	\$48.94
Lead per lb.	16.0¢	15.0¢	14.5¢
Mercury per 76# flask	\$300	\$294	\$212
Molybdenum conc. per lb.	\$1.72	\$1.72	\$1.72
Nickel per lb. (cathode)	\$1.53	\$1.53	\$1.33
Platinum per oz.	\$170	\$135.78	\$102-105
Silver, New York, per oz.	255¢	197.88¢	148.42¢
Tin per lb., New York	203.4¢	179.6¢	171.6¢
Titanium ore per ton (Ilmenite)	\$22-24	\$22-24	\$30-35
Tungsten per unit	\$55.00	\$55.00	\$55.00
Zinc per lb.	19.2¢	19.12¢	17.0¢

STUTTELL, CALIFORNIA

FIELD INVESTIGATION

IS THE FIRST STEP IN

RESOURCE DEVELOPMENT

State of Alaska

Department of Natural Resources

Division of Geological & Geophysical Surveys

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