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PRELIMINARY REPORT
ON
MINERAL RESOURCES OF THE COUGAR LAKE LIMITED AREA

BY
WAYNE S. MOEN

DIVISION OF MINES AND GEOLOGY
DEPARTMENT OF CONSERVATION

December 20, 1962

Preliminary Report on Mineral Resources of the Cougar Lake Limited Area

Location.—The Cougar Lake Limited Area is mainly in the northwestern part of Yakima County in parts of townships 14, 15, 16, 17, and 18 north, and parts of ranges 11 and 12 east. Other parts of the area are in the adjoining northeast corner of Lewis County and the adjoining southeast corner of Pierce County (see figure 1). The total acreage of the limited area is about 90,000 acres, of which the approximate distribution by counties is as follows: Yakima - 63,720 acres; Lewis - 23,400 acres; and Pierce - 2,880 acres.

The limited area adjoins Mt. Rainier National Park on the east and is within the Snoqualmie and Gifford Pinchot National Forests. The area includes approximately 180 acres of private land in the form of nine patented mining claims that are in secs. 31, 32, and 33, T. 17 N., R. 11 E. and in sec. 3, T. 16 N., R. 11 E. (see figure 3).

Areal geology.—The Cougar Lake Limited Area is in the Cascade Mountains physiographic province of Washington. The higher peaks of the area rise to about 6,500 feet above sea level; the average altitude for most of the mountains is about 5,500 feet. The lowest valleys, which are occupied by the American and Bumping Rivers, are at 3,500 feet altitude.

The rivers and streams of the area have dissected the mountainous area into many deep valleys, canyons, and ravines. In the southern end of the area a broad upland at about 5,200 feet altitude contains numerous lakes, the largest of which are Twin Sister Lakes.

The rocks of the area range in age from Eocene (60,000,000 years old) to Recent alluvial deposits that are being deposited by present-day streams. The older consolidated rocks consist of great thicknesses of andesitic volcanic rocks, granitic rocks that are predominately granodiorites, and smaller masses of arkosic sandstones with interbedded shales. Covering the consolidated rocks are surficial deposits of soil, sand, and gravel. On the mountainsides these surficial deposits are thin, but in the larger valleys they are as much as 100 feet thick.

The geologic history of the area can be traced back as far as the Eocene epoch, at which time arkosic sandstones and shales were being laid down as continental sedimentary deposits upon broad alluvial plains that lay to the east of the Pacific Ocean. After the deposition of the sediments, there occurred eruptions of andesitic lava flows in late Eocene and early Oligocene time. Into these volcanic rocks were intruded granitic rocks; the granitic rocks did not reach the surface but solidified at depth. After the solidification, dikes of aplite, felsite, and quartz porphyry cut the granitic rocks and in places some of the older rocks. Most of the mineral deposits of the area were formed at this time from hydrothermal solutions derived from these intrusions.

After the intrusion of the granitic rocks the area was subjected to folding and erosion that exposed the granitic rocks. From late Oligocene through Pleistocene time there continued intervals of folding, eruptions of andesitic lava flows, and erosion. The latest lava flows that occurred in the Pleistocene (within the last 1,000,000 years) were confined to valleys that had been eroded into the older rocks of the area.

Since the latest outpouring of lava the main geologic process has been that of erosion which created the present-day valleys and mountains.

Mineral deposits.—The Cougar Lake Limited Area contains parts of the Summit mining district, which was created in 1891, and the Bumping Lake mining district, which was created in 1913. Although at present the area is not an active mining district and has no producers, it has in the past been the site of much mineral exploration and some mining. Gold, silver, copper, zinc, tungsten, antimony, molybdenum, lead, nickel, coal, pumice, and mineral water have been discovered throughout the area; the distribution of these deposits is shown in figure 3.

Most of the area's mineral deposits are held as unpatented mining claims; however, in the southwest quarter of T. 17 N., R. 11 E. several deposits are covered by 9 patented mineral claims. These mineral patents were issued to the Summit Mining and Reduction Company between 1883 and 1901, but the names of the present owners are not known.

The 23 known metallic mineral deposits of the Cougar Lake Limited Area occur mainly within three areas which are shown in figure 2. The northernmost mineralized area is at Gold Hill in the southwest corner of T. 17 N., R. 11 E.; the east-central area is at Miners Ridge in the west-central part of T. 15 N., R. 12 E. and the east-central part of T. 15 N., R. 11 E.; and the southern area is in the vicinity of Twin Sister Lakes near the southeast corner of T. 15 N., R. 11 E. and the northeast corner of T. 14 N., R. 11 E. The mines and prospects of the three mineralized areas, as well as other known deposits of the limited area, are listed in alphabetical order on pages 5 and 6 of this report.

Only at the Copper Mining Company's claims on Miners Ridge has full-scale mining been undertaken. Beginning in 1906 the company carried out extensive exploration work on several mineralized veins containing copper, tungsten, silver, and molybdenum, and in 1934 a 50-ton mill was erected to concentrate the ore. Production figures are not available to show the total production, but U.S. Bureau of Mines figures indicate that 22,000 pounds of copper concentrate and 650 pounds of tungsten concentrates were shipped by the Copper Mining Company. Production figures are not available from the other metallic mineral deposits of this area, so it is not known which properties have produced.

The Twin Sister Lakes area, which is about 4 miles to the south of Miners Ridge, contains significant deposits of zinc and copper. The deposits of this area have yet to be thoroughly investigated, but veins up to 6 feet wide, containing as much as 30 percent zinc, have been partly explored. Though not known to be in concentrations of commercial value at the present time, molybdenum also occurs in the Twin Sister Lake area.

The Gold Hill area, which is in the Summit mining district, was the site of much mining activity in the late 1800's and the early 1900's. Placer ground near the head of Morse Creek yielded gold nuggets worth as much as \$140 each and \$1.50-nuggets were not uncommon. Subsequent prospecting in the area for the source of this gold revealed lode deposits that assayed as much as 13 ounces per ton in gold and up to 50 ounces per ton in silver. In addition to the gold and silver the ores also carried values in copper and lead. No large mines were established in the Gold Hill area. Also the value of the minerals produced from this area is not known, as production figures are not available.

In the three areas that contain the concentrations of metallic minerals, the ores occur in fissure veins up to 8 feet wide that are related to the granitic rocks. Thus, the areas on the geologic map (see figure 2) that are underlain by Tertiary granitic rocks and the Eocene-Oligocene volcanic rocks, and Eocene continental sedimentary rocks into which the granitic rocks were intruded represent areas in which there is a possibility of discovering metallic mineral deposits similar to the known deposits.

Nonmetallic mineral occurrences are also present in the Cougar Lake Limited Area but are not as extensive as the metallic occurrences. Pumice, coal, and mineral water represent the nonmetallic minerals of the area.

The coal deposits are confined mainly to the Summit Creek (Carlton Pass) area in the southwest quarter of T. 15 N., R. 11 E. (see figure 3). The coal is anthracite and semi-anthracite that is intimately interstratified with thin shale seams of the Eocene continental sedimentary rocks. Although some coal was shipped from this area in the early 1900's, the amount is not known. It is probable that the high shale content of the coal makes it unsatisfactory as fuel and to separate the shale under present conditions would be uneconomical.

Yakima County records indicate that a coal claim was staked in 1890 near the headwaters of Bumping River. This coal appears to be an extension of the Summit Creek coal field, but its value is unknown, as there is no record of production from this area.

Pumice occurs around the core of Mount Tumac in the SE $\frac{1}{4}$ sec. 8, T. 14 N., R. 12 E. Little, if any, work has been done to evaluate this occurrence; however, there appears to be a large quantity of the material which might have some future use.

One known occurrence of mineral water is found in the Cougar Lake Limited Area. Near the center of sec. 18, T. 14 N., R. 11 E. a small spring of palatable cold water charged with carbon dioxide flows at an estimated volume of 300 gallons per minute. The water from the spring is used at the Soda Springs public campground and at one time was used by a commercial bottling works.

Summary.—The Cougar Lake Limited Area contains 23 known metallic mineral occurrences of gold, silver, copper, zinc, tungsten, antimony, molybdenum, lead, and nickel. Although some of the minerals are present only in minor amounts, others occur in concentrations to warrant further exploration and development.

Based on available geologic data on the rocks and mineral deposits of the area, 42,240 acres, or roughly 47 percent of the total area, can be considered favorable for the discovery of metallic mineral occurrences.

Although deposits of coal, pumice, and mineral water are also present in the area, it is doubtful that they would be developed at this time, because more readily accessible deposits of these minerals occur elsewhere in the State.

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Mines and Prospects of the Cougar Lake Limited Area

Bird (4)

(see also Copper Mining Co. under copper)

Loc: NW $\frac{1}{4}$ sec. 18, (15-12E), Bumping Lk. dist. **Elev:** 5,200 to 5,350 ft. **Access:** Truck road from Copper City. 70 mi. by road from Yakima. **Prop:** Bird, Bird Extension, and Red Bird claims. **Owner:** Copper Mining Co., Yakima, Wash. (1906—). **Ore:** Tungsten, copper. **Ore min:** Chalcopyrite, scheelite, molybdenite, arsenopyrite, pyrite. **Gangue:** Quartz, calcite. **Deposit:** Series of parallel and diverging quartz veinlets along a hydrothermally altered shear zone in granitic rock. Shear zone varies from seam up to 7 or 8 ft. wide and can be traced on surface for over 2,000 ft. **Dev:** Lower Bird 450 ft., Middle Bird 80 ft., Upper Bird 160 ft., Red Bird caved, 9 open cuts, 2 shafts. **Assays:** Upper adit had av. of about 0.75% WO. for

Black Jack (Green, Deep Creek) (4)

Loc: Sec. 36, (15-11E), on NW. side of Deep Cr. trail about 100 yd. N. of Little Twin Sisters Lk. **Access:** Trail. **Prop:** 17 claims. **Ore:** Zinc, copper. **Ore min:** Sphalerite, chalcopyrite, pyrite, bornite, chalcocite, galena. **Gangue:** Quartz, calcite. **Deposit:** 3 parallel mineralized stringers from 1 to 3 in. wide separated from one another by 12 in. of country rock. Country rock consists of thin-bedded sandstone, conglomerate, and mudstone. **Dev:** Inclined shaft at least 50 ft. deep, open cuts. **Assays:** Said to assay 20% to 30% Zn where exposed in Deep Cr. Extensions are of much lower grade but said to be of mining grade. **Ref:** 58, p. 7. 158.

Chinook (3)

Loc: SW $\frac{1}{4}$ sec. 12, (16-10E). **Access:** On Chinook Pass-highway 1 $\frac{1}{2}$ mi. E. of Chinook Pass. **Prop:** 3 unpatented claims. **Owner:** Hidden Treasure Mines, Inc., Yakima, Wash. (1954—). **Orie O. Smalley and H. C. Lawson, Prosser, Wash. (1947).** **Ore:** Copper, gold, silver. **Ore min:** Chalcopyrite, with a little arsenopyrite, sphalerite, pyrite, galena, molybdenite. **Gangue:** Granodiorite. **Deposit:** Ore minerals occur in a pocket or lens 4 to 5 ft. wide along the contact of iron-stained granodiorite and andesite. **Dev:** 50-ft. adit, 30-ft. winze with a 15-ft. crosscut, 550-ft. diamond drill hole. **Assays:** 21 tons shipped ran 10% Cu, 27 oz. Ag, \$5 Au. **Prod:** 21 tons shipped to smelter in 1941. **Ref:** 158.

Comstock (3)

Loc: SW $\frac{1}{4}$ sec. 29, (17-11E), Summit dist. **Ore:** Gold, silver. **Ref:** 63, p. 44.

Copper Mining Co. (5)

(see also New Find, Pasco under copper, and Bird, Garibaldi under tungsten)

Loc: Secs. 12 and 13, (15-11E), secs. 7, 8, 17, 18, and 19, (15-12E), on Miners Ridge, Bumping Lk. dist. **Elev:** 4,000 to 6,000 ft. **Access:** 70 mi. by road to Yakima. **Prop:** 42 unpatented claims. **Owner:** Copper Mining Co., Yakima, Wash. (1906—). **Ore:** Copper, tungsten, gold, silver, molybdenum. **Ore min:** Chalcopyrite, arsenopyrite, molybdenite, scheelite, pyrite, bornite, malachite. **Gangue:** Quartz, tourmaline, calcite. **Deposit:** Mineralized quartz veins along shear zones in granite. Mineralization rather sparse. **Dev:** 3 Bird adits, Garibaldi adit, 2 New Find adits, Pasco adit, totaling more than 1,000 ft., numerous open cuts. **Assays:** Tr. Au, 0.60 to 2.00 oz. Ag, 1.15% to 3.35% Cu, tr. to 11.50% WO., 0.13% MoS₃. **Prod:** 1907; 11 tons copper conc. (1938); 650 lb. scheelite conc. (1941). **Ref:** 9, 37, pp. 79-84. 41. 59. 97, 1937, p. 654; 1939, pp. 492, 618. 104, 9/15-34, p. 25; 9/30-34, p. 22. 158.

Crosetti (4)

Loc: Sec. 21, (15-12E), Bumping Lk. dist. **Ore:** Molybdenum. **Ore min:** Molybdenite. **Deposit:** Very slight molybdenite mineralization along joints in aplite stringers in granodiorite. **Ref:** 158.

Crown Point (4)

Loc: A little W. of the Comstock property, Summit dist. **Owner:** George M. Brown (1897). **Ore:** Gold, silver. **Deposit:** 7-ft. vein. **Dev:** 30-ft. adit. **Assays:** Av. \$38 Au, Ag (1897). **Ref:** 63, p. 44.

Damfino (5)

Loc: SW $\frac{1}{4}$ sec. 31, (17-11E), Summit dist. **Owner:** James A. Farrell, J. R. Forrest, Tacoma, Wash. (1897). **Ore:** Gold, silver. **Assays:** \$13 Au, 2 oz. Ag. **Ref:** 63, p. 45.

Dry Spring (6)

Loc: NW $\frac{1}{4}$ sec. 31, (17-11E), Summit dist. **Ore:** Gold, silver. **Ref:** 63, p. 45.

Elizabeth Gold Hill (10)

Loc: NW $\frac{1}{4}$ sec. 4, (16-11E), Summit dist. **Ore:** Gold, silver, lead, copper. **Ref:** 33, 1918, pp. 1473-1474. 63, p. 44.

Eva

Loc: Summit dist. **Ore:** Gold, silver. **Ref:** 63, p. 44.

Fife (Bear Gap, Pickhandle, Manitau, Blue Bell) (7)

Loc: Sec. 31, (17-11E), along the Cascade crest from Bear Gap to Crown Point. **Elev:** 5,000 to 6,000 ft. **Access:** Road up Morse Cr. from Chinook Pass highway reaches within $\frac{1}{2}$ mi. of the property. **Prop:** 2 patented claims: Cold Spring, Silver Reef; and 12 unpatented claims. **Owner:** Manitau Mining & Milling Co. (1941). **Ore:** Gold, silver. **Ore min:** Free gold. **Deposit:** Small quartz veinlets in volcanic rock. Volcanic rock itself reputedly carries gold values. **Assays:** 90 channel samples 10 to 20 ft. in length over an area 1,200 by 1,800 ft. showed an av. value of \$1.37 Au. **Prod:** 1896. **Ref:** 13, p. 162. 63, p. 44. 158.

Garibaldi (2)

(see also Copper Mining Co. under copper)

Loc: NE $\frac{1}{4}$ sec. 13, (15-11E), Bumping Lk. dist. **Elev:** 5,700 ft. **Access:** 1,000 ft. N. of the end of the bulldozer road from Copper City. **Owner:** Copper Mining Co., Yakima, Wash. (1906—). **Ore:** Tungsten. **Ore min:** Scheelite (large crystals), arsenopyrite. **Deposit:** Quartz vein less than 6 in. wide in granitic rock. **Dev:** Open cut. **Ref:** 37, p. 83.

Gold Hill (8)

Loc: S $\frac{1}{2}$ sec. 31, (17-11E), Summit dist. **Elev:** 4,500 to 6,000 ft. **Access:** Morse Cr. road crosses the property. **Prop:** 4 patented claims: Eureka, Climax, Lake Paragon, Boston; and 24 unpatented claims. **Owner:** E. A. Bannister and G. A. Mosher, Yakima, Wash. **Ore:** Gold, reportedly lead, zinc, copper, silver, tungsten. **Ore min:** Free gold. **Deposit:** Small quartz veinlets in volcanic rock. Volcanic rock itself reputedly carries gold values. **Dev:** 2 adits, each about 500 ft. long. **Assays:** Hand samples assayed 75¢ to \$1.50 Au. **Ref:** 58, p. 25. 158.

Gold Links (1)

Loc: Secs. 4 and 5, (17-11E), Summit dist. **Owner:** Gold Links Mining Co., Yakima, Wash. (1941). **Ore:** Gold. **Ref:** 58, p. 26.

Mines and Prospects of the Cougar Lake Limited Area (continued)

Hidden Treasure (3A)

(see also Chinook)

Loc: S $\frac{1}{2}$ sec. 4, (16-11E), near Morse Cr. **Access:** On Chinook Pass highway 5 mi. E. of Chinook Pass. **Owner:** Hidden Treasure Mines, Inc., Yakima, Wash. (1954—). **Ore:** Copper, gold, silver. **Ore min:** Chalcopyrite, pyrite, pyrrhotite, sphalerite. **Deposit:** Slight mineralization along joints and disseminated in calcareous siltstone near granite contact. **Dev:** 400-ft. cross-cut with 2 drifts. 75 to 100 ft. long. **Ref:** 158.

Jug Lake (2)

Loc: Reportedly on the W. shore of Jug Lk. **Access:** Trail up Summit Cr. or up Deep Cr. from Copper City. **Ore:** Antimony. **Ore min:** Stibnite. **Deposit:** Said to be a 2-ft. vein of antimony sulfide exposed in the lake shore and extending into the lake. **Note:** One investigator was unable to find this prospect. **Ref:** 158.

Lolette (9)

Loc: NW $\frac{1}{4}$ sec. 29, (17-11E), Summit dist. **Ore:** Gold, silver. **Ref:** 63, p. 44.

New Find (6)

(see also Copper Mining Co.)

Loc: Near S. line sec. 19, (15-12E), Bumping Lk. dist. **Elev:** 4,300 ft. **Access:** A few hundred yards W. of Copper City, 70 mi. by road from Yakima. **Owner:** Copper Mining Co., Yakima, Wash. (1906—). **Ore:** Copper, gold, silver, tungsten. **Ore min:** Chalcopyrite, arsenopyrite, pyrite, scheelite. **Gangue:** Quartz, tourmaline. **Deposit:** Quartz veins along a fracture zone in granite several feet wide. **Dev:** 2 adits and some open cuts. **Assays:** 11 tons conc. assayed 19.6% Cu, 100 oz. Ag, 1 oz. Au. **Prod:** 11 tons copper conc. (1938). **Ref:** 37, pp. 83-84.

Pasco (7)

(see also Copper Mining Co.)

Loc: NE $\frac{1}{4}$ sec. 19, (15-12E), Bumping Lk. dist. **Elev:** 4,400 ft. **Access:** Road from Copper City, 70 mi. by road from Yakima. **Owner:** Copper Mining Co., Yakima, Wash. (1906-1945). **Ore:** Copper. **Ore min:** Chalcopyrite, pyrite, reportedly scheelite, galena (?). **Gangue:** Chlorite. **Deposit:** Iron-stained zone 6 to 8 in. wide. **Ref:** 37, p. 83.

Twin Sisters Lakes (10)

Loc: On W. shore of the larger of the two Twin Sisters Lakes, probably in sec. 35, (15-11E). **Ore:** Copper. **Deposit:** Said to be a large vein. **Ref:** 158.

Reeves (1)

Loc: Center NE $\frac{1}{4}$ sec. 29, (15-11E), $\frac{3}{4}$ mi. NW. of Frying Pan Lk. **Elev:** 5,300 ft. **Access:** 7 mi. by trail from Ohanapecosh Hot Springs. **Prop:** 1 claim: High Jack No. 2. **Owner:** Abandoned (1949). W. R. Reeves, Universal Alaska Mining Corp. (1933). **Ore:** Antimony. **Ore min:** Stibnite, stibiconite. **Gangue:** Quartz. **Deposit:** A hydrothermally altered zone in serpentine 10 ft. wide contains a 6- to 8-in. band of stibnite-bearing siliceous breccia. **Dev:** Trench and caved adit (1947). **Ref:** 132, p. 91.