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Report of Investigations  
No. 6

INVENTORY  
OF  
MINERAL PROPERTIES  
IN  
Snohomish County, Washington

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By  
W. A. BROUGHTON



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## ILLUSTRATIONS

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Map of Snohomish County showing mineral properties....In pocket

## INTRODUCTION

This is a summary report of the known metallic and nonmetallic mineral properties of Snohomish County compiled from information in the files of the Division of Geology. This information has been secured in part from field investigations and in part from published reports of both State and Federal agencies together with notes in technical journals. No attempt has been made to indicate the sources of data on individual properties since the object is to present the essential facts in as concise form as possible, in order to bring only the known useful facts to the attention of those persons interested in the Snohomish County mineral resources.

Mining operations have largely been restricted to eight mining districts, Darrington, Glacier Peak, Granite Falls, Index, Monte Cristo, Silver Creek, Silverton, and Sultan. The district boundaries are largely arbitrary and in some cases are determined by the natural drainage divides. Each district is taken up separately, a summary statement of the geology being followed by brief descriptions of the mines presented in alphabetical order and then of the prospects also presented in alphabetical order. The distinction between the mines and the prospects has been based entirely on production, regardless of the amount of development work. The properties classed as mines are those that are known to have shipped ore, while the properties that are not known to have shipped ore are grouped as prospects.

The discussion of the lode mining properties is followed by a brief description of the placer properties, also in alphabetical order, and this is followed by a short account of the nonmetallic mineral deposits.

Despite the fact that some of the information used in compiling this report was gathered many years ago, it must be remembered that the mineral deposits do not appreciably change over a period of years. However, changes do occur in the amount of development work, the quantity of ore remaining in the deposits, the accessibility, and the value of the properties. Many of the assay returns given in this report were made when the market prices of the metals were different from the present prices, and it must be realized that many of the assays were run on high grade ore samples rather than on samples taken to show an average of the particular ore body. It is impossible to check these reported assays in order to determine just how representative they are for the various deposits. In most cases the original assay sheets are unavailable, and also the methods that were used in sampling are unknown. Due to recent development work and the present price of metals an examination of many of the properties, with careful and systematic sampling, would probably present somewhat different possibilities from those suggested in this report.

Accompanying this report is a map of Snohomish County showing the several mining districts and the locations of the mines, prospects, placer properties, and nonmetallic deposits. Numbers following the property names in the report correspond to the numbers of the properties designated on the map. Deposits whose locations are only vaguely known are not numbered, and are not designated on the map.



## LODE MINING PROPERTIES BY DISTRICTS

### DARRINGTON MINING DISTRICT

#### GENERAL FEATURES

**Location:** The Darrington mining district, including roughly 265 square miles, is in the northern part of Snohomish County and extends over into Skagit County on the north. Only that part of the district in Snohomish County is included in this report. It is bounded on the east by the Glacier Peak district, on the south by the Silverton district, and on the west by the Granite Falls district, and includes the area drained by the upper part of the North Fork of Stillaguamish River and Sauk River. The district is accessible by roads up the main valleys of the above rivers, and the mines are connected to these roads by truck roads and trails. The topography is rugged with high mountains and narrow, steep-sided valleys.

**Geologic section:** The oldest rocks in the district are a thick series of slates, quartzites, and marbles and these have been intruded by masses of granitic rocks, especially in the eastern part of the district. The mineral veins occur along shear zones and fractures in these rocks and are closely associated with granitic intrusives. Glacial sands, gravels, and clays cover the valley bottoms and small bodies of bog-iron ore occur in these sediments.

**Ores and ore minerals:** The ores of the district are of gold, silver, copper, lead, zinc, antimony, arsenic, mercury, iron, and manganese. The ore minerals are pyrite, chalcopyrite, arsenopyrite, tetrahedrite, galena, sphalerite, cinnabar, native gold and mercury, rhodonite, rhodocrosite, and limonite.

**Ore deposits:** The ore occurs mainly in quartz veins and as replacements along shear zones cutting both the older metamorphic rocks and the granitic rocks. The ore bodies in the shear zones are either as fine disseminations scattered through the crushed and sheared rock or are lenticular masses of nearly solid sulphide ore separated by barren areas along the shear zone. The bog-iron ores occur as beds several feet thick lying on or just below the surface of glacial sands and clays.

**Timber and water:** There is an adequate supply of timber and water on most of the properties or in their near vicinity that can be used for mining and milling purposes. Considerable electrical power can be generated by the swiftly flowing streams.

#### MINES

##### Sam Strom Mine (1)

**Location:** Sec. 24, T. 32 N., R. 9 E., 1 mile southeast of Darrington. **Access:** Good road. **Property:** 7 patented claims. **Ownership:** Sam Strom, Darrington, Washington. **Ore:** Gold, silver, copper. **Ore minerals:** Pyrite and chalcopyrite. **Gangue:** Quartz and sheared slate and diorite. **Deposit:** Mineralized shear zone in diorite and slate. Zone 500 feet wide and composed of altered country rock, quartz veinlets, pyrite, and chalcopyrite. **Assays:** High grade ores carry \$10 to \$30 in gold, 3 ounces of silver, 10 percent copper. Low grade ores carry \$5 to \$7 values. **Development:** 1,000-foot, 600-foot, 500-foot, 250-foot, 175-foot adits and several open cuts. **Improvements:** Cabin and blacksmith shop. **Ore in sight:** Many thousands of tons. **Production:** Some sorted ore produced.



**PROSPECTS****Blue Bird Prospect**

Location: T. 32 N., R. 10 E. Ore: Gold, copper. Deposit: Vein averages 8 feet in width. Assays: High grade ore runs \$30 per ton. Development: From 200 to 300 feet of adits.

**Boston Prospect**

Ore: Copper, gold.

**Buckeye Prospect (2)**

Location: SE $\frac{1}{4}$  sec. 29, T. 32 N., R. 9 E., on White Horse Mountain. Property: 2 claims. Ore: Silver. Development: 9-foot adit.

**Burns Prospect (3)**

Location: NW $\frac{1}{4}$  sec. 18, T. 32 N., R. 10 E., on the west side of Gold Mountain. Property: 7 claims. Ore: Gold, silver, copper. Deposit: Nearly vertical vein striking east-west. Ore body is exposed for 100 feet and has an average width of 4 $\frac{1}{2}$  feet.

**Courtney Prospect (4)**

Location: SW $\frac{1}{4}$  sec. 27, T. 32 N., R. 9 E., on Jumbo Mountain. Ore: Gold, silver, copper, lead. Deposit: 3-foot vein. Assays: \$8.50 in gold, 14 percent copper, 15 ounces of silver, 4 percent lead. Development: 10-foot adit.

**Darrington Iron Prospect (5)**

Location: 5 miles southeast of Darrington on a mountain south of Sauk River. Ore: Iron.

**Elwell-Darrington Prospect (6)**

Location: NW $\frac{1}{4}$  sec. 27, T. 32 N., R. 9 E., on the east side of Gold Mountain and adjacent to the Burns prospect. Ore: Gold, copper. Deposit: 7- to 8-foot mineralized zone carrying 2 to 3 feet of ore.

**Forest-Chickamun Prospect**

Ore: Copper.

**Forest Hope Prospect (7)**

Location: SE $\frac{1}{4}$  sec. 18, T. 32 N., R. 10 E. Property: 3 claims. Ore: Gold, copper, silver, mercury. Deposit: 8 feet of ore for 1,000 feet on the surface. This splits into three veins, 4, 5, and 6 feet wide. Assays: \$6 to \$36 in gold, 8 to 41 ounces of silver, 10 to 18 percent copper. Some native mercury and cinnabar.

**Gold Mountain Prospect (8)**

Location: T. 32 N., R. 9 E., on Gold Mountain. Property: 8 claims. Ore: Gold, silver, copper. Ore mineral: Chalcopyrite, tetrahedrite. Deposit: Three veins. One carries 4 feet of ore, another 18 inches of ore, and the third 3 feet of ore. Assays: \$18 to \$36 in gold, trace to 18 ounces of silver, \$18 to \$32 in copper.

**Gray Rock Prospect (9)**

Location: SE $\frac{1}{4}$  sec. 19, T. 32 N., R. 9 E. Ownership: Mr. D. A. Witcher, Darrington, Washington. Ore: Gold. Ore mineral: Pyrite. Deposit: Small quartz stringers carrying pyrite and cutting granitic rock. Development: One short adit.



**Green Crown Prospect (10)**

Location: SE $\frac{1}{4}$  sec. 31, T. 32 N., R. 9 E., on White Horse Mountain. Property: 2 claims. Ore: Gold, silver, copper. Ore mineral: Chalcopyrite. Deposit: North-south striking shear zone 100 feet wide and carrying quartz veins up to 10 inches wide with chalcopyrite ore. Assays: \$100 in gold, 32 ounces of silver, 26 to 42 percent copper.

**Hannah Prospect (11)**

Location: NE $\frac{1}{4}$  sec. 32, T. 32 N., R. 9 E., on White Horse Mountain. Property: 5 claims. Ore: Gold, silver, copper. Deposit: 3 feet of ore in granite country rock. Assays: \$19.85 in gold, 41 ounces of silver, 30 percent copper.

**Harley Prospect (12)**

Location: T. 32 N., R. 10 E., near the middle of Gold Mountain. Property: 8 claims. Ore: Gold. Deposit: Vein 4 feet wide crops out for 150 feet. Assays: \$42 to \$43 per ton.

**Highland Prospect (13)**

Location: Sec. 3, T. 31 N., R. 9 E., near the headwaters of Buckeye Creek on White Horse Mountain. Property: 5 claims. Ore: Gold, silver, copper. Deposit: 18 inches of ore. Assays: \$20 in gold, 15 to 40 ounces of silver, 18 percent copper.

**Hunter Prospect (14)**

Location: NW $\frac{1}{4}$  sec. 34, T. 32 N., R. 9 E., on Jumbo Mountain. Property: 2 claims. Ore: Gold, silver, lead, copper. Ore minerals: Chalcopyrite, galena. Deposit: Vein 3 feet wide striking east-west and carrying 9 inches of ore. Assays: \$20 in gold, 8 to 40 ounces of silver, 10 percent copper, 4 percent lead. Development: 30-foot adit.

**Jesse Prospect (15)**

Location: Sec. 33, T. 32 N., R. 9 E., at the headwaters of Buckeye Creek. Ore: Gold, silver, copper. Deposit: 9 to 18 inches of ore.

**Justin Prospect (16)**

Location: SW $\frac{1}{4}$  sec. 19, T. 32 N., R. 10 E., on the southeast side of Gold Mountain. Property: 3 claims. Ore: Gold, silver, copper. Deposit: 12-foot vein.

**Keywinder Prospect (17)**

Location: SW $\frac{1}{4}$  sec. 27, T. 32 N., R. 9 E., on Jumbo Mountain. Ore: Gold, silver, copper. Ore Mineral: Chalcopyrite. Gangue: Quartz. Deposit: 3-foot quartz vein. Development: 75-foot adit.

**Larson Prospect**

Location: 2 $\frac{1}{2}$  miles from White Horse schoolhouse on the highway between Arlington and Darrington. Elevation: 1,000 to 4,000 feet. Property: 10 claims. Ownership: C. A. Larson, Darrington, Washington. Ore: Gold, silver, lead, zinc. Assays: 0.1 ounce of gold, 25 ounces of silver, 3 percent zinc, 60 percent lead. Development: 105-foot and 40-foot adits. Improvements: Bunkhouse, cookshack, office, machine shop, and small compressor.

**Manganese Prospect**

Location: Secs. 16 and 19, T. 32 N., R. 7 E., east of Lake Riley. Ore: Manganese. Ore minerals: Rhodonite, rhodochrosite. Deposit: Metamorphosed sediments.

**Manley Prospect (18)**

Location: SW $\frac{1}{4}$  sec. 27, T. 32 N., R. 9 E., on Jumbo Mountain. Ore: Gold, copper. Ore mineral: Chalcopyrite. Deposit: 3 feet of chalcopyrite ore. Assays: \$8 in gold. Development: 130-foot adit.

**Moline Prospect**

Part of the Gold Mountain group.

**Molly Prospect**

Ore: Gold, silver, copper.

**Myrtle C Prospect (19)**

Location: NE $\frac{1}{4}$  sec. 19, T. 32 N., R. 10 E., on Gold Mountain. Property: 9 claims. Ore: Gold, silver, copper, mercury. Ore minerals: Chalcopyrite, tetrahedrite, pyrite, cinnabar, native gold, native mercury. Deposit: Seven veins ranging from 9 inches to 6 feet in width. Assays: \$8 to \$26 in gold, trace to 41 ounces of silver, 18 to 36 percent copper.

**Nesta Brothers' Prospect (20)**

Location: About 3 miles south of Darrington on Jumbo Mountain. Elevation: 800 to 3,900 feet. Access: Within 1 mile of good county road. Property: 25 claims. Ownership: Ole and Pete Nesta, Darrington, Washington. Ore: Copper, gold, silver. Deposit: Ten veins from 2 to 10 feet wide. Assays: From \$5 to \$100 for hand samples. Development: Twelve adits aggregating 1,150 feet. Improvements: A good cabin.

Note: The Nesta Brothers are reported to have ore on Jumbo Mountain carrying 20 to 35 percent molybdenum.

**North Star Mining Co. Prospect (21)**

Location: NE $\frac{1}{4}$  sec. 29, T. 32 N., R. 9 E. Ore: Gold, silver, lead, copper, arsenic. Ore minerals: Galena, chalcopyrite, pyrite, arsenopyrite. Deposit: Narrow fractures cutting granite and carrying quartz and the ore minerals. Development: One adit with drifts aggregating 155 feet.

**Pelican Prospect (22)**

Location: SW $\frac{1}{4}$  sec. 27, T. 32 N., R. 9 E., on Jumbo Mountain. Ore: Gold, arsenic. Ore mineral: Arsenopyrite. Deposit: 12-inch vein. Assays: \$12 in gold. Development: 12-foot adit.

**Queen Anne Prospect (23)**

Location: SE $\frac{1}{4}$  sec. 27, T. 32 N., R. 9 E. Ownership: Ole and Pete Nesta, Darrington, Washington. Ore: Gold, silver, copper, lead, zinc, arsenic. Ore minerals: Chalcopyrite, galena, sphalerite, arsenopyrite. Gangue: Quartz and granite. Deposit: 3-foot fracture zone in granite. Zone strikes N. 88° W. and dips 55° SW. Ore minerals associated with quartz in the shear zone. Assays: Trace to \$550 in gold, trace to \$60 in silver, trace to \$35 in copper. Development: One adit. Improvement: One cabin.

**Sloman Prospect (24)**

Location: On the north side of White Horse Mountain. Ore: Gold, silver, copper. Deposit: 5-foot vein. Assays: As high as \$33 per ton. Development: Two adits each 50 feet long.

**Tayler and Nunn Prospect (25)**

Location: Sec. 29, T. 32 N., R. 9 E. Ore: Gold, silver.

**White Gander Prospect (26)**

Location: NW $\frac{1}{4}$  sec. 34, T. 32 N., R. 9 E. Property: 2 claims. Ore: Gold, silver, copper, arsenic. Ore minerals: Chalcopyrite, arsenopyrite. Deposit: 3 feet of ore.

**Welman Prospect (27)**

Location: SE $\frac{1}{4}$  sec. 19, T. 32 N., R. 9 E., on White Horse Mountain. Ore: Gold. Ore mineral: Pyrite. Deposit: 14-inch vein. Assays: Up to \$94 in gold.

**Witcher Prospect (28)**

Location: NE $\frac{1}{4}$  sec. 29, T. 32 N., R. 9 E., at the foot of White Horse Mountain. Ownership: Mr. D. A. Witcher, Darrington, Washington. Ore mineral: Pyrite. Deposit: Small quartz veinlets in argillite. Development: Three short adits, 35 feet, 25 feet, and 8 feet in length.

## GLACIER PEAK MINING DISTRICT

### GENERAL FEATURES

**Location:** The Glacier Peak mining district includes about 190 square miles around Glacier Peak in the eastern part of the county. It is bounded on the east and north by Chelan and Skagit counties respectively, on the south by Chelan County and the Monte Cristo district, and on the west by the Silverton and Darrington districts. The area is very rugged and practically inaccessible except by trails up Suiattle River and up Buck Creek at the headwaters of Chiwawa River.

**Geologic section:** The central part of the district, excluding Glacier Peak, is underlain by a thick series of quartzites, slates, and marbles. These older rocks have been intruded by large masses of granitic rocks in which the ore deposits occur. These granitics underlie the remaining part of the district except for Glacier Peak, which is composed of still younger andesitic lava flows.

**Ores and ore minerals:** Ores of gold, silver, copper, lead, and molybdenum have been found in the district. The ore minerals are pyrite, chalcopyrite, galena, and molybdenite.

**Ore deposits:** The ore occurs mainly as disseminations and masses of sulphides along shear zones and as disseminations in porphyritic phases of the granitic rocks.

**Timber and water:** There is an adequate supply of timber and water on or in the near vicinity of the properties to be used for mining, milling, and power generating purposes.

### PROSPECTS

**Damm Brothers Prospect (29)**

Location: T. 31 N., R. 15 E., on Miners Ridge at the head of Suiattle River. Elevation: 5,500 to 6,500 feet. Access: Can be reached by road or trail up Railroad Creek. Property: Covers a length of about 2 miles. Ownership: Damm Brothers of Seattle, Washington. Ore: Gold, silver, copper. Deposit: Mineralized shear zone in granitic country rock. Shear zone is 600 feet wide and exposed for a length of 1,500 feet to a depth of over 1,000 feet.

**Assays:** \$1 to \$1.50 in gold, 3 to 5 ounces of silver, 3 to 3.5 percent copper. **Development:** Open cuts and several adits in ore. **Improvements:** Small cabin. **Ore in sight:** Large tonnage.

**Deerfly Prospect (30)**

**Location:** Sec. 11, T. 31 N., R. 15 E., in Suiattle Pass. **Elevation:** 5,000 feet. **Property:** 9 claims. **Ore:** Gold, silver, lead. **Deposit:** 8-foot vein in shear zone in granitic country rock. Exposed for a length of 1,000 feet. **Assays:** 1 ounce of gold, 12 to 30 ounces of silver, 40 to 60 percent lead. **Development:** 500 feet of adits and drifts in ore.

**Glacier Peak Prospect (31)**

**Location:** Sec. 10, T. 31 N., R. 15 E. **Elevation:** 5,000 feet. **Access:** 31 miles from Darrington up Suiattle River, 15 miles of which is by trail; 26 miles from Lucerne of which 12 miles is by road up Railroad Creek from Lake Chelan. **Property:** 25 claims and a mill site. **Ore:** Copper, silver, gold, lead, molybdenum. **Deposit:** Area of porphyry 1,200 feet long, 600 feet wide, and at least 1,500 feet deep. Porphyry carries the ore minerals. **Assays:** \$3 to \$10 per ton. **Development:** 2,500 feet of adits and much diamond drilling. **Improvements:** Cabins for about 15 men. **Ore in sight:** Several million tons of low grade ore.

## GRANITE FALLS MINING DISTRICT

### GENERAL FEATURES

**Location:** The Granite Falls mining district includes about 150 square miles in the western part of Snohomish County. It is bounded on the east by the Darrington and Silverton districts and on the south by the western part of the Sultan district. It extends north and west of the town of Arlington. The topography is much less rugged than that of the other districts in the county and the area is accessible by several good roads along wide river valleys and nearly flat terraces.

**Geologic section:** The eastern part of the district is underlain by a thick series of slates, quartzites, and marbles which have been intruded by small bodies of later granitic rocks. Both the older metamorphic and the granitic rocks have been cut by shear zones which in turn have been mineralized with the ore minerals. In the western part of the district are later marine sandstones and shales. Glacier sands, gravels, and clays cover much of the western part of the district and the valley bottoms in the remaining part of the district.

**Ores and ore minerals:** The important ores found in the Granite Falls district are of gold, silver, copper, lead, and zinc. A small amount of vanadium is reported to be present. The known ore minerals are pyrite, chalcopyrite, galena, and sphalerite.

**Ore deposits:** The ore minerals occur in quartz veins and as replacements along shear zones which cut the older rocks. Sheared and crushed country rock, quartz, and calcite form the gangue material.

**Timber and water:** Much of the timber in the district has been logged off, but there should be an adequate supply of both timber and water in the near vicinity of the deposits to be used in mining and milling operations.

## MINES

**Jefferson Iron Mine (32)**

**Location:** Sec. 30, T. 32 N., R. 5 E., 4 miles northeast of Arlington. **Access:** Road. **Ownership:** Mr. Thomas Jefferson, Arlington, Washington. **Ore:** Iron. **Ore mineral:** Limonite. **Deposit:** Bog-iron, 2½ to 3 feet thick over 3 or 4 acres. Only a small tonnage available. **Development:** Open pits. **Production:** Ore removed from 3 or 4 acres.

**Wayside Mine (33)**

**Location:** Sec. 9, T. 30 N., R. 7 E., 1½ miles east of Granite Falls. **Elevation:** 1,200 to 1,500 feet. **Access:** Along the old Hartford and Eastern railroad grade. **Property:** 15 patented claims. **Ore:** Gold, copper, silver, lead, zinc, vanadium. **Ore minerals:** Chalcopyrite, pyrite, galena, sphalerite. **Deposit:** Vein 6 to 18 inches wide cutting slates. **Assays:** 0.01 to 0.25 ounces of gold, 6 to 10 ounces of silver, 10 percent copper. **Development:** One shaft with seven levels. **Production:** About half a million dollars worth of high grade ore shipped.

## PROSPECTS

**Coe Prospect (34)**

**Location:** Sec. 36, T. 32 N., R. 5 E. **Access:** 1½ miles to railroad. **Ore:** Iron. **Ore minerals:** Limonite, bog-iron. **Deposit:** Ore is 2½ to 3 feet thick and covers an area of about 2 to 3 acres. **Ore in sight:** 10,000 to 15,000 tons estimated.

**Pilchuck Creek Iron Prospect**

**Location:** T. 32 N., R. 5 E., along Pilchuck Creek about 6 miles northwest of Arlington. **Ore:** Iron, titanium. **Ore minerals:** Magnetite, rutile. **Deposit:** Basal sediments of the Chuckanut formation. Flat lying to steeply dipping. **Mineral content:** Low grade.

**Yankee Boy Prospect (35)**

**Location:** NE¼ sec. 18, T. 30 N., R. 7 E., 0.9 miles east of Granite Falls. **Ownership:** Mr. A. G. Jacobson, Granite Falls, Washington. **Ore:** Copper, gold. **Deposit:** Shear zone in limestone and serpentine. Shear zone contains a few quartz and calcite stringers and is stained with malachite. **Development:** A 300-foot adit along the shear zone.

## INDEX MINING DISTRICT

## GENERAL FEATURES

**Location:** The Index mining district, including roughly 210 square miles, is in the southeastern corner of Snohomish County. It is bounded on the south by King County, on the east by Chelan County, on the west by the Sultan mining district, and on the north by the Silver Creek mining district. The topography is, in part, extremely rugged, making transportation difficult, but there is a railroad and a good highway along Skykomish River and the South Fork of the Skykomish and a good truck road up the North Fork of the Skykomish. Several of the mining properties are directly accessible by roads, but most of them are connected to the roads by trails.

**Geologic section:** The oldest rocks in the district are interbedded quartzites, marbles, cherts, slates, and schists that have been intruded by granodiorite. The granodiorite comprises most of the bedrock in the district and at the



time of its intrusion the overlying rocks were greatly faulted and tilted to angles ranging from a few degrees to the vertical. Both the older metamorphic rocks and the granodiorite are cut by aplite and lamprophyre dikes. A thick series of interbedded andesites and arkoses lies unconformably on the older rocks. The youngest material in the district is made up of glacial sands, clays, and gravels.

**Ores and ore minerals:** The most important ore of the district is that of copper, with minor amounts of gold, silver, arsenic, zinc, and molybdenum. Chalcopyrite and bornite are the important copper minerals and usually are associated with pyrite and a small amount of supergene malachite, azurite, chalcocite, and micaceous hematite. The sulphides also carry a small amount of gold and silver. Arsenic occurs in one locality as realgar and orpiment. There is at least one occurrence of molybdenite associated with chalcopyrite and pyrite. A small amount of sphalerite is associated with the chalcopyrite and pyrite in places.

**Ore deposits:** The granodiorite and the older metamorphic series are cut by nearly vertical shear zones that have an average strike of about N. 75° W. in the eastern part of the district and about N. 45° E. in the western part. The majority of these shear zones occur in the granodiorite, but this fact is probably of little importance in prospecting since the granodiorite is the predominant rock of the district. The shear zones are characterized by "pinches" and "swells" and vary from a fraction of an inch to over 20 feet in width. The narrower portions are usually filled with barren fault gouge, but the wider portions are filled with sheared and altered country rock frequently impregnated with the ore minerals and a small amount of quartz and calcite. Where the wall rock bordering the "swells" is granodiorite it is highly kaolinized and chloritized and occasionally slightly impregnated with the ore minerals. The ore bodies proper are in the lens-shaped "swells" that occur along the shear zones and are composed of sheared and altered country rock partially replaced by ore minerals together with small amounts of quartz and calcite. The replacement varies from slight impregnations to large bodies of almost solid sulphides. At one place the ore body consists of a stockwork, in granodiorite, composed of intersecting quartz veinlets carrying the ore minerals and with slight impregnations of the minerals in the granodiorite between the quartz veinlets.

**Timber and water:** There is an adequate supply of timber and water on the mining properties that can be used in mining operations. Most of the properties have an adequate supply of running water that can be used to operate small electrical power plants and mills.

#### MINES

##### **Buckeye Mine (36)**

**Location:** Sec. 33, T. 27 N., R. 10 E., about 1 mile west of Halford. **Elevation:** 2,500 feet. **Access:** Trail from Eagle Falls on the South Fork of Skykomish River. **Property:** 16 claims and 2 mill sites. **Ore:** Copper. **Ore minerals:** Chalcopyrite, bornite, cuprite, chalcocite. **Deposit:** Two mineralized shear zones striking N. 40° E. and dipping deeply SE and ranging in width from mere seams to 6 feet. They are largely barren of ore except for small lenses. **Development:** Three adits with drifts totalling 1,500 feet and

numerous open cuts. **Production:** Several tons of high grade ore were packed out on horses years ago and shipped to the Tacoma smelter.

**Charlotte Mine (37)**

**Location:** Sec. 35, T. 28 N., R. 10 E., about half a mile southwest of the Ethel mine on the northwest side of the North Fork of Skykomish River. **Elevation:** 1,000 feet. **Access:** Reached by trail from Curry's ranch. **Ownership:** Mr. Riley Curry of Index, Washington. **Ore:** Copper, gold, silver. **Ore minerals:** Chalcopyrite, pyrite, chalcocite. **Deposit:** Small lenses of ore along a vertical shear zone in granodiorite. Ore body 20 feet in diameter with a maximum width of 6 feet. **Development:** 150-foot drift, 20-foot drift, 35-foot drift and short winze. **Ore in sight:** About one carload. **Production:** Two carloads of high grade ore.

**Copper Belle Mine (38)**

**Location:** Secs. 1, 2, 11, and 12, T. 27 N., R. 9 E., on the south slope of the mountain northeast of the old station of Reiter. **Elevation:** 1,500 feet. **Access:** Trail. **Property:** 17 claims. **Ore:** Copper, gold, silver. **Ore minerals:** Chalcopyrite, pyrite, bornite. **Deposit:** Lens-shaped bodies of ore in shear zones in granodiorite. **Development:** Main adit 2,000 feet long with drifts and stopes. Seven other shorter adits. Considerable diamond drilling. **Production:** Several hundred pounds of copper matte.

**Ethel Mine (39)**

**Location:** Secs. 34 and 35, T. 28 N., R. 10 E., about  $5\frac{1}{2}$  miles northeast of Index on the north side of the North Fork of Skykomish River and the south side of Excelsior Creek. **Elevation:** 1,250 feet to 2,100 feet. **Access:** Reached by trail from Curry's ranch. **Ownership:** Dr. George Warren of Seattle, Washington. **Ore:** Copper, gold, silver. **Ore minerals:** Chalcopyrite, bornite, pyrite. **Deposit:** Shear zone in granodiorite. The strike is N.  $75^{\circ}$  W. and the dip is  $85^{\circ}$  S. Zone is a few inches to 27 feet in width and carries little ore. **Development:** Four adits aggregating 4,000 feet with drifts and stopes. Winze about 250 feet in depth. **Production:** About 400 tons.

**Index (Wilbur Index) Mine (40)**

**Location:** Sec. 30, T. 27 N., R. 10 E., about 2 miles south of Index and half a mile northwest of Lake Serene. **Elevation:** 1,300 feet. **Access:** Lake Serene trail. **Property:** 5 claims. **Ore:** Copper, gold, silver. **Ore minerals:** Chalcopyrite, bornite, pyrite, chalcocite. **Deposit:** Mineralized shear zone in granodiorite. The strike is N.  $70^{\circ}$  E. and the dip is nearly vertical. **Development:** Three adits 1,300, 1,325, and 1,425 feet, and several open cuts. **Production:** Four carloads.

**Index Independent Mine**

**Location:** 5 miles southeast of Index. **Access:** Trail 1 mile south of railroad. **Property:** 3 claims. **Ore:** Copper. **Ore minerals:** Bornite, chalcopyrite, chalcocite. **Gangue:** Altered granodiorite, quartz, calcite. **Deposit:** Mineralized shear zone nearly vertical and striking N.  $6^{\circ}$  E. in granodiorite. **Assays:** High grade ore \$98.98 per ton. **Development:** One adit with drifts aggregating 900 feet. **Production:** One carload of high grade ore.

**Reiter Mine (41)**

**Location:** Sec. 1, T. 27 N., R. 9 E. and sec. 6, T. 27 N., R. 10 E., near the headwaters of Hogarty Creek. **Elevation:** 2,400 feet. **Access:** Trail up the north side of Hogarty Creek. **Ownership:** Mr. Julius Haun of Gold Bar,



Washington. **Ore:** Arsenic. **Ore minerals:** Realgar, orpiment, arsenolite. **Deposit:** Ore occurs in 2- to 12-inch fractures in granodiorite. The strike is N. 20° E. and the dip is 70° SE. **Development:** 150-foot adit, another short adit, and several open cuts. **Production:** Small amount of ore.

#### **Sunset Mine (42)**

**Location:** Sec. 1, T. 27 N., R. 10 E. and sec. 6, T. 27 N., R. 11 E., on the north side of Trout Creek about 6 miles northeast of Index. **Elevation:** 1,400 feet. **Access:** Truck road from Index. **Property:** 36 claims. **Ownership:** Kromona Mines Corp., 1014 Lloyd Bldg., Seattle, Washington. **Ore:** Copper, gold, silver. **Ore minerals:** Chalcopyrite, pyrite, bornite, chalcocite. **Gangue:** Sheared granodiorite, quartz, calcite. **Deposit:** Four main shear zones in granodiorite. The strike is N. 65° to 75° W. and the dip is 80° to 85° N. **Assays:** 2.63 percent copper. **Development:** Five levels with extensive drifting and stoping. Lower three levels were flooded in 1942. **Improvements:** Several bunkhouses and cabins, cookshack, running water, blacksmith shop, machine shop, sawmill, hydro-electric generating plant, and a 250-ton mill. **Production:** Spasmodic under different operators. From November 1926 to July 1929 there were 193,112 tons of ore produced. Since that time up to 1941 only a few shipments of high grade ore were made. In 1931 one shipment of 514 tons was made. Since 1941 shipments of high grade ore have been sent to the Tacoma smelter.

### **PROSPECTS**

#### **Armament Prospect (43)**

**Location:** Sec. 30, T. 28 N., R. 11 E., just below the Galena guard station. **Access:** Road along the east side of the North Fork of Skykomish River. **Property:** 1 claim. **Ownership:** Mr. Robert McDonald and Mr. John H. Cashier. **Ore:** Copper, molybdenum. **Ore minerals:** Chalcopyrite, pyrite, molybdenite, molybdite. **Gangue:** Quartz and altered granodiorite. **Deposit:** Stockwork of mineralized quartz veinlets in granodiorite. Veinlets up to 3 inches wide and usually at least half a foot apart. Entire mineralized area exposed is 150 feet by 125 feet by 65 feet. **Development:** Several small open cuts and two road cuts.

#### **Beckler River Prospect**

**Location:** T. 27 N., R. 12 E., at the head of Beckler River. **Ore:** Copper, gold, silver. **Ore minerals:** Chalcopyrite, pyrite.

#### **Bitter Creek Prospect (44)**

**Location:** Sec. 11, T. 27 N., R. 10 E., about 4½ miles northeast of Index. **Elevation:** 3,300 feet. **Access:** Trail up Bitter Creek. **Property:** 6 claims. **Ore:** Copper. **Ore minerals:** Bornite, chalcopyrite, pyrite. **Deposit:** Mineralized shear zone trending N. 66° E. in granodiorite. Zone 2 feet wide impregnated with the copper minerals. **Development:** 200-foot adit, 600-foot adit.

#### **Calumet Prospect (45)**

**Location:** Secs. 11 and 12, T. 27 N., R. 10 E., on the ridge between the north and south branches of Bitter Creek. **Elevation:** About 4,000 feet. **Access:** Trail up Bitter Creek. **Property:** 4 claims. **Ore:** Copper, zinc. **Ore minerals:** Chalcopyrite, pyrite, sphalerite. **Gangue:** Altered granodiorite, quartz, calcite. **Deposit:** Mineralized shear zone up to 8 feet wide in gran-

odiorite. The strike is N. 75° E. and the dip is vertical. Development: 100-foot adit, 500-foot adit. Several open cuts.

**Cascade Copper Co. Prospect (46)**

**Location:** Sec. 12, T. 27 N., R. 10 E., and sec. 7, T. 27 N., R. 11 E., on the south side of Trout Creek. **Elevation:** About 2,000 feet. **Access:** 1 mile southeast of the Sunset mine by truck and "cat" roads. **Property:** 11 claims. **Ownership:** Mr. W. Proper and Mr. O. T. Majors of Index, Washington. **Ore:** Copper, gold, silver. **Ore minerals:** Chalcopyrite, bornite, pyrite. **Deposit:** Mineralized shear zones in granodiorite. **Development:** Several short adits and a 310-foot crosscut that fails to cut the ore. **Improvements:** Small blacksmith shop and compressor.

**Cooperative Prospect (47)**

**Location:** Sec. 29, T. 28 N., R. 11 E. and secs. 4 and 5, T. 27 N., R. 11 E. **Access:** Trail up Howard Creek. **Property:** 16 claims. **Ore:** Copper, gold, silver. **Ore minerals:** Chalcopyrite, bornite, pyrite. **Deposit:** Mineralized shear zones trending N. 75° W. in quartzite and granodiorite. **Development:** Several adits aggregating about 1,500 feet, an old shaft of unknown depth, and several open cuts.

**Florence-Rae Prospect (48)**

**Location:** Sec. 2, T. 27 N., R. 10 E., on the ridge between Trout and Bitter creeks. **Elevation:** 1,780 feet. **Access:** Adjacent to road on southeast side of the North Fork of Skykomish River. **Property:** 10 claims. **Ore:** Copper, gold, silver. **Ore minerals:** Chalcopyrite, bornite, pyrite. **Deposit:** Slightly mineralized shear zone striking N. 45° E. in granodiorite. **Development:** 150-foot adit and several open cuts.

**Gold Bar and Elmo Prospect (49)**

**Location:** 4 miles up Wallace River from Gold Bar. **Ore:** Silver, lead, copper, gold. **Ore minerals:** Galena, chalcopyrite. **Deposit:** 16-foot shear zone with 2 feet of galena ore on both hanging and foot walls. **Assays:** \$44 to \$102 in silver, lead, and gold. **Development:** 27-foot adit.

**Gunn Peak Prospect (50)**

**Location:** Sec. 14, T. 27 N., R. 10 E., near the headwaters of Canyon Creek. **Elevation:** 2,500 feet. **Property:** 5 claims. **Ore:** Copper. **Ore minerals:** Chalcopyrite, bornite. **Deposit:** Nearly vertical 3-foot shear zone striking N. 65° E. in granodiorite. Only slightly mineralized. **Development:** 455-foot adit, 10-foot adit.

**Helena Prospect (51)**

**Location:** NW $\frac{1}{4}$  sec. 16, T. 27 N., R. 10 E., half a mile northeast of Index. **Elevation:** 2,500 feet. **Property:** 2 claims. **Ore:** Copper. **Ore minerals:** Chalcopyrite, bornite, pyrite. **Deposit:** 4-foot mineralized shear zone striking N. 45° E. and dipping steeply to the north in granodiorite. Bands of sulphides 1 inch in width alternating with altered granodiorite. **Development:** Three short adits aggregating 225 feet.

**Index Bornite Prospect (52)**

**Location:** Secs. 22 and 23, T. 27 N., R. 10 E., on Lewis Creek. **Access:** 1 mile trail up Lewis Creek. **Property:** 2 claims. **Ore:** Copper. **Ore minerals:** Chalcopyrite, bornite. **Deposit:** Mineralized shear zone striking N. 65° E. and dipping 70° SE. in granodiorite. Sulphides occur as small im-

pregnations and bands up to 4 inches in width. **Development:** 70-foot shaft and two adits aggregating 700 feet.

**Index Peacock Prospect (53)**

**Location:** Sec. 14, T. 27 N., R. 10 E., on Canyon Creek above the Gunn Peak prospect. **Property:** 4 claims. **Ore:** Copper. **Ore minerals:** Chalcopyrite, bornite. **Deposit:** 4-foot shear zone striking N. 65° E. in granodiorite. **Development:** 100-foot adit.

**Kitanning Prospect (54)**

**Location:** Sec. 36, T. 28 N., R. 10 E. and sec. 31, T. 28 N., R. 11 E., on the north side of the divide between Trout Creek and Lost Creek. **Elevation:** 2,000 feet. **Access:** Adjacent to road on the south side of the North Fork of Skykomish River. **Property:** 4 claims. **Ore:** Copper. **Ore minerals:** Chalcopyrite, bornite, chalcocite. **Deposit:** 2½-foot mineralized shear zone striking N. 75° E. in granodiorite. Small body of high grade ore. **Development:** 525-foot adit.

**Lost Creek Prospect (55)**

**Location:** Secs. 29, 31, and 32, T. 28 N., R. 11 E., along Lost Creek. **Elevation:** 3,800 feet. **Access:** Trail up Lost Creek. **Property:** 15 claims. **Ore:** Copper, gold, silver. **Ore minerals:** Chalcopyrite, bornite, chalcocite, pyrite. **Gangue:** Quartz and quartzite. **Deposit:** Disseminations of the sulphides in fractured quartzite. 8-foot fracture zone. **Assays:** \$4 in gold, 2.8 ounces of silver. **Development:** Three adits and a 57-foot shaft.

**Merchant Prospect (56)**

**Location:** Sec. 18, T. 27 N., R. 11 E., on the west side of Trout Creek about 4 miles from its mouth. **Elevation:** 3,500 feet. **Access:** Old wagon road up Trout Creek. **Property:** 12 claims. **Ownership:** Mr. Ivan Merchant, Salem, Oregon. **Ore:** Copper. **Ore minerals:** Chalcopyrite, bornite. **Deposit:** Four nearly vertical mineralized shear zones in granodiorite, slate and quartzite. Three zones strike N. 80° W. and one strikes N. 10° W. Shear zones range from a few inches to 12 feet in width. **Assays:** Some ore shows 15 percent copper. **Development:** Main adit 1,700 feet with drifts. Three other adits 150 feet, 500 feet, and 175 feet long. **Improvements:** Two cabins. **Ore in sight:** 80,000 tons.

**Non Pareil Prospect (57)**

**Location:** SW¼ sec. 6, T. 27 N., R. 11 E., on the northeast side of Trout Creek 1 mile northeast of the Sunset mine. **Elevation:** 2,500 feet. **Access:** Truck road. **Property:** 32 claims. **Ore:** Copper, gold, silver, cobalt. **Ore minerals:** Chalcopyrite, bornite, pyrite, chalcocite. **Deposit:** 1- to 7-foot shear zone, striking from N. 65° E. to S. 75° E. and nearly vertical, in granodiorite. Three sparsely mineralized, 1- to 20-foot shear zones striking east-west, also nearly vertical. All of the shear zones are practically barren of ore where exposed. **Assays:** Assays are reported to have shown 1.14 percent cobalt. **Development:** Several open cuts and a 1,700-foot adit with drifts.

**North Star Prospect (58)**

**Location:** Sec. 4, T. 27 N., R. 10 E., at the headwaters of North Star Creek. **Elevation:** 2,570 feet. **Access:** Trail up North Star Creek. **Property:** 14 claims. **Ore:** Copper. **Ore minerals:** Chalcopyrite, bornite,

pyrite. **Gangue:** Quartz with crushed and altered granodiorite. **Deposit:** Mineralized shear zone trending N. 24° E. and dipping 78° NW. in granodiorite. Irregular bands of sulphides 2 to 3 inches wide. **Development:** Two adits totalling 1,100 feet.

#### **Red Cross Prospect (59)**

**Location:** Sec. 36, T. 28 N., R. 9 E., about 1 mile north of the Copper Belle property. **Elevation:** 3,000 feet. **Access:** 1 mile by trail up May Creek. **Property:** 10 claims. **Ore:** Copper, gold, silver. **Ore minerals:** Bornite, chalcopyrite, pyrite. **Gangue:** Quartz and altered granodiorite. **Deposit:** Mineralized shear zone trending N. 40° E. in granodiorite. **Assays:** One sample ran 4 percent copper, 0.05 ounces of gold and 1 ounce of silver. **Development:** Several short adits and open cuts.

#### **Uncle Sam Prospect (60)**

**Location:** Sec. 23, T. 27 N., R. 10 E., on the south slope of the divide between Lewis and Barclay creeks. **Elevation:** 3,200 feet. **Access:** 4-mile trail from Index and a 3-mile trail from Baring. **Property:** 4 claims. **Ore:** Copper, gold, silver. **Ore minerals:** Chalcopyrite, bornite, pyrite. **Gangue:** Quartzite. **Deposit:** Mineralized shear zone from 10 to 12 feet wide in quartzite. **Assays:** Picked samples ran from 3 to 4.5 percent copper with small amounts of gold and silver. **Development:** Three short adits totalling 400 feet.

#### **Vanadium Prospect**

**Location:** Index district. **Ownership:** Mr. C. S. Armstrong. **Ore:** Vanadium. **Assays:** 98 percent "vanadium" reported.

## **MONTE CRISTO MINING DISTRICT**

### **GENERAL FEATURES**

**Location:** The Monte Cristo mining district, including roughly 80 square miles, is in the eastern part of Snohomish County around the old mining camp of Monte Cristo, at the headwaters of the South Fork of Sauk River. It is bounded on the north by the Silverton and Glacier Peak districts, on the east by Chelan County, on the south by the Silver Creek district, and on the west by the Sultan district. The western boundary is defined by the divide between the Sultan and the Stilaguamish drainages. The district is accessible by two trails, one along the old railroad grade up Palmer Creek, over Barlow Pass and up the South Fork of Sauk River to Monte Cristo and the other over the divide between Mineral City and Monte Cristo. The topography is extremely rugged with high, steep mountains and narrow valleys.

**Geologic section:** The oldest rocks in the district are a thick series of arkoses, quartzites, slates, and marbles. The next oldest rocks are acidic intrusives and extrusives that underlie the major part of the district. The older rocks include the mineral deposits. In the western part of the district the igneous rocks are overlain by a thick series of marine and continental sedimentary rocks with some volcanics which in turn are followed by both acidic and basic lava flows. The youngest material in the district is the glacial sand and gravel that covers the valley bottoms.

**Ores and ore minerals:** Gold, silver, copper, and lead are the most common and most important ores in the district, but there are also ores of zinc, arsenic, antimony, bismuth, nickel, molybdenum, and mercury. The ore minerals are chalcopyrite, arsenopyrite, pyrite, bornite, galena, sphalerite, tetrahedrite, chalcocite, stibnite, molybdenite, cinnabar, and realgar.

**Ore deposits:** The ore deposits are very similar to those found in the other districts in the county. The ore minerals occur mainly as replacements along shear zones but are also found along joints, bedding planes, and contacts in the older metamorphic and igneous rocks. The ore bodies are generally lenticular in shape and commonly occur where cross shearing and shattering have made replacement and the movement of solutions easier. Areas of barren sheared rock, quartz, and calcite are commonly found between the ore bodies. The straightest shear zones and fractures appear to carry the highest values. The highest grade gold, silver, lead, zinc, and copper ores occur from the surface downward to depths of 200 to 300 feet, and below those depths the ore minerals are mainly pyrite and arsenopyrite with somewhat lower values in gold and silver.

**Timber and water:** In the near vicinity of most of the properties there is an adequate supply of timber and water for use in mining and milling operations, and the numerous streams can be used to generate much electrical power.

#### MINES

##### **Alleghany Corp. of Nevada (Foggy) Mine (61)**

**Location:** Sec. 13, T. 29 N., R. 11 E., on the northeast slope of Cadet Peak. **Property:** 40 claims. **Ownership:** Alleghany Corp. of Nevada, 626 Central Building, Seattle, Washington. **Ore:** Gold, silver, zinc, lead, antimony, arsenic. **Ore minerals:** Arsenopyrite, pyrite, chalcopyrite, galena, sphalerite, stibnite, realgar. **Deposit:** Partially mineralized fracture zone that can be traced for 5,000 feet on the surface, strikes northeast, and is nearly vertical. Surface ores are galena, sphalerite, chalcopyrite, stibnite, and realgar. At depths greater than 200 feet the minerals are arsenopyrite and pyrite. **Development:** Over 1,000 feet of adit is reported to give a depth of 1,000 feet below the surface. **Production:** Some production, but amount unknown.

##### **Fortunate Mine**

**Ore:** Gold and silver. **Production:** Reported to have produced some ore.

##### **Justice (Golden Chord) Mine (62)**

**Location:** Sec. 27, T. 29 N., R. 11 E., on the northwest side of Wilmon Peak overlooking Monte Cristo. **Elevation:** 4,000 feet. **Access:** Three-quarters of a mile by trail from Monte Cristo. **Property:** 3 claims. **Ownership:** Mr. John Birney of Everett, Washington. **Ore:** Gold, silver, arsenic. **Ore minerals:** Arsenopyrite, pyrite. **Deposit:** 1- to 3-foot mineralized shear zone striking N. 71° E. and dipping 70° NW. in andesite. Ore bodies from 70 to 400 feet in diameter. **Assays:** Average assays showed 0.43 ounces of gold, 3 ounces of silver, 12.4 percent arsenic. **Development:** Three adit levels totalling about 2,200 feet. **Ore in sight:** Practically all of the known ore has been removed. **Production:** Considerable ore was produced from 1903 to 1905.



**Last Hope Mine**

**Ore:** Gold, silver. **Deposit:** Mineralized fracture zone striking N. 82° W. and dipping 70° NE. **Production:** Reported to have produced some ore.

**Monte Cristo Mine (63)**

**Location:** Sec. 26, T. 29 N., R. 11 E., 1 mile east of Monte Cristo. **Elevation:** 3,000 to 5,500 feet. **Access:** Trail from Monte Cristo. **Property:** 14 claims including the Pride of the Woods, Pride of the Mountains, Mystery, Galore, Eighty Nine, and Baltic. **Ownership:** Mr. H. S. Ofstie of Everett, Washington. **Ore:** Gold, silver, arsenic, lead, zinc, antimony. **Ore minerals:** Arsenopyrite, pyrite, chalcopyrite, galena, sphalerite, stibnite, realgar. **Gangue:** Sheared rock, quartz, calcite. **Deposit:** Main mineralized shear zone striking N. 75° E. and dipping 65° NW. in schist and tonalite; mineralization in other minor fractures. Lenses of sulphide ore ranging from 100 to 300 feet in diameter and from 1 to 15 feet in width separated by barren areas along the shear zone. **Assays:** Surface areas carry 0.95 ounces of gold, 12 ounces of silver, 4 percent copper, 5 percent lead. Deeper ores carry 0.6 ounces of gold, 7 ounces of silver, 1.0 percent copper, 2.5 percent lead. **Development:** Three main levels of adits and several smaller adits. Total underground work about 12,000 feet. **Production:** 300,000 tons of ore. The ore came mainly from the Mystery and Pride claims from above the 700-foot level.

**Northwest Consolidated Mine**

**Ore:** Gold, silver, copper. **Production:** Reported to have produced some ore.

**O and B Mine (64)**

**Location:** Sec. 21, T. 29 N., R. 11 E., about half a mile southwest of Monte Cristo on the slope of Silvertip Peak. **Elevation:** 4,700 feet. **Access:** Trail from Monte Cristo. **Property:** 4 claims. **Ownership:** Mr. A. H. Reiser, 1231 N. 50th Street, Seattle, Washington. **Ore:** Copper, gold, silver, arsenic. **Ore minerals:** Chalcopyrite, arsenopyrite, pyrite. **Deposit:** 2- to 50-foot fracture zone striking N. 33° E. and dipping 65° NW. in andesite. Ore bodies up to 4 feet wide. **Assays:** \$35 per ton. **Development:** Three adits connected by raises and a 3,400-foot crosscut that fails to penetrate ore. **Production:** Several carloads of hand sorted ore.

**Peabody Mine (65)**

**Location:** NE $\frac{1}{4}$  sec. 27, T. 29 N., R. 11 E., on the west slope of Wilmon Peak. **Elevation:** 3,400 feet. **Access:** Trail from Monte Cristo. **Property:** 5 claims. **Ore:** Gold, arsenic, lead, silver, zinc. **Ore minerals:** Arsenopyrite, pyrite, galena, sphalerite. **Gangue:** Quartz and altered andesite. **Deposit:** Mineralized fracture zone ranging from a few inches to 18 inches in andesite. **Assays:** 0.3 to 0.6 ounces of gold, 1 to 36 ounces of silver. **Development:** Main adit 200 feet long and several short adits and open cuts. **Production:** Some ore produced in 1905.

**Rainy Mine (66)**

**Location:** Sec. 22, T. 29 N., R. 11 E., a quarter of a mile northeast of Monte Cristo. **Elevation:** 3,000 feet. **Access:** Trail from Monte Cristo. **Property:** 3 claims. **Ownership:** Mr. J. F. Birney of Everett, Washington. **Ore:** Gold, silver, arsenic. **Ore minerals:** Arsenopyrite, pyrite. **Deposit:**

Mineralized fracture zone striking N. 10° E. and dipping 87° NW. in schist and andesite. Main ore body 300 feet in diameter and 8 inches to 5 feet wide. Assays: 0.75 to 1.0 ounce in gold, 1 to 3 ounces of silver. Development: 800-foot adit and a 200-foot shaft. Production: 20,000 tons of ore.

#### PROSPECTS

##### **Annie Laurie and Ethel Prospect (67)**

Location: Sec. 28, T. 29 N., R. 11 E., half a mile southeast of Monte Cristo. Ore: Gold. Ore mineral: Pyrite. Deposit: Sparsely mineralized fracture zone striking northeast in andesite. Assays: \$5 to \$21 in gold. Development: 80-foot adit and several open cuts.

##### **Argonaut and Typo Prospect (68)**

Location: Sec. 27, T. 29 N., R. 11 E., on the west side of Wilmon Peak. Ore: Gold. Ore mineral: Arsenopyrite. Deposit: 75-foot shear zone striking northeast in andesite and slightly mineralized. Assays: \$8 to \$12 per ton.

##### **Ajax Prospect (69)**

Location: Sec. 26, T. 29 N., R. 11 E., at the headwaters of Glacier Creek. Access: 2 miles from Monte Cristo by trail. Ore: Gold, silver.

##### **Baltimore Prospect (70)**

Location: Sec. 12, T. 29 N., R. 11 E., half a mile southeast of Goat Lake. Ore: Gold, silver, lead. Ore minerals: Pyrite, galena. Deposit: 3- to 5-foot mineralized fracture zone carrying 6 to 18 inches of ore. Assays: \$6 in gold, \$3 in silver.

##### **Blue Rock Prospect (71)**

Location: Sec. 11, T. 29 N., R. 11 E., on the west side of Goat Lake. Property: 4 claims. Ore: Gold, silver, copper, arsenic. Ore minerals: Arsenopyrite, chalcopyrite, pyrite. Deposit: One fracture zone carrying 3½ feet of ore and another 5 to 20 feet wide with some ore. Development: 10-foot shaft, 35-foot adit.

##### **Bon Ton Prospect (72)**

Location: Sec. 14, T. 29 N., R. 11 E., 1 mile south of Goat Lake. Access: Trail from Goat Lake. Property: 5 claims. Ore: Gold, silver, copper. Ore minerals: Bornite, chalcopyrite, pyrite. Deposit: 10- to 12-foot fracture zone that can be traced about 650 feet on the surface. Ore body from 4 to 8 feet wide. Assays: \$16 to \$27 in gold and silver per ton.

##### **Brooklyn Prospect (73)**

Location: Sec. 13, T. 29 N., R. 11 E., above the El Dorado. Development: Short adit in ore.

##### **Cassidy Prospect (74)**

Location: Sec. 26, T. 29 N., R. 11 E., at the entrance of Glacier Basin. Property: 4 claims. Ore: Gold, silver, arsenic. Ore minerals: Arsenopyrite. Deposit: Two mineralized fractures 3 to 5 feet wide. Assays: \$7 in gold and silver, 6 to 10 percent arsenic. Development: Several short adits.

##### **Central Fraction Prospect**



**Climax Prospect****Del Campo Prospect (75)**

**Location:** On the east slope of the ridge dividing the Sauk, Sultan, and Stilaguamish watersheds, overlooking Crater Lake,  $2\frac{1}{2}$  miles west of Monte Cristo. **Property:** 3 claims. **Ore:** Gold, silver, copper. **Ore minerals:** Chalcopyrite. **Deposit:** 10- to 30-foot fracture zone that can be traced for 2,000 feet on the surface. **Assays:** Surface ore runs \$44.86 in gold and silver, 13.8 percent copper. **Development:** 25-foot adit, several open cuts.

**El Dorado Prospect (76)**

**Location:** Sec. 13, T. 29 N., R. 11 E., three-quarters of a mile southeast of Goat Lake. **Ore:** Gold, silver, copper. **Ore minerals:** Chalcopyrite, pyrite. **Deposit:** Narrow mineralized fracture. **Assays:** \$6 to \$21 in gold, \$2 to \$7 in silver, and as high as 21 percent copper. **Development:** Short adit.

**Emma Moore Prospect (77)**

**Location:** Sec. 27, T. 29 N., R. 11 E., on the western side of '76 Basin about 1 mile from Monte Cristo. **Access:** Trail from Monte Cristo. **Ore:** Gold, silver, lead. **Ore minerals:** Arsenopyrite, pyrite, galena. **Deposit:** 24-foot fracture zone striking northeast in andesite. **Assays:** \$40 in gold and silver, 15 percent lead.

**Gift Prospect**

**Location:** On the divide between Goat Lake and the North Fork of Sauk River. **Ore:** Gold, silver. **Ore mineral:** Pyrite. **Deposit:** 8-foot quartz vein. **Development:** 15-foot adit.

**Glacier Prospect**

**Location:** On the west side of '76 Basin.

**Glory of the Mountains Prospect (78)**

**Location:** Sec. 2, T. 29 N., R. 11 E., half a mile northeast of Goat Lake. **Property:** 7 claims. **Ore:** Gold, silver. **Ore minerals:** Arsenopyrite, pyrite. **Deposit:** Wide mineralized fracture zone striking northeast and dipping  $45^\circ$ . Ore body 20 feet wide. **Assays:** \$21 to \$27 in gold, \$1.80 to \$4.80 in silver. **Development:** 40-foot adit.

**Grant Prospect (79)**

**Location:** Sec. 27, T. 29 N., R. 11 E. **Ore:** Gold.

**Homestake Prospect****Hunter Prospect**

**Location:** Near Goat Lake. **Deposit:** Small pay streaks of ore.

**Hydra Prospect****J. B. Prospect (80)**

**Location:** Sec. 27, T. 29 N., R. 11 E. **Ore:** Gold, silver, lead.

**Keystone Prospect (81)**

**Location:** Sec. 22, T. 29 N., R. 11 E., 1 mile east of Monte Cristo. **Ore:** Gold, silver, copper, lead. **Ore minerals:** Galena, chalcopyrite, pyrite. **Deposit:** 4- to 20-foot mineralized shear zone that carries from 10 to 18 inches of ore. **Assays:** \$8 to \$30 in gold and from 6 to 40 ounces in silver. **Development:** 30-foot adit and large open cut.

**Laborum Prospect****Lily of the West Prospect (82)**

**Location:** Sec. 11, T. 29 N., R. 11 E., just east of Goat Lake. **Ore:** Gold, arsenic. **Ore mineral:** Arsenopyrite. **Deposit:** 2½-foot mineralized fracture zone. **Development:** Short crosscut adit.

**Little Giant Prospect (83)**

**Location:** Sec. 13, T. 29 N., R. 11 E., 1 mile southeast of Goat Lake at the head of the basin. **Ore:** Gold, silver. **Ore minerals:** Sulphides. **Deposit:** 8-foot fracture zone that carries 18 inches to 8 feet of ore. **Development:** Short crosscut adit.

**Mackinaw Prospect (84)**

**Location:** Sec. 19, T. 29 N., R. 11 E., on the West Fork of Weedon Creek about 3 miles from Monte Cristo. **Property:** 18 claims and 2 mill sites. **Ownership:** Mackinaw Minerals Co., Everett, Washington. **Ore:** Gold, silver, copper, nickel. **Deposit:** Mineralized fracture zone that can be traced for 3,000 feet on the surface and that has a known depth of 125 feet. Ore body is from 11 to 30 feet wide with a known length of 90 feet. **Assays:** 0.176 to 0.5 ounces of gold, 2.27 to 3 percent copper, 2 percent nickel. **Development:** Small amount.

**Navajo Prospect (85)**

**Location:** Half a mile northeast of Goat Lake. **Property:** 3 claims. **Deposit:** One mineralized fracture zone with good ore.

**Nevada Prospect (86)**

**Location:** Sec. 12, T. 29 N., R. 11 E., a quarter of a mile southeast of Goat Lake. **Ore:** Gold, silver, copper. **Ore minerals:** Chalcopyrite, pyrite. **Deposit:** 3- to 10-foot mineralized fracture zone that carries 3 feet of good ore and some concentrating ore. **Development:** 60-foot adit.

**Nibus Prospect****Orphan Boy Prospect****P. and I. Prospect (87)**

**Location:** Sec. 21, T. 29 N., R. 11 E. **Ore:** Gold, silver, copper. **Ore minerals:** Chalcopyrite, pyrite. **Deposit:** 2- to 6-foot mineralized fracture zone striking N. 33° E., and dipping 65° NW. in andesite and carrying from 5 to 24 inches of ore. **Assays:** \$8.80 to \$21 in gold. **Development:** 112-foot adit.

**Philo Prospect (88)**

**Location:** Sec. 23, T. 29 N., R. 11 E., on the west side of Cadet Peak. **Property:** 3 claims. **Ore:** Gold, silver, copper, arsenic. **Ore minerals:** Arsenopyrite, chalcopyrite, pyrite. **Deposit:** Mineralized fracture zone carrying 15 inches of high grade ore and 2 feet of concentrating ore. **Development:** 20-foot and 40-foot adits.

**Phoenix Prospect (89)**

**Location:** On the east side of the Rainy property. **Development:** Small amount.

**Republican Prospect (90)**

Location: Sec. 13, T. 29 N., R. 11 E., three-quarters of a mile southeast of Goat Lake. Ore: Gold, silver, lead. Ore minerals: Pyrite, galena. Deposit: 4-foot fracture zone.

**Russia Prospect****Sacramento Prospect (91)**

Location: Adjacent to the Sunset property 1 mile south of Goat Lake.

**San Francisco Prospect (92)**

Location: Sec. 13, T. 29 N., R. 11 E., 1 mile south of Goat Lake. Deposit: 10- to 12-foot mineralized fracture zone. Development: Short adit.

**Saturday Prospect****Seattle Prospect**

Ore: Gold, silver, copper.

**Seventy Six Prospect (93)**

Location: Sec. 27, T. 29 N., R. 11 E., on the east side of '76 Basin about 1 mile south of Monte Cristo. Elevation: 5,000 feet. Property: 5 claims. Ore: Gold, silver, lead. Ore minerals: Galena, pyrite. Deposit: 6-inch to 2-foot slightly mineralized fracture zone. Assays: Surface samples show \$30 in silver, \$22.73 in gold, 26 percent lead. Development: 130-foot upper adit and 100-foot lower adit.

**Sidney Prospect (94)**

Location: Sec. 27, T. 29 N., R. 11 E. Ore: Gold, silver. Development: Small amount.

**Stratus Prospect****Sunset Prospect (95)**

Location: Sec. 12, T. 29 N., R. 11 E., about half a mile south of Goat Lake. Ore: Gold, silver, arsenic. Ore minerals: Arsenopyrite, pyrite. Deposit: Fracture zone striking northeast and carrying 3 feet of ore. Assays: \$33 in gold and silver.

**Threadwell Prospect**

Ore: Gold, silver, lead, copper, zinc. Ore minerals: Pyrite, chalcopryrite, galena, sphalerite. Deposit: Mineralized fracture zone striking N. 68° E. and dipping 70° NW. Assays: \$9 to \$20 in gold in the upper 10 feet. Much lower grade ore in the unoxidized zone. Development: 10-foot and 110-foot adits.

**Three Star Prospect (96)**

Location: Sec. 11, T. 29 N., R. 11 E., about half a mile west of Goat Lake. Ore: Gold, silver. Ore minerals: Pyrite. Deposit: 8- to 12-foot fracture zone that carries from 3 to 7 feet of ore. Development: Small amount.

**Tobique and Lalla Rookh Prospect (97)**

Location: Sec. 21, T. 29 N., R. 11 E., just north of the O and B mine. Ore: Gold, silver, lead. Ore minerals: Pyrite and galena. Deposit: 12- to 15-foot fracture zone in andesite. Assays: \$8 to \$30 in gold, 6 to 40 ounces of silver. Development: Two 15-foot adits and another adit of unknown length.

**Tuscolusa Prospect**

**Twentieth Century Prospect (98)**

Location: Sec. 27, T. 29 N., R. 11 E. Ore: Gold, silver.

**Uncle Sam Prospect**

Location: On the west side of '76 Basin.

**Union Prospect (99)**

Location: Sec. 12, T. 29 N., R. 11 E., a quarter of a mile east of the southeast end of Goat Lake. Ore: Gold, silver, arsenic. Ore minerals: Arsenopyrite, pyrite. Deposit: Mineralized fracture zone that carries 18 inches to 4 feet of ore. Development: 40-foot crosscut adit.

**Washington Prospect**

**Waterfall and Blackjack Prospect (100)**

Location: Sec. 13, T. 29 N., R. 11 E., 1 mile south of Goat Lake. Deposit: Two 5-foot fracture zones carrying from 18 inches to 4 feet of ore.

**West Seattle Prospect**

**Whistler Prospect (101)**

Location: Sec. 23, T. 29 N., R. 11 E., on the north slope of Cadet Peak. Ore: Gold, silver, copper, lead. Ore minerals: Pyrite, galena, tetrahedrite. Deposit: 4- to 20-foot fracture zone that carries 18 inches of ore. Development: 20-foot and 30-foot adits.

**Wildcat Prospect (102)**

Location: Sec. 25, T. 29 N., R. 11 E.

**Wilmon Peak Prospect**

Location: On Wilmon Peak. Ore: Gold.

**Zeta Prospect (103)**

Location: Sec. 34, T. 29 N., R. 11 E., about 1 mile east of Silver Lake on the Monte Cristo side of the divide. Ore: Gold, silver, copper. Ore minerals: Pyrite, chalcopyrite, bornite. Deposit: Three parallel mineralized fractures. One shows from 8 to 24 inches of ore, another shows 3 to 18 inches of ore. Assays: \$5 to \$6 in gold, \$3 to \$11 in silver. Development: 15-foot adit and several open cuts.

## SILVER CREEK MINING DISTRICT

### GENERAL FEATURES

**Location:** The Silver Creek mining district, including roughly 78 square miles, is in the southeastern part of Snohomish County north of the Index district and south of the Monte Cristo district. The divide between the Sultan and the Skykomish drainages forms the western boundary and the crest of the Cascades forms the eastern boundary. Most of the mines and prospects of the district are within the area drained by Salmon Creek, Silver Creek, and Troublesome Creek. The district is reached by good truck road on the southeast side of the North Fork of Skykomish River from Index to the ghost town of Galena, which is at the mouth of Silver Creek. The ghost town of Mineral City is about 3 miles north of Galena by poor truck road and the mining properties within the Silver Creek drainage are accessible by trails tributary to this road. The topography of the district is very rugged and marked by narrow, steep-sided valleys separated by high divides which make transportation to and from the mines extremely difficult.

**Geologic section:** The oldest rocks in the district are made up of the same series of quartzites, marbles, argillites, and schists that is found to the south in the Index district. The principal occurrence of these rocks is along Silver Creek Valley. As in the Index district granitic rocks have been intruded into the older metamorphic rocks and now as a result of erosion comprise a major portion of the bedrock of the district. The metamorphic and granitic rocks are both cut by porphyry dikes. In the northern part of the district these older rocks are overlain by small areas of younger andesites and arkosic sedimentary rocks. Along the northern border of the district is a small area of still younger granodiorite. Glacial sands and gravels make up the material in the major valley bottoms.

**Ores and ore minerals:** The important ore in the northern and southern parts of the district is copper with varying amounts of gold and silver. In a small area about 2 miles north of Galena the chief ore is lead with a large amount of silver and some gold and zinc. Chalcopyrite and bornite are the important copper minerals and are found associated with arsenopyrite and pyrite which carry the gold.

**Ore deposits:** The ore deposits are very similar to those of the Index district. The older metamorphic and granitic rocks have been cut by numerous shear zones that have general east-west strikes and nearly vertical dips. These shear zones range in width from a few inches to more than 100 feet and are composed largely of sheared and altered country rock and gouge that has been partially replaced by the ore minerals, quartz, and calcite. The ore bodies proper are largely lenticular in shape and of varying sizes, and constitute areas of the shear zone that have been partially replaced by ore minerals. In the Troublesome Creek area the shear zones, in many cases, have been filled with white vein quartz that carries galena high in silver.

**Timber and water:** There is an adequate supply of timber and water on the properties for use in mining operations. On many of the properties

there is sufficient running water for milling purposes and for generating electrical power.

### MINES

#### **Blue Bird Mine (104)**

**Location:** Sec. 18, T. 28 N., R. 11 E., on the west side of Silver Creek 2 miles north of Galena. **Access:** Truck road. **Ore:** Gold, silver, lead. **Deposit:** Nearly vertical vein that strikes northwest. **Development:** One crosscut adit. **Production:** Small amount.

#### **Fortunate Mine (105)**

**Location:** Sec. 32, T. 29 N., R. 11 E., 1 mile northeast of Mineral City. **Ore:** Gold, silver. **Production:** Reported to have produced some ore.

#### **Index Gold Mines, Inc.**

**Location:** T. 28 N., R. 11 E. **Ownership:** Mr. Henry Siepmann, 2128½ 8th Ave. W., Seattle, Washington. **Ore:** Gold, silver, lead. **Production:** Recently produced some ore.

#### **Last Chance Mine (106)**

**Location:** Sec. 18, T. 28 N., R. 11 E., on the west side of Silver Creek, 2 miles north of Galena. **Access:** Truck road. **Ore:** Gold, silver, lead. **Deposit:** Nearly vertical vein that strikes northwest. **Development:** One crosscut adit. **Production:** Small amount.

#### **Louise Mine (107)**

**Location:** Sec. 32, T. 29 N., R. 11 E., half a mile south of Silver Lake. **Elevation:** 4,000 feet. **Access:** Trail. **Ore:** Gold, silver, copper, zinc. **Ore minerals:** Arsenopyrite, chalcopyrite, sphalerite. **Gangue:** Quartz, calcite, arkose. **Deposit:** Mineralized fracture zone striking N. 68° E. and dipping 83° SE. in arkose. Chalcopyrite and sphalerite near the surface and arsenopyrite at depth. **Assays:** Surface ore shows as high as 15 ounces of gold, 49 ounces of silver, 13 percent copper. **Development:** At least one adit. **Production:** Small amount of high grade ore.

#### **New York-Seattle Mine (108)**

**Location:** Sec. 4, T. 28 N., R. 11 E. **Access:** 13 miles by poor road to railroad. **Property:** 8 claims. **Ore:** Copper. **Deposit:** Four veins 4 inches to 20 inches wide. **Assays:** Average \$14.42 in copper. **Development:** 212 feet in shafts, 1,250 feet of adits. **Production:** Shipments of ore were made to the old smelter at Everett in 1908.

#### **Silver Creek Mine (109)**

**Location:** SE¼ sec. 18, T. 28 N., R. 11 E., on the west side of Silver Creek. **Access:** Truck road. **Property:** Broken Ridge, Dewey, and Bonanza claims. **Ownership:** Mr. Fred Magnusen of Index, Washington. **Ore:** Copper, gold, silver, zinc. **Ore minerals:** Chalcopyrite, bornite, sphalerite. **Deposit:** 4-foot mineralized shear zone that strikes N. 12° W. and dips 19° NE. in limestone and quartzite. **Assays:** 3.1 percent copper, 3 ounces of silver, some gold. **Development:** A several-hundred-foot adit, a 90-foot adit and several open cuts. **Production:** Some ore was produced in 1934.



## PROSPECTS

**Alki and Ellen Prospect (110)**

Location: Sec. 31, T. 29 N., R. 11 E. Ore mineral: Pyrite. Deposit: Vein 8 to 10 feet wide. Development: 60-foot crosscut adit.

**Anaconda Prospect (111)**

Location: SW $\frac{1}{4}$  sec. 19, T. 28 N., R. 11 E., on the mountain above Michigan Gulch. Ore: Gold. Deposit: Four parallel veins and one cross vein ranging in width from 3 to 30 feet with ore bodies from 18 inches to 15 feet. Development: 20-foot adit and numerous open cuts.

**Annie Prospect**

Ore: Gold, silver. Deposit: 4-foot quartz vein. Assays: As high as \$100 in gold and silver.

**Arkansas Traveler Prospect**

Location: On the east side of Silver Creek near the Jumbo prospect.

**Ben Butler Prospect (112)**

Location: Sec. 6, T. 28 N., R. 11 E., on the west side of Silver Creek. Ore: Gold. Deposit: 12- to 15-foot vein carrying 12 to 30 inches of ore. Development: 60-foot adit.

**Big Raymond Prospect (113)**

Location: Sec. 29, T. 29 N., R. 11 E. Property: 4 claims. Ore: Gold, silver, copper. Deposit: Mineralized quartz stringers. Assays: \$2 to \$56 per ton. Development: Adits aggregating 500 feet in length.

**Billy Lee Prospect (114)**

Location: Sec. 7, T. 28 N., R. 11 E., on the west side of Silver Creek about 2 miles south of Mineral City. Ore: Gold, silver, lead. Ore mineral: Galena. Deposit: 18-foot vein striking northwest with nearly vertical dip. It carries a 2-foot pay streak of ore. Development: 112-foot adit and 25-foot adit.

**Black Diamond Prospect**

Development: Small amount.

**Blackstone Prospect (115)**

Location: Sec. 8, T. 28 N., R. 11 E., on Hancock Gulch. Ore: Silver, copper. Deposit: 11-foot vein. Assays: 4 ounces of silver, 9.9 percent copper.

**Bluff Prospect (116)**

Location: NW $\frac{1}{4}$  sec. 8, T. 28 N., R. 11 E., on the east side of Silver Creek. Property: 5 claims. Ore: Gold, copper. Ore minerals: Chalcopyrite, pyrite. Deposit: 4-foot vein with 2 inches of ore, 25-foot vein with 4 $\frac{1}{2}$  inches of high grade ore, and another parallel vein with some ore. Assays: \$7.50 in gold. Development: 20-foot adit.

**Caplin-Holbrooke Prospect (117)**

Location: Sec. 33, T. 29 N., R. 11 E., on the East Fork of Silver Creek about 2 miles north of Mineral City. Property: 9 claims. Ore: Gold, silver, copper. Deposit: 10-foot vein with two 12-inch pay streaks of ore. Assays: As high as \$90 per ton. Development: 75-foot adit.



**Castle Prospect (118)**

**Location:** Sec. 29, T. 29 N., R. 11 E., northwest of the Edison prospect.  
**Ore:** Gold, silver. **Deposit:** 20-foot vein with 4 feet of ore. **Assays:** \$25 per ton. **Development:** 30-foot adit.

**Champion Prospect**

**Ore:** Gold, silver, lead. **Deposit:** 12-foot vein of concentrating ore.  
**Assays:** \$20 per ton.

**Clara Thomson (McCombs) Prospect (119)**

**Location:** Sec. 36, T. 29 N., R. 10 E. and sec. 6, T. 28 N., R. 11 E., on the west side of the West Fork of Silver Creek. **Access:** Truck road. **Property:** 16 claims. **Ore:** Gold, silver, copper, lead. **Ore minerals:** Chalcopyrite, galena, pyrite. **Deposit:** Mineralized shear zones in granite and schist. **Assays:** 0.02 to 0.6 ounces of gold, 0.6 to 19 ounces of silver, trace to 15 percent lead, 15 percent copper. **Development:** Several adits and open cuts.

**Cleveland Prospect**

**Ore:** Silver, lead. **Ore mineral:** Galena. **Deposit:** 5-foot vein.

**Combination Prospect (120)**

**Location:** Sec. 33, T. 29 N., R. 11 E. **Deposit:** 2-foot vein with 1 foot of ore.

**Copper Chief Prospect (121)**

**Location:** NW $\frac{1}{4}$  sec. 7, T. 28 N., R. 11 E., on the west side of Silver Creek. **Property:** 4 claims. **Ore:** Gold, silver, copper, lead. **Ore minerals:** Chalcopyrite, galena, arsenopyrite. **Deposit:** 8-foot vein, nearly vertical and striking east-west. **Development:** 320-foot adit.

**Cora M Prospect (122)**

**Location:** NW $\frac{1}{4}$  sec. 4, T. 28 N., R. 11 E. **Ore:** Gold. **Deposit:** 3 $\frac{1}{2}$ -foot vein that is nearly vertical and strikes northeast. **Assays:** \$12 per ton. **Development:** 20-foot adit.

**Corona Prospect (123)**

**Location:** Sec. 10, T. 28 N., R. 11 E. **Property:** 2 claims. **Ore:** Gold, silver. **Deposit:** 6-foot vein with 3 feet of ore. **Assays:** Surface ore runs \$22 in gold, \$60 in silver. **Development:** 65-foot adit.

**Crown Point Prospect (124)**

**Location:** Sec. 8, T. 28 N., R. 11 E., in Straightup Gulch on the east side of Silver Creek. **Property:** The Crown Point, Silver Shield, Helena, Hidden Treasure, and Crawford claims. **Ore:** Gold, silver, lead. **Ore mineral:** Galena. **Deposit:** 5-foot vein, 4-foot vein, 12-foot vein, 11-foot vein, and 20-foot vein. **Development:** 30-foot adit and several open cuts.

**Daisy Prospect (125)**

**Location:** Sec. 9, T. 28 N., R. 11 E. **Property:** 10 claims. **Ore:** Gold, silver, lead. **Ore minerals:** Galena, arsenopyrite. **Deposit:** Vein from 4 to 12 feet wide in granite. **Assays:** \$7 to \$70 in gold and as high as \$60 in silver, the average being \$20 per ton for both metals. **Development:** 15-foot shaft and 50-foot adit.

**Delco and Marengo Prospect (126)**

Location: Sec. 33, T. 29 N., R. 11 E. Ore: Gold. Ore mineral: Pyrite. Deposit: Large vein.

**Delta Prospect**

Ore: Gold, silver, copper, lead. Ore minerals: Galena, chalcopryite. Gangue: Quartz. Deposit: 5-foot vein.

**Diamond Hitch Prospect (127)**

Location: Sec. 31, T. 29 N., R. 11 E., on the West Fork of Silver Creek. Ore: Gold, silver, copper. Ore minerals: Chalcopryite, pyrite. Deposit: 4 inches of ore along a shear zone. Development: 45-foot adit.

**Dominion Prospect**

Location: T. 28 N., R. 10 E., in Dominion Gulch on Salmon Creek. Property: 7 claims. Ore: Silver, lead. Ore mineral: Galena. Deposit: Two parallel 3-foot veins striking northwest.

**Dutchman Prospect (128)**

Location: T. 29 N., R. 11 E., on Silver Tip Mountain. Deposit: 4- to 5-foot vein of ore. Development: 20-foot adit.

**Edison (Washington-Iowa) Prospect (129)**

Location: Sec. 29, T. 29 N., R. 11 E., on the south slope of Silver Tip Mountain. Property: 12 claims. Ore: Gold, silver, lead, zinc, copper. Ore minerals: Pyrite, chalcopryite, arsenopyrite, galena, sphalerite. Deposit: One 10- to 12-foot vein with 2 feet of ore. One 125-foot vein with several bands of ore from 3 to 6 feet wide. One 7- to 9-foot vein. One 5- to 6-foot vein with 18 inches of ore. A porphyry dike 1,000 feet long, of which 150 feet is mineralized. Assays: \$2.50 to \$132 in gold, silver, and copper. Development: Several adits aggregating about 350 feet and numerous open cuts.

**Editor Prospect (130)**

Location: Sec. 18, T. 28 N., R. 11 E., at the head of Pole Gulch. Ore: Silver, lead. Ore minerals: Galena. Deposit: 2-foot vein. Assays: \$35 in silver. Development: Several open cuts.

**Emma Bess Prospect (131)**

Location: NE $\frac{1}{4}$  sec. 6, T. 28 N., R. 11 E., on the east side of Silver Creek. Ore: Gold. Deposit: Extension of the Ben Butler vein. Development: 25- and 30-foot adits.

**Emma No. 2 Prospect**

Ore: Gold, silver, lead. Ore mineral: Galena. Deposit: 6-foot vein. Assays: \$50 per ton.

**Etruria Prospect**

Ore: Gold, silver, lead. Ore minerals: Galena, pyrite. Deposit: 10-foot vein. Assays: \$25 per ton.

**Even Up Prospect**

Development: Small amount.

**Evergreen Prospect (132)**

Location: NW $\frac{1}{4}$  sec. 20, T. 28 N., R. 11 E., on the east side of Silver Creek just above Galena. Ore: Gold, silver, copper. Ore minerals: Chal-

copyrite, pyrite. **Deposit:** 16- to 20-foot vein striking northeast and carrying from 2 to 4 feet of ore. **Assays:** \$5 to \$65 in gold, 3 to 27 percent copper. **Development:** 30-foot adit with 75 feet of drifts.

**Fanny Prospect**

**Deposit:** 10-foot shear zone with 22 inches of ore. **Assays:** \$25 per ton.

**Four Brothers Prospect (133)**

**Location:** Sec. 6, T. 28 N., R. 11 E., adjacent to the Silver Slipper property. **Ore:** Silver, lead. **Ore mineral:** Galena. **Deposit:** 4-foot vein with 14 inches of ore.

**Frater Prospect**

**Development:** Small amount.

**Garfield Prospect**

**Ore:** Gold, silver, lead. **Ore minerals:** Galena, pyrite. **Deposit:** 6-foot vein. **Assays:** \$30 per ton.

**Gettysburg Prospect (134)**

**Location:** Sec. 7, T. 28 N., R. 11 E., east of the Silver Slipper prospect. **Ore:** Gold, silver, lead. **Ore minerals:** Galena, pyrite. **Deposit:** A 4½-foot quartz vein with 15 inches of ore. **Assays:** \$40 per ton.

**Golconda Prospect**

**Location:** On Troublesome Creek east of Silver Creek. **Property:** Pride of the West, Victoria, and Monte Cristo claims. **Ore:** Gold, silver, lead. **Ore minerals:** Galena, pyrite. **Deposit:** One mineralized shear zone from 4 to 20 feet wide with 2 feet of ore. Two other mineralized shear zones. **Assays:** \$20 to \$30 in gold and silver and as high as 42 percent lead. **Development:** 40-foot adit and open cuts.

**Gold Bar Prospect (135)**

**Location:** Sec. 31, T. 29 N., R. 11 E. **Ore:** Gold, silver, copper, lead. **Ore minerals:** Galena, chalcopyrite, pyrite.

**Gold Boy Prospect (136)**

**Location:** Sec. 7, T. 28 N., R. 11 E., on the west side of Silver Creek. **Ore:** Gold. **Deposit:** 16-foot vein with 2 feet of ore. **Assays:** \$16 in gold. **Development:** 20-foot adit.

**Gold Eagle Prospect (137)**

**Location:** Sec. 29, T. 29 N., R. 11 E., on Silver Tip Mountain. **Property:** 3 claims. **Ore:** Gold, copper. **Ore minerals:** Chalcopyrite, chalcocite, arsenopyrite. **Deposit:** 5-foot vein. **Assays:** \$12 to \$15 in gold. **Development:** 175-foot adit.

**Gray Eagle Prospect (138)**

**Location:** Sec. 17, T. 28 N., R. 11 E., on the east side of Silver Creek. **Ore:** Copper, silver, lead. **Ore minerals:** Galena, chalcopyrite. **Deposit:** Vein. **Development:** One crosscut adit.

**Great Republic Prospect**

**Deposit:** 9 feet of concentrating ore.

**Great Scott Prospect (139)**

Location: Sec. 3, T. 28 N., R. 11 E. Property: 7 claims. Ore: Gold, silver, copper. Ore minerals: Arsenopyrite, chalcopyrite, pyrite. Deposit: 40-foot vein between granite and slate walls. Vein carries 3 to 18 inches of ore. Two other veins 5 and 10 feet wide. Assays: \$8 to \$56 in gold, 2 to 3 percent copper. Development: 30-foot crosscut and open cuts.

**Gypsy Queen Prospect (140)**

Location: Sec. 6, T. 28 N., R. 11 E., on the east side of the West Fork of Silver Creek. Ore: Gold, silver, lead. Ore mineral: Galena. Deposit: An extension of the Webster vein. Development: 20-foot adit.

**Hancock Prospect (141)**

Location: Sec. 31, T. 29 N., R. 11 E., half a mile north of Mineral City. Ore: Copper, gold, silver, nickel, cobalt. Ore minerals: Chalcopyrite, pyrite. Deposit: 15- to 30-foot vein with 1½ to 3 feet of ore. Development: 40-foot adit.

**Helena Prospect**

Development: Small amount.

**Hiawatha Prospect (142)**

Location: Sec. 33, T. 29 N., R. 11 E., about 1 mile south of Silver Lake on the west side of the East Fork of Silver Creek. Ore: Gold, silver. Deposit: Vein. Development: 40-foot adit.

**Hope Prospect (143)**

Location: Sec. 5, T. 28 N., R. 11 E., on Hubbart Peak. Ore: Gold, copper. Ore minerals: Chalcopyrite, pyrite. Deposit: 25- to 30-foot vein with 5 feet of ore on the footwall. Assays: \$5 to \$42 per ton. Development: 100-foot adit on the vein and a crosscut adit.

**Horseshoe and Treasure Box Prospect (144)**

Location: Sec. 36, T. 29 N., R. 10 E., just east of Sheep Gap. Ore: Gold, copper. Deposit: 4-foot vein with 8 inches of ore. Assays: \$17 to \$27 per ton. Development: 16-foot adit.

**Idaho Prospect (145)**

Location: Sec. 7, T. 28 N., R. 11 E., on the west side of Silver Creek. Ore: Gold, silver, lead. Ore mineral: Galena. Deposit: 7-foot vein with from 6 to 12 inches of ore. Assays: \$20 to \$40 per ton.

**Ingersoll Prospect**

Development: Small amount.

**Iron Clad Prospect (146)**

Location: Sec. 18, T. 28 N., R. 11 E., on the east side of Silver Creek about 1 mile north of Galena. Property: 4 claims. Ore: Gold, arsenic. Ore mineral: Arsenopyrite. Deposit: 20 feet of concentrating ore with a narrow streak of high grade ore. Assays: High grade ore shows \$60 in gold. Development: 80-foot adit.

**Jamboree Prospect (147)**

Location: Sec. 7, T. 28 N., R. 11 E. Ore: Gold, copper. Ore minerals: Arsenopyrite, chalcopyrite. Deposit: 4-foot vein. Development: 20-foot adit and 20-foot shaft.

**Jasperson Prospect (148)**

Location: SE $\frac{1}{4}$  sec. 31, T. 29 N., R. 11 E. Property: Sigma and Bullion King claims. Ore: Gold, silver, copper, lead. Ore minerals: Galena, chalcopyrite, pyrite. Deposit: 30-foot vein with from 6 to 8 feet of ore. Assays: \$12 to \$138 per ton. Development: 175-foot adit.

**Jim Dandy Prospect (149)**

Location: SW $\frac{1}{4}$  sec. 8, T. 28 N., R. 11 E. Property: 6 claims. Ore: Gold, silver, copper. Ore minerals: Chalcopyrite, pyrite, arsenopyrite. Deposit: 22-foot vein with 8 inches of ore. Assays: As high as \$80 per ton. Development: Two adits, one 40 feet long.

**Jumbo Prospect**

Location: On the west side of the East Fork of Silver Creek. Ore: Gold, silver. Ore mineral: Pyrite. Deposit: Quartz vein. Assays: \$2.20 in silver, \$21.08 in gold.

**Last Dollar Prospect (150)**

Location: Sec. 8, T. 28 N., R. 11 E., adjacent to the Bluff prospect. Ore: Gold, copper. Ore minerals: Chalcopyrite, pyrite. Deposit: Vein with 10 inches of ore. Assays: \$18 in gold, 7 percent copper.

**Lida Prospect (151)**

Location: Sec. 29, T. 29 N., R. 11 E., adjoining the Edison property on the northeast. Ore: Gold, silver, copper. Ore minerals: Chalcopyrite, arsenopyrite, pyrite. Development: 15-foot shaft.

**Lockwood Prospect (152)**

Location: SW $\frac{1}{4}$  sec. 7, T. 28 N., R. 11 E., on the west side of Silver Creek. Property: 2 patented claims. Ore: Gold, silver, lead. Ore minerals: Galena, pyrite. Deposit: Large vein with from 10 to 30 inches of ore. Assays: From \$23 to \$97 per ton. Development: 90-foot adit, two 10-foot adits, 30-foot adit, and another adit of unknown length.

**Lucky Joe Prospect (153)**

Location: Sec. 7, T. 28 N., R. 11 E., just west of Mineral City. Ore: Gold. Deposit: 6 to 12 inches of ore. Assays: \$30 in gold.

**McKinley Prospect (154)**

Location: Sec. 18, T. 28 N., R. 11 E., on the east side of Silver Creek. Ore: Gold. Ore mineral: Pyrite. Deposit: 10-inch quartz vein. Development: 40-foot adit.

**M and H No. 2 Prospect (155)**

Location: Sec. 7, T. 28 N., R. 11 E., on the west side of Silver Creek. Ore: Gold, silver, copper. Deposit: Vein with 18 inches of ore on the footwall and 14 inches on the hanging wall. Assays: \$24 in gold.

**Marine Prospect**

Location: On the east side of Silver Creek near the Jumbo property.

**Martin Engdahl Prospect (156)**

Location: NE $\frac{1}{4}$  sec. 7, T. 28 N., R. 11 E., on the west side of Silver Creek. Access: Truck road. Ore: Gold, silver, lead, copper, zinc. Ore minerals: Galena, sphalerite, chalcopyrite, arsenopyrite, pyrite. Deposit: Three mineralized shear zones up to 4 feet wide in argillite, quartzite, and limestone. Ore is mainly finely disseminated throughout shear zones.



**Development:** Lower adit 425 feet long, middle adit of unknown length, and upper adit 150 feet long.

**Mayflower Prospect (157)**

**Location:** SW $\frac{1}{4}$  sec. 17, T. 28 N., R. 11 E. **Ore:** Gold. **Ore mineral:** Pyrite. **Deposit:** 20-foot shear zone with from 8 to 36 inches of ore. **Assays:** \$12 in gold. **Development:** 30-foot adit.

**Michigan Prospect (158)**

**Location:** NE $\frac{1}{4}$  sec. 19, T. 28 N., R. 11 E., on the west side of Silver Creek. **Ore:** Gold, zinc. **Ore minerals:** Pyrite, sphalerite. **Deposit:** 3-foot shear zone with 2 to 15 inches of ore. A 2- to 3-foot cross-shear with 3 inches of ore. **Assays:** \$40 to \$70 in gold. **Development:** 70-foot adit.

**Milki Maru Prospect (159)**

**Location:** Sec. 36, T. 29 N., R. 10 E., just below Sheep Gap. **Ore:** Gold, silver, copper. **Ore minerals:** Chalcopryrite, pyrite. **Deposit:** Mineralized shear zone with from 14 to 48 inches of ore. **Assays:** \$17 in gold, 4 ounces of silver, 3 percent copper.

**Mineral Mines Prospect (160)**

**Location:** SE $\frac{1}{4}$  sec. 6, T. 28 N., R. 11 E. **Access:** Truck road. **Ore:** Gold, silver, copper, lead, zinc. **Ore minerals:** Chalcopryrite, pyrite, galena, sphalerite. **Deposit:** Large mineralized shear zone in limestone. **Development:** 375-foot crosscut adit.

**Mineral Mountain Prospect (161)**

**Location:** NW $\frac{1}{4}$  sec. 31, T. 29 N., R. 11 E. **Ore mineral:** Arsenopyrite

**Minnehaha Prospect (162)**

**Location:** Sec. 33, T. 29 N., R. 11 E., on the east side of the East Fork of Silver Creek. **Ore:** Gold, silver. **Deposit:** Mineralized shear zone with from 6 to 20 inches of ore. **Assays:** \$30 to \$65 in gold and silver. **Development:** 60-foot adit.

**Morning Star Prospect (163)**

**Location:** NE $\frac{1}{4}$  sec. 4, T. 28 N., R. 11 E. **Property:** 5 claims. **Ore:** Gold, silver, lead, copper. **Ore minerals:** Galena, pyrite, chalcopryrite. **Deposit:** Several mineralized shear zones. Main shear zone strikes north-east and carries 6 feet of ore. **Assays:** \$40 to \$60 per ton. **Development:** Several adits aggregating 140 feet.

**Mountain Goat Prospect**

**Ore:** Gold, silver, lead. **Ore minerals:** Galena, pyrite. **Deposit:** 20-foot mineralized shear zone. **Assays:** As high as \$150 per ton.

**Murdock Prospect**

**Ore:** Gold, silver, lead. **Ore minerals:** Galena, pyrite. **Deposit:** 10-foot mineralized shear zone.

**National Prospect (164)**

**Location:** Sec. 31, T. 29 N., R. 11 E., on the east side of the West Fork of Silver Creek. **Ore:** Gold, silver, copper. **Ore minerals:** Chalcopryrite, pyrite. **Deposit:** 75-foot porphyry dike slightly mineralized and cut by

shear zone more heavily mineralized. Assays: \$35 to \$300 per ton. Development: 185-foot adit and 75-foot adit.

**Old Missouri Prospect**

Location: On the east side of Silver Creek near the Jumbo prospect.

**Ontario Prospect (165)**

Location: Sec. 7, T. 28 N., R. 11 E., just south of the Copper Chief property. Ore: Silver, gold, lead. Ore minerals: Pyrite, galena. Deposit: 6-foot mineralized shear zone that dips steeply to the north. Development: Several short adits.

**Oro Fino Prospect (166)**

Location: SE $\frac{1}{4}$  sec. 20, T. 28 N., R. 11 E. Property: 5 claims. Ore: Gold, copper. Ore minerals: Chalcopryrite, native copper. Deposit: 7-foot mineralized shear zone that carries 4 feet of ore. Assays: As high as \$56 per ton. Development: 80-foot adit.

**P.-I. Prospect (167)**

Location: Sec. 17, T. 28 N., R. 11 E., about 1 mile northeast of Galena. Ore: Silver, lead, copper. Ore minerals: Chalcopryrite, galena. Deposit: 4-foot shear zone with 2 feet of ore. Assays: \$26 in silver, \$32 in copper. Development: Open cuts.

**Port Gardner Prospect**

Development: A small amount.

**Pullman Prospect**

Ore: Silver, lead. Ore mineral: Galena. Deposit: 3-foot mineralized shear zone.

**Red Cloud Prospect (168)**

Location: Sec. 6, T. 28 N., R. 11 E., on the west side of Silver Creek. Property: 3 claims. Ore: Gold, silver, lead. Ore minerals: Pyrite, cerussite. Deposit: 4- to 6-foot shear zone with 3 to 9 inches of ore. Development: 60-foot adit.

**Remonille Prospect (169)**

Location: SE $\frac{1}{4}$  sec. 3, T. 28 N., R. 11 E. Property: 3 claims. Ore: Gold. Ore mineral: Pyrite. Deposit: 3- to 10-foot shear zone. Assays: \$10 in gold. Development: 25-foot adit.

**Ruby King Prospect (170)**

Location: SE $\frac{1}{4}$  sec. 7, T. 28 N., R. 11 E., on Cascade Gulch. Ore: Gold, copper. Ore minerals: Arsenopyrite, chalcopryrite. Deposit: Shear zone with 5 feet of ore. Assays: \$30 in gold. Development: 60-foot and 20-foot adits.

**St. Louis Prospect (171)**

Location: Sec. 6, T. 28 N., R. 11 E. Property: 4 claims. Ore: Gold, silver, copper. Ore minerals: Pyrite, chalcopryrite. Deposit: 5- to 15-foot mineralized shear zone in granite. Carries 2 to 12 inches of ore. Assays: \$4 in gold, \$3 in silver, \$5 in copper. Development: Numerous open cuts.

**Scotch Lassie Jean Prospect**

Location: On the east side of Silver Creek near the Jumbo property.



**Silver Lake Prospect (172)**

Location: Sec. 33, T. 29 N., R. 11 E., on Silver Tip Mountain. Property: 6 claims. Ore: Gold, silver, lead. Ore minerals: Pyrite, galena. Deposit: 3- to 4½-foot shear zone and two other shear zones with ore. Assays: \$16 to \$140 per ton. Development: 150-foot adit, 101-foot adit, 160-foot adit, and 50-foot crosscut adit.

**Silver Queen Prospect (173)**

Location: Secs. 28 and 33, T. 29 N., R. 11 E., on the East Fork of Silver Creek. Property: Includes the Orphan Boy and QT claims. Ore: Gold, silver, zinc, lead. Ore minerals: Pyrite, galena, sphalerite. Deposit: 6- to 30-foot shear zone with 18 to 24 inches of ore. Another shear zone with 6 inches of ore. Several other small mineralized shear zones. Assays: \$36 to \$45 in gold, \$3.35 in silver. Development: 200-foot adit, 286-foot adit, 25-foot adit, and several open cuts.

**Silver Slipper Prospect (174)**

Location: NW¼ sec. 6, T. 28 N., R. 11 E. Ore: Gold, copper. Ore minerals: Arsenopyrite, chalcopyrite. Deposit: 8-foot shear zone with 24 inches of ore. Assays: As high as \$80 in gold. Development: 40-foot adit.

**Skrinde Prospect (175)**

Location: NE¼ sec. 18, T. 28 N., R. 11 E., near the Silver Queen property. Ore: Gold, silver, copper. Ore minerals: Pyrite, chalcopyrite. Deposit: Narrow mineralized shear zone in limestone. Development: 170-foot adit.

**Standard Prospect**

Ore: Gold, silver, lead. Ore minerals: Galena. Deposit: 6-foot shear zone. Assays: \$40 per ton.

**Steele Prospect (176)**

Location: N1½ sec. 19, T. 29 N., R. 11 E. Access: Truck road. Property: Several claims. Ownership: Mr. I. E. Steele. Ore: Gold. Ore mineral: Pyrite. Gangue: Quartz, calcite. Deposit: 1- to 3-foot vein in argillite, striking N. 10° W. and dipping 40° NE. Development: 150-foot adit and several open cuts.

**Sunday Star Prospect**

Ore: Gold, silver. Ore mineral: Pyrite. Deposit: 3½-foot mineralized shear zone. Assays: \$40 per ton.

**Sunset and Beatrice Prospect (177)**

Location: Sec. 17, T. 28 N., R. 11 E., on the east side of Silver Creek. Property: 2 claims. Ore: Gold, silver, lead. Ore minerals: Galena. Deposit: 20-foot shear zone with 8 to 36 inches of ore. Assays: As high as \$80 per ton. Development: 60-foot adit.

**Superior Prospect**

Ore mineral: Pyrite. Deposit: 10-foot shear zone.

**Texas Prospect (178)**

Location: NE¼ sec. 17, T. 28 N., R. 11 E. Property: 5 claims. Ore: Gold, silver. Ore mineral: Arsenopyrite. Deposit: Mineralized shear zone with from 4 to 7 feet of ore. Assays: \$20 per ton. Development: 20-foot adit and several open cuts.

**Undaunted Prospect (179)**

Location: Sec. 31, T. 29 N., R. 11 E., on Mineral Mountain. Property: 4 claims. Ore: Gold, silver. Ore mineral: Pyrite. Deposit: Six mineralized shear zones that range from 1½ to 6 feet in width and carry from 6 to 36 inches of ore. Assays: \$12 to \$70 per ton. Development: 35-foot adit and several open cuts.

**Vandalia Prospect (180)**

Location: SW¼ sec. 7, T. 28 N., R. 11 E. Property: 5 claims. Ore: Silver, gold, lead. Ore minerals: Pyrite, galena. Deposit: 20-foot shear zone with from 6 to 36 inches of ore. Assays: \$40 per ton. Development: 75-foot shaft with drifts at two levels and a 220-foot adit.

**Victory Prospect**

Ore: Gold, copper, lead, silver.

**Webster Prospect (181)**

Location: NE¼ sec. 6, T. 28 N., R. 11 E. Ore: Gold, silver, lead. Ore minerals: Pyrite and galena. Deposit: Mineralized shear zone with 23 inches of ore. Assays: \$45 in gold, \$8 in silver. Development: 80-foot adit.

**Westland Prospect (182)**

Location: Sec. 7, T. 28 N., R. 11 E., on the west side of Silver Creek. Property: 5 claims. Ore: Gold, silver, copper. Ore minerals: Pyrite, chalcopyrite, arsenopyrite. Deposit: One mineralized shear zone from 8 to 12 feet wide and exposed for 900 feet. A 20- to 30-foot shear zone with 10 feet of concentrating ore. A 4-foot mineralized shear zone exposed for 300 feet. Assays: \$18 and \$36. Development: 47-foot adit, 10-foot adit, 50-foot adit.

**Whaleback Prospect (183)**

Location: Sec. 29, T. 29 N., R. 11 E. Ore: Gold, silver, copper. Ore minerals: Chalcopyrite, pyrite. Deposit: 15 feet of concentrating ore. Assays: \$4 to \$10 in gold and silver.

**Wildcat Prospect (184)**

Location: SE¼ sec. 33, T. 29 N., R. 11 E. Ore: Gold, silver. Deposit: Wide shear zone with 6½ feet of concentrating ore. Assays: \$10 in gold. Development: 40-foot adit.

**Winnie Prospect (185)**

Location: Sec. 31, T. 29 N., R. 11 E., just east of the National prospect. Ore: Gold, silver, copper. Ore minerals: Pyrite, chalcopyrite. Deposit: 8-foot shear zone with 4 feet of ore. Assays: \$56 per ton. Development: 10-foot shaft.

**SILVERTON MINING DISTRICT****•GENERAL FEATURES**

**Location:** The Silverton mining district, including about 165 square miles, is in the central part of Snohomish County with the town of Silverton as its approximate center. It is bounded on the east by the Glacier Peak district, on the north by the Darrington district, on the west by the Granite Falls district, and on the south by the Sultan and Monte Cristo districts. It includes the upper drainage areas of the Stilaguamish and Sauk rivers. The district is accessible by a road up the Stilaguamish Valley. Topographically the district is but slightly less rugged than the Monte Cristo district.

**Geologic section:** The oldest rocks in the district are a thick series of quartzites, slates, argillites, and marbles which have been intruded by later granitic rocks occurring mainly in the eastern part of the district and in small, isolated areas in the western part. The ore deposits occur in shear zones and veins cutting both the metamorphic and granitic rocks. In the south central part of the district is a small area of later andesitic lava flows. Glacial sands and gravels cover the valley bottoms.

**Ores and ore minerals:** The principal ores of the district are of gold, silver, copper, and lead and there are minor amounts of zinc, antimony, arsenic, mercury, and tin. The ore minerals are chalcopyrite, bornite, pyrite, tetrahedrite, arsenopyrite, galena, sphalerite, cinnabar, and stannite.

**Ore deposits:** The ore minerals occur, to a large extent, as replacement along shear zones in deposits similar to those in the Monte Cristo and Index districts. However, unlike those two districts there are also many quartz veins. The shear zones and quartz veins cut both the older metamorphic rocks and the younger granitic rocks.

**Timber and water:** There is an adequate supply of timber and water in the near vicinity of the deposits to be used in mining and milling operations. Much electrical power can be developed by the numerous streams in the district.

**MINES****Bonanza Queen Mine (186)**

**Location:** SE $\frac{1}{4}$  sec. 18, T. 30 N., R. 10 E., about half a mile north of Silverton. **Elevation:** 3,000 feet. **Access:** Wagon road from Silverton. **Property:** 26 claims. **Ownership:** Mr. Desimone and Mr. Otjar of Seattle, Washington. **Ore:** Gold, silver, copper, arsenic. **Ore minerals:** Pyrite, chalcopyrite, pyrrhotite, arsenopyrite. **Gangue:** Quartz, calcite, and altered diorite. **Deposit:** 10- to 75-foot fracture zone in diorite exposed for 3,000 feet on the surface. Ore bodies are from 100 to 300 feet in diameter and from 5 to 16 feet wide. **Assays:** 2 to 6 percent copper, 1 to 6 ounces of silver, 0.02 to 0.19 ounces of gold. **Development:** Three adits totalling 3,000 feet and showing a depth of 1,500 feet. **Ore in sight:** About 10,000 tons. **Production:** Approximately 830 tons of ore.

**Copper Independent Mine (187)**

**Location:** Half a mile southeast of Silverton on the right side of the mouth of Silver Gulch, NE $\frac{1}{4}$  sec. 19, T. 30 N., R. 10 E. **Elevation:** 3,000 feet. **Access:** Road from Silverton. **Ore:** Gold, silver, arsenic. **Ore**

**minerals:** Pyrite, arsenopyrite. **Gangue:** Sheared granite and quartz. **Deposit:** Mineralized shear zone in granite strikes north-south, dipping steeply. Ore bodies from 100 to 200 feet in diameter and 2 to 3 feet wide. **Assays:** 0.6 to 0.7 ounces of gold. **Development:** Three adits, drifts and raises totalling about 700 feet. **Improvements:** Old mill building. **Production:** Small tonnage.

#### **Helena Mine (188)**

**Location:** About 5 miles north of Silverton on the divide between Deer Creek and Clear Creek in the SW $\frac{1}{4}$  sec. 30, T. 31 N., R. 10 E. **Access:** Old wagon road from Silverton to St. Louis mine, thence by trail along the divide. **Property:** 6 claims. **Ore:** Copper, gold, silver. **Ore minerals:** Pyrite, chalcopyrite. **Gangue:** Sheared granite, quartz. **Deposit:** At least two quartz veins, carrying the sulphides, in shear zones in granite. Large low grade bodies of ore. **Assays:** \$19 to \$32 per ton. **Development:** Main adit 124 feet long with 125 feet of drifts about 800 feet below divide. Another adit 1,000 feet lower. **Production:** 150 tons shipped to Tacoma smelter.

#### **Mamie Mine (189)**

**Location:** About 2 miles south of Silverton in sec. 29, T. 30 N., R. 10 E. **Ore:** Copper. **Production:** Small production in 1916.

#### **St. Louis and Jackson Mine (190)**

**Location:** Sec. 8, T. 30 N., R. 10 E., on Deer Creek about 3 miles north of Silverton. **Access:** Old wagon road up Deer Creek. **Ore:** Copper, gold, silver. **Ore minerals:** Chalcopyrite, pyrite. **Gangue:** Sheared granite, quartz. **Deposit:** Quartz vein in shear zone in granite. 18 to 36 inches of ore. **Assays:** \$20 in gold, \$23 in silver, 30 percent copper. **Development:** Two adits connected by raise. One adit 600 feet long. **Production:** Small amount.

### **PROSPECTS**

#### **Arlington Prospect (191)**

**Location:** NE $\frac{1}{4}$  sec. 11, T. 30 N., R. 9 E. About 2 miles northwest of Silverton on Martin Creek. **Property:** 4 claims. **Ore:** Gold, silver, copper, lead. **Ore minerals:** Chalcopyrite, galena, pyrite. **Gangue:** Quartz. **Deposit:** Quartz vein more or less mineralized with sulphides. Maximum width 75 feet. **Assays:** \$12.60 gold, \$6.20 silver, 35 percent copper for the high grade ore. **Development:** 20-foot adit in ore. 1,000-foot cross-cut adit not reaching ore.

#### **Baby Lode Prospect (192)**

**Location:** Near the Arlington prospect. **Deposit:** 6-foot vein parallel with the Arlington vein and carrying some ore. **Development:** Short adit.

#### **Bald Mountain Prospect (193)**

**Location:** 2 miles north of Silverton on the west side of Deer Creek probably in sec. 1, T. 30 N., R. 9 E. **Access:** Old wagon road up Deer Creek. **Property:** The Golden Chord claims and the Lakeview claim. **Ore:** Gold, silver, copper, lead. **Ore minerals:** Chalcopyrite, galena, pyrite. **Deposit:** Quartz vein with sulphide minerals. An extension of the Arlington vein. **Assays:** \$7 to \$9 in gold, silver, and copper.

**Bell and Crown Prospect (194)**

**Location:** Sec. 30, T. 30 N., R. 10 E., on the divide at the East Fork of Bender Creek about 1 mile south of Silverton. **Access:** Trail up Bender Creek. **Property:** 17 claims. **Ore:** Gold, silver, copper, lead. **Ore minerals:** Chalcopyrite, galena, pyrite. **Gangue:** Quartz. **Deposit:** Main quartz vein is from 8 to 30 feet wide in porphyry and slate. Width of the ore averages about 12 feet, chiefly on hanging wall. A cross vein 12 feet wide carries 6 feet of ore. Three other small veins with 2 and 3 feet of ore. **Assays:** 10.5 percent copper, \$8 in gold and silver. High grade ore runs as high as \$30 per ton.

**Big Bear and Butte Prospect (195)**

**Location:** Sec. 33, T. 31 N., R. 9 E., on divide between Clear and Canyon creeks. **Access:** 4 miles by trail from Sauk River. **Ore:** Gold, silver, copper. **Ore minerals:** Bornite, chalcopyrite, pyrite. **Deposit:** Mineralized zone 100 feet wide strikes east-west. Streaks of the sulphide minerals 4 to 10 inches wide. **Assays:** \$9 in gold, \$7 in silver. **Development:** Several 50-foot adits.

**Big Four Prospect (196)**

**Location:** NW $\frac{1}{4}$  sec. 33, T. 30 N., R. 10 E., on the north slope of Big Four Mountain. **Property:** 7 claims. **Ore:** Silver, lead, antimony, arsenic. **Ore minerals:** Galena, arsenopyrite, probably tetrahedrite. **Deposit:** 30 inches of sulphide ore between syenite hanging wall and granite foot wall. **Assay:** \$50 per ton. **Development:** 100-foot adit.

**Black Hawk Prospect (197)**

**Location:** Sec. 3, T. 30 N., R. 9 E. **Ore:** Copper.

**Bornite Prospect (198)**

**Location:** Sec. 20, T. 30 N., R. 10 E., on the West Fork of Bangor Creek 1 mile east of Silverton. **Elevation:** 4,500 feet. **Property:** 11 claims and 6 mill sites. **Ore:** Gold, silver, copper. **Ore minerals:** Chalcopyrite, bornite. **Deposit:** Andesite dike carrying bands and masses of bornite and chalcopyrite. Outcrop shows from 4 to 6 feet of ore. **Assays:** Average samples show 12 percent copper, 0.051 ounces gold, 4 ounces silver. **Development:** 3,000-foot crosscut adit that cuts no ore. **Improvement:** Old buildings of little use.

**Bullet Prospect (199)**

**Location:** NE $\frac{1}{4}$  sec. 21, T. 30 N., R. 9 E., on the mountain at the mouth of Gordon Creek. **Property:** Bullet, Wad, and Hope claims. **Ore:** Gold, copper, arsenic, silver. **Ore minerals:** Pyrite, chalcopyrite, arsenopyrite. **Deposit:** 12- to 14-foot mineralized zone between walls of syenite and serpentinite traceable for 4,500 feet on the surface. **Assays:** \$2 to \$39 in gold, copper, and silver. One sample taken across about 6 feet of the ore showed \$15 in gold and silver. **Development:** 35-foot adit.

**Bunker Hill Prospect (200)**

**Location:** Sec. 4, T. 30 N., R. 9 E. **Ore:** Copper.

**Cleveland Prospect (201)**

**Location:** SW $\frac{1}{4}$  sec. 20, T. 30 N., R. 10 E., adjoining the Independent mine. **Access:** Trail. **Property:** 4 claims. **Ore:** Gold, silver, lead, copper, arsenic. **Ore minerals:** Pyrite, chalcopyrite, arsenopyrite, galena.



**Deposit:** Intersecting veins with several ore bodies 2 feet wide. **Assays:** \$29 in copper, gold, and silver. **Development:** 72-foot adit.

**Cliff Prospect (202)**

**Location:** Sec. 3, T. 30 N., R. 9 E. **Ore:** Copper.

**Climax and Knoxville Prospect**

**Location:** On the east side of Deer Creek.

**Colts Prospect (203)**

**Location:** SW $\frac{1}{4}$  sec. 7, T. 30 N., R. 10 E., on a fork of Deer Creek. **Access:** Half a mile from wagon road up Deer Creek. **Property:** 4 claims. **Ore:** Copper, silver, gold. **Ore mineral:** Chalcopyrite. **Deposit:** Vein or mineralized zone containing 3 feet of rich ore and 7 feet of concentrating ore. **Assays:** 26 percent copper, 18 $\frac{1}{2}$  ounces of silver, and \$3.40 in gold for the high grade ore. **Development:** 14-foot and 16-foot adit on the vein and a 55-foot crosscut that failed to contact the ore.

**Consolidated Prospect (204)**

**Location:** At the head of Martin Creek adjacent to the New Seattle property. **Property:** 4 claims. **Ore:** Gold, silver, copper, arsenic. **Ore minerals:** Arsenopyrite, tetrahedrite. **Deposit:** Extension of the New Seattle vein.

**Copperhead Prospect (205)**

**Location:** SW $\frac{1}{4}$  sec. 18, T. 30 N., R. 10 E., on Long Mountain. **Property:** 19 claims. **Ore:** Gold, copper. **Ore mineral:** Chalcopyrite. **Deposit:** Vein ranges from 2 inches to 5 feet in width. Sixteen smaller veins and stringers known to occur on the property. **Assays:** \$10 to \$70 per ton.

**Copper Prince Prospect (206)**

**Location:** SW $\frac{1}{4}$  sec. 20, T. 30 N., R. 10 E. **Ore:** Gold, silver, copper.

**Copper Queen Prospect (207)**

**Location:** Sec. 13, T. 30 N., R. 9 E. **Ore:** Copper.

**Cornucopia Prospect (208)**

**Location:** SW $\frac{1}{4}$  sec. 33, T. 30 N., R. 10 E., 1,000 feet below the outlet of Copper Lake. **Elevation:** 2,200 feet. **Property:** 4 claims. **Ore:** Gold, silver, lead. **Ore minerals:** Galena, pyrite. **Deposit:** Vein with from 18 to 30 inches of ore. Another vein 3 to 4 feet wide. **Assays:** \$28.80 in gold, \$9.60 in silver. **Development:** 30-foot adit.

**Dahls Mercury Prospect**

**Location:** Near Silverton. **Ore:** Mercury. **Deposit:** 1-foot vein. **Assays:** 3 percent mercury.

**Deer Lake Prospect (209)**

**Location:** SW $\frac{1}{4}$  sec. 36, T. 31 N., R. 9 E., on the mountains overlooking Deer Lake. **Property:** 10 claims. **Ore:** Copper. **Ore mineral:** Chalcopyrite. **Deposit:** 4-foot vein, 6-foot vein. **Development:** Two 60-foot adits, 40-foot adit, and two crosscuts of unknown length.

**Double Eagle Prospect (210)**

**Location:** Sec. 5, T. 30 N., R. 10 E., along the West Fork of Coal Creek. **Property:** 4 claims. **Ore:** Gold. **Gangue:** Quartz. **Deposit:** 14- to 40-foot vein of quartz carrying free milling gold. **Assays:** From \$1 to \$20, averages \$8 in gold.



**Doubtful Prospect (211)**

Location: About 2 miles northwest of Silverton adjacent to the Baby Lode prospect. Deposit: Extension of the Baby Lode vein.

**Drum Lummond Prospect (212)**

Location: Sec. 4, T. 30 N., R. 9 E. Ore: Copper.

**Dry Creek Prospect (213)**

Location: On the west end of Long Mountain. Property: 4 claims. Ore: Gold, silver, copper, arsenic. Ore minerals: Arsenopyrite, chalcopyrite. Deposit: 9-foot vein with 24 inches of ore. Assays: \$2 to \$7 in gold and silver.

**Eclipse Prospect (214)**

Location: NW $\frac{1}{4}$  sec. 19, T. 30 N., R. 10 E., on the south side of Stila-guamish River. Property: 27 claims. Ore: Mercury, gold, silver, arsenic. Ore minerals: Arsenopyrite. Deposit: One vein carrying arsenopyrite. One vein in Marble Gulch, carrying gold, silver, and copper.

**Eureka Prospect (215)**

Location: SE $\frac{1}{4}$  sec. 14, T. 30 N., R. 10 E., on the divide between Perry Creek and Falls Creek. Property: 15 claims. Ore: Copper, silver, gold, lead. Ore minerals: Chalcopyrite, galena, tetrahedrite. Deposit: Two veins. Assays: 4 to 36 ounces of silver, \$1 in gold. Development: Seven adits up to 75 feet in length.

**Everett Prospect (216)**

Location: NE $\frac{1}{4}$  sec. 20, T. 30 N., R. 10 E. Property: 3 claims. Ore: Gold, silver, copper. Ore minerals: Chalcopyrite, pyrite, tetrahedrite. Deposit: Three veins, 6 to 14 inches wide.

**Fanny Prospect (217)**

Location: SE $\frac{1}{4}$  sec. 19, T. 30 N., R. 10 E., on a spur of the mountain south of Silver Gulch. Ore: Gold, silver, copper. Deposit: 22 inches of ore. Assays: \$12 to \$46 in gold, silver, and copper. Development: Open cuts and 30-foot adit.

**Four Brothers Prospect (218)**

Location: Sec. 19, T. 30 N., R. 10 E. Ore: Copper. Development: 130 feet of adits.

**Fox Prospect (219)**

Location: Near Silverton on Long Mountain. Ore: Copper.

**Glengarry Prospect (220)**

Location: Northwest of Silverton near the Three Sisters prospect. Property: 9 claims. Ore: Gold, silver, copper, antimony. Ore mineral: Tetrahedrite. Deposit: 45 inches of ore. Assays: \$4.20 in gold, \$140.70 in silver.

**Granite and Maud Prospect (221)**

Location: SW $\frac{1}{4}$  sec. 20, T. 30 N., R. 10 E., on Silver Gulch. Ore: Gold, silver, lead, arsenic. Ore minerals: Arsenopyrite, galena. Deposit: Two veins. One vein carries 8 inches of ore. Assays: \$43 in gold and silver. Development: 30-foot shaft, 40-foot adit.

**Granite Mountain Prospect (222)**

Location: On Marble Mountain. Ore: Copper, gold. Ore minerals: Chalcopyrite, pyrite. Deposit: Mineralized shear zone 16 to 40 feet wide in porphyry. Assays: \$6.40 to \$12.

**Grizzly Prospect (223)**

Location: On Clear Creek beyond the Helena mine. Property: 4 claims. Ore: Gold, silver, copper. Ore minerals: Chalcopyrite, bornite. Deposit: Two wide veins and one narrow vein with 24 inches of ore. Assays: \$50 in gold, silver, and copper per ton. Development: Adit and 18-foot shaft on narrow vein.

**Hannah Prospect (224)**

Location: NW $\frac{1}{4}$  sec. 31, T. 31 N., R. 10 E. Property: 8 claims. Ore: Copper. Assays: \$10 in copper. Development: 40-foot adit.

**Hecla Prospect (225)**

Location: At the head of Martin Creek about  $5\frac{1}{2}$  miles from Silverton by trail and road. Ore: Gold, silver, copper. Ore minerals: Pyrite, chalcopyrite, marcasite. Deposit: Slightly mineralized joints striking S. 40° W. and dipping 70° NW. in granodiorite. Small amount of the ore minerals and quartz.

**Hoodoo Prospect (226)**

Location: SE $\frac{1}{4}$  sec. 20, T. 30 N., R. 10 E., on Hoodoo Gulch. Access: Wagon road three-quarters of a mile from the old railroad grade. Property: 7 claims and 6 mill sites. Ore: Copper, gold, silver, tin. Ore minerals: Chalcopyrite, pyrite, pyrrhotite, stannite. Gangue: Quartz, calcite, country rock. Deposit: Veins in conglomerate and slate. Assays: \$20 in copper, silver, and gold. Development: 420-foot main adit and shorter adits totalling 200 feet in length.

**Imperial Prospect (227)**

Location: Sec. 20, T. 30 N., R. 10 E., about  $1\frac{1}{2}$  miles east of Silverton. Elevation: 2,500 feet. Property: 11 claims, the most important of which are the Anacortes and the Mountain View. Ore: Copper, silver, lead, gold, arsenic. Ore minerals: Chalcopyrite, arsenopyrite, galena. Deposit: Main vein is along contact of diorite and conglomerate. Assays: Main values are in copper and silver with only a small amount of gold. Development: 400 feet of adit.

**Lily James Prospect (228)**

Location: NW $\frac{1}{4}$  sec. 17, T. 30 N., R. 10 E. Ore: Gold, silver, arsenic. Ore mineral: Arsenopyrite. Deposit: 20-foot zone with mineralized streaks. Assays: \$7 in gold and silver. Development: 80-foot crosscut.

**Lucky Strike Prospect (229)**

Location: Sec. 3, T. 30 N., R. 9 E. Ore: Copper.

**Lulu Prospect (230)**

Location: SE $\frac{1}{4}$  sec. 19, T. 30 N., R. 10 E., across Silver Gulch from the Granite and Maud prospect. Ore: Gold, silver, lead, arsenic. Ore minerals: Arsenopyrite, galena. Deposit: 8 inches of ore. Assays: \$43 in gold and silver. Development: 30-foot shaft, 40-foot adit.

**Mayflower and Louise Prospect**

Location: On the Four Aces vein in the Silverton district.

**Monitor and Sterling Prospect (231)**

Location: Sec. 14, T. 30 N., R. 9 E., on Martin Creek. Property: 2 claims. Ore: Gold, silver, copper. Ore minerals: Chalcopyrite, tetrahedrite. Deposit: 30 inches of ore. Development: 20-foot adit.

**Montezuma Prospect (232)**

Location: Sec. 3, T. 30 N., R. 9 E. Ore: Copper.

**Nemo Prospect (233)**

Location: NW $\frac{1}{4}$  sec. 17, T. 30 N., R. 10 E. Property: 5 claims. Ore: Gold, silver, copper, arsenic. Ore minerals: Chalcopyrite, arsenopyrite. Gangue: Quartz. Deposit: Quartz vein. Assays: \$8 to \$15 in gold, silver. Development: 175-foot adit at valley level.

**New Seattle Prospect (234)**

Location: NW $\frac{1}{4}$  sec. 2, T. 30 N., R. 9 E., near the head of Martin Creek. Ore: Silver, gold, antimony. Ore mineral: Tetrahedrite. Deposit: 5-foot vein striking northeast. Assays: 350 ounces of silver, \$5.69 in gold. Development: Adit.

**New York Prospect (235)**

Location: SW $\frac{1}{4}$  sec. 20, T. 30 N., R. 10 E. Ore: Gold, silver, copper, arsenic. Ore minerals: Arsenopyrite, chalcopyrite. Deposit: 4-foot vein. Assays: \$15 to \$17 in gold, silver, and copper. Development: 20-foot adit.

**Non Pareil Prospect**

Location: Near Helena Mine north of Deer Lake. Property: 2 claims. Deposit: 8- to 12-foot vein.

**St. Cloud Prospect (236)**

Location: Sec. 4, T. 30 N., R. 9 E. Ore: Copper.

**Stockton Prospect (237)**

Location: Near the mouth of Deer Creek. Property: 4 claims. Deposit: Probably an extension of the Bonanza Queen vein. Development: Several adits, one 31 feet long.

**Summer Coon Prospect (238)**

Location: Sec. 20, T. 30 N., R. 10 E., near the Cleveland prospect. Deposit: Probably an extension of the Cleveland vein.

**Three Sisters Prospect (239)**

Location: Sec. 2, T. 30 N., R. 9 E., just across the divide between Martin and Deer creeks. Property: 4 claims. Deposit: 18 inches of ore. Development: 20-foot adit.

**Virginia Prospect (240)**

Location: Sec. 19, T. 30 N., R. 10 E. Ore: Gold, silver, copper, arsenic. Ore minerals: Chalcopyrite, arsenopyrite.

**White Swan Prospect (241)**

Location: Sec. 3, T. 30 N., R. 9 E., at the headwaters of Martin Creek. Ore: Silver. Deposit: Vein parallel to Doubtful vein. Assays: 200 ounces of silver from surface outcrop. Development: 50-foot adit.

**Winter Coon Prospect (242)**

Location: Sec. 19, T. 30 N., R. 10 E. Ore: Gold, silver, arsenic, copper.

## SULTAN MINING DISTRICT

### GENERAL FEATURES

**Location:** The Sultan mining district, comprising about 310 square miles, is in the south-central part of Snohomish County. It is bounded on the south by King County, on the east by the Index, Silver Creek, and Monte Cristo districts and on the north by the Silverton and Granite Falls districts. The western boundary is arbitrarily fixed by a line drawn north and south through the town of Monroe. The important mines of the district are in Sultan Basin at the headwaters of Sultan River. Sultan Basin is accessible by road northward from the towns of Sultan and Startup; the mines are reached by tributary trails. The Sultan Basin area is extremely rugged with high mountains and narrow, steep-sided valleys.

**Geologic section:** The oldest rocks of the district are in the northern part and consist of a thick series of interbedded slates, quartzites, and marbles. These have been intruded by small bodies of granitic rocks and both are overlain by marine sediments in the eastern part of the district. The youngest rocks are in the southeastern part of the district and are mainly andesitic lavas. Glacial sands, gravels, and clays cover most of the western part of the district. The mineral deposits are mainly in the granitic intrusive rocks and along the borders of the intrusives in the older metamorphic series.

**Ores and ore minerals:** The principal ores of the district are of gold, silver, copper, and lead with minor amounts of zinc, arsenic, cobalt, antimony, bismuth, nickel, sulphur, and chromium. The ore minerals are chalcopyrite, arsenopyrite, pyrite, galena, sphalerite, tetrahedrite, bornite, proustite, and chromite.

**Ore deposits:** The ore deposits are in shear and fracture zones that have been partially replaced by quartz, calcite, and the ore minerals. The ore minerals occur as disseminated grains throughout the shear zones and as high grade, lenticular bodies of ore. The deposits are similar to those in the adjoining mining districts to the north and east. There has been practically no oxidation and supergene enrichment of the ores.

**Timber and water:** There is an adequate supply of timber and water on or in the vicinity of the properties that can be used for mining and milling purposes. Much electrical power can be developed from the numerous streams.

### MINES

#### **Florence-Rae Mine (243)**

**Location:** Secs. 26, 27, 34, and 35, T. 29 N., R. 10 E., at the head of Sultan Basin. **Elevation:** 2,100 feet. **Access:** Road up Sultan Basin and trail to mine. **Property:** 26 claims. **Ownership:** Kromona Mines Corp., 1014 Lloyd Bldg., Seattle, Washington. **Ore:** Copper, silver, gold. **Ore mineral:** Chalcopyrite. **Gangue:** Sheared country rock, quartz, calcite. **Deposit:** Five veins. Main vein is mineralized shear zone in limestone and granodiorite and carries an average of 3 feet of chalcopyrite on the hanging wall. Shear zone strikes N. 82° W. and dips 28° SW. **Assays:** 8 to 16 percent copper, 2 to 4 ounces silver, trace of gold. **Development:** Large surface quarry on outcrop of main vein. Main level has 645 feet of

adit and drifts with stopes and raises. 220-foot adit on a smaller vein. **Improvements:** 1-mile tramway from 4,300 feet to 2,200 feet. Bunk-houses for 8 persons. **Ore in sight:** 30,000 tons. **Production:** 340 tons produced in 1941.

#### **Forty-five (Magus) Mine (244)**

**Location:** Sec. 29, T. 30 N., R. 10 E., at the head of Williamson Creek on the south side of the divide. **Elevation:** 4,000 feet. **Access:** Truck road up Sultan River and Williamson Creek. **Property:** 25 patented claims and 2 mill sites. **Ownership:** Mr. G. Startup, Sultan, Washington. **Ore:** Gold, silver, lead, zinc, arsenic. **Ore minerals:** Arsenopyrite, galena, sphalerite, proustite. **Gangue:** Sheared and altered granodiorite and quartz. **Deposit:** Mineralized shear zones in granodiorite. Main shear zone strikes northwest and dips to the southwest. It can be traced for 6,000 feet on the surface. Six known ore bodies on the main shear zone. The largest is from 1 to 15 feet wide and from 16 to 300 feet long and developed from surface to 300-foot level. Other ore bodies known, but relatively undeveloped. **Assays:** Average 0.17 ounces of gold, 20 ounces of silver, lead 5 percent, zinc 4 percent. **Development:** Open cuts. Two adits with drifts, raises, and winzes totalling about 1,500 feet, and gaining a depth of about 300 feet below the surface. **Improvements:** Dwellings for 10 persons, stables, compressor house and plant, blacksmith shop. **Ore in sight:** 10,000 tons. **Production:** 3,185 tons valued at about \$100,000 shipped from 1896 to 1901.

#### **Iowa Mine (245)**

**Location:** NW $\frac{1}{4}$  sec. 27, T. 29 N., R. 10 E., about half a mile west of the Florence-Rae mine. **Elevation:** 2,000 feet. **Access:** Road up Sultan Valley and trail. **Ownership:** Kromona Mines Corp., 1014 Lloyd Bldg., Seattle, Washington. **Ore:** Copper. **Ore minerals:** Chalcopyrite, bornite, pyrite. **Gangue:** Quartz. **Deposit:** Mineralized shear zone in limestone and granodiorite. Strike N. 60° W. with vertical dip. Reported to be the extension of the Florence-Rae vein. **Development:** Three adit levels. **Production:** Small.

### **PROSPECTS**

#### **Big Copper Prospect (246)**

**Location:** NE $\frac{1}{4}$  sec. 4, T. 29 N., R. 10 E., on the south side of Hall Peak. **Property:** 6 claims. **Ore:** Copper, cobalt, gold, silver.

#### **Columbus Prospect (247)**

**Location:** Sec. 33, T. 30 N., R. 10 E., on the south side of Hall Peak. **Property:** 4 claims. **Development:** Short adit.

#### **Copper King Prospect**

**Location:** Sultan Basin. **Ore:** Copper, silver.

#### **Doris Prospect**

**Location:** Sultan Basin. **Ore:** Copper, silver.

#### **Great Northern Prospect (248)**

**Location:** NW $\frac{1}{4}$  sec. 35, T. 29 N., R. 8 E., on south side of Sultan River. **Access:** Road up Sultan River. **Property:** 3 claims. **Ore:** Gold, silver, copper. **Ore minerals:** Chalcopyrite, pyrite. **Deposit:** Mineralized zone 60 feet wide along a contact between granite and slate. **Ore**



minerals are disseminated throughout the zone. Assays: Average of six assays showed \$32 in gold, \$1.76 in silver, \$3.45 in copper.

**Hard Pass Prospect (249)**

Location: SE $\frac{1}{4}$  sec. 36, T. 29 N., R. 10 E., on the west side of Sheep Gap Mountain. Property: 1 claim. Ore: Copper, gold, silver. Ore minerals: Chalcopyrite, tetrahedrite. Development: 10-foot adit.

**Helena and Sadie Prospect (250)**

Location: SW $\frac{1}{4}$  sec. 36, T. 29 N., R. 10 E., on the west side of Sheep Gap Mountain. Property: 2 claims. Ore: Copper, gold, silver. Ore mineral: Chalcopyrite. Deposit: Three parallel shear zones in syenite strike nearly east-west, two of which are 30 inches wide with 18 inches of ore and the third is 6 feet wide with 40 inches of ore. The large shear zone is traceable for 2,000 feet on the surface and the middle one for 300 feet. Assays: \$8 to \$10 in gold, 16 to 20 percent copper. Development: Several short adits.

**Junie Prospect**

Location: Sultan Basin. Ore: Copper, silver.

**Keystone Prospect (251)**

Location: Sec. 28, T. 29 N., R. 8 E. Access: Half a mile of wagon road to the Sultan Basin road. Property: 4 claims. Ore: Gold, silver, copper. Ore mineral: Chalcopyrite. Deposit: Shear zones from 25 to 30 feet wide and carrying disseminated chalcopyrite to a known depth of 300 feet. Exposed length is 700 feet. Assays: Average sample shows 0.27 ounces of gold, 1.6 ounces of silver, 1.38 percent copper. Development: Open cuts. Crosscut adit 200 feet long that is expected to reach ore in about 400 more feet, giving a depth of about 2,000 feet. Ore in sight: 3,000 tons estimated.

**Kromona Prospect (252)**

Location: SW $\frac{1}{4}$  sec. 13, T. 28 N., R. 9 E., at the head of the basin just north of Mount Stickney. Elevation: 3,000 to 4,000 feet. Access: 10 miles by road and 6 miles by trail from Sultan. Property: 8 claims. Ownership: Kromona Mines Corp., 1014 Lloyd Bldg., Seattle, Washington. Ore: Copper, gold, silver, molybdenum. Ore minerals: Chalcopyrite, bornite, molybdenite, pyrite. Gangue: Sheared and altered granodiorite country rock. Deposit: Shear zones in granodiorite. Two mineralized zones from 5 to 10 feet apart striking N. 5° E. and dipping 60° W., one to 10 feet of ore with ore body widening with depth to a known width of 40 feet. Assays: 1.4 to 38.4 percent copper, 1.2 to 18.2 ounces of silver, 0.08 to 2.0 ounces of gold. One sample across 13 feet of the mineralized zone ran 5.41 percent copper, 1.2 ounces of silver, 0.06 ounces of gold. Development: Two short adits. Upper adit on main shear zone and lower adit on a cross shear zone. Improvements: Camp buildings. Ore in sight: 400,000 tons estimated above the upper adit level. Production: None reported.

**Lambert Prospect**

Location: Sultan Basin. Ore: Copper, silver.

**Little Chief Prospect (253)**

Location: NE $\frac{1}{4}$  sec. 5, T. 29 N., R. 10 E., near Copper Lake. Elevation: 2,800 to 3,500 feet. Property: 7 patented claims. Ore: Copper,



gold, silver, cobalt, nickel. **Ore minerals:** Chalcopyrite, pyrite. **Deposit:** Shear zone in greenstone and schists. Width about 90 to 100 feet. **Assays:** 3 percent copper, 0.15 ounce of gold, 3.5 ounces of silver. **Development:** 522 feet of adits. **Ore in sight:** 900,000 tons.

**Lockwood Prospect (254)**

**Location:** NW $\frac{1}{4}$  sec. 25, T. 29 N., R. 8 E. **Elevation:** 2,000 to 3,300 feet. **Access:** 3 miles by trail from truck road. **Ownership:** Lockwood Mining and Milling Co., Seattle, Washington. **Ore:** Sulphur, gold, silver, zinc. **Ore mineral:** Pyrite. **Gangue:** Quartz. **Deposit:** Shear zone replaced by quartz and pyrite. Zone strikes east and northeast. Several bodies of pyrite from a few feet to over 100 feet wide. Entire shear zone about 500 feet wide and roughly 6,000 feet long carrying pyrite at intervals. **Assays:** Trace to \$16 in gold, trace to 5.9 percent zinc, 42 percent sulphur. **Development:** Several open cuts. One 180-foot adit.

**Marguerite Mosier Prospect**

**Location:** Sultan Basin. **Ore:** Copper, silver.

**Mystery Prospect (255)**

**Location:** Near the head of Sultan Basin on the North Fork of Sultan River. **Ore:** Copper, chromium. **Ore minerals:** Chalcopyrite, chromite. **Deposit:** Three parallel copper-bearing veins from 3 to 12 feet wide. Chromite has been reported on the property. **Assays:** Some of the ore shows 5 percent copper. **Development:** Open cuts. 350 feet of adits.

**Paystreak Prospect**

**Location:** At head of Sultan Basin. **Elevation:** 3,000 to 4,500 feet. **Access:** 4 miles of trail to wagon road. **Property:** 16 claims. **Ore:** Gold, silver, copper, bismuth. **Deposit:** Mineralized shear zone that can be traced for 4,500 feet on the surface. **Assays:** Surface ore shows 1 to 2 percent copper, 0.1 ounce of gold. **Development:** Open cuts and short adit. **Improvements:** One cabin.

**Note:** It is reported that a body of chromite is adjacent to the Paystreak property.

**Sultan Group Prospect (256)**

**Location:** Sec. 1, T. 28 N., R. 10 E., at the head of Elk Creek, on the west slope of Crested Buttes. **Elevation:** 4,300 feet. **Access:** Old wagon road. **Ore:** Copper, silver. **Ore minerals:** Chalcopyrite, pyrite. **Deposit:** Seven parallel shear zones in granite. Strike east-west and dip from 80° to 85° S. Largest ore body from 2 to 3 feet wide. **Assays:** Main ore body carries from 5 to 12 percent copper, and 2 to 4 ounces of silver over width of 3 feet and from 1 to 2 percent copper over remaining width. **Development:** 100-foot adit on the main vein and 465-foot crosscut to the vein at 418 feet below the upper adit.

**Sultan Queen (Hicks) Prospect (257)**

**Location:** Sec. 26, T. 29 N., R. 10 E., at the head of Sultan River on the west side of Sheep Gap Mountain. **Elevation:** 3,500 to 5,500 feet. **Property:** 4 claims. **Ore:** Gold, silver, copper. **Deposit:** Shear zone in greenstone. Ore bodies on hanging and foot walls from 1 to 5 feet thick. **Assays:** High grade ore carries 10 to 15 percent copper and \$5 to \$15 in gold and silver. **Development:** Several adits on shear zone showing a length of 1,000 feet and a depth of 500 feet.

**Sunrise Prospect (258)**

**Location:** Sec. 9, T. 29 N., R. 10 E., on Vesper Peak. **Elevation:** 4,500 to 5,000 feet. **Access:** Trail. **Property:** 4 claims: Wall Street, Occidental, Quaker City, Eldorado. **Ownership:** C. Kelley, A. Chase of Everett, Wash. **Ore:** Gold, silver, copper. **Deposit:** Mineralized shear zone in granodiorite. Ore exposed over an area of 300 by 350 feet could be concentrated. Some high grade ore bodies from 18 inches to 2 feet wide. **Assays:** 0.02 to 0.05 ounces of gold, 0.4 to 4.8 ounces of silver, 0.28 to 20.0 percent copper. **Development:** Several adits totalling about 500 feet.

**Uranium Prospect**

**Location:** 5 miles west of the town of Sultan. **Ore:** Uranium.

## PLACER PROPERTIES IN SNOHOMISH COUNTY

## GENERAL FEATURES

Placer deposits of gold and other high specific gravity minerals may form wherever the primary deposits are exposed near the surface. Through the agencies of weathering and erosion the gold is released from the sulphides and quartz and carried to streams where, due to its high specific gravity, it tends to be concentrated on bed rock, in bars that form on the concave side of bends in the streams, behind boulders, and any other place where there is a slackening of the current. Gold colors can be panned from the deposits of the streams draining the various mineral districts of the county, but only in a few places has the gold been concentrated enough to form commercial deposits. The more important placer deposits of Snohomish County are listed below.

## MINES

**Aristo Placer (259)**

**Location:** Sec. 17, T. 28 N., R. 8 E., just below the mouth of Sultan River Canyon. **Ownership:** Mr. H. E. Rathje, Sultan, Washington. **Mineral:** Gold. **Operations:** Primitive methods and small hydraulic unit. **Production:** Small amount.

**Darrington Placer (260)**

**Location:** NW $\frac{1}{4}$  sec. 23, T. 32 N., R. 9 E., near the town of Darrington on the west side of Sauk River. **Mineral:** Gold.

**Deer Creek Placer**

**Location:** On Deer Creek near Darrington. **Mineral:** Gold.

**Double Eagle Placer (261)**

**Location:** Secs. 8 and 9, T. 30 N., R. 10 E., on Coal Creek about 2 miles northeast of Silverton. **Property:** 8 claims. **Mineral:** Gold.

**Gold Bar Placer (262)**

**Location:** Secs. 6, 7, and 8, T. 27 N., R. 9 E., on Skykomish River. **Mineral:** Gold. **Production:** Small amount.

**Granite Falls Placer (263)**

**Location:** NW $\frac{1}{4}$  sec. 8, T. 30 N., R. 7 E., on the north side of the South Fork of Stilaguamish River about 1 mile northeast of Granite Falls.

**Mineral:** Gold.

**Horseshoe Bend Placer (264)**

**Location:** Sec. 8, T. 28 N., R. 8 E., on Sultan River 5 miles north of the town of Sultan. **Property:** 157 acres of patented ground. **Mineral:** Coarse gold. **Average values:** 25 to 40 cents per yard. **Operations:** Considerable amount of work. **Production:** Several thousand dollars.

**Howard Placer (265)**

**Location:** NE $\frac{1}{4}$  sec. 5, T. 27 N., R. 11 E., on Howard Creek. **Property:** 1 claim. **Mineral:** Gold.

**Line a Little Placer (266)**

**Location:** NE $\frac{1}{4}$  sec. 19, T. 27 N., R. 10 E., on the north side of the North Fork of Skykomish River about half a mile west of Index. **Property:** 2 claims. **Mineral:** Gold.

**Phoenix Placer (267)**

**Location:** NW $\frac{1}{4}$  sec. 29, T. 28 N., R. 11 E., on Howard Creek. **Property:** 1 claim. **Mineral:** Gold.

**Sailors Bar Placer**

**Location:** On Sultan River. **Mineral:** Gold. **Production:** \$6,000.

**Shirley Placer (268)**

**Location:** On the North Fork of Skykomish River near Galena. **Mineral:** Gold. **Production:** Small amount.

**Stilaguamish Placer**

**Location:** On Stilaguamish River. **Mineral:** Gold. **Operations:** Hydraulic.

**Sultan Placer (269)**

**Location:** NW $\frac{1}{4}$  sec. 5, T. 27 N., R. 8 E., on Skykomish River south of the town of Sultan. **Mineral:** Gold. **Production:** \$200 up to 1934. \$1,408 during 1934.

**Tin Placer**

**Location:** On the west side of the Cascades near Snohomish. **Mineral:** Tin.

**Young Placer**

**Location:** Near Sultan. **Property:** 7 claims. **Ownership:** Frank A. Young of Sultan, Washington. **Mineral:** Gold.

**NONMETALLIC MINERAL PROPERTIES IN  
SNOHOMISH COUNTY****GENERAL FEATURES**

The potential nonmetallic mineral resources of Snohomish County include asbestos, beryl, clays, coal, diatomite, garnets, granite, graphite, limestone, mineral waters, peat, petroleum and natural gas, phosphate rock, rutile, sand and gravel, strontium, and sulphur. Up to the present time the clays, granite, and limestone are the only nonmetallic resources in the county that have been of commercial importance. The deposits of the other nonmetallics have received relatively little attention and hence development has been slight although a small amount of coal has been produced and several wells have shown the presence of small quantities of oil and gas.

The nonmetallic resources are listed below in alphabetical order with the recorded information pertaining to each deposit.

**ASBESTOS****Asbestos Group (270)**

**Location:** Near the headwaters of Clear Creek about 3 miles northwest of Silverton. **Property:** 6 claims. **Product:** Talcose asbestos. **Deposit:** Serpentine dike, 30 to 150 feet wide exposed to a depth of 75 feet.

**BERYL****Beryl (271)**

**Location:** Near Del Campo Peak about 4 miles west of Monte Cristo. **Deposit:** A large deposit of beryl reported. **Production:** At least two choice crystals reported to have been sold.

**CLAY**

The clay deposits of Snohomish County have been adequately reported in a recent bulletin by Sheldon L. Glover from which the following description is quoted:

"The clay resources are practically confined to those deposits occurring in the Puget Sound glacial sediments. They are suitable for common red-fired ware and structural materials but not for products of higher grade. Fortunately, such clay is of widespread occurrence and may be developed near any of the towns. . . .

"The central and eastern part of the county is composed of Mesozoic and Paleozoic rocks. These include granodiorite, which might be weathered to form excellent clay deposits but for the rapid erosion to which it is subjected, and great areas of metamorphic rocks that are not usually important as clay-forming materials. . . .

"Oligocene sediments form the surface exposures in four or five relatively small isolated areas in the western part of the county. The shales are similar to those cropping out in the vicinity of Seattle and would be usable for ordinary red-firing structural wares. Characteristic exposures occur near Cathcart and just east of Snohomish. Elsewhere the bedrock for many miles east of Puget Sound is deeply covered by alluvium and glacial sediments."

**Everett Clay Deposit (272)**

**Location:** In the city of Everett 400 feet southeast of 39th Street and Rockefeller Avenue. **Ownership:** Everett Brick Yard, 39th Street and Rockefeller Avenue, Everett, Washington. **Product:** Bluish and buff-colored glacial clay used in making brick, hollow blocks, drain tile, and roofing tile. **Development:** Pit 125 feet in diameter with a 50-foot face. Large quantity of clay available. **Production:** Large production of clay products.

**Giddings Clay Deposit (273)**

**Location:** Near Darrington. **Ownership:** Mr. H. W. Giddings, Darrington, Washington. **Product:** Clay that absorbs oils and greases. **Deposit:** Lake clay.

**Pelkey Clay Deposit**

**Location:** Near Marysville. **Ownership:** Mr. R. J. Pelkey, Marysville, Washington.

**Meadowdale Clay Deposit (274)**

**Location:** At Meadowdale about 15 miles north of Seattle. **Ownership:** Meadowdale Pottery, Meadowdale, Washington. **Product:** Glacial clays used in the making of flower pots, novelty and garden ware. **Deposit:** Many thin seams of clay interbedded with sand. Two beds 6 and 4 feet thick have produced. **Production:** Large amount of pottery.

**Monroe Clay Deposit (275)**

**Location:** At the State Reformatory. **Product:** Tile and brick clay. **Deposit:** Glacial clay 4 feet thick overlying glacial till. **Production:** About 4,000,000 common brick and several thousand feet of 6-inch drain tile.

**Sultan Clay Deposit (276)**

**Location:** Near Sultan. **Deposit:** Extensive deposits suitable for brick.

**COAL**

**Jordan Coal Deposit (277)**

**Location:** T. 31 N., R. 6 E., near Jordan about 5 miles southeast of Arlington. **Product:** Subbituminous coal. **Production:** Small amount.

**DIATOMITE**

**Deposit Near Florence (278)**

**Location:** Sec. 32, T. 32 N., R. 4 E., near Florence. **Deposit:** 4-foot bed, several acres in extent.

**Deposit Near Jim Creek**

**Location:** T. 31 N., R. 6 E.

**GARNET**

**Index Garnet Deposit (279)**

**Location:** T. 27 N., R. 10 E., 3 miles southeast of Index on the north side of Barclay Creek. **Product:** Garnet crystals up to 1 inch in diameter associated with hornblende and epidote in quartz.

**Vesper Peak Garnet Deposit (280)**

**Location:** Sec. 9, T. 29 N., R. 9 E., at the summit of Vesper Peak. **Ownership:** Mr. P. E. Crane of Snohomish, Washington. **Product:** Beautiful crystal clusters of grossularite garnet. **Deposit:** Contact zone



exposed for several hundred feet. **Development:** Small open cuts. **Production:** Small production of museum pieces. Considerable ornamental and abrasive material could be produced.

#### GRANITE AND BUILDING STONE

##### **Darrington Deposit (281)**

**Location:** Near Darrington. **Deposit:** Coarse-grained, dark-colored rock with large iridescent labradorite crystals. **Product:** High-grade ornamental stone.

##### **Everett Granite**

**Production:** The City of Everett Street Department is reported to have produced some granite stone in 1939.

##### **Halford Granite Quarry (282)**

**Location:** At Halford adjacent to the Great Northern railroad. **Ownership:** Great Northern Railway. **Product:** Rubble and riprap.

##### **Index Granite Quarry (283)**

**Location:** At Index. **Product:** Ornamental stone, riprap, and poultry grit.

#### GRAPHITE

##### **Pugh Mountain Graphite Deposit (284)**

**Location:** S $\frac{1}{2}$  T. 31 N., R. 11 E., probably between Bedal Falls and the mountain top near the lookout station trail, about 16 miles southeast of Darrington up Sauk River. **Deposit:** A large quantity of graphite exposed by a landslide.

#### LIMESTONE

##### **Consumers Lime Company (285)**

**Location:** Sec. 16, T. 27 N., R. 9 E., about 3 miles southeast of Gold Bar. **Elevation:** 1,080 feet. **Access:** Truck road. **Product:** Crushed agricultural lime. **Deposit:** 100-foot bed of black limestone about 98 percent CaCO<sub>3</sub>. **Development:** Small quarry exposing a face of about 50 feet. **Improvements:** Several miles of truck roads and a mill for crushing the limestone. **Production:** Small continuous production during 1941 and 1942.

##### **Cutoff Deposit**

**Location:** Near Cutoff about 9 miles east of Hartford. **Deposit:** Travertine.

##### **Darrington Deposit (286)**

**Location:** Center of sec. 2, T. 31 N., R. 10 E. **Product:** Travertine. **Deposit:** 15 feet thick over an area of about 300 feet by 500 feet. **Estimated tonnage:** 150,000 tons.

##### **Granite Falls Deposit (287)**

**Location:** Sec. 9, T. 30 N., R. 7 E. **Ownership:** Everett Lime Co., Everett, Washington. **Deposit:** Practically exhausted. **Production:** In production for a long time.

##### **Hartford Deposit**

**Location:** Near Hartford. **Deposit:** Travertine.



**J. A. Jack Deposit (288)**

**Location:** N $\frac{1}{2}$  sec. 16, and S $\frac{1}{2}$  sec. 9, T. 32 N., R. 6 E. **Deposit:** Limestone suitable for paper and sugar industries. **Estimated tonnage:** 50,000 to 100,000 tons. **Production:** Producing at present.

**Valley Gem Deposit**

**Location:** Near Arlington. **Ownership:** Valley Gem Farms, Arlington, Washington. **Product:** Travertine and possibly phosphate rock. **Production:** Reported production in 1938.

(289)

**Location:** E $\frac{1}{2}$  sec. 5, T. 30 N., R. 7 E. **Ownership:** Hadelgo Lime and Rock Company of Seattle and the Everett Lime Company of Everett control different parts of the same deposit. **Production:** Has produced.

(290)

**Location:** NW $\frac{1}{4}$  sec. 14, T. 30 N., R. 7 E. **Estimated tonnage:** Large tonnage of stone is available. **Production:** Has produced.

**Galbraith Deposit (291)**

**Location:** Sec. 23, T. 32 N., R. 8 E., about 6 miles west of Darrington. **Elevation:** 2,500 feet. **Deposit:** Large lenses of limestone. **Production:** Begun in 1939 by the Everett Lime Company of Everett, Washington.

**Payton Lime Company**

**Production:** Produced for papermills in 1934.

**Whitechuck Deposit (292)**

**Location:** Sec. 18, T. 31 N., R. 11 E., on Whitechuck River, about 1 $\frac{1}{2}$  miles up from Sauk River. **Deposit:** 35 feet of limestone.

**MINERAL SPRINGS**

**Garland (Star) Springs (293)**

**Location:** Center of sec. 25, T. 28 N., R. 11 E., on the North Fork of Skykomish River. **Access:** 14 miles of good road from Index. **Temperature:** 50 to 84 degrees Fahrenheit. **Mineral content:** Vary considerably, but are low in sulphur and iron. **Development:** Supply a natatorium and baths in conjunction with a modern hotel and cottage camp.

**Kennedy (Byrne) Hot Springs (294)**

**Location:** NE $\frac{1}{4}$  sec. 1, T. 30 N., R. 12 E., 23 miles east of Darrington near Glacier Peak. **Flow:** Two groups of springs with a very small flow of fairly hot water. **Mineral content:** carbon dioxide, iron, sulphur.

**Sulphur Creek Hot Springs (295)**

**Location:** SE $\frac{1}{4}$  sec. 18, T. 32 N., R. 13 E., on Sulphur Creek. **Access:** Forest Service trail.

**PEAT**

Peat has been reported from some of the lakes and rivers of Snohomish County, but it is high in ash and unfit for fuel.

### PETROLEUM AND NATURAL GAS TEST WELLS

#### **Florence Well (296)**

**Location:** SW $\frac{1}{4}$  sec. 8, T. 31 N., R. 4 E. **Company:** Florence Oil and Gas Company. **Results:** Slight indications of oil and gas. No production.

#### **Snohomish Well (297)**

**Location:** Sec. 10, T. 28 N., R. 6 E., east of Snohomish. **Company:** Sol Duc Oil Company. **Results:** Showings of oil and gas. No production.

#### **Alston No. 1 Well (298)**

**Location:** Sec. 15, T. 28 N., R. 6 E., east of Snohomish. **Company:** Graham Development Company. **Results:** Oil and gas showings. No production.

### PHOSPHATE ROCK

#### **Deposit Near Oso**

**Location:** Reported occurrence near Oso. **Deposit:** Phosphate-bearing rock.

#### **Valley Gem Deposit**

(See Valley Gem Deposit under Limestone.)

### RUTILE

(See Pilchuck Creek Prospect in the Granite Falls Mining District.)

### SAND AND GRAVEL

#### **Hat Island Sand and Gravel Company**

**Location:** Near Darrington. **Product:** Paving sand and structural gravel. **Production:** Has produced.

#### **Heyner Sand and Gravel Company**

**Location:** Near Snohomish. **Ownership:** Paul Heyner, 4th and Cypress Streets, Snohomish, Washington. **Product:** Road and structural sand and gravel. **Production:** Has produced.

#### **Machias Sand and Gravel Deposit (299)**

**Location:** Near Machias. **Ownership:** E. J. Templeton, Everett, Washington. **Product:** Paving sand and gravel. **Production:** Has produced.

#### **Pilchuck Creek Deposit (300)**

**Location:** Sec. 1, T. 31 N., R. 4 E. **Product:** Sand and gravel. **Production:** Has produced.

#### **Stilaguamish Deposit (301)**

**Location:** Sec. 2, T. 31 N., R. 4 E. **Product:** Sand and gravel. **Production:** Has produced.

#### **Reiter Deposit (302)**

**Location:** Along Skykomish River near Reiter. **Product:** Sand and gravel. **Production:** Has produced.

### STRONTIUM

#### (303)

**Location:** T. 28 N., R. 10 E., on the north side of Excelsior Creek near the Ethel mine. **Mineral:** Strontianite. **Deposit:** 4-inch vein.

**SULPHUR**

**Lockwood Prospect**

(See Lockwood prospect under Sultan mining district.)

**Sulphur Creek**

**Location:** T. 32 N., R. 14 E., along Sulphur Creek, a tributary of Suiattle River. **Deposit:** Several sulphur-bearing hot springs and considerable "float" sulphur.

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## INDEX OF METALLIC MINERAL PROPERTIES—Continued

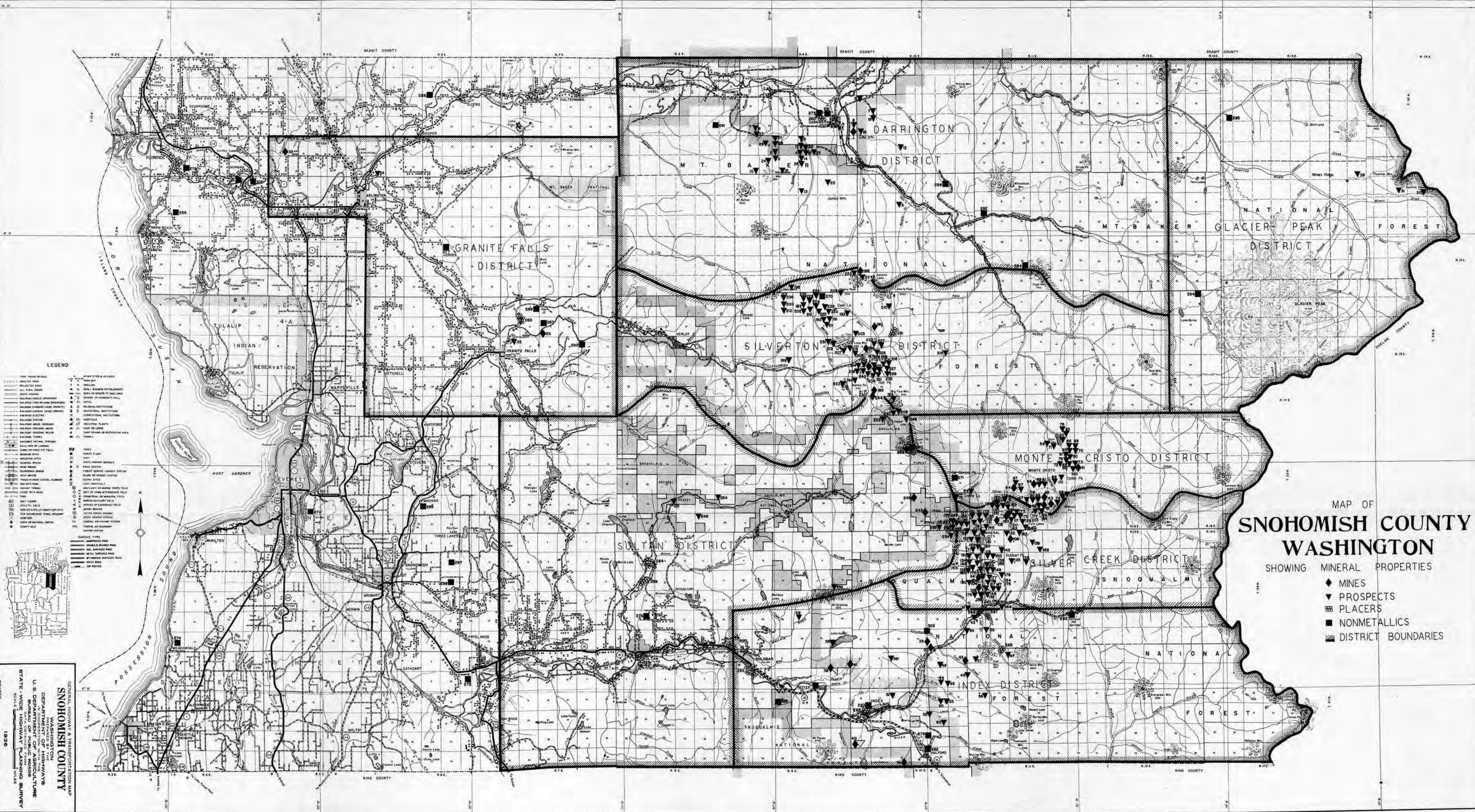
PROPERTY NAME	Page	SUBSTANCE																			
		Antimony	Arsenic	Bismuth	Chromium	Cobalt	Copper	Gold	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Silver	Sulphur	Tin	Titanium	Uranium	Vanadium	Zinc
Lulu Prospect (230).....	44		X																		
M and H No. 2 Prospect (155).....	34																				
Mackinaw Prospect (84).....	24						X	X	X												
Magus Mine (See Forty-Five)							X	X	X												
Mamie Mine (189).....	40						X														
Manganese Prospect.....	9																				
Manley Prospect (18).....	10						X														
Marguerite Mosier Prospect.....	49						X	X													
Marine Prospect.....	34						X														
Martin Engdahl Prospect (156).....	34						X	X													
Mayflower Prospect (157).....	35						X	X													
Mayflower and Louise Prospect.....	44						X	X													
McCombs Prospect (See Clara Thomson)																					
McKinlay Prospect (154).....	34							X													
Merchant Prospect (56).....	18						X														
Michigan Prospect (158).....	35						X	X													
Milki Maru Prospect (159).....	35						X	X													
Mineral Mines Prospect (160).....	35						X	X													
Mineral Mountain Prospect (161).....	35						X	X													
Minnehaha Prospect (162).....	35						X	X													
Molline Prospect.....	10						X														
Molly Prospect.....	10						X														
Monitor and Sterling Prospect (231).....	45						X	X													
Monte Cristo Mine (63).....	21	X	X				X	X													
Montezuma Prospect (232).....	45						X	X													
Morning Star Prospect (163).....	35						X	X													
Mountain Goat Prospect.....	35						X	X													
Murdoek Prospect.....	35						X	X													
Myrtle O Prospect (19).....	10						X														
Mystery Prospect (255).....	49				X		X	X													
National Prospect (164).....	35						X	X													
Navajo Prospect (85).....	24						X	X													
Nemo Prospect (233).....	45		X				X	X													
Nesta Brothers' Prospect (20).....	10						X	X													
Nevada Prospect (86).....	24						X	X													
New Seattle Prospect (234).....	45	X					X	X													
New York Prospect (235).....	45		X				X	X													
New York-Seattle Mine (108).....	28						X	X													
Nibus Prospect.....	24						X	X													
Non Pareil Prospect (57) (Index Dist.).....	18				X	X	X								X						
Non Pareil Prospect (Silverton Dist.).....	45						X	X													
North Star Prospect (58).....	18					X	X	X													
North Star Mining Co. Prospect (21).....	10		X				X	X		X					X						
Northwest Consolidated Mine.....	21						X	X							X						
O and B Mine (64).....	21		X				X	X							X						
Old Missouri Prospect.....	36						X	X							X						
Ontario Prospect (165).....	36						X	X		X					X						
Oro Fino Prospect (166).....	36						X	X							X						
Orphan Boy Prospect.....	24						X	X							X						
P. and I. Prospect (87).....	24						X	X							X						
P.-I. Prospect (167).....	36						X	X		X					X						
Paystreak Prospect.....	49			X			X	X							X						
Peabody Mine (65).....	21		X				X	X		X					X						X
Pelican Prospect (22).....	10		X				X	X							X						
Philo Prospect (88).....	24		X				X	X							X						
Phoenix Prospect (89).....	24						X	X							X						
Pilehuck Creek Iron Prospect.....	13							X									X				
Port Gardner Prospect.....	36							X													
Pullman Prospect.....	36							X							X						
Queen Anne Prospect (23).....	10		X				X	X		X					X						X
Rainy Mine (60).....	21		X				X	X							X						
Red Cloud Prospect (168).....	36						X	X		X					X						
Red Cross Prospect (59).....	19						X	X							X						
Reiter Mine (41).....	15	X													X						
Remonille Prospect (169).....	36		X				X	X							X						
Republican Prospect (90).....	25						X	X							X						
Ruby King Prospect (170).....	36						X	X							X						
Russia Prospect.....	25						X	X							X						

## INDEX OF METALLIC MINERAL PROPERTIES—Continued

PROPERTY NAME	Page	SUBSTANCE																			
		Antimony	Arsenic	Bismuth	Chromium	Cobalt	Copper	Gold	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Silver	Sulphur	Tin	Titanium	Uranium	Vanadium	Zinc
Sacramento Prospect (91).....	25																				
St. Cloud Prospect (236).....	45																				
St. Louis and Jackson Mine (190).....	46																				
St. Louis Prospect (171).....	36																				
Sam Strom Mine (1).....	7						X	X													
San Francisco Prospect (92).....	25						X	X													
Saturday Prospect.....	25						X	X													
Scotch Lassie Jean Prospect.....	36						X	X													
Seattle Prospect.....	25						X	X													
Seventy Six Prospect (93).....	25						X	X													
Sidney Prospect (94).....	25						X	X													
Silver Creek Mine (109).....	32						X	X													
Silver Lake Prospect (172).....	37						X	X													
Silver Queen Prospect (173).....	37						X	X													
Silver Slipper Prospect (174).....	37						X	X													
Skrinde Prospect (175).....	10						X	X													
Sloman Prospect (24).....	37						X	X													
Standard Prospect.....	37						X	X													
Steele Prospect (176).....	45						X	X													
Stockton Prospect (237).....	25						X	X													
Stratus Prospect.....	49						X	X													
Sultan Group Prospect (256).....	49						X	X													
Sultan Queen (Hicks) Prospect (257).....	49						X	X													
Summer Coon Prospect (238).....	45						X	X													
Sunday Star Prospect.....	37						X	X													
Sunrise Prospect (253).....	50						X	X													
Sunset Mine (42).....	16						X	X													
Sunset Prospect (95).....	25		X				X	X													
Sunset and Beatrice Prospect (177).....	37						X	X		X											
Superior Prospect.....	37						X	X													
Taylor and Nunn Prospect (25).....	10						X	X													
Texas Prospect (178).....	37						X	X													
Threadwell Prospect.....	25						X	X		X											X
Three Sisters Prospect (239).....	45						X	X													
Three Star Prospect (96).....	25						X	X													
Tobique and Lalla Rookh Prospect (97).....	25						X	X		X											
Tuscolusa Prospect.....	26						X	X													
Twentieth Century Prospect (98).....	26						X	X							X						
Uncle Sam Prospect (60) (Index Dist.).....	19						X	X							X						
Uncle Sam Prospect (Monte Cristo Dist.).....	26						X	X							X						
Undaunted Prospect (179).....	38						X	X							X						
Union Prospect (99).....	26	X					X	X							X						
Uranium Prospect.....	50						X	X										X			
Vanadium Prospect.....	19						X	X												X	
Vandalla Prospect (180).....	38						X	X		X					X					X	
Victory Prospect.....	38						X	X							X						
Virginia Prospect (240).....	45	X					X	X		X					X						
Washington Prospect.....	26						X	X													
Washington-Iowa Prospect (See Edison).....	26						X	X													
Waterfall and Blackjack Prospect (100).....	26						X	X													
Wayside Mine (33).....	13						X	X		X					X					X	X
Webster Prospect (181).....	38						X	X							X						
Welman Prospect (27).....	11						X	X													
West Seattle Prospect.....	26						X	X													
Westland Prospect (182).....	38						X	X							X						
Whaleback Prospect (183).....	38						X	X							X						
Whistler Prospect (101).....	26						X	X		X					X						
White Gander Prospect (26).....	11	X					X	X							X						
White Swan Prospect (241).....	45						X	X							X						
Wilbur Index Mine (See Index).....							X	X													
Wildcat Prospect (102) (Monte Cristo Dist.).....	26						X	X													
Wildcat Prospect (184) (Silver Creek Dist.).....	38						X	X							X						
Wilmon Peak Prospect.....	26						X	X													
Winnie Prospect (185).....	38						X	X							X						
Winter Coon Prospect (242).....	45	X					X	X							X						
Witcher Prospect (23).....	11						X	X													
Yankee Boy Prospect (35).....	13						X	X													
Zeta Prospect (103).....	26						X	X							X						







MAP OF  
**SNOHOMISH COUNTY**  
**WASHINGTON**

SHOWING MINERAL PROPERTIES

- ◆ MINES
- ▼ PROSPECTS
- PLACERS
- NONMETALLICS
- ▬ DISTRICT BOUNDARIES

- LEGEND**
- |   |                         |   |                              |
|---|-------------------------|---|------------------------------|
| — | RAILROAD                | — | STATE HIGHWAY                |
| — | RAILROAD BRANCH         | — | STATE HIGHWAY BRANCH         |
| — | RAILROAD TUNNEL         | — | STATE HIGHWAY TUNNEL         |
| — | RAILROAD CROSSING       | — | STATE HIGHWAY CROSSING       |
| — | RAILROAD GRADE CROSSING | — | STATE HIGHWAY GRADE CROSSING |
| — | RAILROAD GRADE CROSSING | — | STATE HIGHWAY GRADE CROSSING |
| — | RAILROAD GRADE CROSSING | — | STATE HIGHWAY GRADE CROSSING |
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| — | RAILROAD GRADE CROSSING | — | STATE HIGHWAY GRADE CROSSING |
| — | RAILROAD GRADE CROSSING | — | STATE HIGHWAY GRADE CROSSING |

GENERAL HIGHWAY & TRANSPORTATION MAP  
**SNOHOMISH COUNTY**  
WASHINGTON  
DEPARTMENT OF HIGHWAYS  
IN COOPERATION WITH THE  
U.S. DEPARTMENT OF AGRICULTURE  
STATE-WIDE HIGHWAY PLANNING SURVEY  
1936



INDEX  
TO MINERAL PROPERTIES  
OF  
Snohomish County

To Accompany the Map From Report  
of Investigations No. 6,  
Division of Geology, 1942





## INDEX OF METALLIC MINERAL PROPERTIES

PROPERTY NAME	Page	SUBSTANCE																			
		Antimony	Arsenic	Bismuth	Chromium	Cobalt	Copper	Gold	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Silver	Sulphur	Tin	Titanium	Uranium	Vanadium	Zinc
Ajax Prospect (69).....	22						X							X							
Alki and Ellen Prospect (110).....	29						X														
Alleghany Corp. of Nevada (Foggy) Mine (61)	29	X	X				X		X					X							X
Anaconda Prospect (111).....	29						X														
Annie Laurie and Ethel Prospect (67).....	22						X														
Annie Prospect.....	29						X														
Argonaut and Typo Prospect (68).....	22						X														
Arkansas Traveler Prospect.....	29						X														
Arlington Prospect (191).....	40						X		X					X							
Armament Prospect (43).....	16						X														
Baby Lode Prospect (192).....	40						X														
Bald Mountain Prospect (193).....	40						X		X					X							
Baltimore Prospect (70).....	22						X		X					X							
Beckler River Prospect.....	16						X														
Bell and Crown Prospect (194).....	41						X		X					X							
Ben Butler Prospect (112).....	29						X														
Big Bear and Butte Prospect (105).....	41						X							X							
Big Copper Prospect (246).....	47					X	X							X							
Big Four Prospect (196).....	41	X	X				X		X					X							
Big Raymond Prospect (113).....	29						X							X							
Billy Lee Prospect (114).....	29						X		X					X							
Bitter Creek Prospect (44).....	16						X														
Black Diamond Prospect.....	29						X														
Black Hawk Prospect (197).....	41						X							X							
Blackstone Prospect (115).....	29						X							X							
Blue Bird Mine (164).....	28						X		X					X							
Blue Bird Prospect.....	8						X														
Blue Rock Prospect (71).....	22	X					X							X							
Bluff Prospect (116).....	25						X														
Bonanza Queen Mine (186).....	39	X					X							X							
Bon Ton Prospect (72).....	22						X							X							
Bornite Prospect (198).....	41						X							X							
Boston Prospect.....	8						X														
Brooklyn Prospect (73).....	22						X														
Buckeye Mine (36).....	14						X														
Buckeye Prospect (2).....	8													X							
Bullet Prospect (199).....	41	X					X	X						X							
Bunker Hill Prospect (200).....	41						X														
Burns Prospect (31).....	8						X	X						X							
Calumet Prospect (45).....	16						X														X
Caplin-Holbrooke Prospect (117).....	29						X	X						X							
Cascade Copper Co. Prospect (46).....	17						X	X						X							
Cassidy Prospect (74).....	22	X												X							
Castle Prospect (118).....	30							X						X							
Central Fraction Prospect.....	22							X						X							
Champion Prospect.....	30							X	X					X							
Charlotte Mine (37).....	15						X	X						X							
Clara Thomson (McCombs) Prospect (119).....	30						X	X	X					X							
Cleveland Prospect (Silver Creek Dist.).....	30							X						X							
Cleveland Prospect (201) (Silverton Dist.).....	41	X					X	X	X					X							
Cliff Prospect (202).....	42						X														
Climax Prospect.....	23																				
Climax and Knoxville Prospect.....	42																				
Coe Prospect (34).....	13							X													
Colts Prospect (303).....	42						X	X						X							
Columbus Prospect (247).....	47																				
Combination Prospect (120).....	30																				
Consolidated Prospect (204).....	42	X					X	X						X							
Cooperative Prospect (47).....	17						X	X						X							
Copper Belle Mine (33).....	15						X	X						X							
Copper Chief Prospect (121).....	30						X	X	X					X							
Copperhead Prospect (205).....	42						X	X						X							
Copper Independent Mine (187).....	39	X					X							X							
Copper King Prospect.....	47						X							X							
Copper Prince Prospect (206).....	42						X	X						X							
Copper Queen Prospect (207).....	42						X														
Cora M. Prospect (122).....	30						X														
Cornucopia Prospect (208).....	42						X		X					X							









## INDEX OF METALLIC MINERAL PROPERTIES—Continued

PROPERTY NAME	Page	SUBSTANCE																			
		Antimony	Arsenic	Bismuth	Chromium	Cobalt	Copper	Gold	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Silver	Sulphur	Tin	Titanium	Uranium	Vanadium	Zinc
Sacramento Prospect (91).....	25																				
St. Cloud Prospect (236).....	45						X														
St. Louis and Jackson Mine (190).....	40						X	X							X						
St. Louis Prospect (171).....	36						X	X							X						
Sam Strom Mine (1).....	7						X	X							X						
San Francisco Prospect (92).....	25																				
Saturday Prospect.....	25																				
Scotch Lassie Jean Prospect.....	36																				
Seattle Prospect.....	25						X	X							X						
Seventy Six Prospect (93).....	25																				
Sidney Prospect (94).....	25						X	X							X						
Silver Creek Mine (109).....	28						X	X							X						X
Silver Lake Prospect (172).....	37						X	X		X					X						
Silver Queen Prospect (173).....	37						X	X		X					X						X
Silver Slipper Prospect (174).....	37						X	X		X					X						X
Skrinde Prospect (175).....	37						X	X		X					X						
Sloman Prospect (24).....	10						X	X		X					X						
Standard Prospect.....	37						X	X		X					X						
Steele Prospect (176).....	37						X	X		X					X						
Stockton Prospect (237).....	45																				
Stratus Prospect.....	25																				
Sultan Group Prospect (256).....	49						X	X							X						
Sultan Queen (Hicks) Prospect (257).....	49						X	X							X						
Summer Coon Prospect (238).....	45						X	X							X						
Sunday Star Prospect.....	37						X	X							X						
Sunrise Prospect (258).....	50						X	X							X						
Sunset Mine (42).....	16						X	X							X						
Sunset Prospect (95).....	25	X					X	X							X						
Sunset and Beatrice Prospect (177).....	37						X	X		X					X						
Superior Prospect.....	37																				
Taylor and Nunn Prospect (25).....	10						X	X							X						
Texas Prospect (178).....	37														X						
Threadwell Prospect.....	25						X	X		X					X						X
Three Sisters Prospect (239).....	45																				
Three Star Prospect (96).....	25						X	X							X						
Tobique and Lalla Rookh Prospect (97).....	25						X	X		X					X						
Tuscolusa Prospect.....	26																				
Twentieth Century Prospect (98).....	26						X	X							X						
Uncle Sam Prospect (60) (Index Dist.).....	19						X	X							X						
Uncle Sam Prospect (Monte Cristo Dist.).....	26						X	X							X						
Undaunted Prospect (179).....	38						X	X							X						
Union Prospect (99).....	26	X					X	X							X						
Uranium Prospect.....	50																		X		
Vanadium Prospect.....	19																		X		
Vandalia Prospect (180).....	38						X	X		X					X						
Victory Prospect.....	38						X	X		X					X						
Virginia Prospect (240).....	45	X					X	X							X						
Washington Prospect.....	26						X	X							X						
Washington-Iowa Prospect (See Edison)																					
Waterfall and Blackjack Prospect (100).....	26																				
Wayside Mine (33).....	13						X	X		X					X					X	X
Webster Prospect (181).....	38						X	X		X					X						
Welman Prospect (27).....	11						X	X													
West Seattle Prospect.....	26																				
Westland Prospect (182).....	38						X	X							X						
Whaleback Prospect (183).....	38						X	X							X						
Whistler Prospect (101).....	26						X	X		X					X						
White Gander Prospect (26).....	11	X					X	X							X						
White Swan Prospect (241).....	45						X	X							X						
Wilbur Index Mine (See Index)																					
Wildcat Prospect (192) (Monte Cristo Dist.).....	26																				
Wildcat Prospect (184) (Silver Creek Dist.).....	38							X							X						
Wilmon Peak Prospect.....	26							X													
Winnie Prospect (185).....	38						X	X							X						
Winter Coon Prospect (242).....	45	X					X	X							X						
Witcher Prospect (28).....	11						X	X							X						
Yankoe Boy Prospect (35).....	13						X	X							X						
Zeta Prospect (103).....	26						X	X							X						

