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CHEMISTS • ASSAYERS • ENGINEERS

DENVER, COLORADO 80205

Folio 1030

Date Dec. 1, 1979

Joseph Wojeck, Jr., Inc.
13131 W. Cedar Dr.
Lakewood, CO 80228

We hereby Certify, that the samples assayed for you gave the following results:

DESCRIPTION	GOLD OUNCES PER TON	SILVER OUNCES PER TON	COPPER PER CENT (WET)	LEAD PER CENT (WET)	ZINC PER CENT	IRON PER CENT	INSOLUBLE PER CENT
Y-10	Nil	0.26	} 2 small Atlas dumps				
11	Nil	0.70					
13	Nil	3.82					
14	Nil	5.24					
15	Nil	2.26					
16	Nil	10.46					
17	Nil	3.42	} Dinero Shaft Dump				
18	0.02	4.14					
19	0.04	3.26					
20	0.02	5.40					
21	Tr.	3.46					
22	Nil	3.40					
23	Nil	4.20					
24	0.04	1.36					
25	Tr.	3.22	} Tiger Dump				
26	Tr.	5.40 + 1" of Y-25					
27	Nil	3.50 - 1" of Y-25					
28	Nil	0.25					
29	0.06	6.69					
30	Nil	5.60					
31	Nil	4.40					
32	0.04	8.10	composite 28-31				
33	Tr.	6.26 + 1" of Y-32	} 1/7/80				
34	0.04	5.40 - 1" of Y-32					

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Charge \$ 162.50

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CHEMISTS, ASSAYERS and ENGINEERS

in the central part of the St. Kevin district. At 24 localities in the St. Kevin district the anomalies were greater than 3 times background count; at all other localities the anomalies were less. At only one locality could a uranium-bearing mineral be identified with the unaided eye—namely, torbernite, at the Josie May prospect (see pl. 26). Analyses of samples from other localities gave contents of chemical uranium ranging from 0.001 to 0.07 percent and ratios of uranium to total radioactive material ranging from 0.05 to 0.93 percent. In addition, a rather strong concentration of radon gas was found in the Wilkesbarre adit (see pl. 26). Further prospecting doubtless would disclose more radioactivity anomalies.

The host rock is hydrothermally altered wherever radioactivity anomalies have been found. By far the most common host rock is intensely sericitized granite. Inasmuch as altered granite in the St. Kevin district prevailing exhibits low radioactivity (0.03–0.05 mr per hr), whereas unaltered granite exhibits rather high radioactivity (about 0.12 mr per hr), the anomalies may represent material that was leached, concentrated, and redeposited during hydrothermal alteration.

Most of the radioactivity anomalies were found in material from the zone of weathering in nonglaciated terrain. Such anomalies result from secondary minerals that developed during a long period of weathering in a humid climate—conditions favorable for chemical leaching of uranium. Small quantities of secondary uranium minerals giving small anomalies near the surface therefore might lead downward into larger quantities of hypogene uranium minerals below the zone of weathering. Of course, this does not imply that the hypogene minerals will necessarily be either abundant enough or continuous enough to be profitably mined.

DESCRIPTIONS OF MINES

SUGAR LOAF DISTRICT

DINERO AND NEARBY MINES

By far the most productive local area within the Sugar Loaf and St. Kevin districts has been the ground along the Dinero vein and several closely associated veins—the Gunnison, Silvers, Buckeye State, Orinoco, and Boyd (see fig. 42)—in the north-central part of the Sugar Loaf district. The precise pattern of veins in this local area is now indeterminate because shafts and prospect pits at places are too numerous to delineate individual veins. Plate 26 and figure 42 give the author's best guess at a reconstruction made after a careful field consideration of possible alignments and a study of the locations of shafts and pits on claim maps. Branch veins and auxiliary fissures doubtless were mined in addition to the veins named above.

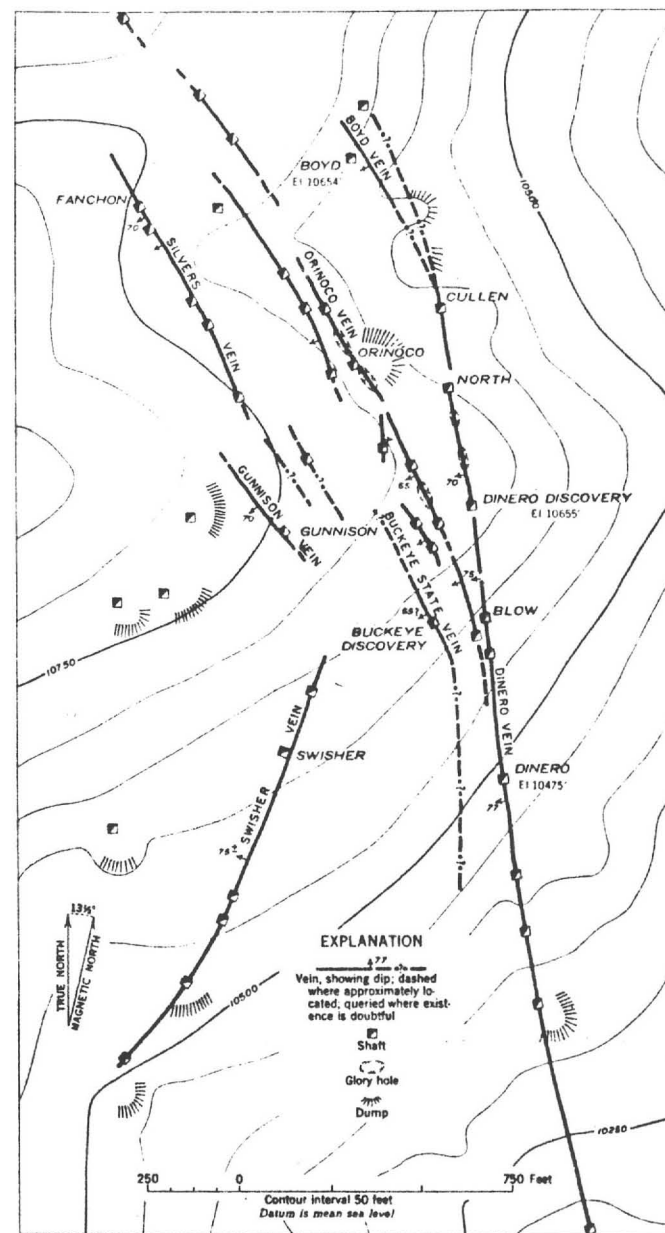


FIGURE 42.—Details of inferred vein pattern on part of Sugar Loaf Hill, Sugar Loaf district, Lake County, Colo.

MINE WORKINGS

All the veins at first were worked from shafts, mostly inclined, along the outcrop. Later, the Dinero tunnel was driven about 3,300 feet northwestward across barren ground to reach the Dinero vein at depth. Figure 42 gives the names and locations of the main shafts, shows the locations of some other shafts, but omits many of the lesser shafts and pits. Plate 26 locates the portal of the Dinero tunnel, at altitude 9,771 feet, immediately to the northwest of the intersection of Sugar Loaf and Little Sugar Loaf Gulches, in the east-central part of the Sugar Loaf district.

Mining done from the shafts doubtless extended to maximum depths of several hundred feet. No specific information about the underground workings could be procured, other than sketchy data about workings along the Dinero vein and a map showing part of a "2nd level down," 157 feet deep along the Gunnison vein. Most of the workings probably were never surveyed.

The Dinero vein was prospected by shafts and pits along an outcrop length of more than 3,000 feet, and it may have yielded at least minor amounts of ore near the surface throughout this distance. The most productive part of this vein, however, lay between the Dinero and North shafts (see fig. 42), which are about 1,100 feet apart. Six levels were worked northward from the inclined Dinero shaft, the sixth level being 265 feet, and the third level about 240 feet in vertical distance below the shaft collar. At least the three upper levels, and likewise a tunnel at the level of the shaft collar, connect with workings from the Blow shaft, which in turn connect with those from the Dinero Discovery and North shafts. It is uncertain whether essentially the entire vein above the third level was stoped all the way from the Dinero shaft to the North shaft, or whether two unstoped lean stretches, each about 100 feet in strike length and plunging 80° north, intervene between the Blow and Dinero Discovery shafts and the Dinero Discovery and North shafts, respectively. **By contrast much of the vein between the sixth and third levels may remain unstoped.**

$$\frac{1100' \times 125' \times 5'}{1.5 \text{ cu ft/ton}} = 46,666 \text{ tons}$$

The Dinero tunnel workings include 2,200 feet of drift along the Dinero vein on the tunnel level, 1,300 feet along two levels below the tunnel, and at least 1,600 feet along diverse levels above the tunnel. In addition, 250 feet of drift follows the Buckeye State vein along a level 200 feet above the tunnel. A 700-foot crosscut that passes directly beneath the collar of the Gunnison shaft apparently cuts at least one nonproductive vein west of the Dinero vein on the tunnel level, but did not extend far enough to reach the Gunnison vein. Figure 43 shows in part the location of veins in the Dinero tunnel workings as inferred from an incomplete mine map. The aggregate length of stopes at the tunnel level probably does not exceed 1,200

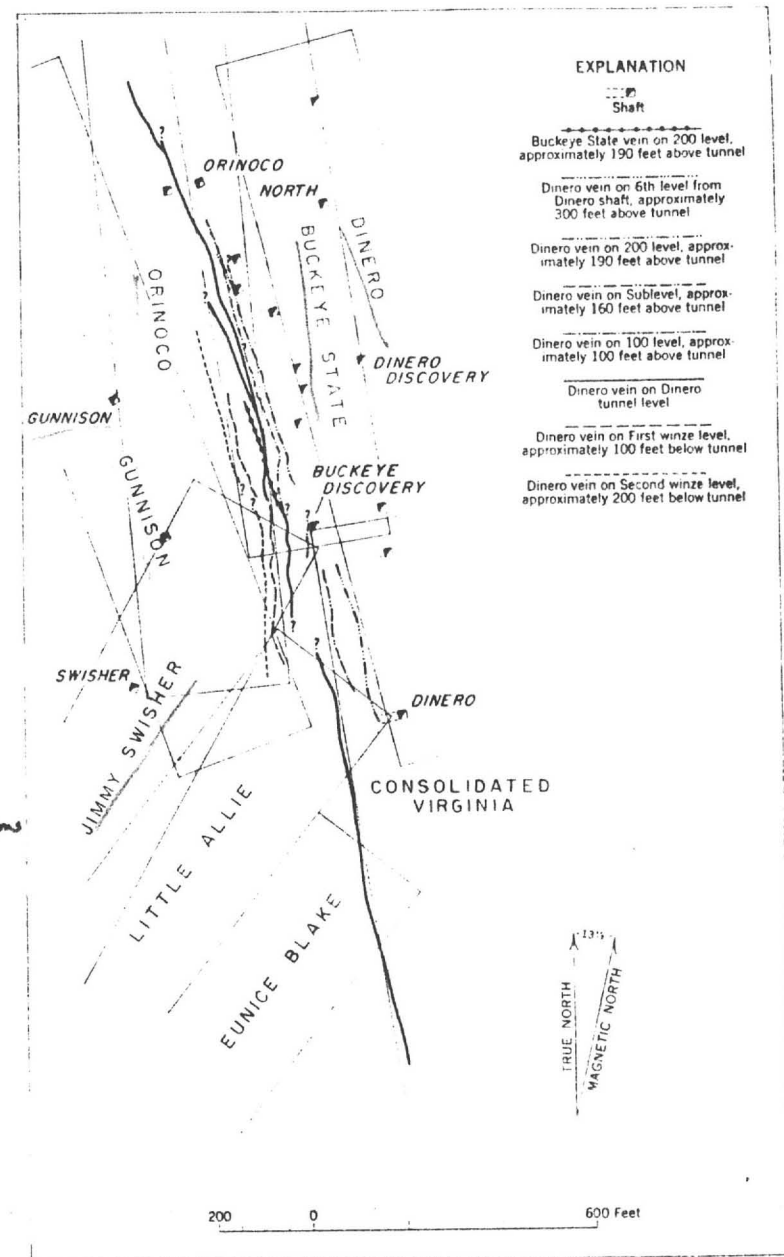


FIGURE 43.—Inferred positions of veins in Dinero tunnel workings, Sugar Loaf district, Lake County, Colo.

feet; as in the workings above, the bulk of them lie north of the Dinero shaft. All ore shoots apparently bottomed above the deepest winze level, that is, 1,000–1,050 feet in vertical distance below the surface at the Dinero Discovery shaft.

The Dinero mine during the period 1914-48 reported an intermittent output aggregating 9,259 tons of ore, of which 939 tons were mined primarily for manganese, the remainder primarily for silver. The manganese content of the 939 tons averaged only about 12 percent. The silver ore averaged 0.155 ounce of gold per ton, 62.7 ounces of silver per ton, 0.12 percent copper, and 1.88 percent lead; its zinc content is not known. Most, if not all, of this ore must have come from the Dinero vein.

An anonymous compilation of records for more than 25 thousand tons of ore, valued at more than \$800,000, shipped by the Dinero mine between 1891 and 1923 may include some ore from veins other than the Dinero. Although not a complete record of production, and perhaps not precisely accurate, the compilation provides data valuable for generalizations that the author regards as reasonably reliable. The prevailing range in gold content of individual shipments is from 0.04 to 0.5 ounce per ton, and in silver content from 11 to 140 ounces per ton; less than 10 percent of the shipments had either a gold or a silver content not within these ranges. The prevailing range in zinc content is from none to 14 percent. The overall averages are 0.167 ounce of gold per ton, 63.0 ounces of silver per ton, 4.3 percent zinc, and about 9 percent sulfur. Lead probably was not determined in all shipments, so a computed overall average of 0.4 percent lead may be too low. The true overall average for lead must not exceed one percent, nevertheless, because the ratio of zinc to lead of shipments in which both are reported averages more than 5 to 1.

A comparison of contents of zinc and of silver in ore shipped during three successive periods when mining presumably attained progressively greater depth suggests that descending water leached zinc near the surface but did not enrich silver. Zinc is reported in only 2 of 54 shipments during 1891-92, in 46 of 172 shipments during 1893-1904, and in 284 of 361 shipments during 1905-23. The average zinc content is 0.3 percent for 1891-92, 2.0 percent for 1893-1904, and 5.2 percent for 1905-23. The average silver content in ounces per ton for these same periods is 62, 43, and 67, respectively.

Only for the Silvers vein could other records of shipments from the Dinero local area be gleaned. Settlement sheets for five small shipments of ore made by Ralph Snedden, lessee, during 1935-36, from the 80-foot level of the Fanchon shaft on the Silvers vein showed: gold, 0.3-0.7 ounce per ton; silver, 84-167 ounces per ton; zinc, 12.3-15.9 percent; lead, none to 7.9 percent; iron, 10-21 percent; manganese, none to 1.7 percent; insoluble, 29-46 percent. Seventeen shipments aggregating 510 tons, allegedly from the Silvers vein during 1891-92, averaged about 0.15 ounce gold per ton and 48 ounces silver per ton; none reported zinc or lead.

Granite is the prevailing wall rock of the Dinero and associated veins, as shown by plate 26. In the vicinity of the Dinero shaft, however, the Dinero vein adjoins a contact between granite and schist, and nearly all the veins enter schist country rock at their northern terminations. The veins locally cut White porphyry and zones of chert. A particularly well defined zone of chert trending sinuously east-northeast (see pl. 26) crosses the belt of veins about 300 feet north of the Dinero Discovery shaft. This may be what some old-timers called the "blow out fault." It would be interesting indeed to be able to observe whether the veins change in physical character in passing through the chert, or are offset along it. Furthermore, perhaps there is some significance in the fact that productive veins closely associated geographically with the Dinero are restricted to an area of abundant minor chert veins that may be auxiliary to the main zone, and to ground immediately to the north. All the rocks except chert are intensely sericitized in proximity to productive veins, and locally considerably silicified.

DETAILS OF VEINS

Accessible exposures of veins of the Dinero grouping are rare. In the Dinero tunnel, the vein itself has been mined out within the accessible workings. The vein fissure walls in some places are fairly well defined, in other places are transitional owing to a gradual decrease outward in the number of individual fracture surfaces and in the intensity of crushing shown by the rock between them. In either case, the rock in the walls is extensively shattered and contains many gouge seams randomly distributed.

A vein thought to be the Silvers was well exposed in 1936 at the breast of a drift, 67 feet south of the Fanchon shaft (see fig. 42), on a level 80 feet vertically below the collar. The vein was 3-4 feet thick. Both walls were fairly well defined, though thin films of gouge parallel to the vein actually provided a transition zone into shattered wall rock. Within the vein fissure were the following zones, from hanging wall to footwall: 6 inches of rotten, oxidized rock, with several partings of brown gouge; 2-2½ feet of unoxidized gray gouge, soft mud, and crushed rock; discontinuous films and veinlets of sulfide minerals; 6 inches to 1 foot of crushed rock, slightly oxidized, with films of gouge; a ½-inch layer of sphalerite. The uppermost zone of oxidized material constituted the ore.

An opencut 80 feet long, located 130 feet west of the Dinero Discovery shaft, exposes the walls of a vein thought to be the Orinoco. The vein, 3-4 feet thick, trending N. 25° W. and dipping 65°-70° SW., has been mined out. At one place, sericitized lamprophyre, either a

dike or an elongated inclusion, adjoins the vein. Elsewhere, the wall rock is intensely sericitized granite that locally has been partly silicified, especially along fractures. A thin layer of strongly silicified rock forms a distinct wall on the foot, whereas the hanging wall is not well defined. A strong branch fissure extends about N. 5° E., 75° NW. into the footwall, and a sheeted zone about S. 30° W. vertically into the hanging wall.

VEIN MINERALS

The bulk of the sulfide-bearing vein material exposed on the dumps is medium-gray, very fine grained quartz—almost chert—containing a considerable though decidedly subordinate quantity of fine-grained pyrite. Some of this material is in massive chunks derived from layers at least a foot thick, but most of it is in small angular fragments derived from thin streaks or from thicker layers that were somewhat broken by postmineral movement within the vein fissures. All the larger fragments contain numerous vugs; some are minute cavities and some are more than 6 inches in longest diameter. Nearly all the vugs are coated with small, clear to translucent quartz crystals. The pyrite is unevenly distributed, and commonly is concentrated in crude layers, concentric masses, or irregular patches. Sphalerite is decidedly less abundant than pyrite, and galena is still less abundant. Sphalerite and galena are irregularly distributed within quartz-pyrite material and also as crystals coating many vugs. All the sulfide minerals also impregnate silicified granite. A light-colored chert-like quartz, usually devoid of sulfide minerals, is found transecting granite and also intermixed with the medium-gray quartz-sulfide material.

An important constituent of ore from the Dinero vein was native silver. Inasmuch as it persisted downward at least to the tunnel level in quantities adequate to be readily detected by the unaided eye, according to Mr. J. Marvin Kleff of Leadville, the native silver was evidently a hypogene constituent. Native silver probably also was found in the Gunnison, Silvers, Buckeye State, Orinoco, and Boyd veins. It is not surprising that no specimens remain on any of the dumps. Traces of argentite and tetrahedrite were seen under the microscope by Sandberg (1935, p. 504) in specimens collected mainly from the dumps of the Dinero and nearby mines.

Whether any of the gouge constituted ore in the Dinero group, as in mines in the St. Kevin district, could not be ascertained.

TIGER-SHIELDS MINE

The Tiger-Shields mine, in the west-central part of the Sugar Loaf district, ranked either second or third in value of output among the productive local areas of the Sugar Loaf district. It was greatly surpassed by the Dinero local area, and it may or may not have been

surpassed by the Gertrude-Venture. Two veins were worked—the Shields, which strikes N. 37° W. and dips about 65°–75° SW., and the Tiger, which strikes N. 20° E. and dips about 55° NW. As shown by plate 26 and figure 41, the two veins form a very wide V, open to the east, but no data concerning their relations at the junction are available.

The veins apparently were worked first by means of a series of shafts along the outcrops of each, and later were opened by the Tiger tunnel. The portal of the tunnel, at an altitude of approximately 10,600 feet, is 4,550 feet S. 63½° W. of the northwest corner of sec. 19, T. 9 S., R. 80 W., at the head of a small ravine that trends southward to join Little Frying Pan Gulch.

A map of the Tiger tunnel, date and surveyor unknown, furnished the strikes and dips given above. The map shows that the Shields vein was continuously stoped through a strike length of 370 feet, south-eastward from its junction with the Tiger, both above and below the tunnel level; presumably the stopes extend upward to grass roots, at a maximum vertical distance of 150 feet above the tunnel. The Tiger vein apparently was continuously stoped above the tunnel level along a strike length of 300 feet, northeastward from its junction with the Shields, and perhaps intermittently thereafter for another 300 feet—though data on the mine map do not clearly designate stoped areas along the Tiger vein. Two hundred feet north of the junction of the two veins, a winze on the Tiger vein suggests that some ore may have been mined below the tunnel level, which is about 180 feet vertically below the surface at that point.

The alinement of shafts and pits on the surface suggests that the Tiger vein may fork north of the Tiger shaft, and also that an auxiliary vein may exist about a hundred feet to the west.

Copies of only a few settlement sheets for ore shipped during 1904–5, 1910, and 1924 were available. These showed gold ranging from 0.06–0.11 ounce per ton and silver from 10.9–23.5 ounces per ton, with no zinc or lead. The average for 275 tons was 0.08 ounce of gold and 21.0 ounces of silver per ton. The ore mined during earlier days may have been richer.

Although the Tiger and Shields veins lie within an island of pre-vaillingly schist bedrock, a great deal of altered and disintegrated granite is found on the dumps. Vein quartz containing considerable pyrite is abundant in chunks and as small angular fragments. The bulk of the vein quartz is medium gray and very fine grained, almost cherty; but light-colored chertlike quartz forms intergrowths with the medium-gray variety and also with veinlets transecting granite. Minor amounts of red chertlike quartz form irregular intergrowths with the medium-gray quartz, and form banded layers within it.

One specimen shows angular fragments of the light-colored variety enclosed in red, which in turn is transected and enveloped by the medium-gray variety. Pyrite is intimately associated only with the medium-gray quartz, in which it is irregularly distributed; pyrite-rich portions impart a crude banding to some specimens. All the pyritic quartz is somewhat vuggy. The abundance of this material on the dumps indicates that it did not constitute the ore. Occasional chunks of nearly pure pyrite, with remnants of gouge adhering, may also be seen.

Mr. George S. Casey, of Leadville, possesses a chunk of native silver about 8 inches in longest diameter, derived from the Tiger-Shields mine. According to Casey, native silver was not uncommon throughout the richer ore shoots.

GERTRUDE-VENTURE MINE

The aggregate value of output from the Gertrude and Venture claims, in Little Frying Pan Gulch, half a mile south of the Tiger and Shields, was of the same general order of magnitude as that from the Tiger and Shields. The bulk of the output came from the Gertrude-Venture vein which strikes about N. 20° E. and dips 50°-55° NW.; the dip is inferred from survey data, furnished by J. Fred McNair, giving the slope of the Venture shaft (see pl. 26) and the location of the Gertrude-Venture vein in the Siwatch tunnel. The main workings along the Gertrude-Venture vein were never surveyed, insofar as the author could ascertain. The distribution of the larger dumps suggests that the vein may have been stoped along a strike length of 300-500 feet, to an unknown depth. At 400-450 feet below the surface, apparently well below the main workings, a vein thought to be the Gertrude-Venture was cut in a long, crosscutting prospect adit named the Siwatch tunnel (see pl. 26). There it was explored along a strike length of 400 feet, but is said to have yielded only very small quantities of low-grade ore.

Three shipments aggregating 251 tons during 1916-21 averaged 0.25 ounce of gold per ton and 37 ounces silver per ton.

T. L. WELSH MINE

The T. L. Welsh mine was only a subordinate producer whose output was perhaps about a quarter of that of the Gertrude-Venture, but inasmuch as part of the adit was accessible for mapping in 1936, the pattern of veins and faults found there serves as a geological sample of mines in Little Frying Pan Gulch.

The mine workings comprise three shafts and an adit. The portal of the adit, at an altitude of 10,044 feet, is 3,500 feet N. 80° W. of the southwest corner of sec. 19, T. 9 S., R. 80 W. The shafts are north-northwest of the adit, the most distant one being 600 feet N.

19° W. of the portal. It may connect with the adit beyond the accessible part. The main T. L. Welsh shaft may connect with the adit via one of the two chutes located 400 feet from the portal (see fig. 44).

Figure 44 is a map of workings accessible in 1936. The wall rock is entirely granite, which has been considerably sericitized. The main vein is a zone that ranges from less than a foot to nearly 5 feet in thickness. It is composed of crushed rock, gouge, and pyritic, chert-like quartz that forms stringers, veinlets, and lenses; the gouge is

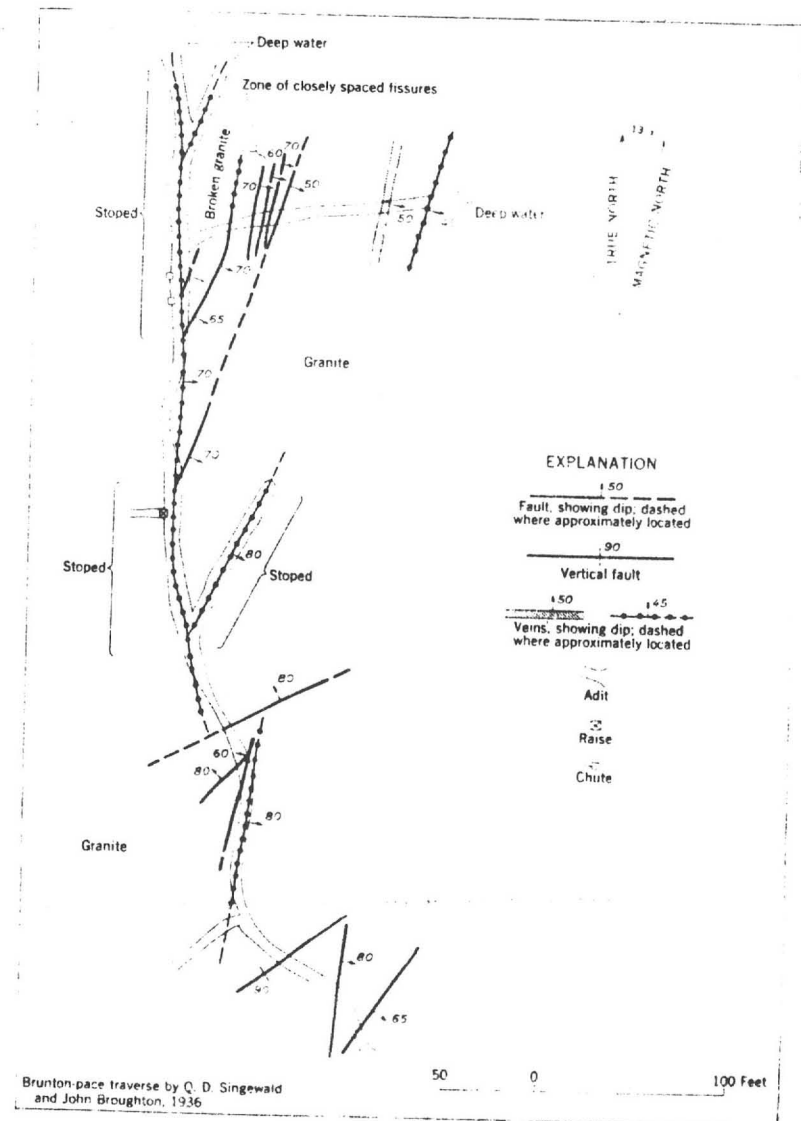


FIGURE 44.—Geologic map of T. L. Welsh adit, Sugar Loaf district, Lake County, Colo.

along many individual fault surfaces that lie within the vein fissure zone. The pyrite-bearing quartz commonly is along the hanging wall, but it also occurs both within the fissure and along the footwall. Rock adjoining the fissure is severely shattered, and contains many gouge films.

The bulk of the strong auxiliary veins and faults lie in the hanging wall of the main vein, as shown by figure 44, yet there are occasional strong transverse fissures. Both walls contain many minor fractures not shown on the map. The auxiliary veins, like the main vein, are fissure zones containing crushed rock, gouge, and pyritic quartz; they range from several inches to several feet in thickness. The easternmost vein, shown 135 feet from the main vein at the eastern accessible end of the crosscut near the northern end of figure 44, is a 3-foot zone of nearly parallel gouge seams with shattered rock between; along the hanging wall is a 1-inch seam of pyrite in soft gouge, and extending diagonally inward and downward from the hanging wall is a lens of pyrite-bearing quartz. The footwall break is heavily stained by limonite, and many fracture surfaces in the severely broken wall rocks are coated with limonite and very minor amounts of manganese stain. Twenty-two feet to the west is another fissure zone, 4 feet wide, that shows pyrite-bearing lenses and nests along the footwall. Both walls are heavily stained by limonite.

A vein fissure 2½ feet wide is exposed in one of the shafts; it trends N. 6° W. and dips 80° NE. The rotten granite walls of the shaft are cut by many minor fissures. Those in the footwall average about N. 20° W. in trend and 50° SW. in dip; those in the hanging wall about N. 75° W. in trend and 65° SW. in dip.

The mine dumps consist mainly of altered granite which is partly disintegrated, but they also contain vein material that is pyrite-bearing, moderately dark, chertlike quartz containing many small vugs. Much of the vein material shows specks and small masses of red chertlike quartz. Pyrite intergrown with the dark chertlike quartz is fine grained, but occasional pieces of nearly pure coarse pyrite also may be found. In the ore bin are specimens of soft white gouge that resemble talc, as well as pyritic dark chertlike quartz.

LAPLANDER ADIT

The Laplander adit was a very minor producer, but as it was accessible in 1936, it provides a geologic sample of veins on the steep slope south of Turquoise Lake. The portal is 4,500 feet S. 61½° W. of the northwest corner of sec. 18, T. 9 S., R. 80 W.

Figure 45 is a map of the adit. The wall rock is entirely granite, which is considerably sericitized and, adjacent to veins, somewhat silicified. The veins are in strong fissures that range from a few inches to 3 feet in thickness. Sphalerite and subordinate pyrite are the only

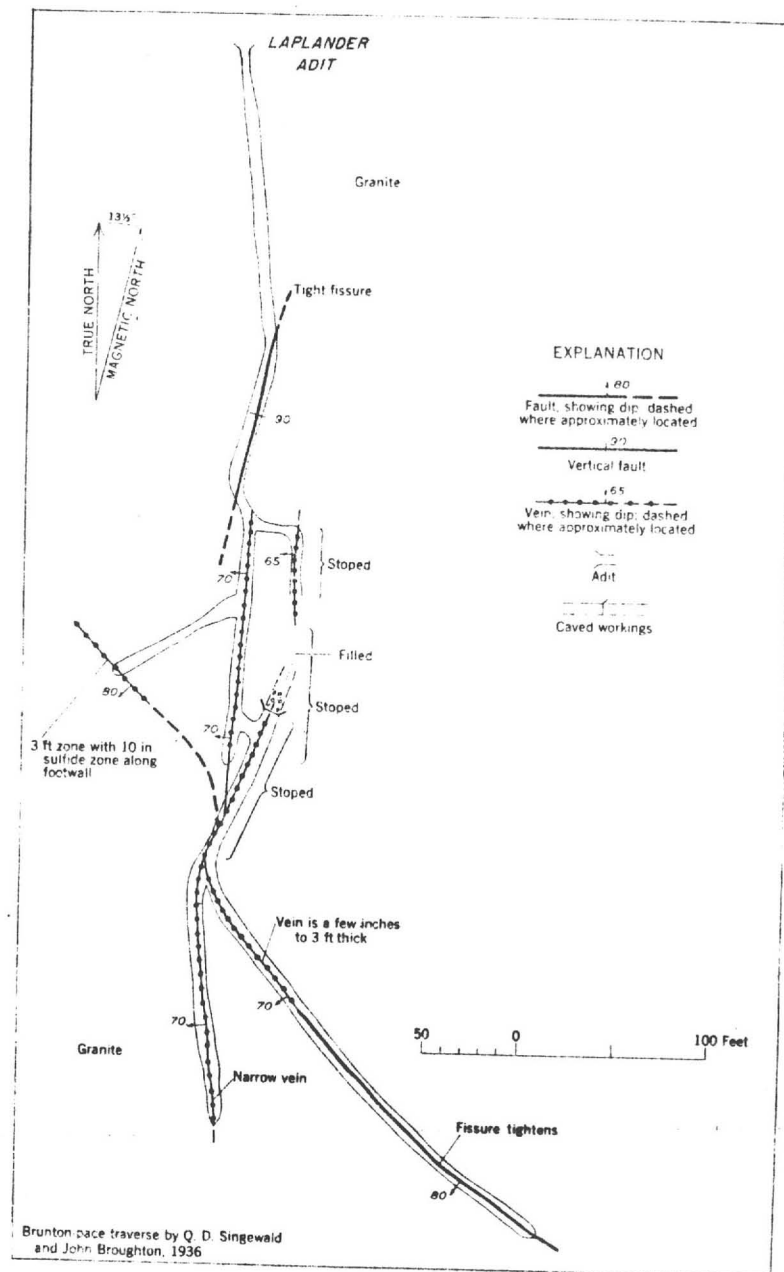


FIGURE 45.—Geologic map of Laplander adit, Lake County, Colo.

sulfide minerals seen. They occur intergrown with quartz and as granular masses and streaks within gouge. Pyrite also forms seams and impregnations in wall rock adjoining all veins. The ore is streaky and lenticular; in places, lenses more than a foot wide pinch out within a strike length of 50 feet. In a very general way, sulfide stringers and

lenses are widest where the fissures are widest. The wall rock adjoining strong fissures is moderately broken by randomly oriented fractures.

BARTLETT MINE

The Bartlett mine is more than half a mile east of the Dinero; it probably was one of the subordinate producers of the Sugar Loaf district, yet not even a guess as to its aggregate output could be obtained. The early workings from the inclined Bartlett shaft (see pl. 26) remain unmapped, insofar as the author could ascertain, but a map of the underground workings of the Bartlett tunnel, made by J. Fred McNair, was available. This map shows a sinuous vein that averages about N. 40° E. in strike and 55° NW. in dip throughout its productive length of more than 300 feet. Ore apparently continued downward below the tunnel level, which is some 220 feet vertically below the collar of the main shaft.

Meager specimens of vein material on the dump of the Bartlett tunnel reveal an early-formed, light-colored chertlike quartz and also minor amounts of moderately coarse vein quartz transected by moderately dark chertlike quartz containing pyrite, sphalerite, and sparse galena. In addition, copper stain was seen on a few pieces of oxidized vein substance.

OTHER MINES

The Red Hook and Nellie C. vein in Little Frying Pan Gulch, according to Leadville information, yielded an aggregate output of about the same amount as the T. L. Welsh mine. This vein probably strikes a few degrees east of north; it may dip 75° NW., concordant with the inclination of the Nellie C. shaft.

The Black Iron vein, half a mile east of the Dinero, according to George S. Casey yielded noteworthy though now unknown quantities of ore from shallow workings during the early days. Later, the Black Iron shaft was sunk to the northwest of the formerly productive area; little success resulted from this venture. Two smelter settlement sheets for shipments aggregating \$740 in net value, from the Black Iron property, averaged approximately: 0.15 ounce gold per ton, 50 ounces silver per ton, 2.4 percent lead, and 5.5 percent zinc. Material on the dump of the shaft is coated with moderate amounts of manganese stain.

Essentially no information could be obtained about either the Swisher vein or a more northerly trending vein located a few hundred feet to the west (See pl. 26 and figs. 41 and 42). The sizes of dumps suggest that both may have been productive, and the Swisher may even have been a medium-sized producer. Three shipments aggregating 70 tons from the Swisher mine about 1914-16 averaged 0.1

ounce gold per ton, 22 ounces silver per ton, 0.08 percent copper, and 0.9 percent lead; the zinc content is not known.

ST. KEVIN DISTRICT

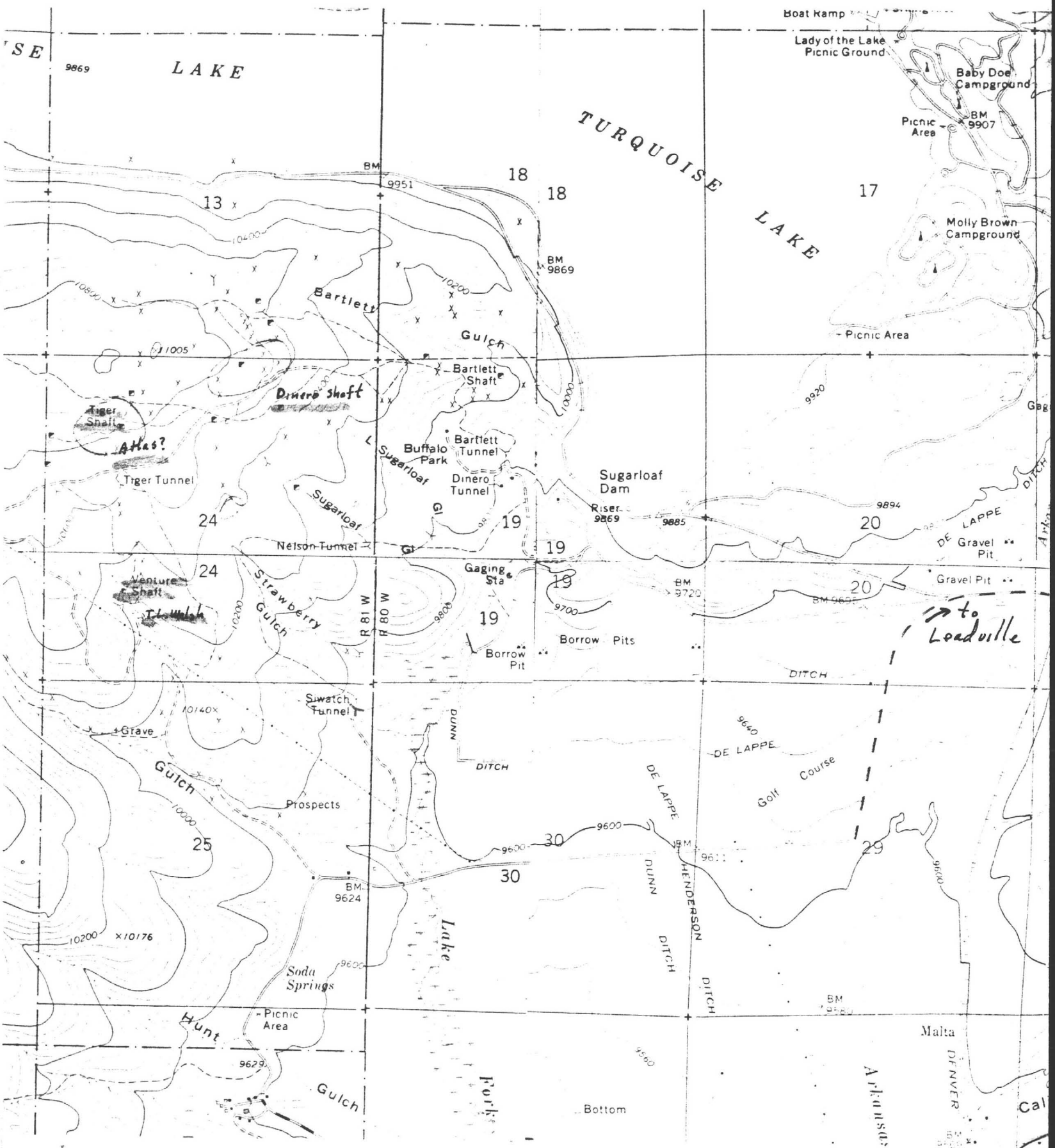
ST. KEVIN MINE

The St. Kevin mine, in the west-central part of the St. Kevin district, is reported to have been one of the largest producers in that district. Its output may have totalled as much as a million dollars in value.

The earliest workings presumably were from shallow shafts along the outcrop of the St. Kevin vein. By 1890, as disclosed by a mine map of that date attributed to Jay A. Wilcox, the vein had been mined along two levels from the inclined St. Kevin shaft (see pl. 26), at depths of 217 feet and 256 feet, respectively, and also from a level at the bottom of the Grandview shaft (see pl. 26) which is 355 feet below the collar of the St. Kevin shaft. In 1914, the St. Kevin shaft was sunk another 60 feet or so, to explore below the 256-foot level in ground east of the Grandview workings, but neither the extent nor the result of this exploration is known to the author. The Rosse tunnel (see pl. 26) was driven, probably at about the same time, with intent to crosscut to the St. Kevin vein at a depth of more than 400 feet below the collar of the St. Kevin shaft; a survey made by McNair in August 1917 discloses that the Rosse tunnel had not reached the vein at that time, but it may have done so later.

It seems likely that the most productive part of the St. Kevin vein increased from a strike length of about 100 feet on the Grandview (355-foot) level to nearly 300 feet on the 256-foot level, and perhaps to as much as 700 feet close to the surface, and that the eastern margin of the shoot raked westward whereas the western margin was nearly vertical. This is inferred from the length and relative positions of levels shown by the map of 1890. The 217-foot level extended 60 feet eastward from the St. Kevin shaft and 360 feet westward; the 256-foot level extended 460 feet westward. The Grandview level extended only 120 feet along the vein westward from a point located 210 feet west of the St. Kevin shaft. About 350 feet west of the St. Kevin shaft, near the western margin of the main ore shoot, the strike of the vein in the mine workings curves from N. 80° E. to due east; about 40 feet west of the shaft it again curves to N. 65° E. The inclination of the St. Kevin shaft, which may represent the approximate dip of the vein, decreases from 50° near the surface to 36° at the 217-foot level, but then increases again to more than 40°, and the average dip from the 256-foot level to the Grandview level is about 55°.

An intermittent output aggregating 1,412 tons of ore reported from the St. Kevin mine during 1914-46 averaged 0.07 ounce gold per ton,



<u>Sample No.</u>	<u>Description</u>	<u>Av oz/ton</u>	<u>Ag oz/ton</u>
ST-1	Siwatch Tunnel north dump	.02	.48
ST-2	N. side south dump	tr	tr
ST-3	S. side south dump	.01	.86
PLS-1	Small dump in Colo. gulch (T.L. Walsh?)	.02	3.36
PLS-2	Small dump west of PLS-1 (T.L. Walsh?)	.02	1.62
PLN-1	Small dump north of PLS-1,2	.01	1.36
V-1	Venture shaft dump? 15' cut	.12	3.22
V-2	Small dump north of Venture 8' cut	.06	10.06
V-3	Small dump north of V-2, 10' cut	.02	4.40
V-4	Small dump from incline shaft, 10' cut	nil	3.00
V-5	Small dump from vertical shaft 6' cut	tr	1.12
T-1	Dark, manganiferous coating on dump from tunnel 6' cut	.04	2.56
T-2	8' cut along line of dump (Atlas?)	.02	1.86
T-3	10' cut down toe of dump	tr	.54
T-4	15' down side of middle dump (Tiger Shaft?)	.08	11.72

5,000 Column Test

C H E M I S T S • A S S A Y E R S • E N G I N E E R S
DENVER, COLORADO 80205

Folio 1017

Date October 6, 1979

J. R. Wojcik, Inc.
13131 W. Cedar Dr.
Lakewood, CO 80228

We hereby Certify, that the samples assayed for you gave the following results:

DESCRIPTION	GOLD OUNCES PER TON	SILVER OUNCES PER TON	COPPER PER CENT (WET)	LEAD PER CENT (WET)	ZINC PER CENT	IRON PER CENT	INSOLUBLE PER CENT
PLN-1	0.01	1.36					
PLS-1	0.02	3.36					
PLS-2	0.02	1.62					
ST-1	0.02	0.48					
ST-2	Tr	Tr					
ST-3	0.01	0.86					
T-1	0.04	2.56					
T-2	0.02	1.86					
T-3	Tr	0.54					
T-4	0.08	11.72					
V-1	0.12	3.22					
V-2	0.06	10.06					
V-3	0.02	4.40					
V-4	Nil	3.00					
V-5	Tr	1.12					

PLEASE PAY FROM THIS INVOICE AS NO OTHER
STATEMENT WILL BE MAILED. THANK YOU.

Charge \$ 97.50

CHARLES O. PARKER & CO.
CHEMISTS, ASSAYERS and ENGINEERS

GS-VBSA

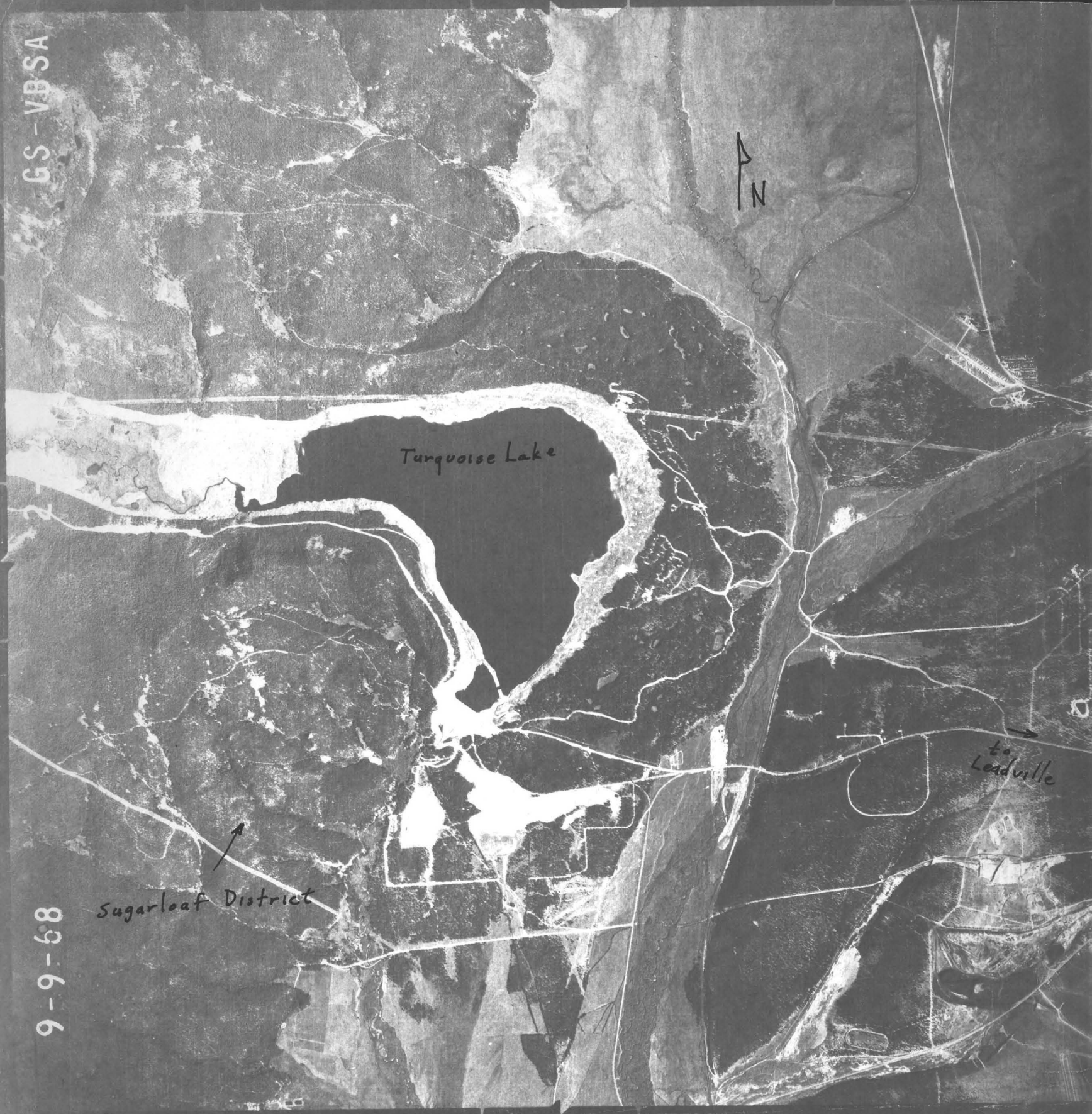
N

Turquoise Lake

to
Leadville

Sugarloaf District

9-9-68



J.R. Wojcik
5875 Urban St.
Arvada, Co. 80004

Mr. Grover Heinrichs
1802 W. Grant Road.
Suite 110-4
Tucson, Az. 85745

Dear Grover;

Enclosed is a handfull of data on the Sugarloaf district about five miles west of Leadville. I have sampled about 100,000 tons of dumps in a very cursory manner but the results seem to be consistant at about 4.0 oz./ton Ag. I composited the rejects from samples from the Dinerp shaft dump for the flotation test and had the head and tails assays checked by another assayer.

The owner prefers to sell outright and has been content to wait for a sell although he did lease with an option to Earth Resources some years back. They did a little geochem (soils) and drilled a hole or two. I think they concentrated near the Bartlett which is more of a base metal target.

I doubt that there is much underground potential except for pillars and some unstoped lowgrade. The cost of rehabilitation of the mine entries would probably be prohibitive. There are other large dumps that I did not get to and the property may have some ultimate value in the recreation industry.

I will appreciate your comments and hope that I have aroused your interest.

Very truly yours,

J.R. Wojcik

<u>Sec. 24, Twp. 9, R 81</u>	<u>MS #</u>	<u>Pat. #</u>	<u>Acreage</u>
W. S. Hancock*	3233	9909	10.330
Jeanetta	2888	10213	7.00
Venus Lot A & B	3135	15521	6.62
Jimmie Swisher	3860	14830	4.130
West Point	4352	20700	7.311
New Discovery	4276		5.160
Venture	1903	32131	10.330
Zeolite	5729	18524	8.340
Plymouth	3411	11073	9.770
H A	19289		5.5
Dinero	2593	8159	7.85
Buckeye State	3693	13014	3.050
Yellow Jacket*	4495	16186	4.070
W. F. Ilgenfritz	3412	11074	9.750
Belle of the West	1251	8512	10.330
Hennesy	11721	28562	2.240
Little Link	5271	20326	6.402
Roosevelt et al	19199		34.194
Edna M.	19314		6.814
Little Harry	2248	7329	8.660
Cleveland	4051		10.200
Florence	759	9910	9.120
Defiance*	1450	6406	5.780
Sally Jane*	3148	24222	10.190
General Shields	831	5570	10.330
1/2 Julia V.	11390	29051	9.866
7/8 Tiger	1365	4930	10.330
3/5 Nellie C. & Red Hook	4485	24423	13.4
Whittlesay*	4246	14942	10.382
5/6 Golden Curry	848	8580	10.330
Gertrude	17619	45137	9.990
Silver Dale	3269	10574	10.120
Jupiter*	3134	25212	9.020
T. L. Welch*	885	5082	10.330

<u>Sec. 24, Twp. 9, R 81 (Contd.)</u>	<u>MS #</u>	<u>Pat. #</u>	<u>Acreage</u>
Birdie R.*	4567	25580	5.05
Sundown	1434	6563	10.330
Riffle	7005	22430	1.890
New Klondyke	15401	38214	8.746
B & S, 1,2,3	20317*	1000 292	44.635
Stillings	15399	38640	7.866
Inez	19838	638322	1.345
Little Major	19134	245 479	10.331
			397.432
Provisional Amelia, Normanna, St. Mary's.			22.46
			419.892

Sec. 19, Twp. 9, R 80

Little Nancy	14099	34529	10.331
Bulldog	20066	860576	9.095
Halcyon	18428		5.824
Caribou	6091	20328	5.098
Little Comstock	6804	37897	10.331
May Queen	6900	22546	6.954
Ten Per Cent	3876	12009	10.320
Copper King	4052	16660	4.45
Prince of Wales	14406	36506	6.318
Benjamin	4822	17990	10.070
R. J. F. Bartlett	4023	14514	10.330
Little Nell and Little Maud	7314	27851	20.660
			109.781
Provisional Part Dinero Placer			8.50
			118.281

Sec. 18, Twp. 9, R 80

Ocean Wave	6670	33585	10.218
Crown Point	5640	19881	8.283
Imperial, Republic, National and Expansion	15560	38285	24.082
Michigamme	8060	28734	9.630

<u>Sec. 18, Twp. 9, R 80 (Contd.)</u>	<u>MS #</u>	<u>Pat. #</u>	<u>Acreage</u>
Black Iron	3182	10774	10.330
Orphan	16127	38787	10.259
Ould Irishman Silver Wave & Clark	5764	20726	22.640
Alice	17437	44421	9.906
Eugene	4573	15866	7.59
C. H. S., S. H. Chicago & Bluewater	19139	319696	41.324
			<u>154.262</u>

Sec. 13, Twp. 9, R 81

Silver Crown	4866		7.430
Orinoco	3701	31974	2.220
Part Fanchon Placer	660	5100	49.375
Kentuckian #2	4590	20322	8.230
Sonora	4486	16701	4.03
Kentuckian	4059	15482	6.6
850/900 Juanita	1483	6657	10.330
Gunnison	2943	9705	7.83
			<u>96.045</u>
Provisional Inez			.924
			<u>96.969</u>

Sec. 25, Twp. 9, R 81

Provisional - Copper King Extension			<u>10.330</u>
Not found			

Sec. 24, Twp. 9, R 81

Amelia	3205	10399	7.160
Normanna	3270		8.110
St. Mary's	2247	7328	7.19

Sec. 25, Twp. 9, R 81

Copper King Extension	6513		10.330
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Sec. 13, Twp. 9, R 81

Inez

MS #

15864

Acreage

.924

Sec. 19, Twp. 9, R 80

Part Dinero Placer

2969

8.50

McGOWEN ORE TESTING CO.

~~XX~~

Feb 4, 1980

JR Wojcik

Metallic flot test dump ore

Grind: Head sample split out. Ten pounds ground to -70 mesh.

pH: Soda ash used to bring pH to 9.

Reagents: collector Z11 xanthate
 frother pine oil

Products: head split out of sample
 con 368 g
 mid 424 g (mid made by recleaning flot con)
 tail cut

Flot results:	<u>Au oz/T</u>	<u>Ag oz/T</u>
head	0.070	4.41
con	0.150	17.43
mid	0.285	6.46
tail	0.010	0.89

Material balance:	<u>Au (mg)</u>	<u>Ag (mg)</u>
head	10.88	685.75
con	1.89	219.69
mid	4.14	93.82
tail	1.28	114.25

Au: tail + con + mid/head = 7.31/10.88 = 67%
Ag: tail + con + mid/head = 427.76/685.75 = 62%

Percent recovery:

Au: con + mid/head = 6.03/10.88 = 55%
Ag: con + mid/head = 313.51/685.75 = 46%

Concentration ratio:

wt head/wt con + wt mid = 4540/792 = 6:1

Enclosure 3

ROOT & SIMPSON, Inc.

TEL: (303) 443-0152

METALLURGICAL CHEMISTS AND ASSAYERS
BOULDER, COLORADO 80301

P.O. BOX 8004

SPECIMEN ASSAY

ASSAYED FOR

J. R. Wojcik

MARKS

647

GOLD OZS. PER TON	SILVER OZS. PER TON	WET LEAD PER CENT	COPPER PER CENT	ZINC PER CENT	IRON PER CENT	USOB PER CENT	PER CENT	PER CENT
0.070	4.41	0.52	0.10	None	Heads			
0.285	6.46				Mid			
0.150	17.43	1.59	0.20	None	Cons			
0.010	0.89				Float tails			

DATE 1/31/80 CHARGES \$ 60.00

Root & Simpson, Inc.

2131 CURTIS STREET

TELEPHONE 623-1852

CHEMISTS • ASSAYERS • ENGINEERS
DENVER, COLORADO 80205

Folio 1061

Date March 15, 1980

J. R. Wojcik
13131 W. Cedar Dr.
Lakewood, CO 80228**We hereby Certify,** that the samples assayed for you gave the following results:

DESCRIPTION	GOLD OUNCES PER TON	SILVER OUNCES PER TON	COPPER PER CENT (WET)	LEAD PER CENT (WET)	ZINC PER CENT	IRON PER CENT	INSOLUBLE PER CENT
Slag	0.02	0.16					
Head	0.04	4.56					
Tail	0.01 0.01	0.32					

*pd 4/21*PLEASE PAY FROM THIS INVOICE AS NO OTHER STATEMENT WILL BE MAILED. THANK YOU. Charge \$ 19.50CHARLES O. PARKER & CO.
CHEMISTS, ASSAYERS and ENGINEERS

