4740 0025

5200 ADIT [illegible] 15 Dyke
5276 [illegible]
5300 [illegible] 15 [illegible] ROAD

GEOLOGIC REPORT

TALAPOOSA MINE

LYON COUNTY, NEVADA

BY: RAYMOND F. ROBINSON

GEOLOGY

REGIONAL GEOLOGY

The geological setting is similar to that of the Comstock Lode. The pre-mineral volcanic rocks, which have been correlated with the Alta and Kate Peak series, are overlain by the Talapoosa formation, consisting of unconsolidated clay and sandy lake beds intercalated with thin andesitic flows and flow breccia. The formation is consolidated to unconsolidated in character. The Talapoosa formation is exposed in an erosional window and is overlain, in turn, by thick vesicular basalt and andesitic flows which are post-mineral in age. There is a discontinuity between the Talapoosa and the older rocks which probably is an unconformity, although the attitude of the older rocks within the window is obliterated by alteration and shattering. Considerable amounts of post-mineral faulting has occurred and some of this has been recent enough to involve surface debris and talus. The younger extrusive rocks appear to dip off the Talapoosa window in a way to suggest that local doming with late faulting may be responsible for the recent appearance of the older rocks in the window. East-west faulting in the window reflects the large east-west fault zone attending the south flank of the Flowery Range along the Carson River Valley. The north-south structures of the Comstock Lode are not present or, at least, not apparent in the Talapoosa district.

PROPERTY GEOLOGY

Surface

Rock Types and Formation

Plate 3 indicates the surface geology. The outstanding feature is a northeasterly elongated, plug-like mass of dacite porphyry intrusive extending northerly and northeasterly from the Dike Tunnel area. Owing to surface debris and basalt flow covering, the size and extent of the intrusive body is not wholly known. This mass intrudes andesite porphyry, an extrusive rock. The surface debris and soil are extensive enough to mask the actual surface contact, but the outcrop of dacite porphyry at several other places indicates that the intrusive has other dikes or apophyses in the andesite porphyry outside the principal mass on the northeast. A flat, underground intrusive contact in the 5298 adit indicates that the dacite porphyry may form, in part, sill-like masses in the area (see plate 9). The Talapoosa formation lies under the basalt and on top of the pre-mineral rocks and consists of poorly consolidated clay and sandy lake material, tuffs, and some andesitic flows and flow breccia. Some parts of it contain large granite boulders, but there is no granite exposed anywhere in the area. It crops out between the base of the basalt section and the pre-mineral rock along the north side of the window and it also occurs along the main access road on the south side of the window. It lies over the intrusive body and the extrusive andesite porphyry and is considered to be younger. Large areas to the north, south, and west sides of the district are covered by thick basaltic flows of late Tertiary age. Basalt covering is thinnest on a narrow east-west belt on the projection of the strike and shearing of the structures in the Talapoosa window.

N. Mill Tunnel

The large area on the map south of the Dike Tunnel and west of the mill and tailings pond is soil-covered basalt. Some assessment rotary drilling in this area penetrated about 100 feet of basalt and encountered Talapoosa sediments; the nature of this relationship is not clear, but the area may represent a land slide block of limited thickness.

Structure

The principal structures shown by outcrop and underground evidence are indicated on plate 3 by projection between outcrops. The major trends are S. 70°-80° E. to east-west and a less strongly developed northeast trend. The Dike Tunnel zone is the one most easily traceable and continuous. On the west, it is developed along the intrusive contact of the dacite porphyry and andesite porphyry, where it strikes N. 70°-80° W. and dips 55° S. The zone steepens to the east to about 75 degrees in the vicinity of the 5200 adit. A parallel zone which scarcely has been explored is exposed on the south side at the southeast end of the window. Evidence is conflicting, but it would appear that either the northeast fault zones are linking structures to east-west faults or they represent complimentary shears.

The intrusive body shows strong jointing and fracturing throughout. These joints and fractures trend northwest, northeast, and east-west, with a few trending north-south. The most strongly fractured portion of the intrusive area is on the northeast end, where intensely silicified, narrow faults occur; a principal fault in this area strikes N. 40° W. and dips 70° E.

Breccia zones are abundant at the surface. The actual origin of the smaller ones are controversial. In places, they occur as elongated tabular forms in faults and appear to be structural in origin but could be volcanic. The major example of a feature of this type is the large breccia pipe located in the erosional wash east of the Dike Tunnel. Soil and debris mask much of its surface features but underground exposures in several shallow adits suggest that it is probably 700 feet wide north-south and 700 feet wide east-west. There is a probability that it is also further elongated to the northeast under the surface debris. The attitude of the pipe is not wholly discernible, but is appears to steeply dip to the east on its west side and it may be bounded by the Dike Tunnel shear zone on its south side, where they are both contiguous at the surface.

A major, flat, northwest dipping, post-mineral fault is exposed at surface and shallow upper workings of the Dike Tunnel area. The relationship to the ore zone is not clear, but it does cut across the mineralized zone and probably severs it on its northwest extension. The kind or degree of movement is not determined. Its projection on topography is indicated on plate 3 and it seems to lie between the Talapoosa ~~formation~~ and the mineralized rock north and east of the Dike Tunnel. It is probably post-mineral and post-basalt in age and appears to have involved talus and soil. This may offset the district structures on the west and may become a factor in evaluating the potential for finding an extension of the district to the west.

Alteration

Alteration is very intense in most of the structurally disturbed area. The dacite porphyry intrusive outside of the structurally disturbed area, although appearing rather fresh, is pervasively altered. Plagioclase is replaced by albite and calcite. Quartz phenocrysts are deeply embayed and biotite is replaced by muscovite, calcite, chlorite, and rutile. Hornblende is completely replaced by muscovite, secondary biotite, calcite, quartz, rutile, and hematite. The groundmass is 50 percent submicroscopic, but the remainder consists of quartz, albite, magnetite, apatite, epidote, and zircon. The surface outcrop shows portions to the southeast and northwest which have a conspicuous light-brown to buff stain, while the intereferring sections have a gray, fresher appearance. The thin section analysis of the iron-stained section is identical with that of the gray zone described above, except that limonite occurs in the groundmass of the stained rock, together with finely disseminated pyrite and/or chalcopyrite. The character of the surface weathering denotes the distribution of sulfide mineralization.

The andesite porphyry at the surface is bleached and leached, seemingly by both hydrothermal clay-sericite facies and supergene processes. Abundant iron-staining by goethite, jarosite, and hematite, especially on fractures, suggests widespread sulfidization, although the original volume is difficult to estimate.

Fault zones and vein zones are commonly brecciated and exhibit both massive silicification and open vugs with drusy quartz fillings. In places, some breccias exhibit a kaolinized, fine-grained matrix with angular silicified fragments. The central part of the large breccia pipe exhibits no kaolinization at the surface, but at the soil-concealed perimeter, where it is slightly penetrated by adits on its northeast and south margins, the pipe exhibits the keolinized matrix and silicified fragments. Owing to soil mantle over the margins of the pipe , it cannot be ascertained as to whether there is a silicified center and a kaolinized rim about the pipe or whether the central siliceous mass is merely due to surface "case hardening" by migrating silica. All breccia zones exhibit the same type of iron staining, but the central zone of the large breccia pipe has an unusually heavy coating of goethite for the area.

As indicated on plate 3, there are several small lenses of opalitic silicification on the north and northeast portions of the window. These contain hematite in seams, but have no valuable metallic values. It is not certain, again owing to soil covering, whether these are in the Talapoosa formation or in the mineralized volcanics beneath it.

Mineralization

Surface mineralization is evidenced by the presence of iron oxides mentioned above. No sulfides were noted at the surface, but at one or two silicified exposures in some old pits, free gold can be panned if the rock is ground.

Geochemical values (see plate 3) and geological aspects suggest that there was widespread, dominantly pyritic, low-grade sulfide mineralization which pervaded many of the roads. Base metals and precious metals entered and were concentrated along breccias, shear faults, and, to a minor extent, distinct quartz veins. The underground exposures provide the best evidence of the character of this mineralization.

Production

Some surface production was made from an open pit above the 5299 and 5298 adits located due north of the mill (see plate 3). The work was done by Mr. Fred Delongchamps and the ore was milled on the property. The pit is about 200 feet long, 30 to 50 feet wide, and 20 to 30 feet deep. The ore was said to have averaged about 20 oz. of silver per ton and, based on the size of the pit, up to 15,000 tons have been mined. The ore is on the eastern projection of the Dike Tunnel structure. The low-grade mineralization did not extend down into the present workings of the 5299 adit and the geological relationship has not been ascertained (see plate 9).

Unknown amounts of ore were taken at an early period by persons unknown from the near-surface workings at several places in the window. The tonnage was small, as witnessed by the small volume of the workings, and because of transportation problems at the time, ore must have been high-grade (see plates 3 and 9). It is reported that high-grade seams of gouge occurred in the uppermost workings of the Dike Tunnel, from which free gold was easily panned. Assays of some material on the dump (see plate 4) suggest that high-grade gold ore actually was found in that vicinity. The upper stoped areas suggest that 2,500 to 3,000 tons may have been removed from a combination of open pit and underground work, but the grade is unknown. The structure, which is the outcrop of the footwall vein in the Dike Tunnel, has not been completely explored, even at this elevation, either at strike or dip (see plate 4). "upper Dyke"

Underground

Dike Tunnel

a. Rock Types

The best underground exposures in the district are in the Dike Tunnel workings, and they probably provide the best evidence of what can be expected elsewhere in the district (see plate 5). In general, there are two major rock types present, the intrusive dacite porphyry and the intruded andesite flows and flow breccias. Their relationships are the same as those seen at the surface. The contact between the two rock ~~types~~ is a faulted one along the north or footwall vein, but patches of dacite porphyry in andesite porphyry in the hanging wall area indicate the intrusive relationship. Elsewhere, as in the 5298 adit, the intrusive relationship is better indicated.

Rock type identification is rendered difficult because of intense alteration and shattering, which is structurally controlled by two major veins and fault systems. The north, or footwall, vein and fault zone very closely follow the contact between the dacite porphyry intrusive on the north wall and the andesite porphyry extrusive which lies on the south. The northeast fault and vein system joins the footwall, or north vein, in the central and east portion of the underground workings (see plate 6). Kaolinitic alteration of the rocks in the hanging wall of the north vein is very intense and identification of the rock types in this area is rendered very difficult owing to destruction of most of the original rock material. In general, enough texture is retained by the dacite porphyry so that its coarse porphyritic texture contrasts to the fine-grained porphyritic texture of the andesite. Texture, then, is almost the sole criterion for distinguishing the two, although it is a tentative procedure. Small areas of the intrusive rock occur somewhat sporadically in the andesite porphyry in the hanging wall portion of the north vein and, because of alteration effects, it is not certain whether these represent dikes, small intrusive masses, faulted blocks, or combinations of all three. Because of alteration effects, andesite porphyry can best be identified in the hanging wall area of the vein either by its fine-grained porphyritic texture or by a complete lack of it. In the west end of the mine workings, some purple and reddish-gray color is retained in a few places in the andesite, indicating the original color of the rocks.

In the extreme southwest crosscut of the Dike Tunnel, a coarse-grained biotite andesite flow is faulted against kaolinized, fine-grained andesite porphyry and dacite porphyry. This may be a volcanic member of the Talapoosa formation. Similarly, at the end of the north crosscut, a coarse-grained, greenish, kaolinized andesite porphyry flow breccia is faulted against the dacite porphyry and may also be a member of the Talapoosa formation.

b. Structure

One of the major fault trends in the tunnel is N. 70° W., 55° S., as noted on the footwall or north vein. This trend is also exposed at the surface, where it forms the slickensided south face of the intrusive mass in a silicified breccia zone 10 to 20 feet in width, which extends from the portal of the Dike Tunnel northwesterly for about 500 feet to the basalt cover (see plate 3). It, likewise, forms a silicified brecciated zone, a distinct entity in the mine, from the portal northwest for 550 feet and varies from 10 to 40 feet in width (see plate 6).

The second major trend, the northwest zone, impinges on the footwall vein and appears to merge with it at about 200 to 250 feet west of the portal. The actual relationship of the two veins is not wholly disclosed since this portion of the adit is in the hanging wall of the footwall vein and the vein's intersection lies in the footwall of the workings. This northeast system of mineralizaed faults and shears is less confined and more sharply distinctive than the north vein. It strikes about N. 55° E. and dips variously from 50°-85° SE to 80° NW on its several components. The junction area of these veins has created a wide, shattered zone closely resembling a horse-tail structure containing a myriad of minute to large fractures, all of which appear to have been mineralized by quartz and former sulfides.

Another major feature in the tunnel is a flat, clay-bearing structure which tops most of the mined structures of northeast vein structure. It is a white to greenish-gray, hard (when dry) clay which is of unknown total thickness, but is at least 2 to 3 feet thick. The clay shows internal, variously oriented slickensided surfaces indicating multiple shear adjustments. Where the vein structures in the andesite and dacite porphyry beneath abut against it, the clay exhibits 1 to 2 feet of induration with an intense red and brown coloration created by impregnation of gypsum and black, brown, and brick-red iron oxides. Various interpretation are made for the structure, the principal being that it is a fault or that it is the base of the Talapoosa formation and a lake bed clay. If it is a fault, it does not cut or offset the footwall vein zone but must affect a structural junction of sorts which has not been actually exposed. The reason appears to be that it strikes nearly parallel to that vein and dips 30 degrees or less to the south. It is exposed only in mined openings where the steeper dipping mineralized structures of the northeast vein intersects it. It exhibits an abrupt and drastic change of orientation and actually changes its strike from east-west to N. 40° E. and its dip from 10°-30° S. to 65°-70° W. at a point just west of the inclined shaft. It apparently was truncated by the old erosion surface eastward from the inclined shaft and, in this vicinity, the stope on the northeast vein structure also actually intersects the old surface in the subtalus outcrop. West of the shaft, the vein is terminated by the Talapoosa fault at heights of only 10 to 25 feet over the track. Stopes between the inclined shaft and the north or footwall vein and on the north side of the northwest vein zone all encounter this strong, flat, clay-bearing structure at various places and elevations, according to past accounts. Regardless of whether this is a pre-mineral Talapoosa formation base or a fault, it has had a channeling and damming effect, at least in the sense that it has directed post-sulfide surface water into the vein system, producing an extreme leaching effect on the ore beneath, particularly on the original silver content.

There appears to be no post-mineral or post-footwall or northeast vein cross structures in the mine to produce faulted segments or lost vein problems. The footwall system appears to be the dominant throughgoing structure. The northeast vein may be subsidiary or essentially of the same age.

c. Brecciation

Essentially the whole area of the mine workings is a breccia zone which appears to have had a very complex history of structural rejuvenation and alteration. Most of the brecia is of local rock type and is angular to subangular, suggesting that large displacement has not occurred. Much of the broad breccia zones are composed of highly kaolinized rock, including both matrix and fragments. The fragments occasionally can be identified as andesite porphyry and dacite porphyry. Linear zones tend to contain silicified fragments in a fine, granular, kaolinized matrix, the fragments consisting of both vein matter and volcanic and intrusive rock. Some fragments contain disseminated pyrite and other sulfides. The footwall vein breccia, which is 10 to 25 feet wide, consists of completely silicified fragments and groundmass bounded on the south by a wide breccia zone with kaolinized matrix and silicified fragments. The siliceous breccia is open and the cavities are lined with drusy quartz and adularia which exhibits banding about the fragments and is very similar in appearance to the Comstock Lode vein material. The marginal breccia with the kaolinized matrix is not vuggy and has scarcely any drusy quartz. Some elements of the northeast system contain lenses of open silicified breccia similar to the north or footwall vein.

d. Alteration

The dominant alteration type in the mine workings is kaolinization of the rocks in the hanging wall of the intrusive contact. It affects both the groundmass of the breccias and, in places, the fragments. Silicification is also outstanding in the mine area and several stages of the process followed multiple periods of refracturing. It appears that a zone of intense kaolinization formed outside and on the margins of the silicified zone and that both may have been created as halos about the intrusive contact. Multiple brecciation must have occurred, followed by repeated silicification along structurally controlled zones.

The mixture of altered breccia types can be explained in the following way. At the interface between the inner silicified and outer kaolinized zone, brecciation produced a zone of soft, fine-grained, kaolinized rock which formed a matrix between the hard fragments of the adjacent brecciated inner silicified zone. This made the breccia generally impervious to oncoming silicifying and mineralizing solutions, except where certain active fault strands maintained openings along which massive silicification occurred. Still later, fault adjustments and resilicification produced lensy, linear, recemented breccia or vein zones within the brecciated kaolinized zone. The north vein zone, initially, largely situated in the siliceous zone, was able to maintain permeability throughout the multiple brecciation processes and underwent several periods of fracturing and recementation. Where the northeast vein system cut through the breccia of the outer kaolinized zone (with kaolinized matrix and siliceous fragments), it has been irregularly shattered and received lesser amounts of silicification along with mineralization in the "horsetail" area where movement maintained openings.

e. Mineralization

(1) North or Footwall Vein

This vein contains primary sulfides in several areas; elsewhere, it is leached and contains abundant goethite and jarosite, with lesser amounts of hematite and copper oxides. The mineralization assemblage is distinctly different from that on the northeast zone. In several areas, light-gray to white pyrite occurs in fine-grained disseminations and pods with conspicuous amounts of chalcopyrite, both in the fine-grained siliceous matrix and in silicified fragments. Covellite and chalcocite selectively replace chalcopyrite. Fine-grained metallic minerals are also scattered about in the matrix and in fragments which are considered to be silver sulfides. Assays indicate that significant copper and silver mineralization occurs throughout the structure, but gold is relatively subordinate. Known production from the structure has been small. Several small stopes and raises occur above the tunnel to as high as 50 feet over the tract. A small stope extends below the tunnel level for 50 feet (see plates 5 and 6). Most areas of the vein in the Dike Tunnel level show primary sulfides, particularly in tight, hard portions of the vein. However, the sublevel stopes and levels appear to be entirely oxidized, with large amounts of hematite dominating the iron oxide. No knowledge of the character of the shipped ore exists.

(2) Northeast Vein Zone (See Plate 6)

This vein contained the highest grade ore in the mine and the "high-grade stope," referred to by Delongchamp's records in figures 2 and 3, is located within the zone, but it is not known which of the several stoped areas is so designated. This vein contains the "horsetail" zone (see plate 6). The mineralized zone (higher-grade portion), defined by trend of stoping, following an almost east-west trend on the south side to the inclined shaft; it swings N. 20° W. from the incline shaft on the southwest side and then trends N. 60° E. again to junction with the footwall vein. The majority of the remaining mineralization, which probably represents some of that which was stoped, consists of a large zone of multiple, brown geothite- and jarosite-stained seams and zones of white, and gray, dense, silicified, angular breccia. Irregular areas of completely silicified breccia exist; elsewhere, the softer breccia with the kaolinized matrix and siliceous fragments occur. The softer vein material and, particularly, the "horsetailed" material essentially is all iron oxides. The original sulfide, aside from pyrite, cannot be identified. The siliceous material contains finely disseminated pyrite, silver sulfides, and, in a few places, free gold, which can be seen in oxidized seams. The ore on the south portion of the vein (east-west stope east of the inclined shaft) was stoped about 50 feet to the top of the old outcrop and to the bottom of surface debris in at least two places. Even the solid backs of this stope cannot be more than 5 or 10 feet below the old outcrop. West of the incline shaft, the back of the stope, which is against the Talapoosa fault (or formation?), ranges from only 10 to 20 feet above the track, where it tops out. The northeast trending stopes in the zone nearer the vein junction break to the surface through a raise which passes beyond the old outcrop through at least 20 to 30 feet of talus and soil.

In the areas west of the shaft, a few pillars and some silicified breccia on some of the vein strands contain incompletely leached ore with small pods of essentially original primary sulfide mineralization. The primary material contains up to 20 oz. of gold and over 100 oz. of silver; copper, lead, and zinc are anomalous. This ore consists of fine-grained silver sulfides (unidentified species), tetrahedrite, and native gold within massive, clear to blue, glassy quartz. Cutting through the early quartz and sulfides are later, narrow seams of drusy quartz with goethite, free gold, and remnants of silver sulfides. The later quartz seams contained pyrite which formed acids, leaching most of the silver sulfides and some of the gold in the vein. This material should exist in the vein systems below the level of leaching and impoverishment of silver, probably below the pertinent water table. The present water table elsewhere in the district, as in the Christenson shaft, stands at about 150 feet below the Dike Tunnel.

Breccia Pipe

The breccia pipe has four adits which penetrate the margins by short distances; the largest, on the south side at the access road level, penetrates about 35 to 40 feet. The lower adit, just below the road, penetrates about 25 feet. Northeast of the breccia pipe, two adits penetrate the breccia zone; one penetrates about 15 feet and the other, about 175 feet southeast of it, penetrates about 85 feet. The lower adits on the south side show the breccia to consist of kaolinized matrix with both silicified and kaolinized fragments of andesite porphyry, with minor dacite porphyry and some vein quartz. In some of the fragments sparsely disseminated sphalerite occurs and jarosite is strongly developed. The tunnel progressively penetrates more kaolinized rock and less silicification, although the adit does not reach to the highly silicified core of the breccia pipe which occurs surrounded by soil at the surface (see plate 3).

The northeast adits penetrate the same kind of breccia as in the south adits, and they are 200 feet northeast of the surface outcrop of siliceous breccia. It appears then, that the breccia pipe may be asymmetrical and elongated northeasterly. The longer northeast adit shows breccia fragments of andesite porphyry and mixed zones of kaolinized and siliceous breccia. However, at the extreme northeast end of the adit, the last 10 feet consist of dacite porphyry breccia fragments. At the lower face of the adit, the bottom 1 foot consists of a massive dacite porphyry intrusive which appears to be one edge of the breccia pipe.

Mineralization in all of the adits, except for the disseminated sphalerite, is completely oxidized material from former sulfides consisting of goethite, jarosite, and minor hematite. Primary sulfides probably were a mixture of pyrite and silver sulfides and, possibly, free gold. As noted on plate 3, all of the rock chip samples taken at the surface were strongly anomalous in silver and gold, but not in lead, zinc, or copper. One sample on the northeast end of the siliceous breccia outcrop contained 15 ounces of silver in a sample which was taken by Mr. Delongchamp.

It does appear that interesting values in gold and silver may be found at depth in and around the breccia pipe. The sulfide zone may be rather deep in this porous breccia but certainly should be encountered within depths of 200 to 400 feet.

50' Au .02
Ag .42
90' Au .025
Ag 1.18

A shallow rotary drill hole was put down in the road along the east side of the siliceous breccia outcrop at a point about 75 feet north of its junction with the main access road south of the breccia pipe. The hole does not appear to be collared within the pipe itself but well within the wall rock. There is no available data on this hole, but it is said to have penetrated some sulfides at depth.

5299 and 5298 Adits (See Plage 9)

The rock type in these adits is difficult to map owing to the widespread brecciation, strong kaolinization, and silicification. The rock generally is considered to be brecciated dacite porphyry, possibly intrusive in origin. However, areas of fine-grained porphyry suggest that some of the rock is extrusive andesite porphyry. The surface rocks in the vicinity were mapped as andesite porphyry because of the fine-grained residual texture. Massive dacite porphyry occurs in the footwall of the 5299 crosscut beneath brecciated rock north of the winze. The nature of this contact could not be ascertained but it is tentatively assumed to be an intrusive one. In the northwest end of the 5299 adit, the last 100-140 feet consist of a volcanic breccia with well-rounded rhyolite, basalt, and andesite fragments in a fine-grained volcanic matrix. Some boulders are up to 4 feet in diameter. The contact between the two types of breccias is vague. The presence of the massive dacite porphyry at the foot of the adit in this area suggests that perhaps the area is on the edge of a later volcanic vent.

The alteration is similar in type to that of the Dike Tunnel. The breccias consist of the kaolinization matrix with siliceous angular fragments. The massive silicified breccia type is also present (see plate 9). Some areas of massive, silicified, unbrecciated andesite and dacite porphyry also occur.

The mineralization is confined to east-west shear zones and essentially is part of the Dike Tunnel structural zone. Quartz, goethite, jarosite, and minor hematite fill the fractures in the shears. A few tensional fractures crossing the shear zone also are similarly mineralized. All fractures are leached and oxidized.

The low-grade ore found in the open pit does not appear to have extended down to the 5299 level, although some draw points to the pit from the adit level establish the relative positions. The nature of the pit mineralization is not known, but is was probably similar to that mapped in the adits below.

A winze was sunk from the 5299 adit on a wider and stronger zone of silicification (see plate 9). The winze is inaccessible since all the timber is rotted out and nothing is known of the geology therein.

In the 5298 adit, a portion of the same shear zone was stoped from the adit to the surface and for at least 50 feet below it. Since the bottom of the stope is covered by many feet of post-mine slough and muck, there is no good data obtainable. A sample of the portion of a pillar assayed is as follows:

4206-102 0.5% Cu, 0.429 oz. Au, 4.27 oz. Ag

Other Mine Workings

a. Christensen Shaft

No detailed work was done on this shaft. The shaft extends to the 165-foot level and a sump of unknown depth below is filled with water to within 20 feet of the 165-foot level. The shaft timber is in good shape. The wall rock, a dacite porphyry, is intensely silicified, vuggy, and brecciated. The width of the altered and mineralized zone is not fully disclosed by the workings.

Examination of the pillars and the ends of the stopes disclosed that there is abundant, fine-grained, disseminated pyrite with sparse ruby silver and other silver sulfides present in the silicified rock. Assays of samples taken several years ago by Duval Corporation personnel showed up to 15 oz. of silver at several sample sites. The ore is heavily oxidized to about 100 feet and much less so to the 165-foot level. The gross ore shoot, as defined by stoping, is about 70 feet east-west to 130 feet or more in depth and averages about 5 feet wide. About 60 percent of the ore shoot has been mined out and the remaining 40 percent is of lower grade.

b. South Tunnel

Opposite the Christensen shaft, south of the access road along the far side of the window, an adit extends 120 feet due south into the hill-side in the pre-mineral rock covered by thick basalt flows. The wall rock of the adit is strongly kaolinized and sheared dacite porphyry. The rock is intensely shattered, but not silicified. Fractures have abundant iron staining, largely goethite, over a 70-foot wide zone.

Structure within the zone trends dominantly east-west to N. 50° W. and is roughly parallel to the Dike Tunnel structure trend to the north. Samples were taken as follows:

10' zone, 10' to 20' from portal	0.009 oz. Au	0.07 oz Ag
	(Totally leached and oxidized)	
45' zone, 42' to 87' from portal	0.012 oz. Au	0.41 oz. Ag
	(Totally leached and oxidized)	
20' zone, at 94' from portal	0.038 oz. Au	0.21 oz. Ag
	(Totally leached and oxidized)	

There is evidence that the mineralized zone extends southward beyond the adit, but there are no pre-mineral rocks exposed in this direction.

SUMMARY

The Talapoosa mine is exposed in an erosional east-west window in post-mineral Tertiary basalt and andesitic flows. The property contains multiple mine openings and is located on the hydrothermally altered and mineralized series of earlier Tertiary andesite flows (Kate Peak formation) which have been intruded by a dacite porphyry mass. The altered mineralized zone (3,200+ feet long and 1,000+ feet wide) is controlled by northeast and east-west shear zones and fault structures, with a breccia pipe and other breccia zones having been formed. Kaolinitic and siliceous alteration pervaded the area along these structures, followed by multiple stages of refracturing and introduction of quartz, pyrite, chalcopyrite, tetrahedrite, proustite, pyrargyrite, several other silver sulfides (not all identified, but argentite is present), and conspicuous free gold. Oxidation and acidic leaching has been very extensive, tending to remove most silver and some gold. Some small remnants of primary ore occur in pillars within tight, silicified zones in stopes containing some of the primary vein matter, which is very high-grade in gold and silver.

The land status picture is favorable, with all of the district being controlled by the owners of the Talapoosa mine. The area of interest is covered by patented and valid unpatented claims.

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CONCLUSIONS

The Talapoosa mine has produced gold and silver from rich, shallow ore shoots with characteristics similar to the ore of the Comstock Lode. These shoots have potential for local expansion both in depth and on strike.

The ore shoots have not yet been explored below the 100-foot depth. The ore mined appears to have been from perched sulfide zones containing slight residual enrichment in through-going structures which are strong and persistent on both strike and dip. The ore shoot of prime interest, that in the Dike Tunnel, is underlain by a completely leached structure in the lower workings. The true primary zone beneath the Dike Tunnel ore shoot or breccia pipe has not been found, but perched unoxidized remnants in the mined area indicate that it may have bonanza characteristics in precious metal content.

The mineralized breccia pipe, also of prime interest, is strongly anomalous in gold and silver at the surface but has never been explored at depth.

Owing to the multiplicity of mineralized structures and their suggested density, some bulk mining potential of low-grade material may prove feasible. There is potential for expanding the district's mineralized zones to the north, south, east, and west and for discovering concealed mineralized structures.

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