

GOLD HILL
DISTRICT

325-3

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Deep Creek Mining Region

R E P O R T O N T H E

CLIFTON AND FERBER MINING DISTRICTS,

and the country adjacent to the proposed

RAILROAD FROM WENDOVER TO GOLD HILL,

Tooele County, Utah,

By

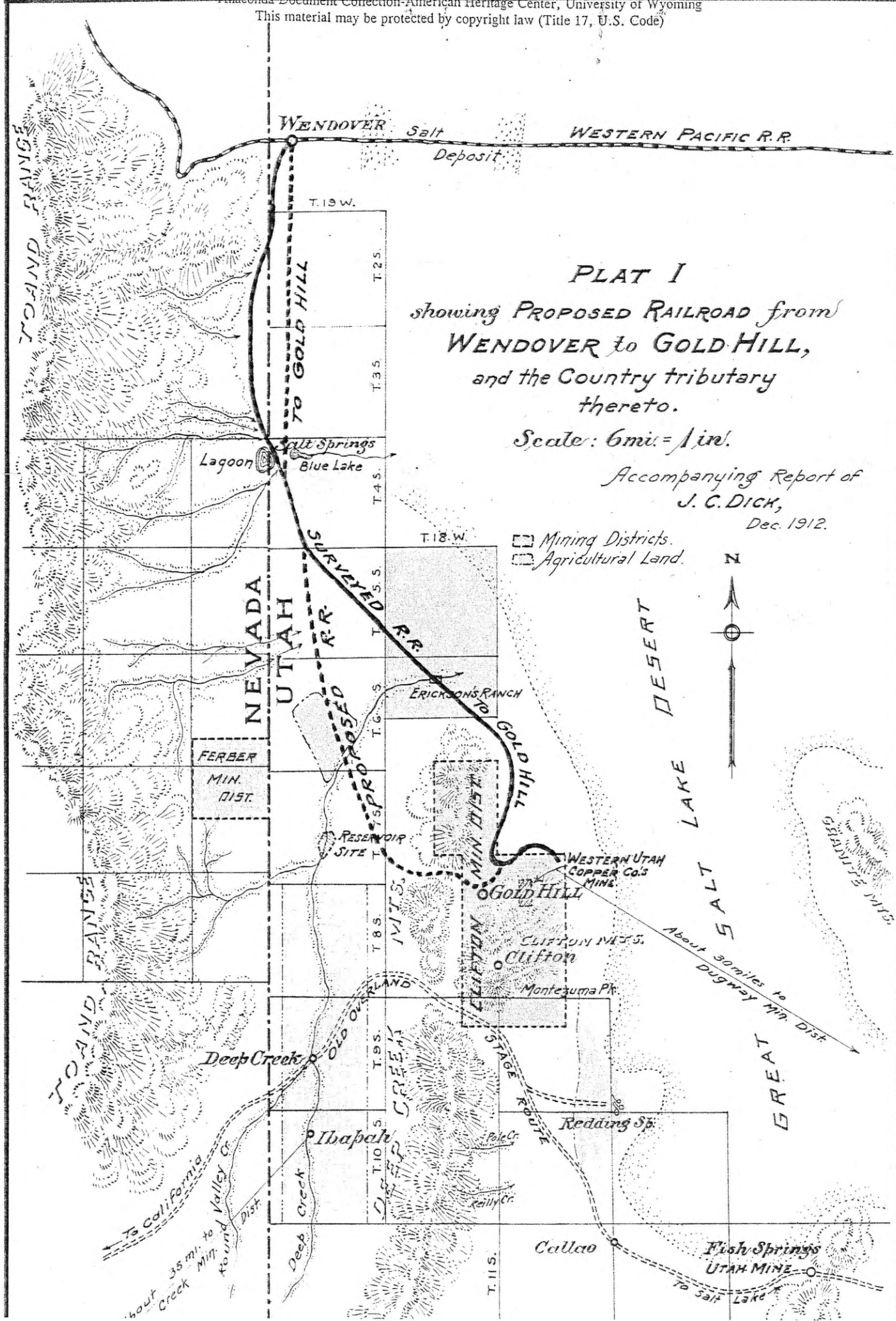
J. C. Dick, E.M.

Salt Lake City,
Utah,
December, 1912.

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PLAT I
showing **PROPOSED RAILROAD** from
WENDOVER to GOLD HILL,
and the **Country tributary**
thereto.

Scale: 6mi. = 1in.

Accompanying Report of
J. C. DICK,
Dec. 1912.

- Mining Districts.
- Agricultural Land.



WENDOVER Salt Deposit WESTERN PACIFIC R.R.

T. 13 W.
T. 2 S.
T. 3 S.
T. 4 S.

NEVADA
UTAH
SURVEYED R.R.

T. 18 W.

FERBER
MIN.
DIST.

ERICKSON'S RANCH

WESTERN UTAH
COPPER CO.'S
MINE
Gold Hill

CLIFTON MIN. DIST.
Clifton

Montezuma Pk.

Deep Creek

OLD OVERLAND

T. 8 S.

T. 9 S.

T. 10 S.

T. 11 S.

Redding Sp.

Callao

Fish Springs
UTAH MINE

TOIYABE RANGE

TOIYABE RANGE

LAKE DESERT

SALT LAKE DESERT

GREAT

To California
about 35 mi. to Valley Cr.
Creek Mt. to Round Valley Cr.
Dist.

About 30 miles to
Dugway Mt. Dist.

To Salt Lake

R E C A P I T U L A T I O N .

In summing up the several features in connection with the proposed railroad, I have no hesitancy in stating that in my opinion, a railroad from Wendover to Gold Hill would be a financial success. How much land could be put under water for agricultural purposes is rather indefinite until the total supply of water is actually determined, however we do know that there would be in excess of 10,000 acres. We also know that perhaps 20,000 acres would be dry farmed.

The Mining Districts are but in a prospective stage, but it is demonstrated that we would have a tonnage from the mines of the District, that would exceed 100,000 tons the first year. These figures I believe would be exceeded during the successive years, as I would anticipate a rapid development of the mineral field.

The railroad can be built and equipped for \$450,000.00. As the country develops the road will undoubtedly be extended southerly and branch lines to other points constructed. On the whole, it is my opinion, that it would prove a very profitable investment.

INTRODUCTION.

My investigation of the Deep Creek country includes a visit to the agricultural lands of the valleys, the location of a reservoir site to impound the flood waters of Deep Creek to be used in irrigating said land, a probable route for a proposed railroad from Wendover on the Western Pacific to the mineral district in question, and a study of the mines and prospects in Clifton and Ferber Mining Districts that lie respectively to the East and West of the Deep Creek Valley, sampling all mines that had ore in sight, and prospects that from geological conditions and ore showing looked favorable for ore deposition of sufficient magnitude to be considered a reasonable source of tonnage to be handled by the proposed road.

Attached hereto are three maps,-

Plat I. A general map of Deep Creek and country adjacent. This was compiled from a larger map of Mr. D. MacVichie, from later surveys in the office of U.S. Surveyor General, and from data obtained in the field.

Plat II. Map of Clifton Mining District. My information was obtained from the same sources as in Plat I.

Plat III. Map of Ferber Mining District, compiled from a claim map of the District obtained from Mr. N. Dunyon, and from information obtained in the field.

DEEP CREEK VALLEY.

This valley lies wholly within the State of Utah, drained by a stream of the same name which rises in the high peaks of the Ibapah Range, and flows northwesterly for six miles

where it joins the stream from the Round Valley and continues North aparalleling the Utah-Nevada State Line for 25 miles, when it turns a little to the northeast, and becomes lost in the sand of the Salt Lake Desert. Its total length is about 50 miles.

The Deep Creek Valley through which it flows for the first 15 miles has an average width of about four miles, having an elevation ranging from 4800 to 5500 feet. This fertile valley was taken up by the Mormon settlers in the early history of Utah, the Overland Stage Route to California passing through it. After the upper fifteen miles the valley narrows and for a distance of six miles the average width is less than 1500 feet. It then wends its way through a narrow gorge cutting through the foot hills at the north end of the Deep Creek Range. There are, in the upper end of the Valley, about 75,000 acres of good agricultural land. Six miles north of this tract where the valley again widens, the ground slopes gently to the foot hills on the West, forming a small plateau some four miles in length and covering about 10,000 acres which is good bench land suitable for agricultural purposes. After leaving this tract the stream cuts through the foot hills. Between the foot hills and the desert there is a strip of land about ten miles in length by five miles wide, through which the creek flows. This tract has deep soil, a gradual slope, and topography ideal for irrigation.

A reservoir site was located up the Creek at a point where the Creek cuts through what is known as "Hogback Ridge". Here with an earthen dam twelve hundred (1200') feet wide and 45 feet high, and at a probable cost of Forty thousand (\$40,000) dollars,

a reservoir could be built to impound the flood waters of Deep Creek that would be sufficient to irrigate 5,000 acres of land.

The water shed of Deep Creek and Round Valley Creek is extensive, I would say probably 500 square miles, yet I could not obtain reliable data on the flow of Deep Creek during the Spring flood season, and therefore further investigation is necessary to determine the amount of water that flows down the Creek annually. The Creek is now flowing about two-second feet. The reservoir site is shown on Plat I, also the agricultural land in blue color. Another tract of desirable land is in the vicinity of Redding Springs. This strip, 2 miles wide and from 12 to 16 miles long, is also shown in blue. An examination of all these lands was made by Professor Merrill, an agriculturalist of high standing, and you are respectfully referred to his report for a detailed study and description thereof.

THE MOUNTAIN RANGES AND THEIR MINERAL RESOURCES.

On the east of the Valley is the Deep Creek Range, on the West the Toand Range, the former in the State of Utah, and the latter in Nevada. The highest mountains of the Deep Creek Range are shown at the southern end of Plat I, and are known as "Ibapah Mountains", the highest peak having an elevation of 12,100 feet. The central portion of the Range is known as the "Clifton Mountains", their highest point Montezuma Peak, being 8,000 feet. The north end of the Range is known as "Dutch Mountain", its highest point being about 8,000 feet. The gap in the range between Clifton and Ibapah

Mountains where the old Overland Stage Line crosses, has an elevation of 5,800 feet, about the same elevation as the gap in the range to the south of Dutch Mountain.

The rock exposed on the Range is principally a granite rock, granodiorite or possibly a monzonite. The Range has an anti-clinal structure and shows intense folding of the strata which overlies this granitic core. The overlying strata being limestone of a dray gray and dark blue color. Also on the eastern flank of the Range are beds of quartzite and shale.

The Toand Range on the West of the Valley is similar in geological structure as that above described. Ancient lake terraces are quite prominent on the flanks of the ranges that face the desert, the most prominent one - the one that can be most easily traced - has an elevation of 4,700 feet. The desert has an elevation of 4,300 feet. These elevations were obtained by barometric readings.

These Ranges are mineral bearing throughout their entire extent. The Clifton and Ferber Mining Districts, 12 miles to the north-west are shown in red on Plat I., and will be taken up later. Other features on the map are the Queen of Sheba Mine, shown near the souther limit of the map. This mine has produced considerable gold. There is a five stamp mill on the property but it is now idle.

Some very promising prospects I understand, are being developed in Pole and Riley Canyons, about ten miles northwest of Callao, but I did not visit these prospects.

The Fish Springs District, in which is located Utah Mine, is located about 12 miles east of Callao. Utah Mine has been a steady producer of lead-silver ores for a great many years. They have a 60 mile wagon haul to the San Pedro Railroad. This long haul necessitates the sorting out for shipment, only their highest grade ore. I visited this District about six years ago. They were then shipping about 50 tons of ore per week. I understand they are shipping at present about 100 tons per month.

The Dugway Mining District is about 30 miles distant from the terminus of the proposed railroad to Gold Hill. I have not recently visited this field, but from my knowledge of two previous visits some six years ago, I believe it to be worthy of consideration, and I append hereto a report on that District by Mr. R.W. Rodgers, in which I believe the statements made on the probable tonnage are conservative. I also append to this report a description of the Muncy Creek Mine in the Silver Creek Mining District which is located about 35 miles south west of Ibapah. This District I have never visited, but like the description of Dugway, it is suggestive of the resources beyond the present terminus of the proposed road.

In the Toand Range to the south of Ibapah about 15 miles, I understand some lead-silver ores are being shipped. I also learned that a shipment had been made from a prospect about 10 miles north of Farber District. Some prospectors are now in there but I did not visit them.

R A I L R O A D.

A railroad has been surveyed and is shown on the map in red color. It will be noted that this survey from Wendover crosses the State Line and is in Nevada for about 10 miles of its length, then recrossing into Utah, passing the Erickson Ranch, and along the east slope of Dutch Mtn. to the Western Utah Copper Company's Mine. This route, I understand from Mr. MacVichie, is 46 miles in length, and as a route from Wendover to the mines I believe this to be the preferable one. However other conditions, such as proximity to the Deep Creek Valley and to the Ferber Mining District, are strong arguments for having the road come up the west side of the Range and cross the Divide at the gap just south of Dutch Mountain. From the topography I judge the grade would be easy on the west side of the Range, but somewhat heavier on the east side, as the descent from the gap in the Range to Gold Hill is 600 feet and the distance 4 miles. However either route is permissible, and from the north end of Dutch Mountain to Wendover, the alignment would be practically straight and the grade very slight, necessitating no costly construction. Mr. MacVichie's figures on the cost of a road from Wendover to Gold Hill, for construction and equipment, \$450,000.00, I believe is fully ample by either route.

Another feature shown on the map, and one that may be of commercial importance, is the Salt Springs, about 20 miles north of Dutch Mountain. There is a flow of water from

the Lagoon and from Blue Lake, of about three-second feet. The water is warm, having a temperature of about 100 degrees, F. and though it contains too much salt for irrigation purposes, it would be excellent for milling ores. Should the Districts herein described develop to the extent of requiring large reduction works, the site and water could be here procured.

THE CLIFTON MINING DISTRICT.

EXTENT.

The District includes the Clifton Mountains and Dutch Mountain, or the northern 14 miles of the Deep Creek Range, more especially the east or desert flank of said Range. It has a highly mineralized surface area of some 13 miles long by 5 miles wide.

HISTORY.

In the early sixties the first discoveries were made. The District was organized in October, 1869, and a lead smelter built at Clifton in 1872. Judging from the slag dump at Clifton there were probably about 1500 tons of ore smelted. In 1874 the smelter was moved about 3 miles north to Gold Hill, and from the slag dump there I would judge 500 tons of ore had been smelted. There are no authentic records of smelting operations available, but suppose the inaccessibility of the location would make it practically impossible to realize profits. Salt Lake City, 130 miles distant, was the nearest market for supplies, and at that time it meant an all wagon haul.

in 1892 an amalgamation plant was built at Gold Hill to treat some gold ores. Also in 1904 a cyanide plant was

erected on the Midas Property. These plants, as the smelters, operated at high cost on account of inaccessibility. During the past 30 years some ores have been shipped to the Salt Lake smelters, but the long wagon haul makes this prohibitive on everything that is not of high grade.

Five years ago the Western Utah Copper Co. spent considerable money with a view of building their own railroad from the mines to the Salt Lake Valley smelters, however this proposition fell through.

At one time a railroad from Tintic, Utah, to the Deep Creek field, was proposed, and at another time a route from Salt Lake to Ely was investigated. These instances have always lent impetus to the development of the Deep Creek Mines, but between the intervals of excitement attending these railroad prospects, the camp has been practically dormant.

There about 300 Patented Mining Claims in the District, and it is estimated 400 claims are held by Possessory Rights of the Locator. Practically no development work is being done on the Patented ground, and only sufficient work on the un-Patented ground to hold the titles.

TOPOGRAPHY.

The slope from the desert up to the mountain ridges is gradual, the foot hills being of about 4500 feet elevation, and the highest peaks, Dutch Mountain and Montezuma, 8,000 feet. Good wagon roads are built to all the principal properties, and with the exception of the north end near the summit of Dutch Mountain which is precipitous and covered with slid rock, the grades to all the properties are easy. There is but little timber on any of the ridges, but considerable Pine about 20 miles distant

in the southern part of the Range. Some five or six springs in the District furnish water for domestic purposes. This supply is not sufficient for any reduction works. The Salt Springs spoken of above, will supply such needs.

GEOLOGY.

The granitic rock which underlies the sedimentaries and is exposed over half the area of the District, is a dark crystalline rock composed principally of feldspar, hornblende, biotite, and some quartz, plagioclase feldspar predominating. However in some localities the alkali feldspars are more prominent, and the rock of a lighter color. It should be classed as a grano-diorite or as a monzonite, probably the former. Overlying this granitic core the sedimentaries of limestone, quartzite and shale show the folding of the strata to have been intense. These beds have been greatly faulted, shattered and broken, so that by the agency of erosion, portions throughout the District show isolated areas of limestone which are merely a capping of shallow depth, while in other portions the limestones are thick and reach to unknown depth, the most massive sedimentaries being on Dutch Mountain and in the western part of the District. The ridge forms an anti-cline and the strata shows a dip conforming thereto, however the great foldings above mentioned have broken the regularity, and ~~xxx~~ dips in all directions are to be observed.

Cutting the formations are a series of dikes chiefly andesite and rhyolite, that trend generally N.S., though a very prominent one about 80 ft. in width with a strike of 40 deg. E. and dipping slightly to the N.W., can be traced from just East

of Montezuma Peak to the N.E. for a distance of 2-1/2 miles, Other dikes are observed with varying courses.

The District is traversed by fissures which strike in all directions. The greater number, I believe, are within the limit of N. 10° E. - S. 10° W., and N. 10° W. S. 10° E. This series seem the stronger and more persistent, there is also a strong fissuring in a N. 40° E. direction, paralleling the dike of the same course mentioned above.

MINERALIZATION AND DEVELOPMENT.

The surface indications of mineral are very good throughout the District. The ore deposits are not confined to fissures as there are generally good ore showings on the lime-porphry contact. The north-south dikes I believe, have had considerable to do with the ore deposition. The field has the appearance of deserted prospects, this is due to the want of railroad facilities. The majority of prospects are shallow but most all have a little ore on the dumps. It was disappointing that I could not get to the bottom of many of the prospects shafts the ladders having rotted so as to be unsafe, yet those that were inspected in nearly all instances showed ore, or conditions sufficiently encouraging to prosecute further development if railroad facilities were procured.

I noted three fair sized deposits of barium sulphate, assaying 75%, not pure enough to be of commercial importance, yet of sufficient magnitude to be of interest. Another interesting deposit near the south end of Dutch

Mountain, was that covering an area of perhaps 300 by 100 feet, of garnet rock, the garnet crystals being from $\frac{1}{2}$ " to 1" in length. The rock carried a little epidote and hornblende as accessory minerals. In the central portion of the District quite a deposit of iron tourmaline of the black variety formed along the contact zone of porphyry and limestone. Two different veins of mica were also noted in the central portion of the District, that was contained within the quartz veins in the granite.

DESCRIPTION OF DIFFERENT PROPERTIES.

Plat II, appended hereto shows the location of some of the most important properties in the District. I visited perhaps 100 shallow shafts or cuts which are not shown on the map, but from which was gained some knowledge of the geology and mineralization. This information I have tried to epitomize in the foregoing general remarks, and shall now describe more in detail some of the most important properties examined.

WESTERN UTAH COPPER COMPANY.

This Company owns 4 different groups of claims, the Gold Hill Group of 10 claims, the Touloume Group of 3 claims, the Calaveras Group of 4 claims, and the Yellow Hammer group of 3 claims. The examination of this property consisted chiefly of checking the assays and tonnages of ore as set forth in the comprehensive report furnished me by Mr. MacVichie. I was also furnished with a full set of assay maps of the different levels of the Gold Hill Mine, located in the north east part of the District.

Gold Hill Mine.

Granite dipping to the northwest forms the top of the ridge on the Gold Hill property. From the central portion of the group proceeding north, the ridge is flanked on the east side by a belt of dark gray limestone dipping East, and overlaid with a strata of quartzite. The limestone on the south end of the property has been eroded. An andesite dike 40 feet wide, striking N. 10° W., and S. 10° E., can be traced throughout the length of the property, and also for two miles further south. It has a slight dip to the West, and has very much shattered the limestone which shows very heavy mineralization, and which forms the outcrop of the copper ore deposits. The dike is on the east side and the granite on the west, thus forming a trough in which the mineralization has been concentrated, the limestone being replaced by copper and iron, thus forming the ore body.

There are the 80, ⁸⁰150, ¹⁵⁰220 and 300 foot Levels. The 80 ft. and the 300 ft. Levels are opened by tunnels from the surface. The 150 and the 220 foot Levels are connected by winzes with the upper and lower tunnels. The largest ore shoot developed extends from the surface to the 150 foot Level, and by winzes for some 25 feet below. The ore body has been fairly well developed on the 150 ft. Level showing a block of ore 210 feet long, and in one place 80 ft. wide. There is only this one cross cut showing the total width.

The 80 foot Level has not been driven in the ore shoot and only intercepts it at what is called "The Gold Stope." The connections from the 150 foot Level to the 220 foot Level, is without the ore snoot. Neither have sufficient raises nor winzes been developed within the shoot to determine its limit.

There is a shaft about 700 feet northwest of the northerly limits of the ore body, sunk to a depth of 60 feet on the lime-granite contact. This shows some fine copper ore, but could not examine its full length on account of no ladderway. I believe that the ore shoot will continue north, the possibilities being good for its continuation some 600 to 800 feet farther.

The tonnage developed I have carefully estimated and think it conservative to place the ore in sight, and probable ore, at 100,000 tons. This was sampled by taking large cuts on either side of the drift and carefully quartering. Samples were taken every 20 feet. The average assay value is 4.52% copper, 3.9 oz. silver, 31¢ in gold. The copper is principally in the form of oxide and carbonate. Analysis of composite sample shows 25% silica, 29% iron, 2.% manganese, and 2.5% lime.

The 220 foot Level has not ~~been~~ developed any quantity of ore. There are about 350 feet of drifting and cross cutting. The dike spoken of above has been cut, and also the fissured zone to the east of the dike. The fissure has some value but no quantity of commercial ore .

The 200 foot Level is driven East from the mouth of the tunnel for 200 feet, here intercepting the fissured zone east of the dike, where some lead ore has been mined. The tunnel was then turned south for 480 feet, and a cross cut driven East 80 feet where the fissure was again intersected. It shows very little mineralization here, but drifting south in the fissure for about 80 feet, an ore body was encountered carrying lead and silver values. Here the fissure was cross cutted showing its width to be 75 feet and mineralized the entire distance. A winze was sunk 40 feet at this point, and a cross cut driven from the bottom. This development in the fissure shows some few hundred tons of commercial ore, and I believe, the prospects are good for finding a larger ore body. The ore developed assays gold 40¢, silver 11.4 oz., lead 15.3%.
The gangue carries a very high excess in iron, this sample running 25% iron and 15% silica.

A shaft 80 feet from the mouth of the tunnel has been sunk from the 300 foot level to the 270 foot. I could not get down this shaft on account of the ladders being unsafe, but understand that development was not sufficient to cut the fissure on the East, nor the dike on the West, cross cuts being driven only a short distance. The work is all in limestone, I am told.

The large tonnage of copper ore developed, with possibilities to the North, combined with the lead ore showing on the 300 foot Level, and the continuation of that fissured zone as seen on the surface and intercepted

on the 220 foot Level, makes the Gold Hill a mine of great resources. With railroad facilities the copper ore should net, at the present prices of the metals, \$7.00 per ton, after paying all mining, freight and smelting charges. The lead ore of the grade mentioned would return about \$6.00 per ton after deducting all charges.

Touloume Group.

The Touloume Group of three (3) claims is located near the south end of Dutch Mountain. On the Tucson Claim there is a shaft of 4 X 6 by perhaps 50 ft. deep, sunk on a quartz fissure. The fissure stands near the vertical and strikes easterly and westerly. I could not get down the shaft but there is a nice copper showing on the surface, About two tons of ore on the dump which I sampled made assay returns of 40g gold, 3.7 oz silver, and 5.38% copper.

About 1500 feet to the northeast of this shaft on the Touloume ~~Group~~ Claim, is a short tunnel 25 feet in length with a winze at the face about 30 feet deep. This work is on a ledge striking easterly and westerly and shows some bunches of copper ore of commercial grade. The ground has merit and should be developed.

The Calaveras Group.

About a mile south of the Calaveras property, there are some strong iron outcrops in the limestone and some nice copper showings along the contact of lime and garnet. These deposits are of the contact metamorphic type, the

workings are all shallow.

The Yellow Hammer Group is located on this zone. The several small shafts and cuts on this property show some copper ore. The surface is very well mineralized and the ground is worthy of development.

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THE CANE SPRINGS GOLD MINING AND MILLING COMPANY.

This Company owns the Cane Springs Group about a half mile southwest of the Gold Hill Post Office, the Alvarado Group located three quarters of a mile north of the Gold Hill Mine, and the Frankie Claim, adjoining the Calaveras Claim on the northeast

Alvarado Group.

A fissure cuts through the Alvarado ground close to and in places coincident with, the lime grano-diorite contact, being the same as previously mentioned in the Gold Hill Mine. An incline shaft has been sunk to a depth of 200 feet on the fissure which strikes in a south-westerly direction, and dips at an angle of 60° N.E. Drifts have been run in either direction from the incline at intervals of 50 feet, the vein averaging 4 ft. in width, has been stoped from the 200 ft. Level to the surface, the ore shoot being continuous and about 150 ft. long. Very little prospecting has been done outside of this ore body. Some sulphide ore carrying good copper values show on the 200 ft. Level, which is suggestive of a sulphide deposit at greater depth.

The ore is lime spar and the tonnage in sight estimated at 2,000 tons of low grade, averaging about \$4.00 per ton in gold, and 20¢ silver. Some rich specimens are still found on the wall, and the ore previously milled was undoubtedly of good grade.

The Cane Springs Mine.

Formation on the Cane Springs is lime and diorite, with a fissure striking northwesterly, and dipping to the northeast. The fissure is in the limestone and can be traced southeasterly for 1,000 feet, and I believe the same fissure continues southeast through the Dunyon property and beyond. The mine is developed by tunnels and an incline shaft 150 ft. deep. The ore has been stoped out and the old workings caved.

The vein is about four feet wide. It is a lime spar and but very little ore of commercial grade is in sight. The values are principally gold, assaying about \$3.50 per ton, with some little showing of copper. The property looks favorable for further development.

The ore mined from the Alvarado and Cane Springs 20 years ago was treated by the amalgamation process, using a Crawford Mill. The mill buildings stand on the northeast end of the property. The machinery has been removed and the buildings are rather delapidated. I understand the mill was operated for two years, and that the heads ran \$18.00 per ton. Judging from the size of the tailings dump there were milled about 15,000 tons. A sample of the tails assayed \$1.20 in gold.

The old smelter moved from Clifton to Cane Springs, spoken of previously, stands near the mill site. There are probably 500 tons of slag on the dump, a sample of which assayed gold .02 oz., silver 4.9 oz., lead 12%, copper 1.43%.

The Frankie Claim.

This Claim has the same geological conditions as the Calaveras Claim described above, and is located on the north end of the same spur. A tunnel has been driven in the fissured zone near the lime-granite contact for a distance of 200 feet. It shows considerable mineralization and near the face are some small bunches of copper ore. The lime has been somewhat garnetized by contact metamorphism. The showing is good and work should be further prosecuted.

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CLAIMS AND PROSPECTS OF THE CLIFTON DISTRICT.

The Wilson Property.

This property is located east of the Frankie and comprises an area of 12 claims, 7 of which are Patented. The formation is massive gray and blue limestone cut by porphyry dikes.

Through the central portion of the group a strong fault fissure trends easterly and westerly, standing nearly vertical. The faulting is strong and shows extensive movement. There are some good iron outcrops on the surface

and considerable work has been done, principally by means of a tunnel. This tunnel was securely fastened with door and padlock which prevented examination. The dump was large, from its size I judge the length of the tunnel must be 300 ft. A sample of some quartz ore in the bins assayed 3.58 oz gold, with .70 oz silver, or a value of about \$72.00 per ton. There was also on the dump two or three tons of ore that contain some tungstein. This was not sampled. Some little lead and copper was visible in the waste dump. From the conditions and ore showings I believe this is a property of considerable merit.

The Blackbird Claim.

About a half a mile south of the Gold Hill Mine, along a zone cut by the same andesite dike that runs through said property, are a series of north-south fissures, upon which have been sunk several shafts from 20 to 40 feet in depth, all having some mineral showing.

A shaft on the Blackbird Claim in this locality, 79 feet deep, has a showing in the bottom of sulphide ore. A general sample was taken of the few tons of ore on the dump. It assayed .015 oz gold, 9.8 oz silver, 5.4% lead, and 0.77% copper. This fissured condition of the granite extends southerly for some distance.

The Success Property.

This is owned by Gardiner, et al., of Salt Lake City, and is located about three miles south-east of Gold Hill. The country is principally granodiorite with porphyry dikes trending northerly and southerly. Fissures coursing north-south, and others with varying strikes and dips, traverse this section of the District. The country is well mineralized and most all the fissures show ore of commercial grade.

The Success incline is sunk on a fissure striking N. 40° W., and dipping to the S.W., on a pitch of 35°. It has a quartz and iron gangue, is 5 ft. wide, and shows strong the entire length of the incline, which is about 150 ft. deep. A sample taken at the bottom of shaft assayed 60% gold, 12.8 oz silver, 2.6% lead, and .51% copper. There are about 40 tons of ore on the dump, a sample of this assayed \$1.80 in gold, 22.6 oz silver, 6.9% lead, and .77% copper. A sample taken of two or three tons of sorted ore on the dump, assays, gold .03 oz., silver 20 oz., lead 62.4%, copper 1.38%. This fissure looks strong at the bottom of the shaft and from appearances, I believe it worthy of development.

The Climax Shaft.

This shaft is located about half a mile southwest of the Success Incline. It has a depth of 200 ft. according to Mr. Rodenhouse, who directed the work. There is about 120 ft. of water in the shaft and I could not inspect it, but I am told that 50 tons of lead ore were shipped during the progress of development, and that

there is a good showing on the 100 ft. Level. It was sunk on an east-west fissure in the diorite. Two or three cuts on said fissure show some nice copper-lead ore.

A shaft 40 ft. deep on a parallel fissure about 400 ft. north of the Climax Shaft, has some good looking ore on the dump. A sample assayed .25 oz gold, 7.4 oz silver, 1.8% lead, 1.54% cu. 200 ft. east of this shaft on the same fissure at its intersection with the north-south fissure are two shallow pits. Sample of ore taken from these pits assayed .02 oz gold, 2.4 oz silver, .6% lead, and 1.18% copper. Fissure showed considerable quartz.
The Copper Queen Claim.

On the Copper Queen Claim about half a mile south of the Climax Shaft, is a highly silicified fractured zone of some 300 ft. in width, paralleling a porphyry dike which strikes N. 10° E. Along this zone were a number of shallow cuts showing copper ore. A general sample assayed 50¢ gold, 7.4 oz silver, 1.8% lead, and 1.54% copper.

Rodenhouse Property.

Continuing southerly from the Copper Queen Claim along the zone mentioned there are a series of east-west fissures which intersect said zone, and at these intersections two shafts have been sunk to a depth of 25 and 30 feet. These are within 100 feet of each other and some good looking quartz was piled on the dump of each of these prospects. A sample assayed as follows,-

Dump No.1	\$1.00	gold,	no silver,	no lead.
Dump No.2	10.60	"	.4 oz "	No.lead.

About 1,000 feet to the southwest of the shafts spoken of above, a sheared zone of some 500 feet long by perhaps 200 feet in width, is quite extensively mineralized. Two shafts sunk to the depth of 40 feet show iron pyrite and some copper sulphide decimated through the altered diorite. The copper content however is low, and though no samples were taken I do not think the decimated mass would run to exceed .5% copper. However further developments may prove a deposit of importance.

The Monocca Claim.

About a mile south of the old town of Clifton is located the Monocca Claim, from which some lead-silver ores were mined in the early days. Several tunnels were driven in the limestone near the top of the ridge, the most of them are now caved. The surface mineralization looks good. A few tons of ore of commercial grade are scattered here and there at the several openings.

Silver King Property.

Surrounding the Monocca Claim is the Silver King Group of some 200 acres. Running through the middle of the property northwesterly and southeasterly, is a lime-granite contact. The limestone is massive, of blue and dark gray color. A series of fissures striking N. 40° E. and dipping slightly to the northwest can be readily traced.

About 300 feet north of the Monocca workings, the Silver King Incline is sunk on a bedding of limestone, striking N. 45° W., and dipping northeast about a 20° pitch.

It is 170 ft. long with a short drift at 10 ft. from the face driven N.W. for 30 ft. The upper 90 feet of incline looks the better. The ore, which is about 2 ft. thick, is a carbonate of copper. A fault at the bottom of the incline cuts off the mineralization, but think the ore would be readily found. Four samples were taken as follows,-

	Gold.	Silver.	Lead.	Copper.
Face of Lower Drift,	.02 oz.	6.3 oz.	2.0%	.87%
Near face of Incline	.00 oz	0.7 oz	0.0%	.97%
Face drift 80' Level	.15 oz	6.8 oz	0.6%	17.20%
In Incline at 40'	.02 oz	9.2 oz	3.5%	9.93%

Owners state they shipped 10 tons of ore from these workings which assayed 50¢ gold, 6 oz silver, 18% copper, and 29% iron.

The Searchlight Shaft is about 800 feet easterly from the Silver King Incline, and is sunk 50 feet deep on a fissure in the lime, striking N. 40° E. The vein shows iron and quartz and at 30 feet depth there is some lead carbonate ore, but did not sample it.

About 300 feet southerly from the Searchlight Shaft, a short tunnel has been driven on what is known as the Lion Lode. The work is not extensive but the mineralization looks strong. Samples of the ore assayed,- Gold .02 oz., silver 6.4 oz., lead 19.2%.

The course of the deposit is N.E. and S.W., and seems to be a fissure in the limestone.

Senator Group.

A little to the east of the Searchlight Shaft a limestone granite contact is observed striking N. 35° W. upon which several patented claims are located, covering a contact and lime belt on the west. The lime is very much fractured and mineralized, and there is also considerable mineralization on the contact. The Senator Group is located on this zone about one mile northwest of the Searchlight shaft. It has several shallow cuts and three shafts of from 50 to 70 feet in depth. They all show some ore on the dump, but could not examine the shafts on account of ladders having rotted. From the mineralization and geology I believe this group has merit.

The Confederate Shaft.

The Confederate Claim is one of the oldest in the District. It is located on a fissure striking N. 40° E. and dipping slightly to the N.W. I am told it was this shaft which furnished most of the lead ore for the Clifton Smelter. By dropping rocks I judged its depth at 150 feet. I could not get down on account of no ladder way. It is located near the top of a ridge about 500 feet N.E. of the Searchlight Shaft, and has some few tons of ore piled on the dump, but I did not sample it.

The Red Jacket.

This is another old property from which I understand lead ore was shipped to the Clifton Smelter. It is N.E. of the Confederate. I did not visit it.

The Watson Property.

This group consists of several patented claims located on a fissure in the granite striking about N.40° E. and paralleling the Confederate Fissure at N.W. about 1,000 feet distant. An incline shaft of unknown depth dipping to the West has been sunk on it and some ore extracted and piled on the dump, which has been sorted into two piles. A sample of 5 tons of sorted ore principally galena, assays gold .03 oz., silver 78.8 oz., lead 51.1%. A pile of perhaps 20 tons of iron oxides and lead carbonate ore was also sampled, assaying .03 oz gold, 15.3 oz silver, 10.4% lead. This has a strong surface showing and I believe development would prove it a good shipper.

Tungstein Deposit.

About one mile north of Clifton there is a series of quartz fissures, in the granite upon which ^{is} a shallow pit showing a deposit of tungstein ore. There has been but little development, but the deposit after further exploitation may prove valuable. About five tons of tungstein ore are on the dumps. I did not sample it.

Gerster Prospect.

This prospect is located about a mile N.E. of Montezuma Prak. It is a shallow cut on a fissure in the granite, but the copper ore is of high grade and may develop. A porphyry dike striking N. 40 ° E., having a width of 60 feet, cuts through the granite about 80 feet south of the Gerster cut. This dike can be traced for two miles.

Sherman Tunnel.

About half a mile east of the Gerster Prospect a tunnel is being driven on a fissure striking N. 60° E. and dipping slightly N.W. The ledge is about three feet wide and shows some quartz and lead carbonate. The fissure is strong on the surface and cuts through some small areas of limestone that cap the granite to the N.E. The tunnel is in 20 feet.

Robinson Property.

At the Robinson Group of Claims about a mile south of the Sherman Tunnel, an incline shaft has been sunk in the limestone to a depth of 110 feet, on a fissure striking N. 45° E., and dipping S.E. The fissure approximately parallels a lime-granite contact about 100 feet to the north.

On the 50 ft. Level of the Incline there is a drift which runs S.W. on the vein about 150 feet, and at the bottom of the incline a drift is driven S.W. 100 feet. The drift at the bottom is on the vein but shows very little mineralization. The upper 50 feet of incline, and the 50 foot Level, looks the best. Here the vein is 5 feet wide with 2 feet of fair ore. The best ore in the upper parts of the mine has been sorted and shipped. A general sample from the upper 40 feet of incline, assayed, no gold, 2.4 oz silver, 2.76% copper. Development to date is not encouraging.

Midas Group.

The Company owns four patented claims located in the west half of Sec. 6, T. 9 S., R. 17 W., about one mile

south of Montezuma Peak. The formation is limestone resting on granite and cut by porphyry dikes running N.E. and S.W. The ore occurs in a fissure striking north and dipping east at an angle of 45°. The vein is 4 feet wide and averages \$18.00 per ton. The mine is developed by a tunnel 700 feet in length. There are three ore shoots exposed on the surface. The first one about 200 feet long was faulted at 150 ft. below the surface. This ore has been stoped and milled in a cyanide plant erected on the property. Some prospecting was done to pick up the ore below the fault but without success. The two other ore shoots to the North have been but partially developed. Work was discontinued and the mill dismantled some six years ago after milling about 8,000 tons. The property has merit and will no doubt be further developed.

The Barney Reevy Gulch.

To the west of the Midas about three quarters of a mile in Barney Reevy Gulch, are a number of Patented claims. I understand there are some nice prospects in this canyon. The formation is limestone and diorite with some strong appearing ledges outcropping thereon. I did not examine any of the developments in this part of the District.

Erickson Property.

This group of claims west of Barney Reevy Gulch about three quarters of a mile, are mostly in the granite formation. There is some limestone on the west side of the group. The granite-lime contact running N.50° E. and dipping N.W. on a pitch of 30°. An incline has been sunk on the contact

to a depth of perhaps 100 feet. About five tons of ore are piled on the dump. I sample therefrom assayed, - \$1.80 gold, 9.7 oz. silver, 6.5% lead, .51% copper.

Southerly from this incline about 500 feet, a tunnel has been driven N. 30° E., for a distance of 350 feet on a fissure in the granite. The vein is 18" wide and rather flat, dipping west at an angle of 20°. A sample was taken on the vein at the face of the tunnel which assayed .03 oz. gold, 3.2 oz silver, 1% lead. Some better ore has been sorted from the vein during the progress of development and has been piled on the dump. It samples Gold .03 oz., silver 10.6 oz., lead 12.4%, copper .82%.

Gardiner Property.

This is located in the north end of the District and is known as the Garrison-Monster Group, covering an area of about 500 acres of patented land on the north end of Dutch Mountain. The formation is massive blue limestone resting on a strata of quartzite and over the limestone a bed of shale. The formation is cut with intrusive porphyry, and is quite generously fissured and well mineralized.

In the southwest portion of the group is located the Uncle Sam Incline at an elevation of about 6200 feet. It is sunk 85 feet on a bedding of limestone striking E. & W. and dipping North on a pitch of 20°. Outcrop is strong on surface for 50 feet, the ore shoot raking to the West. The bottom of the incline is a marbleized limestone. There are 40 tons of ore on the dump, 10 tons sorted assay .03 oz gold,

12.7 oz silver, 69.4% lead. 30 tons of second class ore assays, gold a trace, silver 2.3 oz., lead 25.4%.

100 feet north of the Uncle Sam Incline is a small cut showing some nice lead ore in a bedding of blue limestone.

The Monster Incline, about 1,000 feet north of the Uncle Sam, is sunk 100 feet on a vein about 3 feet wide, striking easterly and westerly and dipping south. The walls are well defined and show movement. Near the face of incline a drift driven 30 feet easterly shows some good ore, but at the face of this drift the ore is cut off by a fault running northerly and southerly. There is some good ore along the incline but it is spotted.

About 1500 feet northeast of the Monster Incline is located the Gardiner Incline, sunk to a depth of 80 feet on a fissure striking easterly and westerly, and dipping northerly about 50°. The vein is about 5 feet wide, 2 feet of it showing good lead ore. The best portion of the vein is at a depth of 40 feet. This sampled, trace gold, 3.5 oz silver, 35.8% lead.

To the east of this about 600 feet is the Porphyry Incline, sunk on a lime porphyry contact for about 50 feet. A cross cut was driven through the porphyry and continued in the direction of N. 30° W. for 300 feet through a zone of crushed limestone with tongues of porphyry intruded through it. An incline sunk 40 feet deep on the north side of this zone dips about 50° to the North. This winze has a streak of about 2 feet of good looking ore, some of which

can be sorted and shipped. The 300 ft. cross out of crushed limestone and porphyry is well mineralized with iron oxide, but does not carry any values.

This porphyritic zone continues westerly for 2,000 or 3,000 feet along which are several openings all showing some ore. A bunk house, barn and blacksmith shop are located west of the Porphyry Incline about 1500 feet. About 300 feet west of the bunk house along this fractured zone, a shaft was sunk in the limestone, and at 15 feet in depth entered the porphyry, showing that perhaps the dike is quite extensive and continuous, but does not reach the surface at all places.

Near the camp a long tunnel is driven, cross cutting the formation with a view of intersecting the veins described at the Monster and Uncle Sam Inclines. This tunnel is in 800 feet but has very little mineral shown to date.

The several ore showings at the different cuts leads me to believe that ore bodies will be found on this property with more extensive development, and I believe it will prove a liberal shipper.

The Evans Property.

Southeast of the Uncle Sam Incline about 1,000 feet, the Chester Tunnel is driven S. 20° W. for 200 feet on a fissure. It is driven to intersect an east-west fissure that outcrops some 700 feet to the south. The tunnel has some showings of lead-silver ore but no tonnage

developed. 100 feet south of the tunnel mouth, the Chester Incline is sunk to a depth of 50 feet. The fissure here shows some quartz and looks strong, some high grade silver ore in small bunches was encountered in the development.

200 feet north of the Chester Incline, the Lost Horse shaft 15 feet deep, shows some lead ore. It dips north about 60° striking east-west.

The Royal Tunnel located about 1,000 westerly from the Lost Horse, is driven North, then Easterly 700 feet to face. This follows a small fissure and at 300 feet from the mouth of the tunnel, a winze was sunk 40 feet deep showing some lead ore at the junction of the fissure with the bedding plane. At the face of the tunnel there is also a winze showing some lead ore. Neither of these small deposits of ore were sampled.

The Brewer Property.

The Brewer Group is located southwesterly about three quarters of a mile from the Royal Tunnel. It is developed by a tunnel 100 feet in length, driven along a fissure striking S. 55° W. Fifty feet from the mouth of tunnel a winze is sunk 10 feet deep, and a short drift driven to the northeast from bottom of winze. At the face this shows a cross break running south, and apparently a fissure to the south of the one developed, showing honey combed quartz. The main fissure shows some copper ore, and there are on the dump, about 2 tons that will run 10% copper. I am told this ore runs high in silver, but I did not sample it.

The prospect at the bottom of the winze looks encouraging and I believe further development should be prosecuted.

Spotted Fawn Property.

To the East of the Gardiner Property, about 2 miles, on the east side of Dutch Mountain, is located the Spotted Fawn Group of some 200 acres. The formation is blue limestone with a fissure cutting northerly and southerly. An incline shaft has been sunk to a depth of 50 feet and some stoping done at the bottom. There has been considerable galena ore taken from these workings and there is a nice showing in the bottom of the shaft. 200 feet north of this shaft an incline was sunk to a depth of 60 feet on a pipe of lead ore. The deposit is quite irregular and is small, though the showing justifies further development. This property is owned by a Mr. Murdof, and promises to make a mine upon further developement.

Murdof Copper Property.

To the south of the Spotted Fawn three quarters of a mile, Mr. Murdof owns a group of claims upon which a fissure striking northerly and southerly has some good copper showings, but very little work done. The showing justifies further prospecting.

Darnell Property.

The Darnell Group is located south of the Murdof Property, about a mile. The formation is principally limestone with a lime-granite contact striking easterly and westerly through the south end of the property. To the north of the contact about 100 feet, a shaft 45 ft. in depth is sunk on a fissure striking northerly and southerly, that has a good showing of mineralized vein material. The bottom of the shaft is in heavy oxide of iron, a sample taken across bottom and all four sides, assays gold .02 oz., silver 5.6 oz., no lead.

About 1200 feet northerly from this shaft is one similar, being 50 feet deep and sunk in iron oxide its entire depth. To the north of this second shaft there is a fissure striking northeasterly and southwesterly, upon which there are some good copper showings, and a short tunnel driven to cut the fissure at about a 50 foot depth, has not yet intersected it. I believe this prospect is worthy and should be developed.

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SUMMARY.

Should a railroad be built to Clifton Mining District, the Gold Hill Mine could ship 150 tons of ore

per day, and keep it up for a long period, as they would undoubtedly develop tonnage in country yet unexplored.

The several properties above described, with the exception of the Gold Hill, are all in the prospective stage, and the matter of tonnage indefinite, but I believe after twelve months active development throughout the District, the prospects described, in conjunction with the Gold Hill Mine, would furnish at least 300 tons daily.

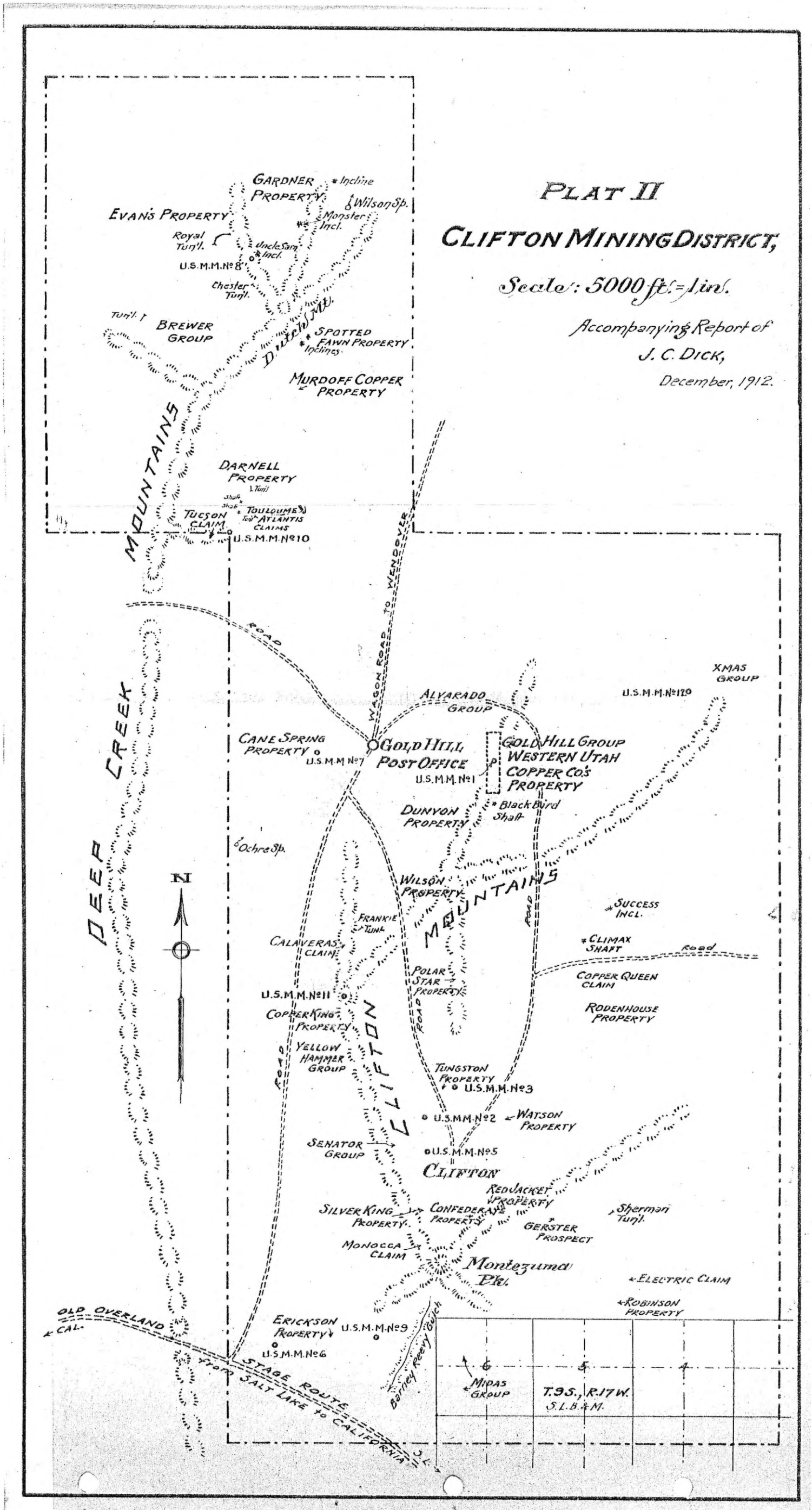
This is based on the fact that for the amount of development work done throughout the District, the ore showings are good, and I am confident that some of the best looking prospects would develop into mines of some magnitude and importance.

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PLAT II
CLIFTON MINING DISTRICT,

Scale: 5000 ft. = 1 in.

Accompanying Report of
 J. C. DICK,
 December, 1912.



T H E F E R B E R M I N I N G
D I S T R I C T .

Location and Extent.

Plat I. shows the location of the Ferber District, about 12 miles due west of the north end of Dutch Mountain. The extent of the more developed portion is shown by a claim map, Plat III., which has platted all the Patented ground, also four other groups which are held by the Possessory Rights of the Locator. There are other prospects to the north and west of those shown on Plat III., but I did not visit them.

Topography.

The ground rises gradually from Deep Creek to the West for one mile, where we enter the mouth of Ferber Canyon, draining East. The canyon is rather narrow for three miles, but after crossing the Nevada State Line it opens into an area of about six square miles of gently sloping ground broken only by a few rounded hills. The elevation of the Districts ranges from between 5700 to 6,000 feet. There are no bold outcrops and a great deal of the area is covered with wash.

Geology.

The same type of igneous rock that covers Clifton Mountains predominates here, grano-diorite overlaid with a belt of limestone that dips to the north. The limestone is of a dark gray color, generally garnetiferous.

and inter-bedded with a dark rock of schistose structure. Diabase, rhyolite and andesite dikes having a course generally N.W. and S.E., cut the formation.

Mineralization.

The mineralization, generally speaking, is along the lime-diorite contact, though some mineralization is confined to fissures and fractured zones.

Most all the ore along the contact is copper ore, and that which makes in fissures within the lime is generally lead ore.

Development of Different Properties.

The Regent Group.

The Regent Group consists of 12 un-Patented Claims owned by Mr. L. Palmer. The principal development is done at the Regent Shaft in the northwest part of the group. It is sunk to a depth of 150 feet on a fissure in the limestone, striking S. 50° E., and dipping slightly to the N.E. On the 30 foot Level there is 40 feet of drifting; on the 50 foot Level, 200 feet of drifting; on the 75 foot Level, a cross cut was driven 15 feet northeasterly to the vein, and then a drift along the vein for 80 feet; on the 150 foot Level a cross cut was driven to the northeast 120 feet, the last 60 feet being in a fissured zone. The walls here are not so well defined, and but little ore was encountered on this level.

There has been some good ore stoped from the upper levels. Four lots of ore have been shipped from the property, totalling 80 tons; average smelter returns show 40% lead, 30 oz silver, with an excess of iron over silica. There are 400 tons of ore on the dump that will average 10% lead, 6 oz. silver, 28% iron, 24% silica.

There are 12 other cuts and shallow shafts on the property, all showing mineralization, assays therefrom show lead ore running 24% lead, with 17 oz silver. This is a very good prospect and should be further developed.
The Chance Copper Group.

Southeast of the Regent Shaft about three quarters of a mile, the Chance Copper Group is located, covering 7 un-Patented claims. The lime-diorite contact passes through the central portion of the group, showings of copper ore are to be observed along its course. A dike of rhyolite porphyry striking N.W. and S.E., cuts the formation it being the same rhyolite dike that ~~was~~ was observed in the Regent Ground.

Three shafts have been sunk in the limestone, a little north of the contact, to depths of 18, 40 and 120 feet. All have some copper showing and some copper ore piled on the dump, but I did not sample it.

Sheridan Group.

To the south and east of the Chance copper Group the Sheridan Property has two shafts sunk to depths of about 50 and 100 feet respectively. This work is in a lime-

stone belt some 600 feet wide, which extends south from the main body. The belt is very heavily mineralized and is garnetized, the deposit due to contact metamorphism and lime replacement. I do not think the lime is very thick here, but the showing is very good, and a pile of 50 tons of good copper ore is on the dump.

Pete Reed Claim.

This is a good prospect to the south of the Sheridan Claims, and is located in the same zone, being a continuation of the same deposit. An incline shaft about 40 feet deep is sunk on a shoot of ore 4 feet wide, and dipping to the south at an angle of 45°. 15 or 20 tons of good copper ore are piled on the dump. I judge it would assay 7% copper.

The Bradley Copper and
Martha Washington Claims.

The same zone mentioned in the Sheridan and Pete Reed properties, extends northerly to the Bradley Copper ground, and easterly along the contact in the Martha Washington Group. Small cuts and shallow shafts are sunk along the contact, all showing some good copper ore. A shaft is sunk on the Martha Washington Claim to a depth of 100 feet. The outcrop is strong, and at a depth of 40 feet in the shaft the ore makes in the bedding of the limestone dipping north.

This zone, covering a length of nearly 5,000 feet and having a width of about 600 feet, should be developed.

I think the possibilities for some good sized ore deposits in this section, are very good.

Sadie D. Property.

This group lies to the north of the Martha Washington, and is owned by Mr. L. Palmer. There are three shafts on the property, 20, 37 and 50 feet deep. They all show some ore, one of them having 2 tons of ore on the dump that will assay \$50.00 in silver. It is rather siliceous and carries but little lead.

The Big Chief, Stone Cabin, and
Great Western Property.

These three groups of claims located east of the Martha Washington, and along the lime diorite contact, are developed by a series of shallow shafts and cuts that show about the same condition, that of heavy iron oxide carrying lead. The deposits make in fissures in the limestone ~~xxxxxx~~ paralleling the contact. From these shallow shafts considerable ore has been mined and piled on the dump. A general sample of some 200 tons, assays 15.1% lead, 1.4 oz silver. It has a heavy iron excess.

There are also three or four hundred tons of low grade ore piled on the dumps of these properties, that I believe could be sorted and a shipping grade procured, as the excess in iron is very high.

Salt Lake Group.

The diorite in the middle of the District seems to mark the center of disturbance of volcanic activity, and the limestone surrounding dips away from this central point.

The Salt Lake Property is in the southern portion of the District on a limestone formation, dipping S. 30° E. The outcrop along the contact is strong for 3,000 feet. An incline shaft 100 feet deep, has been sunk on a shoot of ore that has made in a bedding of the limestone just south of the contact. It has a dip of 30°, but the deposit is irregular. At present the property is being worked under lease and bond. The leasees sorting and shipping the higher grade of ore to Salt Lake smelters. They have in the past two months mined 100 tons of shipping ore that is of sufficiently high grade to stand the wagon haul to Wendover. There is on the dump about 400 tons of ore that will assay 60¢ gold, 5.5 oz silver, 1.3% lead, 3.48% copper. This would all stand shipping if a railroad were built along the proposed route.

There are other cuts and shafts to the west of this that have some nice showings. This property I believe to be the best prospect in the Ferber District, and in my opinion it would prove a liberal shipper for some time to come.

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SUMMARY OF FERBER DISTRICT.

Should a railroad be built to Deep Creek it would stimulate the development of the properties in the Ferber District to the extent of making two or three small mines. Should there be a large tonnage developed in this section a spur 6 miles in length could be built into the heart of

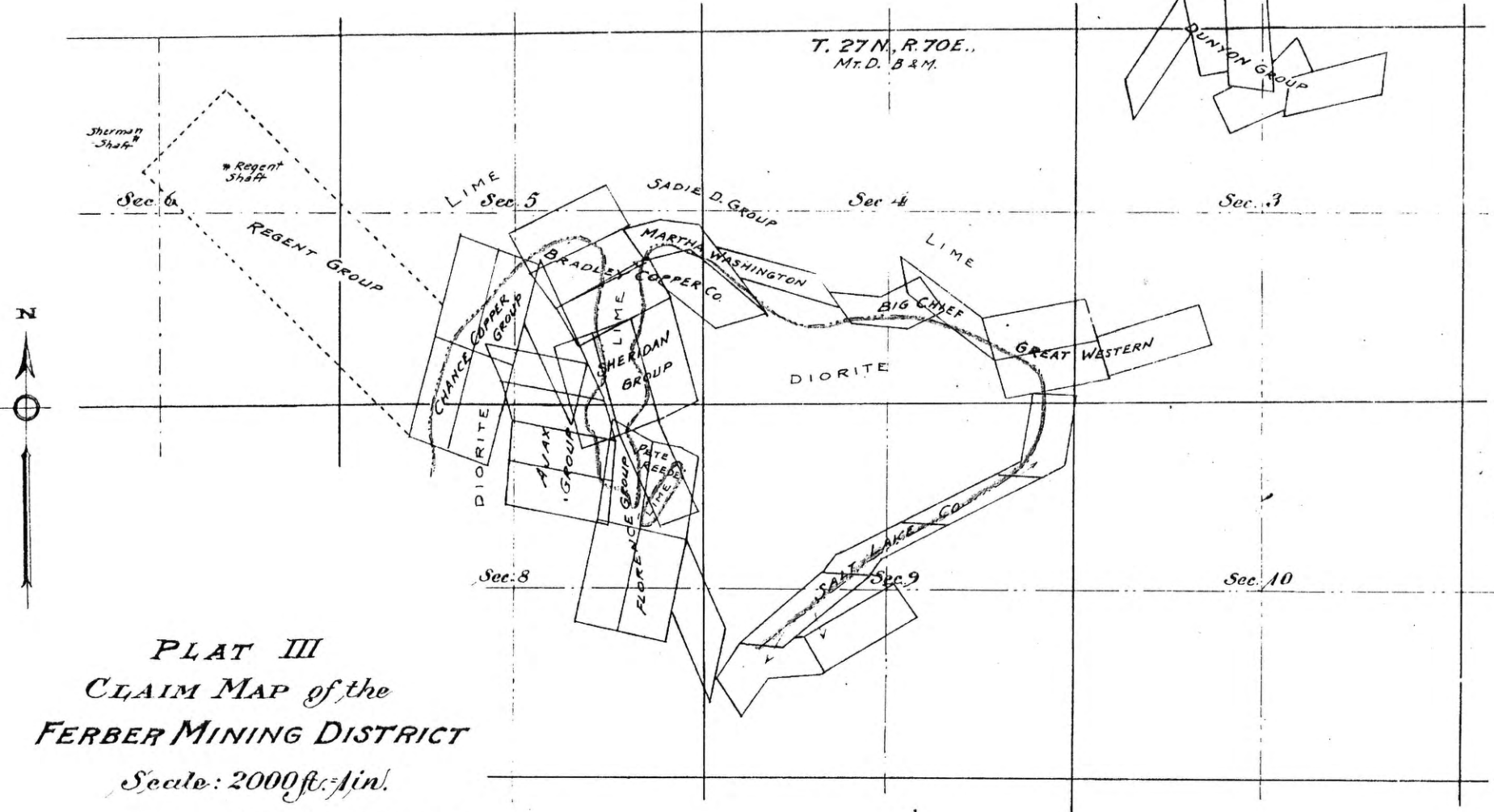
the District at a cost not to exceed \$40,000.00. The alignment would be good and the grade not to exceed 2.5%.

I believe the District would furnish 1,000 tons of ore monthly from the beginning, and would increase rapidly as the properties developed.

Respectfully submitted,

Salt Lake City,
Utah,
December 1912.

T. 27 N., R. 70 E.,
Mt. D. B & M.



PLAT III
CLAIM MAP of the
FERBER MINING DISTRICT
Scale: 2000 ft. = 1 in.
Accompanying Report
of J. C. DICK,
December, 1912.

R E P O R T

on the .

D U G W A Y M I N I N G D I S T R R I C T

in

Juab County, Utah.

by

R.W.Rodgers,

Jan. 5, 1907.

Location.

The Dugway Mining District is situated in the Dugway Mountains in Western Utah. The Range runs in a northwest and southeasterly course, and is from five to ten miles wide by many miles in length. The developed mineral area is at the northern end of the Range and is about two miles by three miles in extent. The Granite Mountains lie to the north of the Dugway Mountains with a pass^{of} about two miles separating them. Some mining is being done on these mountains, and outcrops of mineralized quartz are prominently exposed.

Geology.

The mineralized area consists of bedded limestone lying on partly metamorphosed quartzite. There are evidences of intrusion masses of hard, greenish porphyry occurring both in the limestone and quartzites, but nothing that could be classed as a strong porphyry dyke. In places, the limestones have been partly metamorphosed, taking the appearance of a greenstone. This is most marked in the central and southern part of the District, where strong faulting has also occurred, forming lime-quartzite fault contacts. Another pronounced feature of the District is depressions in the quartzite which narrow to a point as they near the axis of the Range, and widen out as the quartzites become lower and gradually disappear under the lime. These depressions contain a stratified limestone and porphyritic rock in bunches. It is my opinion

that these depressions are in the nature of high troughs in the quartzite that have retained in them part of the overlying lime.

The District is traversed by three distinct series of fissures, the most pronounced having a course of N.37° E. S. 37° W. These fissures practically cut the formation and affect both the limes and quartzites. The next series run practically north and south, and stand practically vertical. Others run northwest and south east. On the lime-quartzite contacts on the strike, the lime has been crushed and broken and is impregnated with iron, oxidized on the surface, but in a sulphide form, at no great depth below the surface. This mineralization is not confined to points where fissures cross but has been proven to exist wherever work has been done to expose the conditions. At points where fissures cross, the mineralization is heavier, and lead, copper, gold and silver are often present in paying quantities- and sometimes of pronounced richness.

In the limes, the deposits - both lead and copper - will, without doubt, prove extensive with development, but from the abundance of iron sulphides, I anticipate that copper will predominate.

Accessibility.

At present the District is reached by a drive of about sixty miles from St. Johns on the San Pedro, Los Angeles & Salt Lake R.R. The Dugway Mountains rise on a gradual slope from the desert level, and teams can drive to almost any of the properties - either from the east or west slope/

Timber and Water.

Timber is now being obtained in the Onaqui Range, about 45 miles east from Dugway. The water supply is limited to sufficient for culinary purposes, and even this has at times to be hauled several miles from the south of Granite Mountain. About 15 miles distant, however, (at Fish Springs) is an unlimited supply, serviceable for power and concentration purposes.

Properties and Development.

The St. George Copper Co.

The property of this Company consists of 16 claims. The lime quartzite contact is covered by this ground for a distance of about 6,000 feet. Two shafts have been sunk and lead and copper ores are developed in both. One shaft is sunk on the contact for about 100 feet, and has ore all the way from the surface. The other is started in the lime, and sunk 250 feet - encountering the contact at this point. A drift has been driven east and west along the contact for about 400 feet, and iron sulphides carrying some copper is exposed along the entire drive. The ore occurs in bunches of clean sulphides, and in disseminated sulphides in the lime. In the west drift, a fissure has been encountered and some fine lead ore exposed, while for several feet the vein carries sufficient lead to make a good milling product. This mine will be a good producer with greater depth and is now in position to mine a small tonnage of shipping ore. The east end of the property which is not yet developed, has a strong N.E. and S.W? fissure crossing, and is very promising ground.

The Black Maria.

This claim, which is one of a group of 8 owned by Angus W. Cannon, has a strong lime-quartzite fissure contact, highly mineralized. Ore has been mined and shipped from this ground, and it would be a producer of shipping ore, with reasonable facilities. The ore is quartz, carrying copper and lead - the ledge being from one to five feet thick.

The Snow Bird.

This claim covers a continuation of the Black Maria Fissure into the quartzite. There is a heavy mineralization of iron, and it would probably develop pay ore with depth.

The Golconda Group.

This group comprises three claims, and covers a lime-quartzite contact. The lime is somewhat latered and the work has been done on a N.E. and S.W. fissure. A shaft is down 100 feet, and about 100 feet of drifting has been done. Rich lead ore in bunches has been uncovered, and the property could produce a small tonnage of shipping ore.

The Bertha Group.

This group comprises six claims and covers a lime quartzite contact. A shaft has been sunk on the Bertha Claim about 100 feet, and drifts have been driven in the lime and along the contact. Some very good lead ore is uncovered, and a large deposit of sulphides. This property would produce some shipping ore, and a good tonnage of

sulphides of profitable grade, with proper smelter facilities.

The Yellow Jacket Group.

This group lies to the southeast of the quartzite and covers part of the lime-quartzite fault contact. Several fissures run through the ground, and a heavy mineralization of iron is contained in the fissure. Bunches of lead carbonates occur in the iron, and the work done has revealed a vein at times as wide as thirty feet. This ground is very promising, and could be put on the producing list with very little work. There is no evidence so far, of sulphide ore, and as the fissures are in the lime, and very strong with lead carbonates and iron, I believe the mine will make a lead producer of importance, with development.

The Buckhorn.

This property lies to the south of the Yellow Jacket Group, and is worthy of special note, in that it has already produced about \$80,000.00 of rich silver ore. At present the property is not being worked, but several people are now developing ground adjacent, and it will no doubt revive its reputation as a producer in the near future.

The Big Four Group.

This group comprises five claims, and covers the lime-quartzite contact for about two thousand feet. A shaft has been sunk 100 feet on the contact, showing iron with some copper all the way down. A tunnel has been driven in on the crushed lime for about two hundred feet, and uncovers

the lime-quartzite contact at the face. Although no ore of shipping grade has been exposed, the conditions are favorable to the development of ore bodies with more work and something can be expected from this property.

The Four Metals Company.

The group owned by this Company comprises seven claims. The ground lies to the north of and adjoins the Big Four Group. The ore occurs in fissures in the lime and a shaft has been sunk 375 feet, and drifts run out on the fissures. Near the surface, carbonate ores are uncovered, and in the lower work sulphides both of lead and copper - have been developed. About fifty tons of ore are now on the dump, most of it being a shipping grade, and some a high grade lead. This property would produce a steady tonnage of shipping ore.

The Ocean Group.

This group comprises six claims lying to the north of the St. George Copper Company's ground. The ore occurs in fissures in the lime, and a shaft is down 200 feet. The ore is continuous, varying in width from a few inches to three feet, and is an iron sulphide carrying copper, and also a carbonate carrying copper and lead. This is a promising piece of property, and could produce a small tonnage of shipping ore from present development.

The Utahna Goldfield Co.

This Company has ten claims in the quartzite belt. The ore occurs in fissures, there being two of pronounced strength. Some lead ore has been mined and shipped - a shaft

being down about 80 feet. This property would produce from present openings a small tonnage of shipping ore.

The Black Dragon.

This group covers a quartzite-lime contact for about three thousand feet. A shaft is down some distance and iron sulphide ores, carrying some copper, are on the dump. This ore could be handled with favorable smelting facilities.

The Dugway Copper Co.

This Company is operating ground northeast of the Black Dragon, on the same lime belt. They control about four thousand feet of lime-quartzite contact. A shaft is down 200 feet, and drifting on the contact has been carried on for 100 feet. Practically the entire drift has iron sulphide ore carrying copper. The ore ~~xxxxxx~~ occurs as bunches of clean sulphide, and as lime impregnated with sulphides. It would not be difficult to develop a large tonnage of this class of ores, ^{and} with depth I anticipate larger bodies of clean sulphide ore.

The Metallic Hill Group.

This group comprises ten claims and covers part of the lime-quartzite contact. The ore so far developed is in fissures in the quartzite - several of which traverse this ground. Rich lead ore in small seams occurs, and also stringers of high grade copper ore. The property could produce a small tonnage of shipping ore from present openings, and has good possibilities on the lime-quartzite contact where these fissures cross. No development in this direction has been done. (7)

Belcher Mining Co.

This Company has two claims covering a lime-quartzite fault contact. This fault fissure is highly mineralized and has produced considerable shipping ore. Two shafts are down about 100 feet, and some open cut work has been done. This property would, without doubt, produce considerable tonnage of shipping ore.

The Alice Group.

This group comprises six claims, and covers part of the same fault contact as the Blecher Group. Some rich leads are being uncovered, and work on a tunnel along the fault is being prosecuted. This is a promising piece of ground, and could produce a small tonnage of shipping ore from present work.

Numerous other claims and groups have small openings and several show shipping ore in seams of varying thickness. With favorable shipping facilities, these would come in with some tonnage of shipping ore.

The District is in what might be called an early stage of development. It is satisfactory to note that in those places where work is now being done, every foot of development discloses favorable conditions.

SUMMARY.

Of the groups I visited, at least two can be depended on to produce shipping ore. Four groups have already developed sulphide ores that could be handled

under favorable smelting facilities.

The District is barely scratched, so far as development goes, but it is not likely that high grade ore will ever attain large proportions. The permanency of the District will largely depend on the values contained in the sulphide deposits.

Respectfully submitted,-

R.W.Rodgers.

Salt Lake City, Utah,
January - 5 - 1907.

EJG

REPORT ON THE MUNCEY CREEK MINES

SILVER CREEK MINING DISTRICT

WHITE PINE COUNTY,

NEVADA.

By H.C.Parker.

MUNCEY CREEK MINES.

Between the dates of the 9th and 12th of this months I made a superficial examination of the prospects of the Muncey Creek Mines, belonging to Messrs. Bassett and Clayton. This property was examined upon representation of its unusual merit as a copper prospect.

LOCATION.

Muncey and the mining claims of the Muncey Creek Mines are located in the Silver Creek Mining District, White Pine County, Nevada, about thirty five miles northeast of Ely, on the east slope of the Schell Creek Range, and about forty five miles southeast from Cherry Creek via the stage route to Aurum, which runs three times a week. From the McGill smelter over the Schell Creek Mountain road through Kalamazoo and the North Creek Canyon, the property may be reached a part of the year by a drive of about twenty five miles. During the Winter months this road is closed because of snow. The elevation of the principal workings of the mining properties is approximately 7000 feet.

The property of Messrs. Bassett and Clayton which was examined on this trip, consists of three separate groups of mining claims, numbering thirteen locations in all. These separate groups of claims are called; the Armagosa Group consisting of five claims; the Kansas Group of three claims, and the Grand Deposit Group of

five claims.

The armagosa Group of claims known as the Armagosa, Seventy-six Claim No.2, Key West, and Lizzie Lode, are located high upon the mountain at an elevation close to 8,000 feet. The small ore showings on these claims which are exposed at two points on the ground are lead carbonates carrying small values in gold and silver. The outcrops are in an upper belt of gray limestone trending N.E. and S.W. about 400 feet below the contact of the limestone and the eruptive porphyry about, which forms the apex of the Range at this point. The ore occurs in breaks in the limestone. At thr best showing on the ground, on the Armagosa Claim, the ore occurs in a rather enlarged shattered zone and gives promise of opening up favorably with further work. So far, what little ore has been taken out was found in small bunches and streaks, through an iron-lime gangue. This group can be considered only of small value in its present state of development.

KANSAS GROUP.

The Kansas Group of three claims located on a large porphyry dyke and lime contact, covers the southern limits of the property. The group of claims are known as the Kansas, Emma and Petersburg. These claims are on the same dyke as the Grand Deposit Group, but separated from the latter by the property of the Cambrian Copper Co. On the Kansas Group of claims considerable work has been done the greater part of which has been useless. A long tunnel has been driven (upwards to 300 feet) which could hardly

has been driven (upwards 300 feet) which could hardly have been expected to show any results, other than so much work.

At several points within the porphyry and along the contact with the limestone which strikes N.E. and S.W. some good showings of copper ore have been exposed on the Kansas Claim, close to the surface. For the most part the ore is low grade, but surface indications and the work done to date tend to warrant the conclusion that an extensive deposit of this ore may be developed with further work. At the time of my visit to th this property a vertical shaft sunk in the porphyry had reached a depth of 40 feet. About one half of its cross section has been low grade all the way down. With a little greater depth and cross cutting to the N.W. this shaft should show some interesting results.

The extent of the ore showings in the Kansas Group cannot be given with any accuracy at this time.

Apparently the mineralized portion of the porphyry and contact is of considerable width, possibly 100 feet or more, but no definite information as to its length is to be had. It may be found to extend into the Cambrian ground to the N.E. With sufficient work which means considerable, the groups should develop into one of merit. In its present stage it can be considered only as a prospect.

GRAND DEPOSIT GROUP.

On the Grand Deposit Group of five claims known as the Grand Deposit, Grand Central, Sunrise, Protector and Broadside, the largest amount of development work has been done, with the result that the biggest body of ore anywhere showing in the District has been found. The ore development in this group is not extensive in the sense of covering a great area, for the mining work of the group has been confined wholly to the Grand Deposit Claim. On this claim a good ore body has been developed by means of an incline shaft to the depth of 160 feet with cross cuts and drifts in the ore body. By no means has its ore body which occurs in the contact between limestone and porphyry been completely developed to the depth gone, but enough work has been done to show that an ore shoot of some magnitude continues down to the lowest workings. So far as depth is gained, the size of the ore body is increasing. At the bottom of the present workings, which I was unable to examine because of mine caves, the ore body is said to be 66 feet long and about 40 feet wide. The ore shoot dips at a high angle to the S.E..

The ore in the Grand Deposit Claim, so far as developed, is a low grade copper (about three or four per cent), carrying a few ounces of silver and a high per cent of iron. The lowest workings the copper in the ore is in an oxidized state, being in the form of carbonates of the metal. The iron is also completely oxidized and

characteristics of the deposit seem to indicate an extensive leaching of the copper in the ore has taken place. The lowest workings are perfectly dry and the leached condition of the ore is the bottom is quite as extensive as above. A small amount of the ore in the mine is quite a good grade of copper (about ten per cent) and has a total value of approximately \$30.00 per ton. The amount of this high grade ore is not sufficient to make it worth while to try to ~~mine~~ mine it separately under the present condition of transportation by team to the nearest railroad point.

Beside the incline shaft on the Grand Deposit Claim, a vertical two-compartment was sunk to a depth of 90 feet some years ago. Each compartment of the shaft is 4 X 5 feet in the clear and cribbed with native lumber, it being intended for the main working shaft on the property. No connection with the ore body opened by the incline shaft, a distance of about 150 feet has ~~never~~ been made.

Geology.

The geology of the District in the immediate vicinity of the mining prospects is simple. With the eruption of the porphyry formations, considerable faulting and displacement of the original sedimentaries quartzite and limestone took place. Apparently the main break across

the bedding of the limestone formation, resulted in the contact, in which the Grand Deposit ore body occurs. This contact makes the extreme north end of the lower eruptive belt. From this north break the apparent strike of the contact between the porphyry below and the limestone above, is N.E. - S.W., with a dip to the S.E. a broad belt of limestone intervenes, dipping to the N.W. between the lower and upper porphyry belts.

IMPROVEMENTS.

On the Grand Deposit Group and below the main shaft, the following buildings are located,-

- 1 Bunk House $15\frac{1}{2}$ x 56 feet, 2 rooms,
- 1 cook house 15 X 46 feet, kitchen, dining room and 2 bed rooms.
- 1 office and Supt's residence - 6 rooms,
- 1 stone cellar,
- 1 adobe house 13 X 14 feet.

At the Grand Deposit Shaft are the following,-

- 1 building 66 X 39 feet with hoist,
- 1 Blacksmith and carpenter shop 16 X 20 feet.
- 1 stone powder magazine 9 X 10 feet.
- 1 small blacksmith shop,
- 1 gallows frame in good condition,
- 2 ore buckets and hoisting rope.

NATURAL CONDITIONS.

NATURAL CONDITIONS.

The nearest water to the Grand Deposit property is about one mile south at Muncey Creek. In this stream there is plenty of water for mining and milling purposes. Good native timber is to be had in the District, though it is not abundant in the immediate vicinity.

Respectfully submitted,

H.C.Parker.

Salt Lake City,
Feb.28th,1912.

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