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PRINTED: 06-14-2006

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: HERBERT COLLUM

ALTERNATE NAMES:
HELMER-NUTTER GROUP

YAVAPAI COUNTY MILS NUMBER: 304A

LOCATION: TOWNSHIP 12 N RANGE 5 W SECTION 9 QUARTER SE
LATITUDE: N 34DEG 23MIN 18SEC LONGITUDE: W 112DEG 46MIN 38SEC
TOPO MAP NAME: BISMARCK MESA - 7.5 MIN

CURRENT STATUS: DEVEL DEPOSIT

COMMODITY:
LEAD
SILVER
COPPER
GOLD PLACER
VANADIUM

BIBLIOGRAPHY:
USGS BISMARCK MESA QUAD
ADMMR AMERICAN KIRKLAND MINES INC. FILE
ADMMR HELMER-NUTTER GROUP FILE
THE MINE IS ALSO IN SEC. 16

Intra-Company Correspondence

SHATTUCK DENN MINING CORPORATION

and

SUBSIDIARIES

Engineering/Geology Office

Date September 26, 1962

TO: D. M. Kentro

SUBJECT: Herbert Collum Property
Lead-silver-copper prospect in T 12 N, R 5 W, sec. 9 (Weaver Mountains) Yavapai County, Arizona

Summary

The results of geologic mapping and geophysical surveying indicate the extent of mineralization on the Collum property to be limited. It is recommended further exploration on this property be abandoned.

General Statement

The Collum property was initially examined on November 8, 1961, at which time recommendations were made (due to relatively high values in Pb and Ag) to re-examine and map the property--report dated November 28, 1961.

In brief, mineralization on this property consists of lead, silver, and copper in a vein striking northwest and dipping about 40° west. The width of the vein, where exposed in the Collum workings, varies from 2.5 feet to nil. Development work consists of a 50 foot shaft, sunk on the vein, with two drifts to the north--one at the 25 foot level, the other at the bottom of the shaft. The longest drift (bottom level) is some 30 feet long.

Geologic Mapping

A quartz vein that outcrops intermittently for some 1,500 feet north of the Collum shaft was mapped on aerial photos at a scale of 1 inch equals 200 feet. Detailed mapping suggests this structure is not an extension of the shaft vein. Locally weak sulphides occur in the quartz vein. The shaft vein is traceable on the surface for about 300 feet south of the shaft and several test pits and old workings are located along its strike--to the north the vein cannot be traced for more than 50 feet. The quartz vein does not outcrop south of the shaft. In a gross sense the shaft vein and quartz vein are in line and appear to be the same structure.

Geophysical Surveying

A traverse was established along the assumed strike of the shaft vein for 1,500 feet north and 1,500 feet south. At each 400 foot interval, beginning at the shaft, an electromagnetic survey was run across the traverse for about 500 feet east and west. The result of this survey indicated the presence of a weak conductor axis about 200 feet west of and parallel to the shaft and quartz veins. A second, more precise, survey was run over the strongest parts of this axis. The second survey indicated the conductor to be weak.

Conclusions

Based upon results obtained from geologic mapping and geophysical surveying it appears unlikely the mineralization on the Collum property has any appreciable strike length or width.

It therefore is recommended our company incur no further expense on this property.

Robert G. Raabe
Geologist

Intra-Company Correspondence

SHATTUCK DENN MINING CORPORATION

and

SUBSIDIARIES

Engineering/Geology .....Office

Date November 28, 1961 Johnson

TO: D. M. Kentro

SUBJECT: Herbert Collum Property
Copper-lead-silver prospect
Yavapai County, Arizona

On November 8, 1961 a copper-lead-silver property was examined near the northern end of the Weaver Mountains in T 12 N, R 5 W, section 9, Yavapai County, Arizona.

Mr. Herbert Collum, 515 East Sheldon, Prescott, Arizona, holds this property by annual assessment work. The property consists of 4 claims 2 of which are unrecorded.

The Collum property is reached via a dirt road on the Square M Ranch. The entrance to the Square M Ranch is marked on the highway between Kirkland and Kirland Junction, Arizona

Development work and sampling

The ore zone is defined by a northwest trending fault in which copper and lead mineralization occur in widths averaging about 2 feet to nil.

Development work examined consists of a 35 foot inclined (55°) shaft with a 12 foot drift to the northeast at the 25 foot level. The shaft has been sunk in the fault plane. A gobbed stope, on the 15 foot level, northeast from the shaft is inaccessible--the length is not known.

Three samples were cut in the ore zone on the 25 foot level, the results of which are tabulated below:

	width	Au	Ag	Pb	Cu
5.0' from shaft	2.3'	0.02	3.0	11.6	2.65
7.0' " "	2.0'	0.04	7.2	14.2	8.25
10.0' " "	2.5'	0.08	18.9	40.6	5.5
A sample from the ore bin.....		0.06	6.8	21.1	8.2
A fifth sample from the dump said to be country rock assayed.....		0.01	1.4	13.8	1.15

Due to the encouraging assay of the "country rock" Mr. Collum was asked to bring in more of this rock type for further examination and assay. The assay results of six "country rock" samples brought to the Iron King Mine by Mr. Collum assayed as follows:

	Au	Ag	Pb	Cu
#1	0.06	tr	16.0	0.16
#2	0.02	0.4	9.7	0.18
#3	0.06	4.1	13.0	1.72
#4	0.04	17.2	23.0	0.12
#5	0.03	tr	20.0	0.16
#6	0.05	6.2	13.6	1.16

A mineralogical examination of the above rocks indicates the lead mineral is cerussite, a carbonate of lead.

Conclusions and recommendations

It is recommended this property be re-examined and mapped to determine the extent of the lead carbonate zone. It is probable the zone will not be exceptionally large and closely associated with the copper-lead vein. It is probable the lead has been leached from the vein and precipitated nearby (in footwall and or hangingwall) as a carbonate. Perhaps the combination of the copper-lead vein with an associated lead carbonate zone may define an economic width.

Robert G. Raabe

LAST HOPE

Yavapai County
Big Bug District

See: HELMER-NUTTER GROUP, Yavapai County (file)

See: C.S. (Chuck) BARNES (card)

BARNES, C.S. (Chuck)
Western Exploration Inc.
1343 East Winter Drive
Phoenix, Arizona 85020
Phone: 943-5363

KP WR 10/5/79: Mr. Sig Palm, Recreation Lands Staffman, Prescott National Forest, reported Mr. Barnes is erecting his dredge on the Big Bug Creek.

KAP WR 10/17/79: Larry Chantler, 357 Park, Prescott, Arizona 86301, phone 445-8874, reported he works for Nuclear Dynamics. He also reported that Chuck Barnes' placer gold dredging operation on Big Bug Creek is on claims called the LAST HOPE and adjacent patented ground.

JOHNSON MINE

YAVAPAI

Accompanied Walt Rogers to the Johnson mine about 7 miles SW of Kirkland. Here he has 2 men who have driven 236 feet of x-cut. In approximately 60 additional feet the vein should be intersected about 16 feet below the shaft bottom; however, the cross-cut will need to be turned 5° to the NE to be directly under the shaft.
GW WR 1/14/75

[redacted]

PAY DIRT for February 24, 1975

[redacted] no activity.

JOHNSON MINE YAVAPAI

Went with Walter Rogers, Congress, to the Johnson Pb-Ag prospect about 6 miles west of Kirkland in Sec. 9, T12N, R5W. Here a narrow (1-2 ft.) shear zone in medium grained granite is mineralized in spots. Two inclined shafts about 50 feet deep show from 1-2½ ft. of oxide minerals of Fe, Mn, Cu & Pb. The structure strikes N25-40W and dips 45°W. The 2 shafts are about 200 feet apart and the north one has a small stope about 25 feet long off the north side. The south shaft is inaccessible. This occurrence is in the northern foothills of the Weaver Mts. where the medium grained granite crops out over several square miles and forms rolling hills of 50 to 100 feet of relief. Mr. Rogers was advised to clean out the loose muck in the bottom of thenorth shaft and sample the stope. If the sampling was favorable to begin mining. Later to drill at least 3 angle core holes about 200 feet apart into the zone from the surface.
GW WR 8/6/74

Went to the Johnson mine with WalterRogers. The inclined shaft has been cleaned out to the bottom, 44 ft. and the north drift is now being mucked out; it is 42 feet long. At 27 feet from the shaft a 10 foot raise goes up to a short level above and also at this point there is a winze partially filled with muck, it also contains water. At the foot of the raise the vein or shear zone has widened.to about 3 ft. and contains several highly mineralized streaks; a sample was taken here. Due to Mr. Rogers wanting to start a x-cut from the foot of the hill below the shaft the mine and the subject area was surveyed by Brunton and tape. The shaft inclines at 55° and the hill slopes in the same direction, west, but at 11° so that a x-cut will need to be 297 ft. long to intersect the vein 26 ft. below the shaft bottom. There is room to do this and Mr. Rogers said he would begin the x-cut immediately. GW WR 9/18/74

Went with Walter Rogers to the Johnson mine about 6 miles SW of Kirkland. Here some 400 feet north of the shaft Mr. Rogers has sunk an inclined hole along the strike of a 4" to 12" quartz vein in granite. This structure which is a shear zone up to 4' wide strikes S50°E and dips west at about 35°. The vein may or may not be the "old" one. The cross cut from west of the "old" shaft lacks approximately 170 feet from intersecting the vein. Mr. Rogers said a Bobcat loader had been ordered and on its arrival he will again continue the cross cut which should cut the vein some 60 feet below the outcrop and also cut the "new" vein. GW WR 12/4/74

SW

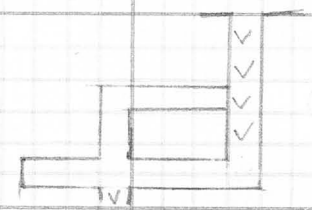
1" = 40'
9/18/74

Wash

Fe dike

NE

Cross Section



Longi. Section

DEPARTMENT OF MINERAL RESOURCES
State of Arizona
MINE OWNER'S REPORT

Date 8/6/74

1. Mine: Johnson
2. Location: Sec. 9 Twp. 12N Range 5W Nearest Town Kirkland Distance 6 mi
   Direction East Nearest R.R. Santa Fe Distance ~
   Road Conditions 2 mi paved, 4 mi poor trail.
3. Mining District and County: Yavapai County
4. Former Name of Mine:
5. Owner: Wm. Johnson attorney
   Address: Grants Pass, Ore
6. Operator: Walter Rogers
   Address: Congress, Az.
7. Principal Minerals: Pb, Ag, Cu
8. Number of Claims: Lode ..... Patented ..... Unpatented 51
   Placer ..... Patented ..... Unpatented .....
9. Type of Surrounding Terrain: Rolling hills of granite at North end of the Weaver Mtns.
10. Geology and Mineralization: Spotty ore Pb-Ag ore occurs in a 2' shear zone in medium grained granite. Strikes N25-40°W & dips W@ 45°. Probably 3 tons of ore stockpiled at shaft said to assay 50-70% Pb + 7-20 oz Ag/T. these figures appear hi. The previous production was doubtless carefully hand sorted.
11. Dimension and Value of Ore Body: Zone traceable on surface for approx 300'

Please give as complete information as possible and attach copies of engineer's reports, shipment returns, maps, etc. if you wish to have them available in this Department's files for inspection by prospective leasors or buyers.

(over)

12. Ore "Blocked Out" or "In Sight": None.

Ore Probable: few hundred tons at most.

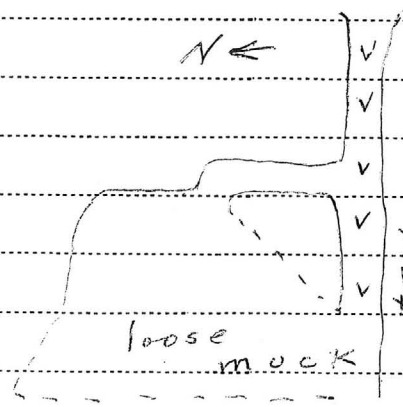
13. Mine Workings—Amount and Condition: in generally good condition

	No.	Feet	Condition
Shafts	2	45-50	North one in fair shape, south one inaccessible
Raises			
Tunnels			5 surface trenches, only 2 expose vein.
Crosscuts		0	
Stopes	1	20' hi x 25' long	some loose muck in bottom; stands well

14. Water Supply: Stock well ¼ mi SE. capacity & depth unknown.

15. Brief History: Mined some 40 yrs. ago by a Ms. Johnson who later opened the lumber yard in Wickenburg.

16. Remarks:



The 2 inclined shafts are approx. 200 ft apart, there are 2 trenches between which expose the vein of oxidized Fe, Mn, Pb & Cu mins. The 3 recent trenches North of the north shaft haven't exposed the zone.

17. If Property for Sale, List Approximate Price and Terms: Shattuck-Denn is reported to have examined this property some yrs. ago.

18. Signature: G walker

HELMER-[illegible]TER GROUP. VANADIUM PROPERTIES,
Yavapai County, Arizona.

Report Of Preliminary Examination.

By Frank R. Wicks,
Consulting Engineer(Mining)

Los Angeles, California.

April, 1927.

General Statement:

This report is prepared from notes taken during a brief preliminary examination. It is, therefore, not as complete in detail as could be desired.

The Helmer-Hutter Group of mining claims will justify extensive sampling, geological study and development.

The present showing are such as to indicate that this group will probably make a producing property of substantial size and value. The ores now in sight will have sufficient market value to carry a large portion of the development expense and the indications are that the property can be placed on a profitable basis within three or four months. Immediate shipment of ore now in sight and conservative development of the property is recommended.

Respectfully submitted.

Signed: Frank R. Wicks.

The Helmer-Hutter Group. Summary Of Report.

Area: 17 lode claims, approximately 325 acres.

Location: 4 miles easterly from Kirkland, Arizona.

Shipping Point: Kirkland on Santa Fe Railroad.

Elevation: About 5,500 feet above sea level.

Road Conditions: Good. Weather Conditions: Good.

Water: For camp use only. Timber: None.

Power: None. Electric power could be had for extensive operations if desired.

Surface Improvements: Nil. Equipment: Small hoist, blacksmith ooutfit. Total development to date, about 600 feet. Deepest shaft, 300 feet, vertical, old work. Present working shaft, 28° incline; 90 feet deep.

Country Rocks: Yavapai schist, granodiorite and granite. Mineralized zone: Rhyolite porphyry, cut by quartz-calcite cross veins.

Some report on AZ Mogg vanadium Book II

Ores: Vanadium minerals predominate, mostly lead-zinc complex vanadates. Also some lead sulphide, with very good silver values and some ore with gold as the principal values.

Ore on dump: 50 to 60 tons, high grade vanadium ore. 150 to 200 tons low grade vanadium ore that could be sorted. Several scattered dumps of vanadium and gold ore in small amounts.

Location and Transportation Conditions:

The Helmer-Nutter Group, as shown by the attached sketch map, comprises seventeen contiguous lode claims, all approximately full size with one exception, representing an irregular shaped group having a total area of about 325 acres. The total length along the strike of the main vein is nearly one and one-half miles.

These properties are situated in the westerly portion of Yavapai County, Arizona, four miles easterly from Kirkland, and in the east portion of the Weaver Mountains.

Kirkland is a station on the Santa Fe Railroad. The road distance is about four miles and the road conditions are quite good. If extensive operations were undertaken, a private siding on the railroad could be arranged between Kirkland and Hillside, which would make the truck haul only about ½ mile to 1½ miles. This could be so arranged at nominal expense. Road construction to any portion of the property can also be easily accomplished. The elevation at the center of the property is approximately 5,500 feet above sea level.

Prescott is the nearest town of importance, 37 miles by the highway. The properties are about two miles westerly from the nearest point on the Prescott-Phoenix highway, with good connecting roads. Climatic conditions are good for all year operations. This section of Arizona does not suffer the extreme heat in summer that is troublesome at lower altitudes.

Water for camp use is obtained from a spring on the northerly claim. Water for ore treatment will probably be developed in deeper mining, but not sufficient from the mines, a larger supply could be had within a couple of miles. No timber on the property. Mine timber can be purchased from reserves within the county. Electrice power for large operations could probably be obtained without prohibitive expense on account of extensions of power lines in this section of the State. For immediate operations, however, fuel oil engines would be most suitable.

TITLE.

All of the claims are unpatented, being held by location and annual work under the lode mining laws. The assessment work has been completed to satisfy the requirements of title up to the end of June, 1928. Five of the claims seem to have sufficient work completed at the present time to permit the obtaining of fee title, but there is probably no advantage in procuring patent upon these claims until such time as the remainder of the group is ready.

At the time of examination several claims of the group were held by Emmet Nutter as locator, while the other claims were owned by Mr. J. P. Helmer, and others, but all under option

and lease to M. Nutter. There are no apparent conflicts in property or ownership and the group seems to be so arranged as to be workable without interference with other properties in any way.

Geological Conditions:

The country rocks upon this property and its vicinity are chiefly granodiorite and Yavapai schist in huge alternating bands, having a general northest direction of strike. Relatively small sections of a coarse grained granite and pegmatites occur at irregular intervals.

On the Helmer-Nutter group the Yavapai schist predomina tes, and the schist structure is much broken and intruded by later rocks, with some moderate faulting incident thereto. Passing through the center of five claims which are located end-for-end, there is a well defined rhyolitic porphyry dike, having a nearly vertical dip and an average width of fifteen to twenty feet, although showing considerable variation from place to place. This dike has a direction approximately parallel to the lines of the schist structure, or abouth North 28° East.

Transversely at irregular intervals the rhyolite porphyry is cut and some places slightly faulted by seemingly later intrusions of quartz, and quartz-calcite veins. In a general way this situation is similar to the geological structure at or near many of the mines in Yavapai County, and particularly in the Bradshaw Mountains.

The transverse veins and many portions of the rhyolite dike have been altered, leached and refilled with calcite, quartzite, etc., with more or less alteration of the mineralization, with the result that the main dike has been taken on the appearance of a huge vein structure. Perhaps it would be correct for all practical purposes to consider that upon this property the rhyolite-porphyry is in reality a huge vein having a known length of more than one and one-half miles, and probably a depth of several hundred feet.

The present development work is not sufficient to make it possible to predict whether the permanent ores will be found principally in the main dike structure or in the transverse veins, but it is now evident that large sections of the main dike will be workable and at least two of the cross veins seem to have profitable ores.

Development Work And Ore Showings:

Considering the size of the property the development work completed to date is but little more than a small start on the prospecting of available ground. The ores so far encountered consist of two principal classes. One being a fairly simple ore having low to moderate gold values found mainly on the northerly portion of the properties. The other ores, on the center and southerly portions of the claims, may be described as a mixture of complex vanadium minerals with oxidized lead and zinc minerals containing some silver, all in a calcite gangue.

Near the southerly end of the group, on the First Hope Claim, at a point where the rhyolite is cut by a strong transverse vein, an inclined shaft has been put down by the present owners. This shaft has a length of about 100 feet, dipping 28° to 30° and actually attains a depth below the surface of seventy two feet.

At the base of this incline a cross-cut has been driven as far as the schist wall on one side, exposing a total width of vein structure of twenty-one feet. Some fifty feet westerly from this shaft and on the cross vein a tunnel about thirty feet long has been driven toward the main vein.

All of this work, representing a total length of workings of about 140 to 150 feet was in ore, and out of the development work about fifty or sixty tons of high grade ore was sorted and piled separately, while the remainder was dumped with the waste rock at the mouth of the shaft.

Above the shaft incline along the outcrop of the rhyolite small prospect shafts have shown ore of a similar nature, leading to the conclusion that for at least two or three hundred feet ore may be expected continuously from the surface downward to more than the depth of the present shaft. That the good ores extend beyond these relatively small dimensions both downward and horizontally is believed to be practically certain.

In large spots and lenses in the vein throughout the workings just described, there are segregations of nearly pure vanadinite and descloizite, the first being chloro-vanadate of lead, and the latter a lead-zinc vanadate. These are high grade vanadium minerals. Other combinations of vanadium minerals occur at intervals, displaying an unusual amount of specimen ores of exceptional purity as compared with any deposit of this character in the West. It is from these lenses that the high grade ore now on the dumps was sorted and mined separately. The remainder of the vein shows disseminated minerals of vanadium and lead, with occasional spots of galena, the lead sulphide. Several specimens showed lead carbonate and some zinc carbonate. A sample taken by the owners, representing a channel cut across twenty feet at the bottom of the inclined shaft assayed 3.0% vanadium oxide. Numerous chunks of ore weighing fifty to one hundred pounds were encountered elsewhere in the workings which were almost pure vanadinite.

Several samples have been taken of the sorted ore now on the dump. My own sample assayed 13.7% vanadium oxide and 42% lead, with 39 ounces of silver per ton. Other samples have shown higher percentages of vanadium, possibly due to the difficulty of sampling lump ore of this character. Of this ore, about 30 to 40 tons now remain on the dump, while one shipment of fifteen tons sent to a lead smelting plant netted better than sixty dollars per ton after payment of all smelting and handling charges. In this case payment was made for lead, silver and gold, but no allowance was made for the vanadium value contained.

The waste dump at the inclined shaft contains some low grade ore mixed with the waste rock, which in itself is mostly porphyry with minute impregnations of mineral scattered through. I would estimate that the entire dump would average about one-half of one per cent vanadium oxide or ten pounds per ton of the material. With comparatively easy sorting to remove waste rock the vanadium contents of the remainder could be increased to an average of probably better than one per cent vanadium oxide, thus making a good grade of mill ore.

Samples of the dump crushed and concentrated produced a product containing 18% vanadium oxide, thus calculated as practically pure vanadium mineral, while concentrates from the ore now exposed in the bottom of the shaft showed 15% vanadium oxide. The lower proportion of vanadium in concentrated product in the latter case was no doubt due to a higher proportion of lead sulphide

in the ore, such as might be expected with increased depth.

This dump contains about 400 tons of rock and ore mixed, representing probably an equivalent of 150 to 200 tons of 1% vanadium oxide ore. Such a dump could probably be worked at a profit with a milling plant on the property, but cannot be given an appreciable value until some means of treating it is available. The same is of course true of the smaller dumps at other shafts, and prospect holes along the same vein. They could all be brought to one point for treatment with but little difficulty.

Going northerly along the strike of the main vein on the Hope Claims, taking in a distance of about 2,500 feet from the main inclined shaft, there are nine places where the vein has been exposed either by shallow shafts or open cuts, or by natural erosion. In a shaft near the center of the First Hope Claim, such high grade vanadium ore is exposed. In the others the showing are not so good, but material taken from the vein in each case will show vanadium minerals in panning, while a sample from the winze near the northerly end of the Last Hope Claim shows a little free gold in panning. In this last case the sample is believed to have been taken from the quartzite cross vein rather than from the rhyolite.

Tracing the rhyolite from this point, it is fairly well exposed over the top of a low hill to a point about one thousand feet distant on the first Nessom Claim. Here an old shaft and large dump give evidence of former operations of substantial proportions. This shaft is not now in shape for examination, and it is doubtful whether it could be profitable reconditioned, though this is possible. The work here is said to have been done before railroad transportation was available, which probably true, and the production is said to have been principally gold ore. The dump which probably contains upwards of two thousand tons of material seems to be a mixture of rhyolite and schist. This was not sample by me, but is said to contain some ore that will assay $18.00 to $20.00 per ton in gold. I can readily believe that some milling grade ore might be sorted from it. This shaft is shown to have at least one level driven from it, but whether there are more is not certain, and I was unable to learn whether the horizontal work was driven on an east-west, across the schist or on the rhyolite vein parallel to the schist structure.

Near the northerly end of the properties at an elevation about two hundred feet higher than the old shaft, and apparently on the same rhyolite vein are several places where lead carbonate can be picked out. At this point the vein is quite wide, but the mineralization is confined to streaks or stringers within the vein. This Ore is considerably altered and shows pockets or vugs after galena mineral, so should develop workable value at very nominal depth.

On the outlying claims only location and prospecting work has been done, and the development is therefore limited to a very occasional showing of ore as yet insufficient to be of importance. It should be stated, however, that I did not give these calims very much time during the preliminary examination. Greater importance may be attached to these claims than is evident from the present development work as they cover the east-west veins, which may in reality be more important than the rhyolite structure now considered as the main vein.

Conclusions.

The general situation may be summed up by saying that this Helmer-Nutter Group shows very excellent preliminary development, and

has the present appearance of making a property of substantial proportions and value. Some high grade ore could be shipped at once and a small treatment plant would justify within a very short time, if the development work continues to show low garde ores of about the values so far uncovered. The brief study of the conditions on this group of claims, which I have had the opportunity to make up to this time, has given me the impression that while there may be more apparent importance at present in the vanadium ores now exposed, the prospects for the development and production of silver-lead sulphide ore at moderate depths are likely to prove of greater import as soon as the workings pass below the water level.

It would seem to me that the vanadium ores, which are probably confined mostly within the limits of the Evening View and First Hope Claims, really represent a huge infiltration, or absorption of these minerals from a wide adjoining area, and, therefore, should be considered as a lense having more or less definite limits of not more than one thousand feet in length, and probably not over 100 feet in depth, or only a short distance below the present water level. Within these limits a large tonnage of vanadium ore could exist, and development work indicates that it will be of such quality as to be very profitable in production.

The vanadium ores are more or less complexed with lead and zinc, and they contain fairly good value in silver. There is good reason to believe that below the vanadium ores will be found silver-lead ore, and if the size of the veins continue downward, as they show on the surface, that possible tonnage should be quite large.

Because of the lesser alteration and disturbance toward the northerly end of the property, I am now rather inclined to think that the permanent or sulphide ores will be greater actual value on that end, even though the surface showings are not so good, and there is also some indication that the deeper ores may be limited principally, if not entirely, to the transverse or east-west veins, rather than to the rhyolite structure, in which the vanadium mineralization is most noticeable at present.

I believe the properties have sufficient merit to justify extensive development, during which the ores encountered could be shipped to largely aid in carrying the expense of the work. Perhaps under the right arrangement for handling and marketing the vanadium ore, the work may be made to show a profit from very soon after starting operations.

Before making definite recommendations as to the most advisable plan of development and operations, it would be necessary to have additional sampling and more exact data as to present available ore, faces, etc.

Signed: Frank A. Wicks.