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GEOLOGY AND GEOCHEMICAL SURVEY

CASINO-CANADIAN CREEK PROPERTY

DAWSON RANGE, Y.T.

FOR

CASINO SILVER MINES LTD.

R.J. Cathro, P. Eng.

Nov. 1, 1968

019100

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PHOTOGRAPHS

MAPS

SUMMARY

Casino Silver Mines Ltd. owns a 211 claim property in the Dawson Range, Yukon, some 190 air miles northwest of Whitehorse. This property has been investigated at various times since 1911 for its placer gold and tungsten potential and its silver-lead vein deposits. The first extensive work war carried out by Casino Between 1964 and 1967 exploring the silver-lead veins. During the course of this work, an intriguing copper-molybdenum zone with large tonnage possibilities was indicated. The 1968 program has consisted of a review of all previous work on the property, a geological survey of the limited outcrops, and a geochemical soil survey of the copper-molybdenum zone.

The 1968 work has confirmed that n important mineralized zone is centered on Patton Hill, between the headwaters of Casino and Canadian Creeks. The zone does not outcrop and is only very poorly suggested in the overburden. It is best indicated by strong, well-defined copper and molybdenum soil anomalies about 3500 feet in diameter, a coincident magnetic anomaly, an intense alteration halo, a large iron gossan precipitating from strongly acid groundwater on one side, and a gold-tungsten placer deposit on the other side.

A $150,000.00 program, including 5,000 feet of diamond drilling, is recommended to determine the nature and grade of the mineralization causing the anomalies.

INTRODUCTION

Casino Silver Mines Ltd. owns a 211 claim property in the Dawson Range, Yukon Territory. Between 1964 and 1967, approximately $500,000.00 was spent by Casino in constructing a 140 mile winter road from the Alaska Highway, establishing a trailer camp, and searching for silver-lead vein deposits. The 1968 work was aimed at reassessing the previous data and re-evaluating the potential of the claims for "porphry-type" deposits of copper, molybdenum or tungsten. A geological mapping program and geochemical soil survey were conducted between August 19 and 31 under the writer's direct supervision.

PROPERTY, LOCATION AND ACCESS

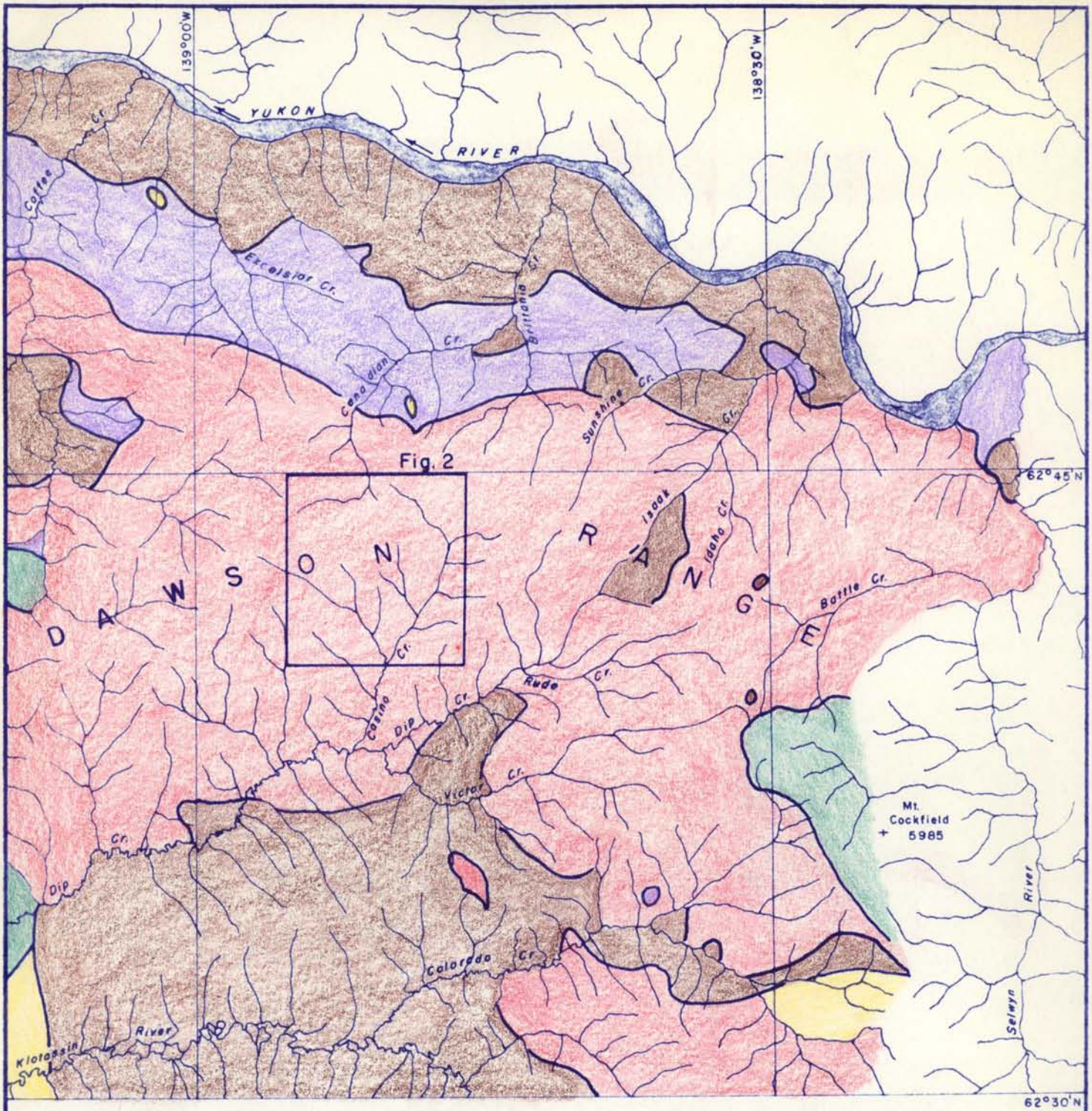
The property comprises 211 unpatented, contiguous mineral claims located on and between the headwaters of Casino and Canadian Creeks. It is some 190 air miles northwest of Whitehorse, at 62°43'N, 138°49'W, within N.T.S. Claim sheet 115-J-10. A 140 mile winter road was built in 1966 from Burwash Landing, on the Alaska Highway. Prior to that, the property was reached by an 18 mile tractor road from the Yukon River. Present access is by air, using an airstrip on the property.

Although the property is somewhat remote at the present time, upgrading of the winter road would bring it within 300 road miles of Whitehorse or 375 miles of the seaport of Haines, Alaska.

HISTORY AND PREVIOUS WORK

The property has had a long and varied history, commencing as a minor gold placer discovery on Canadian Creek in 1911. Four years later tungsten was recognized by the G.S.C. in the placer concentrates. The placer tungsten was investigated in 1941 by Canadian Tungsten Ltd., and Hollinger Exploration Co. Ltd., in 1942 by Bralorne Gold Mines Ltd. and Yuba Consolidated Gold Fields, of California and in 1953 by Tecumseh Petroleums. In 1964, the gold placer potential was studied by C.D.N. Taylor for L.I. Proctor.

The silver-lead veins were discovered about 1936 and staked about 1943. Very little work was done on them until 1963 when Rio Tinto and Yukon Consolidated Gold Corp. bulldozed the Bomber veins. The property was acquired by Casino the following year, 48 tons of hand-cobbed ore were shipped by air in 1965 and 1200 feet of underground exploration began in 1966. Subsequent surface work included 6033 feet of diamond drilling, a geochemical silt survey of the stream drainage, an aeromagnetic survey, 100 miles of linecutting and ground magnetic and EM surveys, extensive bulldozer trenching and ditching, and a small geochemical soil survey. This exploration was directed by C.D.N. Taylor, P. Eng., and by Dr. S.S. Szetu of Cana Exploration Consultants Ltd.



Legend

Tertiary	Carmacks Group	Basalt, Andesite, Dacite, Trachyte flows, Breccia, Tuff.
Mesozoic	Klotassin Batholith	Jurassic or later Granite, Granodiorite, Gabbro
Mesozoic	Mt Nansen Group	Basalt, Andesite, Dacite, Trachyte flows, Breccia, Tuff
Probably Proterozoic	Yukon Group	Granite Gneiss
Probably Proterozoic	Yukon Group	Schists - mainly Quartz & Mica, locally Hornblende & Sericite; minor sheared Conglomerate, Limestone

After G.S.C. Maps –
#1702, Cairnes, 1918, Klotassin
#44-34, Bostock, 1944, Selwyn River.

0 1 2 3 4 5 10 mi.

Regional Geology
DAWSON RANGE, Y.T.
CASINO SILVER MINES LTD.

ARCHER & CATHRO
Consulting Geological Engineers

DATE	10 Sept. 1968
DRAWN	[illegible]
SCALE	1" = 4 mi.

DWG. No. 1.

GEOLOGY

1. Regional- Figure 1 is a compliation of regional mapping by the G.S.C. The Casino property is situated along the north edge of the east-west trending Klotassin Batholith. This intrusive body is presumably related in age (Cretaceous)and origin with the Coast Range Batholith, but since a large area to the south and east has not yet been mapped by the G.S.C., the details of the relationship are unknown. The Klotassin Batholith is probably either the northwest extension, or a smaller satellite stock on the margin of the Coast Range Batholith. In composition it ranges from pyroxenite to granite but is mainly a medium-grained quartz monzonite or granodiorite. Gneissic rocks are also present, suggesting that, in places, the contact between the Klotassin Batholith and metamorphic host rocks may be gradational.

The batholith intrudes metamorphic rocks called the Yukon Group, a widespread unit of Cambrian or Precambrian age which forms the base of the stratigraphic sequence in many parts of the Yukon. The most common rock is quartz-mica schist, with other types of schist, gneiss, amphibolite, impure quartzite, limestone, and conglomerate present in lesser to minor amounts.

The youngest rocks in the district are volcanic flows, feeder dikes, and pyroclastic beds, probably of Tertiary age.

Photo 1- Casino property looking N.W. Patton Hill is immediately behind airstrip with Casino Creek on right and Canadian Creek beyond.

Photo 2- View looking west. Proctor Pass on right side of Patton Hill.

Photo 3- View S.W. showing trenches and ditches on "C" grid. Casino Creek crosses the near side of the grid and is joined by Taylor Creek which heads on Patton Hill.

2. Geomorphology- Because this district has been subjected to very little, if any Pleistocene glaciation, overburden consists of residual weathering products and the present drainage pattern has developed because of local variations in bedrock geology. Because outcrop is so scarce, overburden information is a useful aid to bedrock mapping and, for these reasons, the geomorphology of the property has been given added emphasis.

This district is part of the Yukon Plateau, an area of peneplanation and erosional maturity. Scattered subtle hills on broad mountain ridges are all that now remain of this surface. Continental uplit, and/or deepening of the major river valleys by glaciers, resulted in a rejuvenation of the drainage system and devlopment of the present dendritic pattern. This part of the Yukon is generally considered to have escaped the effects of Pleistocene glaciation, one of the few such areas in Canada. There is evidence of local alpine cirque glaciers on the highest peaks and the general shape of upper Canadian Creek valley and the remarkably thin overburden cover in this and upper Casino Creek valley suggest that a small glacier may have been present on the Casino property. About one mile below the placer workings, the gradient of Canadian Creek increases sharply where it has cut its way down into bedrock to form a canyon, suggesting that the upper portion is a hanging valley and/or that upper Canadian Creek originally drained south through Casino Creek.

The climate in recent times has been both cold and arid. The four nearest measuring stations, Dawson City, Snag, Aishihik, and Carmacks, all have annual mean temperatures between 21° and 24°F and annual precipitation of from 8 to 14 inches, of which slightly less than half falls as snow. The entire region is covered by permafrost.

Under these conditions, chemical decomposition has been negligible except in areas of hydrothermal alteration where it is slightly effective. Erosion has consisted primarily of frost shattering followed by slow downhill creep under the influence of solifluction. Topography is subdued and stream gradients are usually gentle. The intensity and depth of frost shattering has depended largely on the amount of jointing, fracturing, foliation and bedding in the rock. Thus, as a general rule of thumb, areas which have the most outcrop have the least structure or alteration and are least likely to be of economic intersest.

On the Casino property, the crests of the highest hills are composed of castellated outcrops of hard, massive, weakly jointed quartz monzonite (see Photo 4). On Patton Hill, on the other hand, the bedrock consists of quartz-veined and strongly fractured granite cut by dikes. Outcrop is practically absent and the hillsides are covered by coarse slide rock (felsenmeer). (See Photo 5).

On the "C" baseline grid on Casino Creek, outcrop is rare but bedrock is now exposed in bulldozer trenches, ditches, and diamond drill holes. Bedrock varies from areas of relatively hard and unaltered granodiorite to areas which have decomposed "in situ" to granitic sand. In the latter, individual grains in the rock are still unweathered but they are no longer bonded together. The only visible difference in the rock to account for the two types of weathering appears to be in the degree of fracturing, veining, and hydrothermal alteration.

A similar decomposed area may be present in the vicinity of the Canadian Creek placer deposit. Old placer reports indicated that a 40 foot shaft and rill holes up to 80 feet deep did not intersect bedrock, although a distinctive brownish yellow to rusy red limonitic layer was noted in all the reports. In the placer drill logs, this was described as a "brown sandy clay". This zone was usually about 8 to 10 feet below surface and was underlain in the drill holes by sand and fine angular rocks. Taylor pointed out that this hardpan layer probably rested on bedrock, which, because it was decomposed and soft, had not been recognized.

Large, tabular to sub-angular boulders of hard, unaltered granodiorite are common everywhere on the propery and give a misleading impression of bedrock geology. Through solifluction these blocks can travel

Photo 4- Castellated granitic outcrops and talus on the S.W. side of Patton Hill. Mount Meloy is in the distance.

Photo 5- "C" grid looking down Taylor Creek from Patton Hill. Note the felsenmeer in the foreground and the transported limonite gossan along Taylor Creek.

great distances from their source, even on gentle slopes. Although the overburden is permanently frozen, it is remarkably mobile. In one locale, broken bedrock moved over 50 feet horizontally on a slope of less than 10° before reaching surface through 8 feet of overburden.

3. Mineralization

Although the property is well mineralized, only the lead-zinc-silver veins have been found in place and much of the information is based on weathering products seen in talus and in the placer workings. The various types of mineralization are described separately below.

Lead-Zinc-Silver- Argentiferous galena and sphalerite occur in northwest-trending quartz veins. Chalcopyrite, pyrite and barite are minor constituents. A 48 ton hand sorted shipment from the Bomber veins in 1965 assayed 161 ozs/ton silver and 68% lead while the two best mineralized sections in the Bomber adit assayed 48.4 ton silver, 31.3% lead, and 8.8% zinc across 1.4 foot width for a length of 40 feet, and 37.1 oz/ton silver, 18.2% lead, 9.3% zinc and 2.2% copper across a 1.6 foot width for a length of 80 feet . Two parallel veins explored by a crosscut assayed 8.7 ozs/ton silver, 2.0% lead, 1.1% zinc and 0.7% copper across a 7 foot width, and

9.0 ozs/ton silver, and 6.8% lead, 3.6% zinc, and 0.3% copper across a 1.5 foot width. Several other veins elsewhere on the property gave similar assays although the silver content of the lead tended to be lower in places. The best veins were found north and south of the Bomber adit, in the Helicopter claim area, and on the "C" grid near Casino Creek. Although the vein faults are strong and continuous, and the silver content of the lead is relatively high, the mineralized lenses tend to be erratic in distribution and too narrow to warrant further exploration at this time.

Copper-Molybdenum- Copper was first recognized in significant amounts as extremely high silt sample assays in 1966. The anomaly extended over a length of two miles on Casino Creek below its headwaters, and on its tributary, Taylor Creek. H. Grant Harper found copper mineralization in float near the headwaters of Casino Creek in 1967. Most of this consists of finely disseminated malachite in altered, dark feldspar porphyry, a sample of which assayed 0.22% copper. A few flecks of chalcopyrite were seen and a specimen of diorite assayed 0.53% copper. Diamond drilling in the "C" grid area cut narrow pyritic alteration zones containing minor amounts of chalcopyrite.

A large transported gossan follows Taylor Creek for

a length of 2200 feet upstream from Casino Creek. It averages 100 feet wide and 10 to 15 feet thick and consists of stream gravels cemented by brown limonite. The gossan contains only minor amounts of copper, lead, or zinc, and diamond drill holes through it proved that bedrock below is relatively unmineralized and is not the source. The gossan and the copper silt anomaly appear to be derived from a hidden source on Patton Hill.

Molybdenum has been identified in the Canadian Creek placer and in narrow lead-zinc-copper sulfide zones in drill holes on the "C" grid. Assays ranged from 0.013 to 0.026% MoS_2. Bigelow reported in 1953 that molybdenite had been seen in a vein occuring in Canadian Creek below the canyon.

Gold-Tungsten- These metals have only been seen in placer form and are confined to Canadian Creek and Patton Gulch near their junction, on the north slope of Patton Hill.

The gold is sharp and is mostly fine and powdery with a little wire and leaf. Nuggets up to 1/4 inch long were found in the early years. Finesness ranges from 860 to 900. The gold occurs in the upper 10 feet, evely distributed through a brownish yellow to rusty red limonite band, probably just above bedrock.

According to Szetu, a semiquantitative spectrographic analysis made in 1966 of a composite sample of 36 silt samples from Casino Creek assayed 0.03 oz/ton gold.

Tungsten occurs as the mineral ferberite, $FeWO_4$, a member of the wolframite group, with a minor amount of scheelite, $CaWO_4$. It is intimately associated with the gold and a black sand concentrate, which is mostly magnetite. Magnetite pebbles as long as 4 inches have been reported whereas most of the ferberite is less than minus 10 mesh in size. Pure ferberite contains 76.5% WO_3, whereas Canadian Creek samples assayed 64% to 67% WO_3. This indicates that the feberite probably contains some hematite. Hollinger suggested that some of the ferberite might be hydrated, in which case the WO_3 content could drop as low as 54%. Tungsten concentrates containing less than 60% sell at penalty prices.

4. Bedrock Geology

The majority of the Casino claims are underlain by granodiorite and related igneous rocks of the Cretaceous Klotassin Batholith. Strong hydrothermal alteration and weathering effects make field study difficult.

On the north side of Canadian Creek, gneissic texture is common although the exact position has not been differentiated. This probably represents the edge of a gradational contact with Yukon group rocks to the north. On the "B" grid a dike-like body of hornblende-biotite pyroxenite is poorly exposed.

The granodiorite is medium to coarse grained with the hornblende commonly porphyritic. Biotite and nornblende are present in equal amounts. Small xenoliths of fine-grained diorite are common and patches of what are likely layer wallrock fragments have been cut in drill holes.

The geology on Patton Hill is markedly different from that exposed elsewhere. This is quite obvious on surface on the basis of colour and weathering characteristics. Outcrop is virtually absent. The most common rock is a pitted, quartz-sericite mixture with a granitic texture. This is thought to be a quartz-rich, altered intrusive. At least two types of dikes and a series of quartz or pegmatite veins occur. A porphyritic dike occurs on the northeast side of Patton Hill which is occasionally coated with malachite stain. It has a medium grey, aphanitic groundmass and white feldspar phenocrysts. The other dike is poorly exposed and has a dense brownish colour. It was seen in one area on top of Patton Hill and in one trench near the Bomber adit. The vein quartz is associated with muscovite and feldspar.

At the headwaters of Taylor Creek and the transported gossan is a large area of poorly bedded rocks which could be either volcanic or sedimentary in origin. The mineralogy is quartz with sericite or clay and the

texture is fine-grained and definitely clastic. Occasional rounded objects up to 1/4 inch in diameter may be either amygdules or pebbles. One small outcrop of quartz-cobble conglomerate was found.

Hydrothermal alteration is common everywhere on the property except in the castellated outcrop areas on the summits of the higher hills. The alteration exhbits a crude zoning centered about Patton Hill, where a quartz-sericite-pyrite assemblage is most common. On the "C" grid, chlorite becomes more common and the degree of alteration becomess less intense. The G.S.C. described the alteration near the Bomber adit as consisting of clay and calcite and showing no close relationship to the veins.

Although the available data is sketchy and interpretation far from certain, the information points to two stages of igneous activity, one Cretaceous and one Tertiary in age. The mineralization and hydrothermal alteration are probably related to the Tertiary stage, which appears to be related to either a large pendant of older metasediments or Tertiary pyroclastics.

GEOCHEMICAL SURVEY-1968

The sampling program was concentrated in the vicinity of Patton Hill and Proctor Pass, the apparent source of the copper silt anomaly to the south and the gold-tungsten placer to the north. The exisitng geophysical grids were used for control and these were extended somewhat to give additional coverage. Soil development has been very slow in this climate. Above timberline, soil consists of decomposed bedrock with felsenmeer. In the areas covered by vegetation, a thin humus muck layer covers a rocky and organic B horizon. This layer was sampled where possible although permafrost sometimes made this difficult.

A total of 432 samples were taken, of which only a few were silts. The samples were analyzed by Chemex Labs Ltd., North Vancouver, for copper, molybdenum, lead and tungsten using hot acid extraction techniques. Figures 3 to 6 show the contoured results for copper, molybdenum, lead and tungsten, respectively. The assays from the 1966 silt and 1967 soil surveys have been included. The results are discussed separately for the individual metals.

1. Copper- The survey clearly outlined one large, highly anomalous area on the north side of Patton Hill and several small, isolated anomalies near Casino Creek and the upper end of Canadian Creek. The large anomaly is over 2500 feet wide and extends 4000 feet north from the head of Casino and Taylor Creeks to Canadian Creek. It rises abruptly to over 150 ppm from background values of 50

ppm or less, and contains two large areas assaying better than 300 ppm. One of these is closely related to the area of copper bearing felsenmeer which was found at the head of Casino Creek. Copper values within the "C" grid (sampled in 1967) are quite low except for a few isolated assays.

The silt sampling in 1966 gave copper values between 900 and 2400 ppm along the upper 1 1/4 miles of Casino Creek, while values downstream on Casino and on Taylor Creek ranged between 100 and 300 ppm. Anomalous assays were obtained over 2 miles downstream on Casino from its headwaters. Assays on Canadian Creek and Patton Gulch ranged between 75 and 150 ppm, while, as a comparison, values on Meloy Creek below the Bomber Veins were less than 25 ppm. It should be noted here that these were not typical silt samples in that they were collected with a shovel at depths between 1 and 2 feet.

Samples collected by the writer on Taylor Creek above the gossan are of interest. Two water samples assayed 238 and 282 ppm in copper and nil in all other metals. Recently percipitated limonite contains 72 to 225 ppm copper, 39 to 54 ppm lead, 2 to 14 ppm molybdenum, and 5 ppm tungsten. A further 1000 feet upstream, at the headwaters of the creek, two silt samples assayed 117 and 126 ppm copper, 190 and 225 ppm lead, 76 and 80 ppm molybdenum and nil in tungsten, while a water sample assayed 2 ppm copper and nil in all other metals. The

ph of the stream ranges from about 2.6 at the head of the gossan to 4.4, 1000 feet upstream.

2. Molybdenum- One large anomaly was outlined which coincides very closely with the position of the copper anomaly on the north side of Patton Hill. The molybdenum anomaly is shorter and wider, being crudely circular with a diameter of about 3000 feet. The margins of the anomaly are extremely abrupt and molybdenum is perhaps a more definitive metal than copper on the Casino property. Backgound is less than 3 ppm while the anomaly assays higher than 20 ppm and contains large areas assaying over 65 ppm and as high as 450 ppm.

   Unfortunately, the "C" grid samples in 1967 and the 1966 silt samples were not assayed for molybdenum, but the present sampling around the "C" grid gave only background values.

3. Lead- The pattern for lead does not bear any relation to that of copper or molybdenum. Weakly anomalous values were obtained south and west of Patton Hill while several narrow strong anomalies, probably related to veins, were found in 1967 on the "C" grid associated with a slightly higher background. The areas of lead response appear to be peripheral to Patton Hill although the sampling has not extended far in any direction.

   The 1966 silt survey tended to confirm this. Casino and Canadian Creeks assayed between 15 and 75 ppm whereas,

Meloy Creek, draining the Bomber Veins, assayed 800 ppm for half a mile below the adit and above 270 ppm for over a mile downstream.

4. Tungsten- This metal did not produce a clear pattern and does not appear to be a useful indicator on this property. The highest values, 20 ppm or better, are as common away from Patton Hill as near it and the geochemical response does not show any relation to the placer tungsten-gold deposit. Tungsten was not assayed for in 1966 or 1967.
5. Zinc- The 1968 samples were not analyzed for zinc although the 1966 silts and 1967 soils were. Zinc is generally more mobile and less definitive than lead and it tended to occur with the lead in the previous work.

GEOPHYSICAL SURVEY- 1966 & 1967

These consist of an airborne magnetometer survey and ground magnetic and electromagnetic surveys in 1966 and 1967. The airborne survey was flown by Aero Photo Incorporated. Lack of proper ground control made map preparation difficult and the survey was used mainly to outline areas of low magnetic response which were then surveyed on the ground. Figure 7 is a compilation of all ground magnetic surveys conducted by Cana Exploration Consultants Ltd., and Figure 8 if a compilation of the surveys in the Patton Hill-Proctor Pass area at the same scale as the geochemical maps.

Magnetic response was generally quite flat in the areas surveyed except for a northwest trending pyroxenite dike on the "B" grid, two small anomalies at the south end of the "A" grid, and two large magnetic areas in the Patton Hill area. One of these is centered on the copper and molybdenum geochemical anomalies and has a peak response of over 2000 gammas. The other is situated at the northwest corner of the survey area in the bottom of the Canadian Creek valley. There is no outcrop or geochemical response associated with the latter area.

The EM units used were a Sharpe SE-200 and a Ronka EM-16. This survey proved useful in locating and tracing lead-zinc vein faults, more because of their associated fault gouge than their mineralization. However, the EM surveys are of limited value in searching for copper-molybdenum-tungsten deposits.

CONCLUSIONS AND RECOMMENDATIONS

In the course of exploration for silver-lead veins and placer gold and tungsten, an important copper and molybdenum zone has been discovered on the Casino property. This zone does not outcrop and is covered by a thin layer of weathered, frost-fractured and leached bedrock on Patton Hill, between the headwaters of Casino and Canadian Creeks. It is best indicated by a strong geochemical soil anomaly about 3500 feet in diameter, associated with intense hydrothermal alteration and a local magnetic anomaly of over 2000 gammas intensity. The soil anomaly assays over 150 ppm copper with peaks above 300 ppm and a background level of about 50 ppm, and over 20 ppm molybdenum, with peaks above 65 ppm and a background level of less than 3 ppm. Taylor Creek, draining southeast into Casino Creek, is strongly acidic and is depositing a large limonite gossan. Canadian Creek and Patton Gulch, which drain to the north, contain a small but significant gold-tungsten placer deposit. Lead-zinc veins appear to be peripheral to the copper-molybdenum zone.

The source of the geochemical anomalies is probably copper and molybdenum sulfides associated with a Tertiary dike swarm and perhaps a small quartz-rich stock within the Cretaceous Klotassin Batholith. The possibility exists that the area of interest is a roof pendant. Disseminated free gold, ferberite and magnetite are probably associated with

the copper molybdenum zone.

The nature and grade of the deposit can only be determined by diamond drilling. At least six holes will be required, one of which should be at least 1000 feet in length. Since the mineralization may be associated with steeply dipping dikes or veins, the holes should be angled at 45°-50°. From the geochemical results the best section appears to be on Line 28 South ("F" Baseline) between Casino Creek and Patton Gulch. However, an I.P. Survey should be conducted before drilling starts to better define the area of prime interest.

This drill program should begin about the middle of May, as soon as sufficient water is available. Before breakup, the trailer camp should be moved 1.5 miles from its present location beside the Bomber adit to the foot of Patton Hill. Drill equipment and supplies should be flown to the airstrip on skis before breakup. Preparation of drill sites and local transportation of equipment and camp can be accomplished with a D-6 bulldozer now at the property.

Since the initial stream samples were not normal silt samples and were not assayed for molybdenum, the drainage within the claims should be resampled before the overburden is further disrupted by development work. All samples should be assayed for gold, copper, molybdenum and tungsten. This survey should help to determine if other zones of mineralization

similar to that on Patton Hill occur in the area. Any areas of interst should be investigated by reconnaisance soil sampling.

To aid in the geological mapping, a laboratory study of the rock samples collected during 1968 should be conducted during the winter. Emphasis should be on hydrothermal alteration and origin.

If the initial drilling is encouraging, new aerial photgraphs should be taken during the summer and a proper contoured base map should be prepared.

The estimated cost of the next stage of exploration is as follows:

A. Diamond Drilling

Direct Cost- 5000 feet BQ size @ $12.00/foot--------$60,000.00

Indirect

Moving trailer camp----------	5,000.00
Fuel for drill----------	10,000.00
Aircraft transportation of men & supplies-	20,000.00
Bulldozer operation----------	5,000.00
Supervision ----------	10,000.00
Camp Costs ----------	10,000.00
Assaying ----------	5,000.00
	65,000.00

Total drilling cost---- 125,000.00

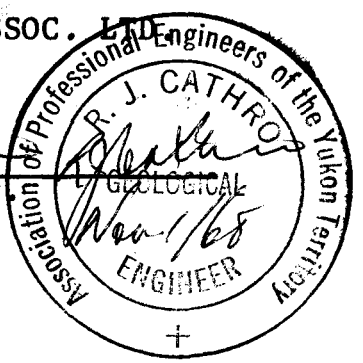
B. Miscellaneous

Induced Polarization Survey	$5,000.00
Laboratory rock study	2,000.00
Silt and soil sampling	3,000.00
Aerial photography and mapping	5,000.00
	15,000.00
Total cost	140,000.00
C. Contingency for drilling problems	10,000.00
Total budget-1969 program	$150,000.00

Respectfully submitted,

ARCHER, CATHRO & ASSOC. LTD.

R.J. Cathro, P. Eng.



Mount Gooding

GOLD-TUNGSTEN PLACER DEPOSIT

TO YUKON RIVER

PROCTOR CREEK

CASINO ROAD

PASS

CANADIAN GULCH CREEK

PATTON CREEK

"C" ZONE

"C" BASELINE

"0" BASELINE

"4" BASELINE

TAYLOR CREEK

LYMAN CREEK

PATTON HILL

Mount Meloy

BOMBER ZONE

Bomber Adit

Camp Creek

AIRSTRIP

HELICOPTER ZONE

HELICOPTER CREEK

MOLOO CREEK

MOLOO ADIT

"E" BASELINE

"B" ZONE

"B" BASELINE

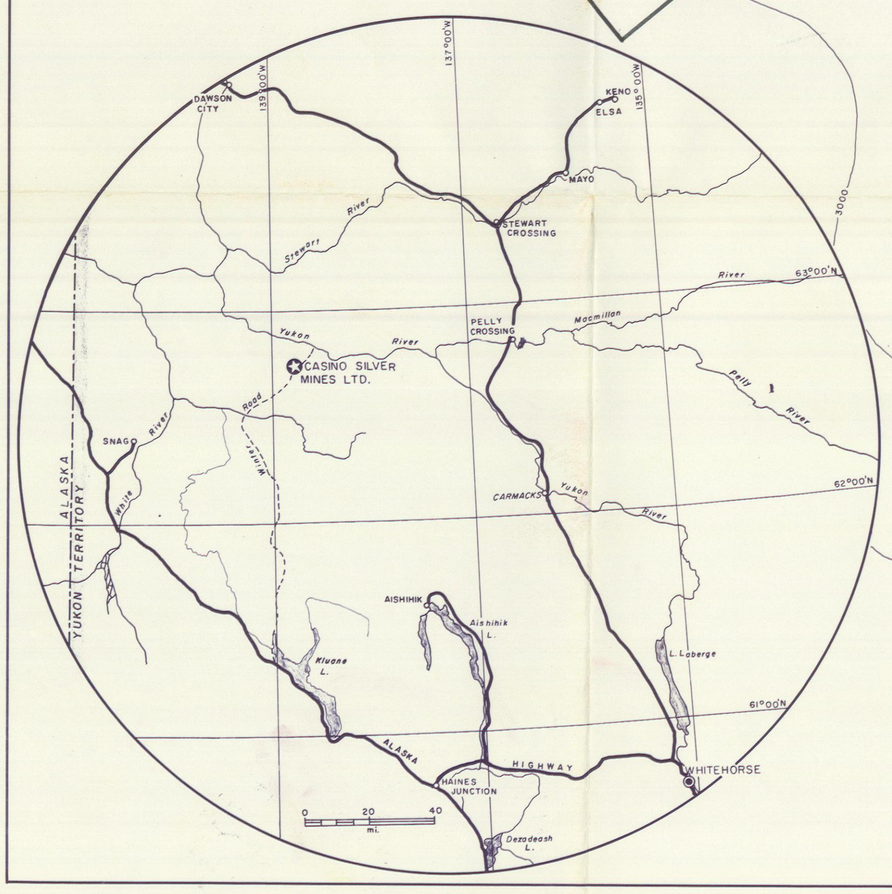
"A" ZONE

"A" BASELINE

APPROXIMATE CLAIM BOUNDARY 1 SEPT. 1968

TO ALASKA HIGHWAY

CASINO CREEK



LEGEND.

BEDROCK

- Granodiorite
- Pyroxenite
- Arkose, quartzite, conglomerate, tuff.
- Gneiss
- Feldspar Porphyry, dacite & aplite dikes

FELSENMEER

- (orientation unknown.)

Bedrock geology on "C" grid north and south of Bomber adit and at helicopter zone is based on drill holes and trenches

500' contours from N.T.S. topographic map 115-J

Association of Professional Engineers of the Yukon Territory — R. J. CATHRO — GEOLOGICAL — Nov. 1/68 — ENGINEER

GEOLOGY
CASINO SILVER MINES LTD.
CASINO - CANADIAN CREEKS, DAWSON RANGE, Y.T.
ARCHER, CATHRO & ASSOC. LTD.
Consulting Geological Engineers

DATE	9 Sept. 1968	
DRAWN		
SCALE	1" = ¼ mi.	DWG. Nº 2.

No MAP# Doc#019100 (394)

CANADIAN CREEK

GOLD - TUNGSTEN PLACER ZONE

Cabin

"G" BASELINE

PATTON GULCH

PROCTOR PASS

PATTON HILL

"F" BASELINE

NO SAMPLES DUE TO TALUS

To Yukon River

"C" BASELINE

LYMAN CREEK

Road

To Main Camp

TAYLOR CREEK

CASINO CREEK

TRANSPORTED LIMONITE GOSSAN

1967 Survey

Legend

- 0 - 40 PPM
- 40 - 80 PPM
- 80 - 160 PPM
- 160 - 320 PPM
- 320 - 640 PPM
- 640 PPM +
- DIRECTION OF SLOPE
- o - SOIL SAMPLE
- X - SILT SAMPLE

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GEOLOGICAL
Nov 1/68
ENGINEER

COPPER SOIL SURVEY

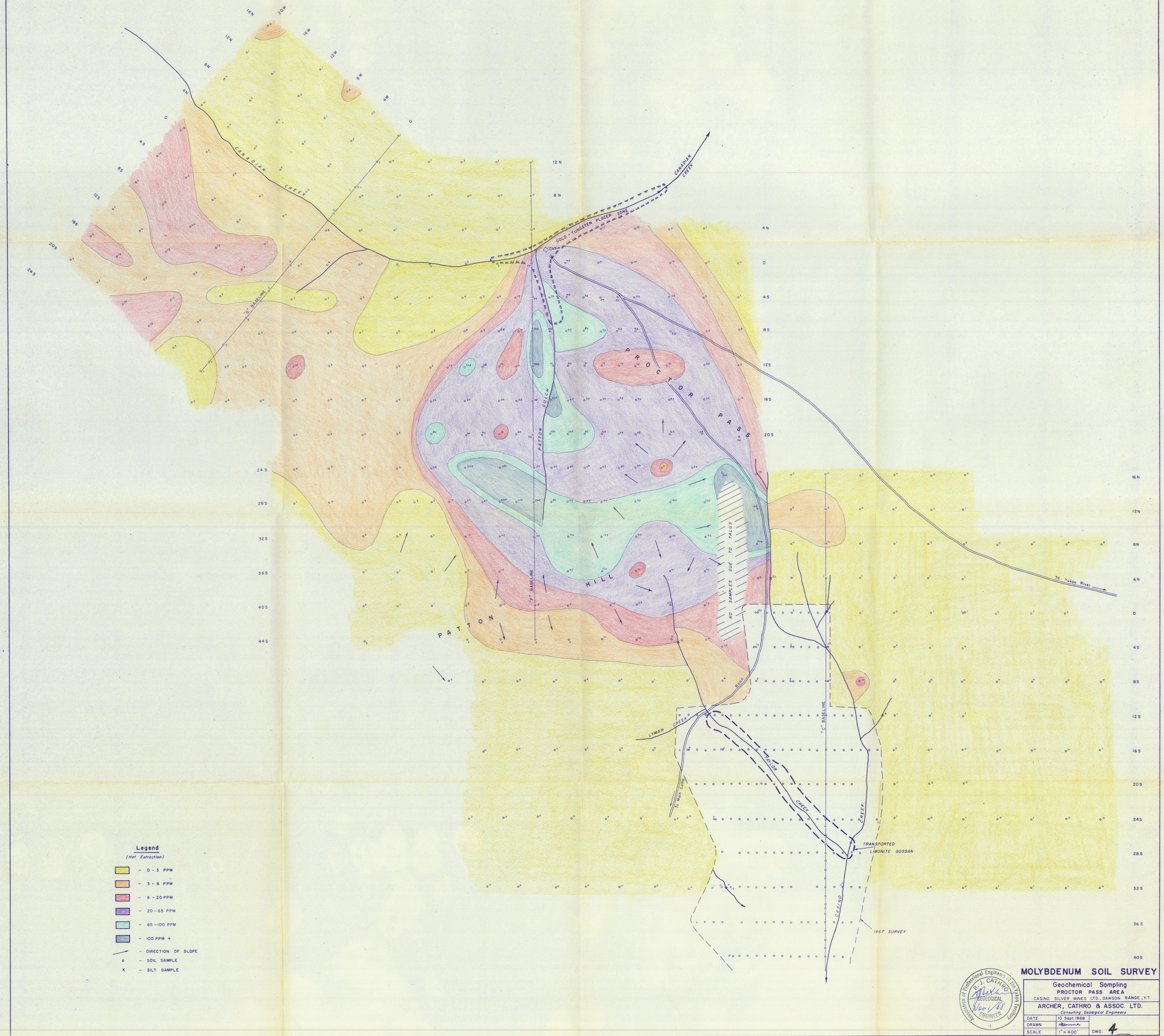
Geochemical Sampling
PROCTOR PASS AREA
CASINO SILVER MINES LTD., DAWSON RANGE, Y.T.

ARCHER, CATHRO & ASSOC. LTD.
Consulting Geological Engineers

DATE	10 Sept 1968		
DRAWN		DWG.	3
SCALE	1" = 400'		

No MAP# Doc #019100

(395)



Legend
(Hot Extraction)

- 0 - 3 PPM
- 3 - 8 PPM
- 8 - 20 PPM
- 20 - 65 PPM
- 65 - 100 PPM
- 100 PPM +
- DIRECTION OF SLOPE
- o — SOIL SAMPLE
- X — SILT SAMPLE

MOLYBDENUM SOIL SURVEY

Geochemical Sampling
PROCTOR PASS AREA
CASINO SILVER MINES LTD., DAWSON RANGE, Y.T.

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DATE	10 Sept. 1968
DRAWN	
SCALE	1" = 400'

DWG. 4

No MAP# Doc# 019100

(396)

CANADIAN CREEK

GOLD - TUNGSTEN PLACER ZONE

Cabin

"G" BASELINE

PROCTOR PASS

PATTON GULCH

PATTON HILL

"H" BASELINE

NO SAMPLES DUE TO TALUS

Road

LYMAN CREEK

To Main Camp

TAYLOR CREEK

EASING CREEK

TRANSPORTED LIMONITE GOSSAN

1967 SURVEY

To Yukon River

"C" BASELINE

16N 20W 16W 12W 8W 4W 0 4S 8S 12S 16S 20S 24S

12N 8N 4N 0 4S 8S 12S 16S 20S 24S 28S 32S 36S 40S 44S

Legend

(Hot Extraction)

- 0 – 50 PPM
- 50 – 100 PPM
- 100 – 200 PPM
- 200 PPM +
- DIRECTION OF SLOPE
- o – SOIL SAMPLE
- X – SILT SAMPLE

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LEAD SOIL SURVEY

Geochemical Sampling

PROCTOR PASS AREA

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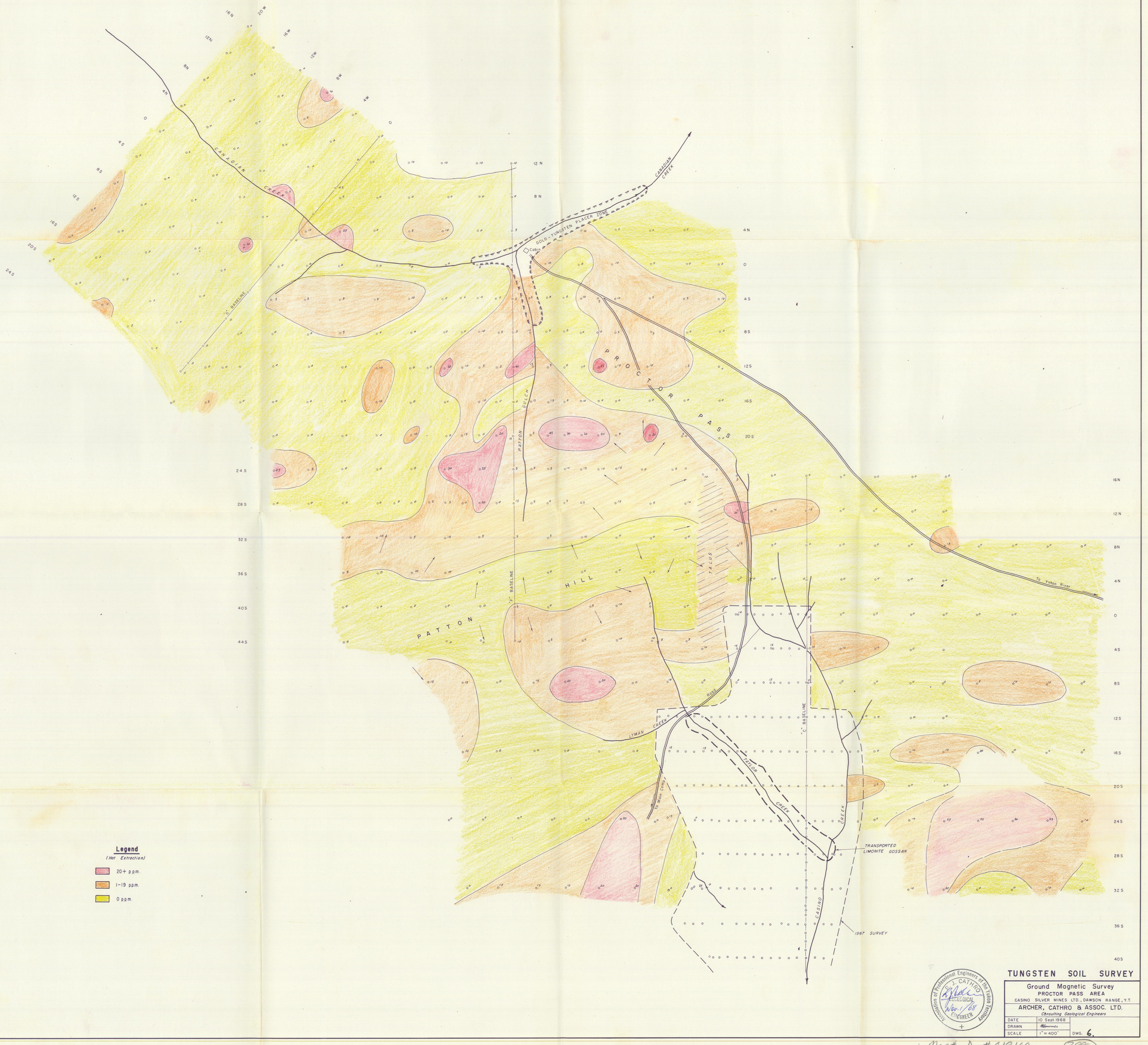
DATE	10 Sept. 1968		
DRAWN	[illegible]	DWG.	5
SCALE	1" = 400'		

NO MAP # - Doc# 019100

(327)



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Nov. 1/68

TUNGSTEN SOIL SURVEY

Ground Magnetic Survey
PROCTOR PASS AREA
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DATE	10 Sept 1968
DRAWN	Mcpherson
SCALE	1" = 400'

DWG. 6.

No MAP # Doc # 019100

358

Mount Gooding

Mount Meloy

GOLD-TUNGSTEN PLACER DEPOSIT

TO YUKON RIVER

ROAD

CANADIAN CREEK

PATTON GULCH

PATTON HILL

PATTON PASS

CASINO CREEK

TAYLOR CREEK

LYMAN CREEK

"G" ZONE

"G" BASELINE

"F" BASELINE

"D" BASELINE

"C" BASELINE

"B" ZONE

"B" BASELINE

"A" ZONE

"A" BASE LINE

BOMBER ZONE

Bomber Base CAMP

AIRSTRIP

HELICOPTER ZONE

HELICOPTER CREEK

AUTUM CREEK

TO ALASKA HIGHWAY

approximate claim boundary - Sept. 1968

Legend

- — < 600
- — 600 - 1000
- — 1000 - 1500
- — 1500 - 2000
- — 2000 - 3000
- — 3000 +

GROUND MAGNETIC SURVEY

500 ft. contours from N.T.S. topographic map 115 - J ; ground surveys by Cana Exploration Consultants Ltd., 1966

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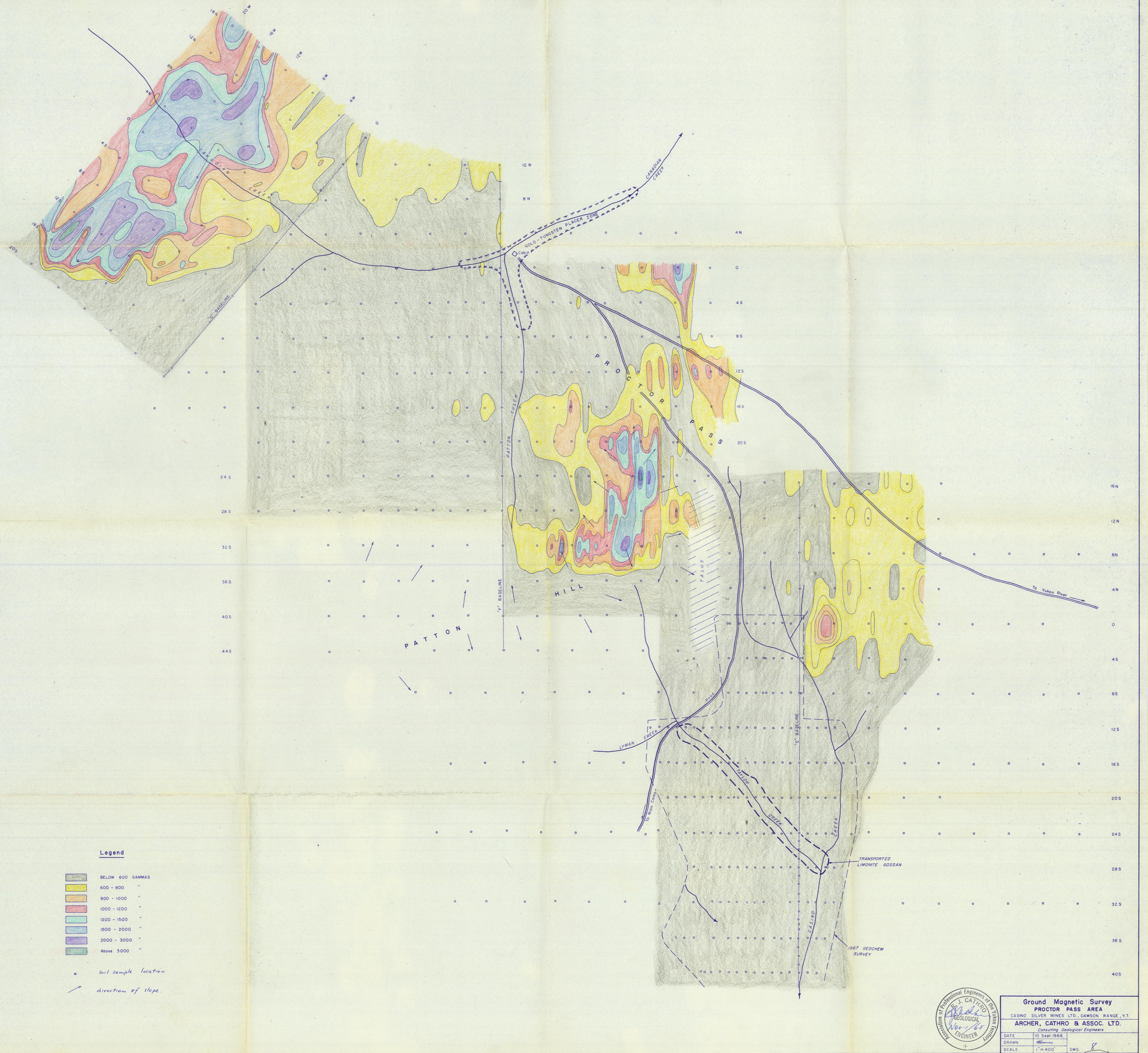
Property Base Plan		
CASINO SILVER MINES LTD.		
CASINO - CANADIAN CREEKS, DAWSON RANGE, Y.T.		
ARCHER, CATHRO & ASSOC. LTD.		
Consulting Geological Engineers		
DATE	9 Sept. 1968	
DRAWN		
SCALE	1" = ¼ mi.	DWG. Nº 7

No MAP# Doc# 019100

(399)



Legend

- BELOW 600 GAMMAS
- 600 – 800 "
- 800 – 1000 "
- 1000 – 1200 "
- 1200 – 1500 "
- 1500 – 2000 "
- 2000 – 3000 "
- Above 3000 "

soil sample location

direction of slope.

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Ground Magnetic Survey
PROCTOR PASS AREA
CASINO SILVER MINES LTD., DAWSON RANGE, Y.T.
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DATE	10 Sept. 1968
DRAWN	
SCALE	1" = 400'
DWG.	8

No MAP # Doc # 019100
400