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CAMP:	012	2 Nicola H	Belt					
CLAIM(S): Placer Leases 18977-19000 OPERATOR(S): Key Diversified Metal AUTHOR(S): Woods, D.V.;Allen, A.R. REPORT YEAR: 1988, 42 Pages COMMODITIES SEARCHED FOR: Gold,Platinum GEOLOGICAL SUMMARY: Upper Triassic Nicola Group, argillite, andesite, schists and lava Princeton Basin Eocene slate, sandstone, coalseams, on andesite and lava. To the northwest at higher elevations massive ultrabasics of peridetite, pyroxenite and gabbro, including magnetite, platinum and gold. Coast range to Tertiary granitic intrusives. Stream, river, bench gold and platinum placers.								
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KEY DIVERSIFIED METALS CORP. PROCESSING AND INTERPRETATION OF MAGNETOMETER SURVEY DATA PRINCETON BASIN PLACER PROPERTY LATITUDE: 49° 24'N LONGITUDE: 120° 34'W NTS: 92H/7E AUTHOR: Dennis V. Woods, Ph.D., P,Eng. Consulting Geophysicist DATE OF WORK: 29 March - 3 April 1987 DATE OF REPORT: 5 May 1988

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ILLUSTRATIONS

FIGURE 1 - Location Map \checkmark FIGURE 2 - Claims Map \checkmark FIGURE 3 - Regional Geology \checkmark FIGURE 4 - Local Geology /

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INTRODUCTION

On March 29 to April 3, 1987 a magnetometer survey was conducted over the Princeton Basin placer leases of Key Diversified Metals Corp. by Mr. A.T. LaRose. The intention of this survey was to indicate areas on the property warrenting priority investigation for heavy metal placer deposits. Sixty-six line kilometers of magnetic data were gathered over the placer leases in three separate grids.

The magnetometer survey was described by Allen (1987a,b) who identified certain anomalies for follow-up investigation. At the request of **Key Diversified Metals Corp.**, the magnetic data has been computer processed in order to facilitate a more detailed interpretation and assessment of the potential for heavy metal placer deposits on the property.

PROPERTY

The 24 placer leases held by Key Diversified Metals Corp. are recorded as # 18,977 to # 19,000 inclusive. The leases were issued in June 1985 for a period of 10 years (category "Y"). The property covers an area of 1,200 hectares on the west side of the Similkameen River Valley, 5 kilometres south of Princeton, B.C. The location map is shown in Figure 1 and the claims are shown in Figure 2.

The Princeton Basin placer property is located between the Similkameen and Tulameen Rivers at elevations ranging from 914 to 1036 metres above sea level. It is crossed by the White/Bromely, Stevenson and Tracy Creeks which flow south and east into the Similkameen River.





LOCATION AND ACCESS

The centre of the claim block is located near Steveson Lake, eight kilometers southwest of the confluence of the Tulameen and Similkameen Rivers. The claim block is situated within the Similkameen Mining Division of B.C. The NTS map coordinates of the claims are 92H/7E. The approximate geographical coordinates are a latitude of 49° 24'N and a longitude of 120° 34'W.

Access to the area is achieved via B.C. Provincial Highway 3 south from Princeton and then west along various logging, mining and public gravel roads intersecting Highway 3.

REGIONAL GEOLOGY

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The regional geology of the Princeton-Tulameen area was originally described by Rice (1947). A portion of his map is shown in Figure 3. The main unit in the area is the Upper Triassic Nicola Group: varicoloured subaerial and submarine basaltic to rhyolitic flows, tuffs, breccias and lahars with associated intrusive rocks and minor interbedded limestone, conglomerate and sandstone.

Lower Jurassic intrusives into the Nicola Group are (in order of age): the Tulameen Ultramafic Complex, Coast Intrusions such as the Osprey Lake Batholith and the Alison Lake Pluton, and the Copper Mountain Intrusion. The Tulameen Ultramafic Complex lies about 10 km west of the property and is composed of peridotite, pyroxenite and gabbro. Similar ultramafic intrusives are also found near Hedley about 20 km to the west. The Coast Intrusives are typically light coloured (grey to pink) siliceous granite, granodiorite and quartz diorite. The Copper Mountain Intrusives range in composition from syenite to gabbro and are quite distinctive by their almost total absence of free quartz.

Resting uncomformably on the Upper Triassic - Lower Jurassic



LEGEND FOR REGIONAL GEOLOGY - FIGURE 3



Resting uncomformably on the Upper Triassic - Lower Jurassic volcanic-plutonic basement are two units initially described by Rice (1947): the Kingsvale Group and the Princeton Group. The Kingsvale Group is composed of Lower Cretaceous rhyolitic to dacitic breccias and flows with minor andesitic porphyry flows. It has rather limited distribution.

The Tertiary Princeton Group has two members: a lower volcanic formation consisting of intercalated flows, breccias, tuffs and minor volcanoclastic sediments ranging in composition from rhyolitic breccias to dacite, andesite and basalt flows and porphyries; and the Allenby Formation consisting of massive, cross-bedded conglomerate and sandstone, massive and thinly bedded shale, with intercalated beds of coal, carbonaceous siltstone and shale. The Princeton Group has been described in detail by McMechan (1983) who has mapped the area of the placer leases at 1:50,000. A portion of his map is reproduced in Figure 4.

LOCAL GEOLOGY

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The Key Diversified Metals Corp. placer leases are centered within the southern half of the Princeton Basin - a homoclinal graben structure filled with Tertiary sediments and volcanics of the Princeton Group (Figure 4). The basin is 6-8 km wide and about 30 km long. It was formed by extensional tectonics during the Tertiary (similar to the Basin and Range in western United States) which resulted in a simple downdropped rotated block along a north-south trending listric normal fault zone (the Boundary Fault) which now forms the eastern margin of the basin.

McMecham (1983) has mapped the basin structure at 1:4000 using information from coal exploration boreholes and a reconnaissance gravity survey. The maximum depth of the basin is about 1500m

3



LEGEND FOR LOCAL GEOLOGY - FIGURE 4

GEOLOGICAL MAP OF THE PRINCETON BASIN SOUTH-CENTRAL BRITISH COLUMBIA

PRINCETON BASIN GEOLOGY BY R. D. MCMECHAN (1975) SURROUNDING GEOLOGY BY R O MCMECHAN ANO J. NEBOCAT (1975) AND BY PRETO (1972, 1979)

TERTIARY OR QUATERNARY

LANOSLIDES

TERTIARY

MIDDLE EOCENE ALLENBY FORMATION

70 DOMINANTLY MEDIUM TO VERY COARSE-GRAINED ARKOSIC WACKE, COM-Monly tuppaceous includes granule to cobble conglomerate

74 THINLY TO THICKLY INTERBEDDED, FINE TO VERY COARSE-GRAINED TUFFACEOUS TO ARKOSIC WAGKE SILTSTONE BROWN COMMONLY CAR-BONACEOUS SHALE SOME CLAYSTONE AND COAL

7 DOMINANTLY CARBONACEOUS SHALE/MUDSTONE SOME SILTSTONE AND NON-CARBONACEOUS CLAYSTONE COAL, MUDROCKS LOCALLY TUFFACE-OUS LOCALLY SURNT DUE TO COMBUSTION OF ADJACENT COAL

76 DOMINANTLY BENTONITIC AND OTHER TUFFACEOUS MATERIAL, INCLUDING WHITE ASH IFOR EXAMPLE PRINCETON ASH) GENTONITE COMMONLY SILTY OR SANDY

VOLCANIC MEMBER'

7g FLOWS OF DACITIC TO BASALTIC COMPOSITION. GENERALLY FRESH AP-PEARANCE, MAY HAVE OLIVINE PHENOCRYSTS COMMONLY VESICULAR, WELL-OEVELOPED FLAGGY OR COLUMNAR JOINTS SUBORDINATE RHYOLITIC TO DACITIC TUFFS AND BRECCIA

MIDDLE ECCENE OR EARLIER LOWER VOLCANIC FORMATION

45 VARICOLOURED FLOWS OF INTERMEDIATE COMPOSITION. COMMONLY VESICULAR OR AMYGDALOIDAL, WITH MINOR BRECCIA

do ALD OH BROWN LAHARS AND PYROCLASTIC (7) ERECCIA WITH SUBORDINATE RED FLOWS TUFFACEOUS UNITS AND MINOR INTERBEDDED VOLCANI-CLASTIC SEDIMENTARY ROCKS

POST LOWER CRETACEOUS

5 ALLISON CREEX STOCKS PINK TO GREY LEUCOGRANITE SYENODIORITE MONZONITE GRANODIORITE AND QUARTZ DIORITE, MINOR MARIC MICRO-OIORITE

LOWER CRETACEOUS KINGSVALE GROUP

4 REDDISH BROWN TO GREEN RHYOLITIC TO DACITIC BRECCIAS AND FLOWS. LESSER GREY FLAGIOCLASE FORFHYRIES OF INTERMEDIATE COMPOSITION

JURASSIC OR LATER

OSPREY LAKE INTRUSION DOMINANTLY PINK AND GREY GRANITE AND QUARTZ MONZONITE COMMONLY CONTAINING LARGE PINK MICROCLINE PMENOCRYSTS WITHIN A MEDIUM TO COARSE-GRAINED GROUNDMASS SOME LIGHT-COLOURED GRANODIORITE

UPPER TRIASSIC OR LATER

2 OTHER INTRUSIONS MOSTLY FIRE-GRAINED INTRUSIVE ROCKS OF VARI-ABLE COMPOSITION INCLUDES DIORITE AND MICRODIORITE OF COPPER YOUNTAIN INTRUSIONS

UPPER TRIASSIC

DARK TO LIGHT GREEN AND GREY BASALTIC [ANDESITIC [?]] FLOWS, TUFFS, AND BRECCIAS, AUGITE AND AUGITE-FLAGIOCLASE PORPHYRITIC FLOWS AND BRECCIAS COMMONLY CHLORITIZED, IN MANY PLACES BLEACHED AND SILICIFIED MINOR LIMESTONE AND LIMY MUDSTONE

SYMBOLS



beneath the centre of the property. The basin shallows toward the northwest and the south. A northeasterly trending normal fault has been mapped in the Princeton Group rocks in the southcentral part of the property.

Outcrops in the lease area consist of gently dipping sandstones, shales, conglomerates and coal seams. Most of the property, however, is covered by glacial till and stream sediment sands and gravels.

HISTORY AND PREVIOUS WORK

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Placer gold and platinum exploration has been carried out in the Similkameen-Tulameen area since the late 1800's. This work is best summarized by Borovic (1986) in his report on the Dalby Placer Project for Blackberry Gold Resources Inc.:

"The active exploration and placer mining of the Tulameen-Princeton area started with discovery of coarse gold on Granite Creek in 1885. "Nuggets valued up to \$150 were recovered from Granite Creek, though the largest nugget, valued at \$900, came from Lockie (Boulder) Creek, a tributary of Otter Lake."(B.C.Dept. Mines Bull.No.21). Platinum is recovered with placer gold from Tulameen River and its productive tributaries. The old reports show that in some places there is more platinum recovered than gold. "The platinum found is in nuggets up to one half ounce in weight. It is estimated (Camsell.C.1913) that from 10,000 to 20,000 ounces of placer platinum has been recovered since 1885. The total placer gold production in the area "has had a value of approximately \$750,000 (1980).

At the beginning of the century, the district was regarded as the best platinum producer in North America. A ratio of platinum to gold was said to be 1 to 4 on the Lower Tulameen River and near the mouth of Olivine Creek was 1 to 1 or better. Platinum in minor amounts is still being recovered in placer deposits in the area."

Borovic (1986) goes on to describe the exploration program carried out on the Dalby placer leases immediately west of the Key Diversified Metals Corp. property:

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"The Dalby placer leases were staked on the premise that the Dalby Meadows is an ancient channel of the Tulameen River and that platinum and gold, derived from the Tulameen Ultramafic Complex to the northwest and/or from some smaller ultramafic bodies outcropping in the neighboring areas are present in sufficient quantities in the gravels of the ancient river bed.

Nov.19,1985 and Dec.13,1985: Twenty-nine test pits were excavated to bedrock or to the depth of the excavator boom (20 feet). Eleven 45 gallon drums of material (each equivalent of 1/4 yard) were taken for further testing and twelve 5 yard piles were left for on-site testing in the spring.

The first testing was done in the present Dalby Creek draw. The trenching showed a thick section of clay beneath 10 to 20 feet of gravel in the present small stream bed. Dalby Creek is a stream 2 to 3 feet wide and 1 to 2 feet in depth.

Prospecting showed that the gravels resting on the siltstone bedrock contain one to two colors per pan. The bedrock is very soft and in places is weathered to clay, making the bedrock gravel contact impossible to sense with the bucket. The gold content appeared to be on the west side of the creek only and striking in a northwest direction.

Further trenching, approximately 2,000 feet to the northwest up on a timbered flat and approximately 100 feet above Dalby Creek draw, encountered a water-filled horizon containing large boulders.

Jan.1986.:

The eleven 1/4 yard samples were tested in the Greenwood test plant in early January 1986. A gold platinum bearing boulder channel mixed with normal stream gravels and boulders with a known pay depth of 10 to 15 feet and a minimum width of 100 feet lies beneath 10 to 20 feet of sandy silt for an unknown length in the Dalby Meadows.

The channel is not cemented and contains no large amount of black sand. The main gold values are coarse and nuggets. The amount of platinum noted in the preliminary testing 'shows that 15% of the values can be expected as Platinum Group Metals. The amount of minus 60 mesh gold is not known but appears to be significant.

The rough testing indicates values in the channel will average 100 mg to 500 mg gold per yard, with platinum averaging 10 mg. Not enough sampling has been done to indicate the high range. The electron probe studies show the gold content of the nuggets to be in the nineties. The platinum content of the P.G.M. nuggets is 80% with an 8% iridium content. Local experience indicates that these types of gravels have to be bulk tested to indicate the true gold- platinum content because of the nugget effect. The experience in the Tulameen River and Similkameen has shown that a marked increase in recoverable values will take place with testing of larger samples.

These encouraging results warranted further staking. This additional acquisition of placer ground was completed during the latter part of February 1986."

Exploration continued on the Dalby leases during the latter part of 1986 with line cutting, geological mapping, test pitting, building access roads, hammer drill testing, and extensive geophysical surveying consisting of seismic, ground magnetometer and VLF-EM.

In 1987, Blackberry Gold Resources Inc. reported that "drilling in the Dalby Meadows area has outlined in excess of 820,000 cubic metres of gravel with values of combined gold and platinum ranging from C\$1.17 to C\$7.22 per cubic metre (US\$400 gold; US\$489 platinum). The deposit is a quaternary interglacial channel completely hidden by a thin mantle of overburden. Drill intersections of the gravels range between 4 and 20 metres in thickness."

Allen (1987b) describes the placer exploration program carried out on the Rosch property immediately east of the Key Diversified Metals Corp. placer leases:

"In the early 1980's gold and platinum were discovered in overburden on the Rosch ranch, on the east side of the Similkameen River, 1,750 metres east of the **Key Diversified** Meatals Corporation leases.

Mr. Rosch had built a small concentrator and was recovering gold when his leases and others were acquired by Kettle River Resources and G.F.L. Technologies. These corporations conducted tests on gravel from a series of pits and Wright Engineers Ltd. of Vancouver were employed to provide a report on the property. The Wright Engineers Ltd. report was completed in 1983. It included field and laboratory studies and costs estimates through to the production stage if further studies warranted. Their report concluded with the following paragraphs:

"Summarizing the above, the development programme, culminating in a Feasibility Report, is estimated to cost a total of about \$1,675,000. This together with contingencies and outside overheads could bring it to \$2,000,000. We believe this is a reasonable expenditure considering the possible potential of the area."

"The potential for ore reserves in the lease area that makes up Eastern Leaseholds block of ground, is very substantial. The surface area of the leases is in the order of 5 million square metres. The alluvial deposit rises from the Similkameen River to a height of 300 to 400 metres. No rock outcrops are apparent except on the north and south extremities of the area. The volume of alluvia therefore is enormous. As to whether the deposit constitutes an economic ore reserve will depend on confirming test work and exploration, but the potential is promising."

MAGNETIC SURVEY:

The magnetic survey of the **Princeton Basin** placer leases was carried out using a Scintrex MP-4 proton precession magnetometer connected to the Scintrex IGS-4 portable data acquisition system. Diurnal variations were monitored using an identical base station magnetometer and corrected by subtracting the base station fluctuations from the field data.

The survey was carried out in three separate sections of equal area. In each section, ten lines spaced 200m apart were surveyed 1000m north and south from a centrally located east-west baseline. Stations were taken every 25m along the lines. The survey areas are contiguous so that the southern end of the north grid joins with the northern end of the central grid, etc. However, since a different base station was used for each grid, the magnetic readings differ along their common boundaries.

DATA PROCESSING:

The magnetic data was supplied in the form of computer print-outs of the diurnal corrected readings. These data were entered into a micro-computer memory by hand. The data were then re-arranged into separate grids, plotted out in profile form to check for input errors, and finally gridded and contoured to produce Maps 1, 2, and 3.

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In order to determine the relative contributions of bedrock and overburden structures to the total field magnetics, the data was filtered to produce the regional magnetic contour plots shown in Maps 4, 5, and 6. By subtracting this filtered data from the original total field data, residual magnetic contour plots were obtained as shown in Maps 7, 8, and 9. The residual maps more closely represent the effect of overburden.

DISCUSSION OF RESULTS:

The filtered magnetic plots shown in Maps 4, 5, and 6, display smoothly varying fields which reflect variation in the thickness of the Princeton Basin or to variations of the lithologies of the Nicola Group basement rocks. The Princeton Group sedimentary rocks have a relatively uniform magnetic susceptibility which is substantially lower than the susceptibility of the basement volcanic and metamorphic rocks - hence the basin is effectively magnetically transparent. The same smooth, gradual variation of the total magnetic field was observed over the entire Princeton Basin from an airborne magnetic survey carried out by Western Geophysical Aero Data Ltd. for Blackberry Gold Resources Inc. (Woods, 1988).

Short wavelength anomalies in the residual magnetic contour plots shown in Maps 7, 8, and 9, may be due to variations in overburden thickness, since the magnetic susceptibility of the Princeton Group sedimentary rocks is uniformly low and the susceptibility

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of the overburden is generally zero; or to variations in overburden morphology (e.g. black-sand, heavy metal placer deposits). By plotting topographic relief and outcrop distribution from McMecham (1983) onto the residual magnetic contour plot, it is possible to identify some of these features.

Magnetic highs in the immediate vicinity of mapped outcrop or which align with topographic ridges are assumed to be due to thin overburden cover over buried bedrock ridges. Magnetic lows conincident with valleys are likely due to the increased thickness of overburden fill within the valleys. Magnetic highs within or flanking the valleys, or which have little apparent correlation to the topography or mapped outcrop pattern, are identified as possible heavy metal placer deposits.

The most promising magnetic features identified for follow-up investigation are:

Grid 1	L1200W to L 200W	200N to 400N
	L 800W to L OE	200N to 300S
	L1400W to L1200W	500S to 800S
	L1800W to L1600W	6005 to 8005
Grid 2	L1800W to L1600W	600N
	L OE	700S
Grid 3	L 200W	800N
	L1400W to L1000W	500N
	L1400W	1005 to 5005

SUMMARY AND CONCLUSIONS:

By computer processing the magnetometer survey data from the **Princeton Basin** placer leases of **Key Diversified Metals Corp.** it has been possible to enhance the survey results and to identify specific anomalies as being due to heavy metal placer deposits

within the overburden cover on the property. Comparisons of the enhanced residual magnetic countour plots to the outcrop distribution and topographic relief of the property has enabled the identification and elimination of bedrock related anomalies from further consideration.

RECOMMENDATIONS:

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Given that placer deposits have been discovered both to the east and west of the **Princeton Basin** property (and in the case of the Dalby Creek deposits immediately to the west of the property, ground magnetics have been an important contributing factor for these discoveries), it is highly recommended that further exploration be carried out on the residual magnetic anomalies identified in this report.

Enhancement of the reconnaissance magnètic survey data has resulted in the identification of specific anomalies interpreted to be caused by heavy metal placer deposits in the overburden. More detailed magnetic surveys (50m line separation and 12.5m station intervals) should be carried out over these features to pinpoint the optimal areas for trenching or drilling. A detailed, multi-spectral radiometric survey, carried out in conjunction with the detailed magnetic survey, will greatly assist in the positive identification of heavy metal placer deposits and in the reduction of subsequent test trenching and drilling costs. Seismic refraction surveys may be necessary to trace individual bedrock channels and to map the depth of overburden and the thickness of the pay zones.

Respectfully submitted,

Dénnis V. Woods, Ph.D., P.Eng. Consulting Geophysicist

WHITE GEOPHYSICAL INC.

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STATEMENT OF QUALIFICATIONS

COST BREAKDOWN:

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Digitization, processing and computer plotting	\$3,300.00
Geophysical Report	1,500.00
	\$4,800.00



















