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TECHNICAL REVIEW REPORT ON THE FRANKLIN CAMP MINERAL EXPLORATION PROPERTY, GRANBY RIVER AREA, GREENWOOD MINING DIVISION, BRITISH COLUMBIA

Latitude c. 49°33' North
Longitude c. 118°22' West
NTS 82E/09W

by

G.R. Peatfield, Ph.D., P.Eng.

for

Tuxedo Resources Ltd.

Vancouver, British Columbia **31 August, 2001**

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1.0 SUMMARY

The Franklin Camp mineral exploration property is located about 60 kilometres north of the city of Grand Forks, in southern British Columbia. Access is by paved and gravel roads up the Granby River and Burrell Creek valleys. The property area has moderate topographic relief and is heavily forested except in areas of recent logging. Climatic conditions would allow for year-round operations, and there is no shortage of water.

The property consists of a large number of claims of varying types, including a few Crown Granted Lots. A total of about 3900 hectares are contained within an area measuring about six by eight kilometres. There are a few small adverse claims within the property outline. The property is held by Tuxedo Resources Ltd. under the terms of seven separate option agreements with several vendors.

The camp has a long and complex history dating back to the last decades of the nineteenth century. Initial interest was directed toward precious metals (gold and silver) with base metals in quartz lodes. At the same time, there was exploration of copper-rich contact metamorphic ("skarn") occurrences. During the time of World War I, shipments of high-grade copper-rich material to a smelter were found to contain significant amounts of platinum. This triggered an interest that has continued to the present. Exploration and exploitation activity has waxed and waned through the decades down to the present.

Production has been recorded from four separate properties, albeit minor from all but one. That one, the Union Mine, produced about 55,500 troy ounces of gold and 1,392,300 troy ounces of silver from several stages of operation between 1913 and 1989. Other operations produced small amounts of direct shipping material of various types.

The geology of the property area is complex and still not really well understood. The oldest rocks are Paleozoic volcanic and sedimentary units best correlated with the Anarchist Group to the south. Intruding these rocks are granitic stocks forming part of the Jurassic Nelson Plutonic Suite. Also intrusive in the Jurassic were the rocks of the Averill Plutonic Complex, a zoned alkalic pluton with phases ranging from syenite and monzonite through mafic syenite and gabbro to clinopyroxenite. It is with these rocks that the copper-platinum (and latterly recognized palladium) material is found. The older rocks are locally overlain by the Eocene continental clastic sedimentary and associated felsic volcanic rocks of the Kettle River Formation and subsequently by the felsic alkalic flows and the Eocene Marron Formation.

There are three principal mineral deposit or occurrence types, and in addition to these a number of rather miscellaneous "showings". The principal deposit types represented are: 1) epithermal (?) gold-silver dominant quartz veins and silicified zones, with abundant base metals, in the Paleozoic rocks; 2) segregations of copper sulphides (chalcopyrite and bornite) with associated platinum and palladium in mafic alkalic rocks of the Averill complex; and 3) poly-metallic skarn concentrations generally associated with

2.0 INTRODUCTION, TERMS OF REFERENCE AND DISCLAIMER

Tuxedo Resources Ltd. ("Tuxedo" or "the Company") has retained G.R. Peatfield to review reports and other data pertaining to exploration and development work on the Franklin Camp mineral property ("the subject property") north of Grand Forks, in southern British Columbia, and to visit the property. This report summarises my findings regarding various aspects of the work. It has a strong bias toward a review of historical exploration and exploitation data from various sources; for more details, reference should be made to published and unpublished reports, the latter available from the company or myself. This report covers general background information, and summary details of geology, geophysics, sampling, production records, and environmental topics. It is by no means a complete study of the camp; such a study is necessary but outside the terms of reference of this report. I have no interest in any mineral rights in the Franklin Camp area, nor do I expect to acquire such rights. I am, by virtue of education and experience, a "Qualified Person" as defined in National Instrument 43-101.

Over the past several months Tuxedo has assembled a large land package, under several option agreements, covering most of the historic Franklin Camp. Interest in the camp was originally for copper in "skarn" deposits and for gold and silver in structurally controlled bodies of silicification and quartz veining. Later, the emphasis changed to the search for platinum group elements ("PGE's") associated with copper-bearing ultra-mafic units in an alkalic intrusive complex. Over the years, however, most of the metal production from the camp (in terms of value) has been gold and silver from the bonanza deposits. The present interest in the camp is focussed on both the PGE and the bonanza gold-silver targets, with less interest in other deposit types.

Notwithstanding over a century of activity, the present phase of exploration in the Franklin Camp is at an early stage. There is an marked need for a detailed, comprehensive compilation of data for the camp, using information from all available sources. At present, it appears that there are two main target types; the PGE – copper association and the bonanza (epithermal?) precious metal vein deposits. Of these two, the latter has historically been by far the more important type, and in my opinion the understanding of the structural setting of this deposit type is so poor that there is considerable potential for the discovery of additional material. The recovered grades for the vein deposits over the years are such that they constitute an attractive target, and should be pursued aggressively.

This report has been prepared for Tuxedo Resources Ltd., based in part on information supplied by the Company, which is believed to be reliable. Much additional information has come from various government publications. Given the nature of the data available and the age of some of the reports, there are of course possibilities of errors or differences of interpretation. Where these are obvious, reference has been made to them. All reasonable care has been taken in the completion of the report, but G.R. Peatfield, Ph.D., P.Eng. cannot guarantee the accuracy of the source data. Written permission of the author is required before release of any summary of or excerpt from this report.

3.0 PROPERTY LOCATION AND DESCRIPTION

The subject property lies about 60 kilometres north of the city of Grand Forks, north of the so-called 'Boundary District'. (see Figure 1) Grand Forks is located on a major transportation route – British Columbia Highway No. 3 (the Crowsnest Route or Southern Trans-Provincial Highway). The present land holdings are centered at about latitude 49°33' north, longitude 118°22' west, on National Topographic System ("NTS") map-sheet 82E/9W, and cover most of the historic Franklin Camp mining district.

The property situation in the Franklin Camp at present is complex, to say the least. The claim holdings that are the subject of this report consist of a large number of mineral tenures of varying types, including: Modified Grid ("MGS") mineral claims; "two-post" mineral claims; reverted Crown Grant mineral claims ("R.C.G.'s"); and Crown Granted Lots holding mineral rights ("C.G.'s"). All claims are in the Greenwood Mining Division (in the case of C.G.'s and R.C.G.'s, in Similkameen Division of Yale Land District). These mineral tenures are the subject of several separate agreements.

The overall property dimension is about eight kilometres (maximum) north-south by about six kilometres east-west, covering some 39 square kilometres or about 3,900 hectares. Figure 2 shows the idealised outlines of the various claims in the property. It is important to stress that this is not a formally surveyed plan, and that there will undoubtedly be differences in the actual outlines of the various claims and claim blocks. The possibility of occurrence of internal fractions cannot be discounted.

The total property, which contains claims that are at present the subjects of separate option agreements between Tuxedo and several optionors is made up of:

i. Five (5) MGS mineral claims totalling 79 claim units.

ii. Eighty-five (85) two-post mineral claims.

iii. Two (2) R.C.G.'s.

iv. Three (3) C.G.'s.

In addition, there are within the property outline six (6) C.G.'s and one R.C.G. not included in any of the present agreements. Of these mineral tenures: two C.G.'s (McKinley and Hanna) cover the old McKinley mine area and are held by a third party; three C.G.'s (Aldie, Deadwood & Homestake) on the western flank of Mount Franklin are controlled (although not owned outright) by one of the present optionors and could probably be acquired by Tuxedo on easy terms; one C.G. (Idaho) located immediately west of the Union mine area is owned by the above mentioned optionor. It was inadvertently left out of an agreement and will be added in the near future (J.W. Carson, personal communication, 20 August 2001) One R.C.G. (Mountain Lion) north-west of Franklin Mountain is controlled by a third party. In the sections that follow, there are some data presented that are derived from work on these excluded parcels. These data are included for the purposes of completeness. Where the data are contained in Tables, these sections have been shaded to make them obvious.

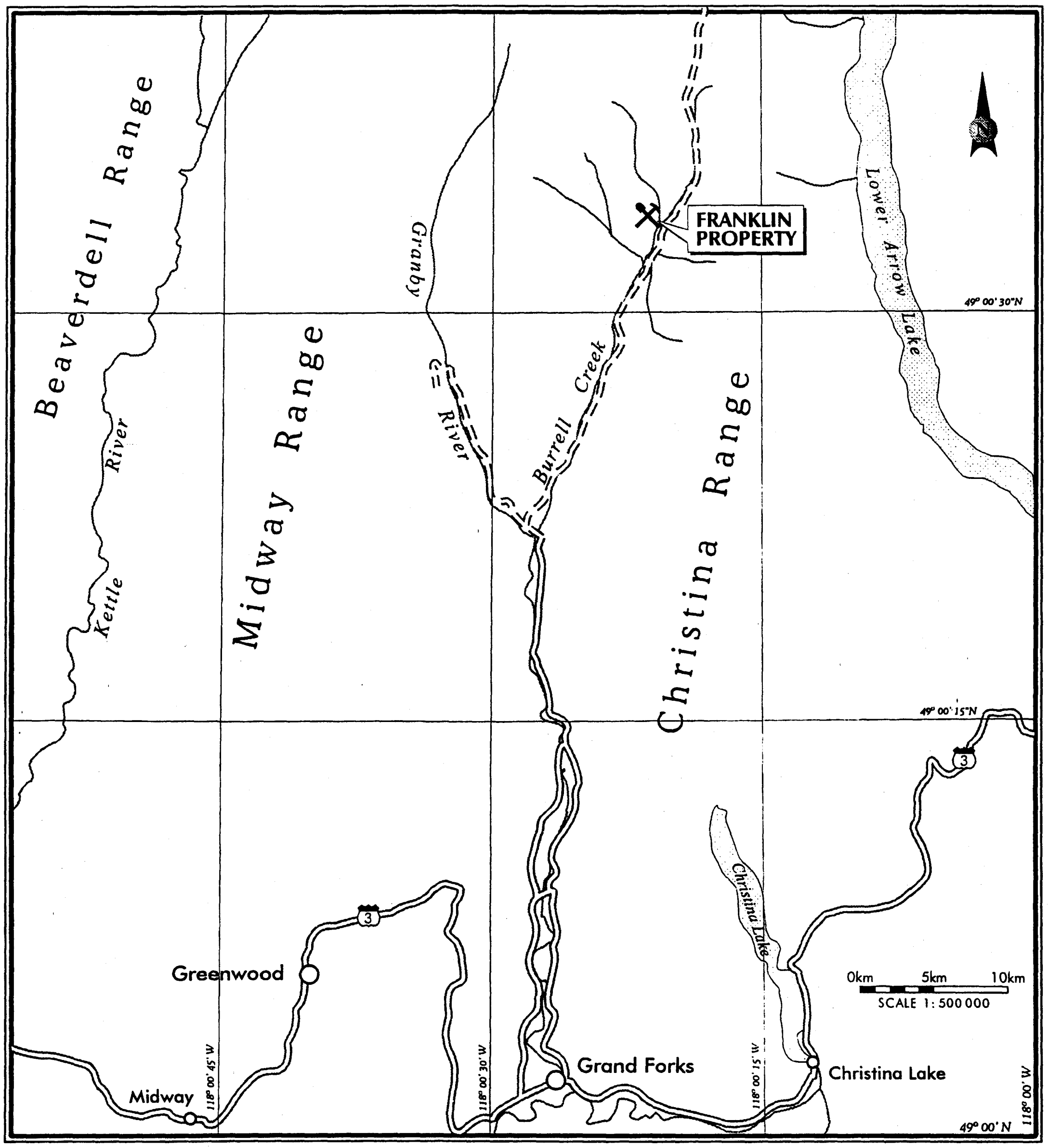

Figure 1: ***Location map, Franklin Camp Mineral Property. Scale 1:500 000***

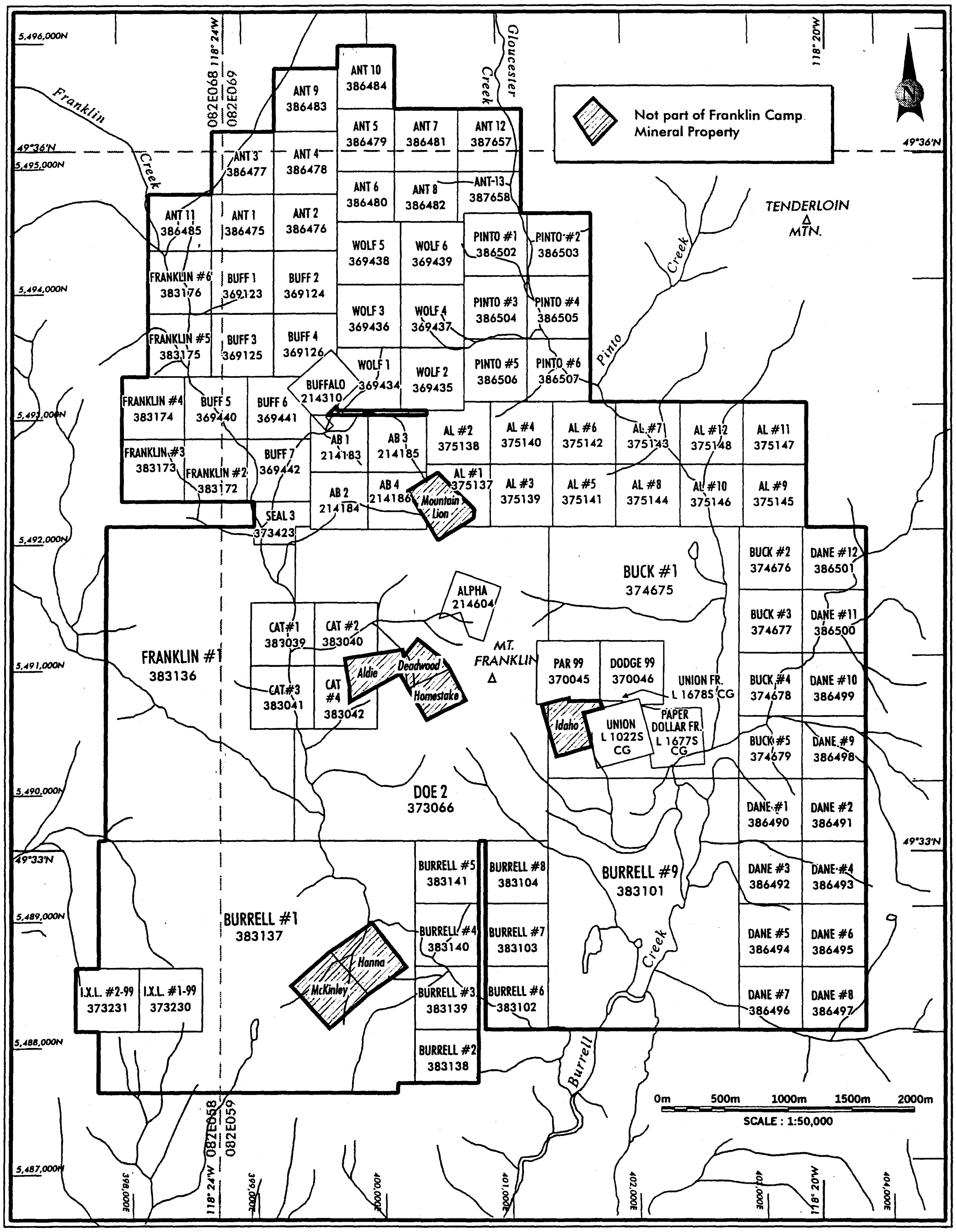

Figure 2: Claim map, Franklin Camp Mineral Property. Scale 1:50 000

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Finally, there is an on-going issue of uncertainty with respect to several parcels of land (see Figure 3) which were once C.G.'s and for which the legal surveys have not been cancelled but which have been forfeited to the Crown (the "FA Claims").[1] There is some question as to whether these parcels hold any mineral rights and if they in any way impair the mineral rights of subsequently located claims. The Chief Gold Commissioner has been made aware of this situation and has been asked to clarify the status of these parcels; no definitive answer has been forthcoming at the time of writing.[2] If these parcels do in fact hold some mineral rights, the present owner must be the Crown, and the Crown would have to decide how to dispose of such rights. It seems likely that in fact the subject parcels do not hold any mineral rights, but this supposition is not proven.

A summary of the claim holdings is contained in Appendix I. Seven agreements (five executed and two agreements in principal in preparation) cover various claim groups making up the property. Figure 4 shows the outline of the option agreement areas.

I have not independently verified the details of the status of either mineral title or option agreements. Discussions of details of property ownership and title are outside the scope of this report; such data can be obtained from the Company.

4.0 ACCESS, CLIMATE , VEGETATION AND PHYSIOGRAPHY

Access to the Franklin Camp is by paved road for about 40 kilometres north from Grand Forks along the Granby River valley, and thence by gravel forest access roads for 25 kilometres up the Burrell Creek valley[3]. This road access would be adequate for presently projected exploration activities, although local on-property improvements and additions might be required in some target areas if work advanced to the drilling stage. There is also good road access from the property to Edgewood on Lower Arrow Lake and thence north to British Columbia Highway No. 6, joining Vernon and the Arrow Lakes.

The general terrain in the region of the Franklin Camp is mountainous, with numerous rounded hills or mountains separated by wide valleys. Elevations range from about 825 metres in the valley bottoms to a maximum of about 1450 metres at the top of Franklin Mountain. There are some local rock bluffs and cliffs, but for the most part the topography, although steep, is not precipitous.

The climate in the area of the Franklin Camp is typical of the mountain valley areas of south-central British Columbia. Summers are warm, with moderate rainfall; the area does not qualify as "dry belt". Winters are cold, with long periods of freezing temperatures and accumulations of snow that may exceed one to two metres on the mountain slopes. The climatic conditions are not so severe as to preclude year-round mining operations, either open-pit or underground.

[1] Figure 3 also shows one Crown Grant (L1028S - Bystander) that is shown on the recent claim map but is apparently not an existing Crown Grant. Its status is not known.
[2] In conversation with Mr. Rick Conte of Mineral Titles Branch on 28 August 2001 I was assured that the Branch regarded this as a very serious uncertainty, and that they were working hard to resolve it. He would not say so in so many words, but the implication was that the parcels in question would not hold any title.
[3] The Granby River was known in the early years as the North Fork of the Kettle River, and what is now called Burrell Creek was originally "the East Fork of the North Fork . . . ."

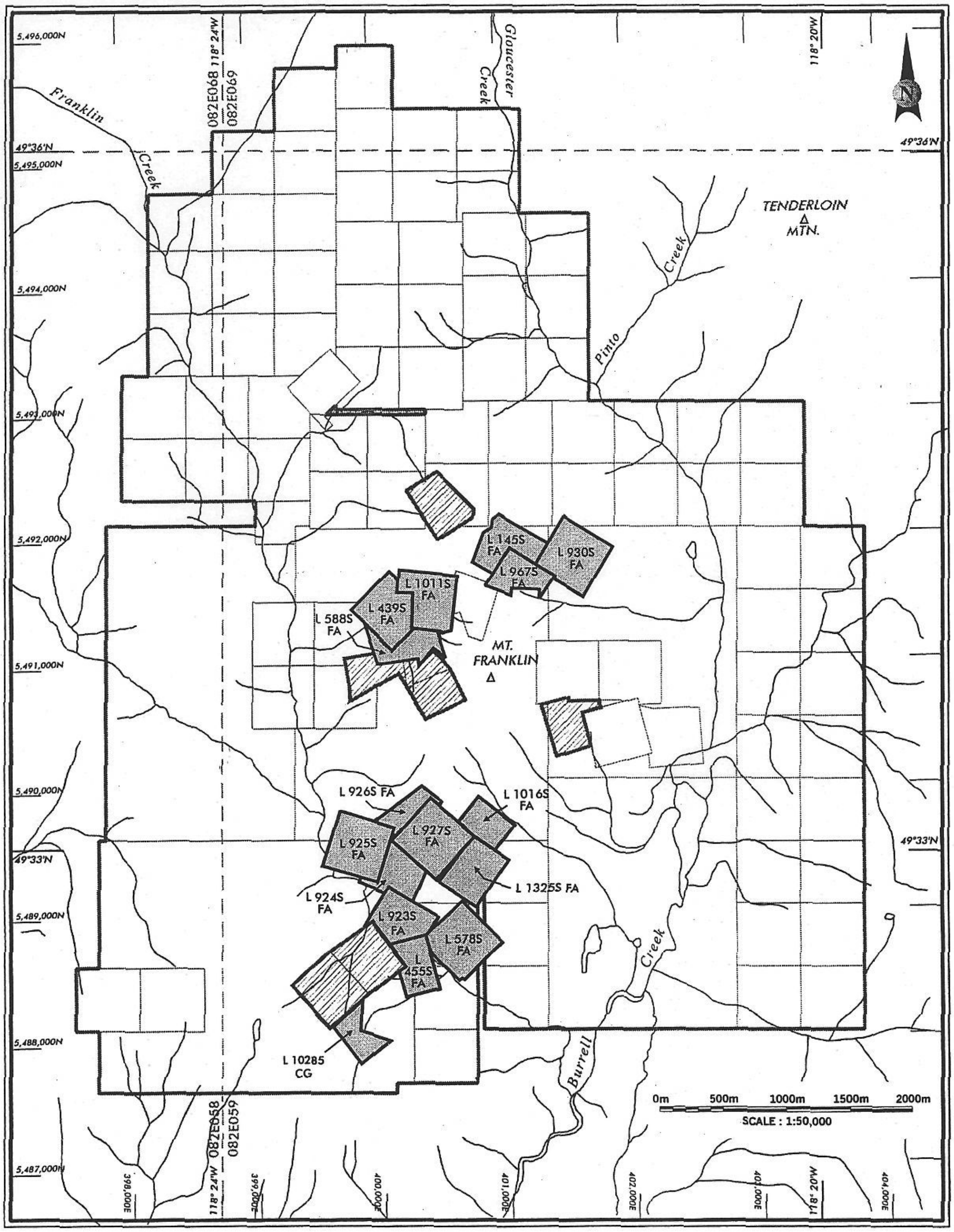

Figure 3: ***Map showing location of the "FA Claims" of uncertain tenure, Franklin Camp Mineral Property. Scale 1:50 000***

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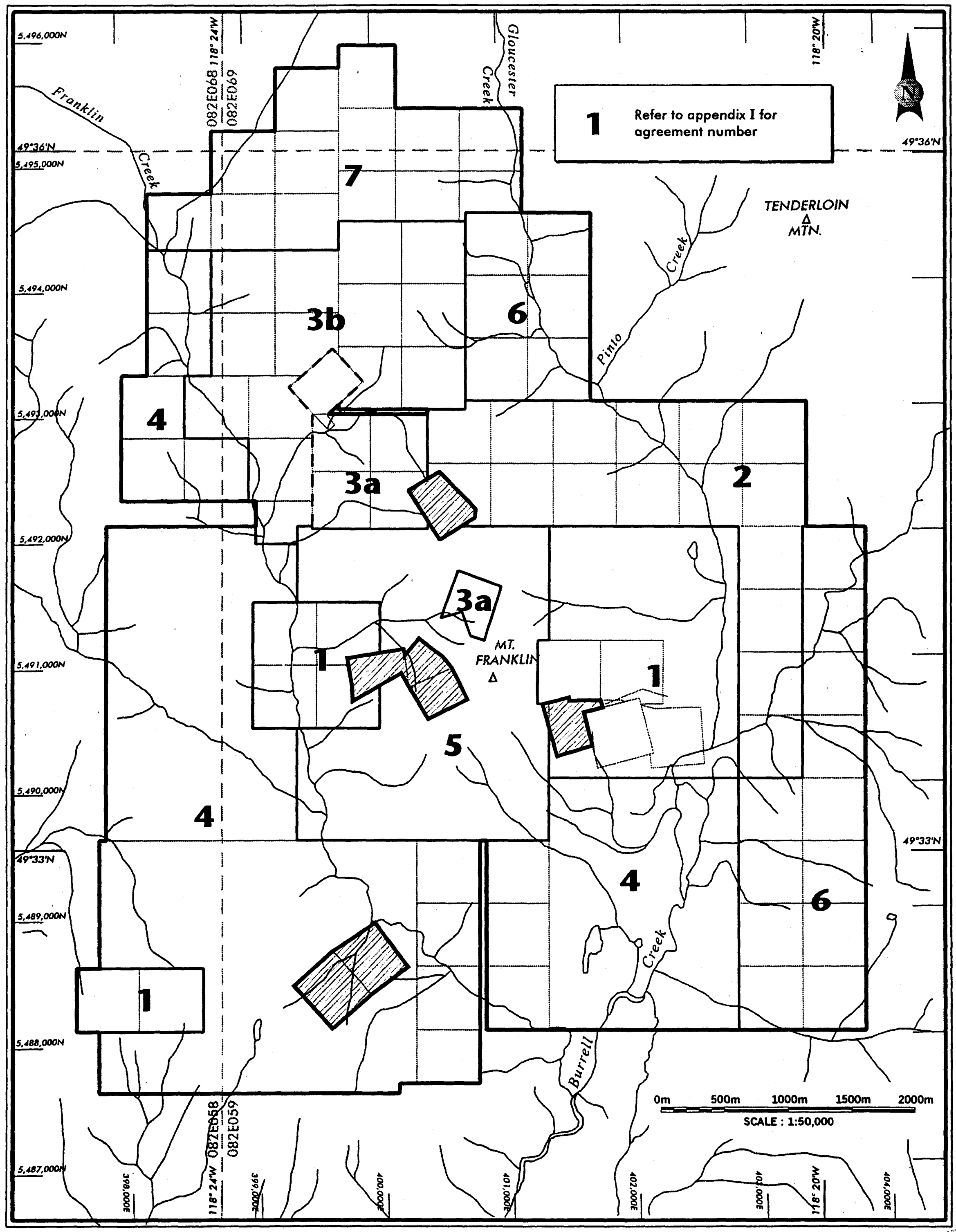

Figure 4: ***Outlines of option agreement areas, Franklin Camp Mineral Property. Scale 1:50 000***

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Vegetation on the property is generally mixed coniferous forest, with some deciduous trees in the valley bottoms and locally on slopes. The principal coniferous tree species are Douglas fir, western larch, lodgepole pine, white spruce and western red cedar. Deciduous trees include trembling aspen and paper birch, with black cottonwood in valley bottoms. There are open, grassy areas on several of the mountain slopes, especially those with a southerly aspect.

5.0 LOCAL RESOURCES AND INFRASTRUCTURE

The principal settlement in the region is Grand Forks, with a population of about 4,000. Most normal services, including a hospital, are available here. There are adequate accommodation and eating facilities for the city to serve as a base for exploration programs. Fuel supplies and most material requirements are available.

There is ample water for diamond drilling programs on the property. There are no apparent serious impediments to exploration in the form of surface rights alienations[1], but this would require careful checking before any development work was contemplated. At present, grid electrical power is not available at the property.

The area includes some summer grazing leases for cattle ranchers. There is active logging on much of the property, which has the advantage of providing enhanced road access and producing some new or expanded rock exposures.

6.0 HISTORY

The history of mining and exploration activity in the Franklin Camp is long and complex. The following section gives only a very cursory review, focussing on the more important events with an emphasis on the exploration activities directed toward the search for PGE's associated with copper minerals, and for gold and silver in structurally controlled deposits.

The early stages of the camp history are well described by Drysdale (1915), covering the period from the initial discoveries up to and including the summer of 1911, the year of his fieldwork. It is useful to quote him at length:

> The first mining claims to be located in the Franklin Camp were the Banner and the McKinley, which were both staked in the summer of 1896. The locator of the Banner claim was Frank McFarlane, after whom the camp was named, while Jos. Wilcher located the McKinley claim. The Gloucester[2] and adjoining claims were located by Thos. Newby in the summer of 1898. These were followed by the White Bear in 1899, the Maple Leaf in 1902, the Evening Star in 1903, the Buffalo in 1904, the IXL in 1904, and many others.

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[1] This said, there are at the time of writing real estate signs advertising land for sale in the general area of what was originally known as Gloucester City, immediately south-east of the Union mine. It may be that some of the town lots still exist, with their surface rights intact. Further title search is necessary.

[2] This claim was Crown Granted in 1902 to Thewby H. Merson et al. as the Glouster, Lot 2809 (MMAR 1902 – page H304). The spelling Gloster is also found in some records. Notwithstanding that this was British Columbia, some of the inhabitants obviously had trouble with the spelling of British place names!

In 1900 a government trail was cut to the camp from Grand Forks, and the same year a 200-foot cross-cut tunnel was driven on the Banner claim to tap a vein encountered in a shaft. This was the main development work up to that time, as only open-cuts and small prospect pits had been attempted on the other properties. The year 1906 saw the greatest activity in Franklin, when considerable development was carried on and practically all the ground in the mineral belt was staked out. Town sites were surveyed, and the lots put on sale. Cabins were rapidly erected, and the camp was boomed extensively by mine promoters who freely made use of the newspapers in advertising this as a new and promising copper camp. That same year witnessed a gold placer rush of prospectors to Franklin on the news that gold nuggets had been found at Dinsmore's, about a mile below Gloucester City. This turned out to be a case of salting by a prospector, who was detected before he could dispose of his property and had to decamp in haste.

The McKinley was the premier property at this time, so far as exploitation was concerned, showing some hundreds of feet of tunnelling and considerable surface stripping and trenching. It had been bonded for two years to a company on behalf of eastern capital, for $200,000. The year 1906 saw some diamond drilling done on the Banner claim, as well as development work on the Gloucester group, bonded by the Dominion Copper Company, while in the same year the Fee Brothers did some work on the Maple Leaf property.

Following the boom period, a reaction set in and there was a period of depression up to 1908, when the completion of a wagon road from Grand Forks to Gloucester City made the camp more accessible, and mining activities were continued for a short period. The years 1909 and 1910 saw comparatively little prospecting and mining done, as the majority of the claims by this time had been crown granted and allowed to lie dormant.

Development work was carried on in the summer of 1911 on the McKinley property, under bond by the British Columbia Copper Company. Besides the work done on the McKinley assessment, development work was carried on on the Dane and Averill groups, the Union, Buffalo, and Royal Tinto claims.

The camp was examined in 1914 by officers of the British Columbia Bureau of Mines (Larson and Verrill 1915), with a view to reviewing the development possibilities of the region. It is interesting to quote their general conclusion in full, understanding that it was written in the spirit of the times. What a difference nearly a century makes!

> After thorough observation of the various conditions indicative of the future possibilities for the development of the natural resources of the district examined, and after careful consideration of the facts derived from this examination, as herein stated, it is our opinion that the development of the agricultural, timber, and mineral resources is impracticable under the present conditions of transportation; but that with transportation facilities provided for by the extension of the railroad from Lynch creek such development would be entirely practicable, and in all probability of inestimable value to the Province.

The long and complex history of the camp, with its many properties and occurrence types, is difficult to present in a simplified, overview manner. The following is a general picture on a decade by decade basis, commencing in 1911, which is the last year covered by Drysdale's summary above. There are of course inevitable overlaps, but this gives a general idea of the ebb and flow of exploration activity in the camp, and of the changes in emphasis in different eras. Details and references to source reports are readily available on the Ministry of Energy and Mines "Minfile" page on the Internet at http://www.em.gov.bc.ca/cf/minfile and this data bank is recommended for perusal by interested readers wishing for more details on specific properties or areas. It is important to note, however, that the data in Minfile are not always correct, and reference should also be made to source documentation.

The decade 1911-1920 saw the beginning of serious activity on the Union property, which was Crown granted in 1914 and ultimately became the premier producer in the camp, from a vein deposit carrying precious and base metals. Production from this mine was minimal during this decade, but better days were to come. The McKinley property had essentially gone into eclipse by this time. In 1915 and 1916 the owners of the Maple Leaf property made small shipments of hand-picked copper-rich material. The most important event during this decade was the investigation of several properties for platinum, as described in the following paragraph.

In mid-1918, the Imperial Munitions Board (London) became alarmed regarding the supply of platinum for the war effort. This resulted in an examination and evaluation of various properties and mineral occurrences in Canada. In the event, the war ended before these investigations could be finalized, but as part of the work several properties in the Franklin Camp were examined and samples taken for assay (Thomlinson 1920; see also O'Neill and Gunning 1934). Thomlinson wrote as follows:

> I left Vancouver, B.C., on August 2, 1918, and proceeded to Grand Forks in the Boundary District, for the purpose of taking ore samples at the Maple Leaf lode mine in the Franklin camp, Grand Forks mining division. .... I arrived at Franklin on August 5, and arranged with Mr. Louis Johnson, manager of the Union Mine, for accommodation during my stay in the camp.

Thomlinson then went on to describe how he examined and sampled material from the Union and the Maple Leaf Group (Maple Leaf and Beaver). Encouraging results from some of the samples at the Maple Leaf resulted in his return to the camp in September 1918 and examination and sampling on the Lucky Jack, Mountain Lion, Golden Age, Averill Group and Buffalo Group properties. Results of this sampling are given in a subsequent section of this report.

The next decade, 1921 to 1930, was not one of great activity in the camp. The Union was bonded to J.F. McCarthy of the Hecla Mining Company ("Hecla") in 1927 and development commenced in 1928. A small amount of production was recorded from the Union mine. A stock market promotion of the Maple Leaf Mining Company collapsed, and construction of a small smelter was abandoned. In 1927, the Maple Leaf was bonded to Hecla, but no work was recorded.

The decade 1931 to 1940 was the major one for the Union mine. Hecla recorded considerable production up to 1936, and treated tailings and dump material, before ceasing operations. In 1937 the mine was leased by W.E. McArthur who did exploration work and made a small amount of production through 1940. There was also some activity on the Maple Leaf, Bullion and Homestake properties, with a very small amount of production reportedly from the last named mine. Emphasis in these years was on precious metals operations, with ores and concentrates shipped to smelters at Trail and in the United States.

The decade 1941 to 1950 was very quiet, with small amounts of work by W.E. McArthur on the McKinley, Union and Homestake properties. Little other activity is recorded for the camp, and essentially nothing happened during the 1951 to 1960 decade.

The period 1961 to 1970 saw the beginnings of more modern exploration in the camp, with the emphasis shifting away from the search for veins bearing gold and silver to looking for platinum and to a lesser extent copper deposits. Franklin Mines Ltd. assembled a large property position, covering most of the camp including many of the prominent properties. Their work was concentrated on the search for platinum, and included geological mapping, geophysics, geochemistry and sampling of several previously known occurrences. Elsewhere in the camp, there was activity directed toward copper and possibly molybdenum-bearing "porphyry" deposits, as for example by Newmont Mining Company of Canada Ltd. on the IXL property west of the McKinley mine[1]. The Union mine property was essentially dormant during this decade.

The following decade, 1971 to 1980, saw several programs of diverse nature. The Union mine was optioned from Hecla by Mustang Resources Ltd. who tried a cyanide leach process to treat the tailings but were unsuccessful in their efforts. Later in the decade, in 1979, the mine was optioned by Pearl Resources Ltd. ("Pearl") who did some diamond drilling but did not find any more material suitable for mining and treatment. Several other small programs on various properties were undertaken by a number of firms, but there were no significant discoveries.

In the decade 1981 to 1990 work in the camp was accelerated. Pearl continued drilling at the Union mine with poor results. In 1985, 24K Mining Inc. optioned the property from Pearl and in 1986 merged with Summit Ventures Inc. to form Sumac Ventures Inc. ("Sumac"). This company erected a facility to heap leach the tailings from the old Union operation, but the project had serious problems and was closed in 1989. Meanwhile, Longreach Resources Ltd. ("Longreach") assembled a large property position in 1986, with strong emphasis on the northern portion of the camp and on the search for PGE-bearing material. Longreach did considerable work including some diamond drilling. Placer Dome Inc. ("PDI") optioned the property and did extensive field work in 1987 as the "Platinum Blonde" project. PDI's work included surface mapping and sampling, and drilling of several holes in a number of localities. Elsewhere in the camp, there was a small amount of work directed toward other types of material, mostly copper occurrences.

Work in the decade 1991 to 2000 was not extensive. Sway Resources Inc. did some surface work and drilling on the Banner and Homestake properties, mostly directed toward the search for gold. On the IXL property, Canamax Resources Inc. ("Canamax") did some surface work and drilling for copper.

This very cursory review of events over a time span of more than a century is necessarily incomplete. However, it shows that the early work was directed mainly toward the search for and exploitation of copper and gold-silver deposits. In 1918, there was a brief period of interest in the platinum potential of the camp, but serious interest in PGE's was only renewed in the 1960's, and this has been the main focus of exploration

[1] Note that for this work the Minfile reference is to Canamax Resources Inc. but this is an error.

(as opposed to exploitation) from then to the present time. However, there has been a lesser but significant interest shown in the search for gold-silver vein deposits and copper in both skarn and porphyry environments.

7.0 PRODUCTION RECORDS

Four separate properties in the Franklin Camp have recorded metal production, albeit this was minor in the case of three of the four. In three of the four cases, the emphasis was on precious metals (gold and silver), and only incidental amounts of base metals were produced. There is no record of any PGE production. In all cases, the figures published refer to recovered metal production, so that any calculated grades are thus recovered grades, and therefore less than total. Some of the tonnage was in the form of small shipments of hand-sorted material sent directly to smelters. The production figures are taken from Minfile, in some cases checked against older published records:

Maple Leaf:

In 1915-1916, the Maple Leaf property owners shipped two carloads of hand-cobbed material to a smelter.[1] These shipments totalled 36 tonnes at a recovered grade of 1.7 grams gold per tonne ("g/t Au"); 172 grams silver per tonne ("g/t Ag"); and 7.6 percent copper. Platinum was not recovered (or at least was not paid for), but Thomlinson (1920) reported that ". . . according to Mr. Young [the manager of the Maple Leaf property], each ton of ore shipped contained nearly one-quarter of an ounce [about 8.5 grams per tonne] of platinum, for which the owners were not paid." There was no mention of palladium; presumably this metal was not assayed for. Thomlinson sampled material said to be similar to that shipped to the smelter, and obtained assays of 0.15 and 0.17 troy ounce platinum per ton ("o/t Pt").[2]

Homestake:

The Minfile report states that in 1940-1941, operators of the Homestake property, adjacent to the Union Mine, shipped a total of 453 tonnes of material for which the recovered grades are calculated as 15.3 g/t Au, 30 g/t Ag and small amounts of zinc and lead. There is, however, some uncertainty in the records regarding this property, and the production quoted may in fact have been derived from a property of the same name in the Beaverdell Camp to the west.

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[1] There is confusion in the literature regarding the destination of these shipments. The Annual Report of the Minister of Mines for 1915 has conflicting information – at one point (page K 201) it refers to a shipment to Trail (the Trail smelter, operated by the Consolidated Mining and Smelting Company of Canada Ltd. ("CM&S", latterly "Cominco"); at another point (page K 204) the statement is that the material went to the Grand Forks smelter of the Granby Consolidated Mining, Smelting and Power Company ("Granby"). This was reiterated in MMAR 1927 (page 225). O'Neill and Gunning (1934) stated that the ore went to Grand Forks. On balance, given that the Granby smelter was closer and that it specialised in copper, it seems more likely that this is where the material was treated.

[2] I have chosen to quote Thomlinson's assays in their original Imperial measure format, rather than making the conversion to metric measure. For a justification of this approach, refer to sub-section 11.6 below.

McKinley:

Notwithstanding that the McKinley is one of the oldest properties in the Franklin Camp, first staked in 1896 and Crown Granted in 1906, the only recorded production is a small shipment to the Trail smelter in 1949. This shipment totalled 132 tonnes (including 36 tonnes mined in 1948), with calculated recovered grades of 0.5 g/t Au, 215 g/t Ag, 0.12 percent lead and 0.17 percent zinc. The material was also said by the lessee to contain about three percent copper, but CM&S made no payment for this metal.

Union:

The Union mine was the premier producer of the camp, from an epithermal (?) bonanza gold-silver vein deposit. The production records for this mine are difficult to summarise, because there were several generations of production, and in two periods this production was won as a result of treatment of tailings from previous milling operations. In addition, there were several small shipments of direct smelting (flux?) ore to at least three smelters. The tonnage figures quoted here are for the total amount of material said to have been mined, and the recovered grades are derived by applying this tonnage to the total metal production listed regardless of the process. In total, about 122,500 tonnes of material were mined with average (overall) recovered grades of 14 g/t Au and 353 g/t Ag. Total metal production is said to have been about 55,500 troy ounces of gold and 1,392,300 troy ounces of silver. Production was discontinuous, starting in 1913 and ending in 1989.

8.0 GEOLOGICAL SETTING

8.1 Regional Geology

In terms of its regional tectonic setting, the Franklin Camp lies within a broad area included by Wheeler et al. (1991) in the Harper Ranch subterrane of Quesnellia, part of the Intermontane superterrane. In this area, Quesnellia lies within the southern portion of the Omineca morphologeological tectonic belt. The Harper Ranch subterrane forms basement to Quesnellia, and consists of "Upper Devonian to Triassic arc clastics, volcanics and carbonate."[1]

8.2 Local Geology

The general Franklin Camp area is contained within an inlier of Paleozoic volcanic and sedimentary rocks, surrounded by Mesozoic and Tertiary plutonic rocks and locally overlain by Tertiary clastic sedimentary strata and volcanic flow rocks (Little 1957; Templeman-Kluit 1989; Wheeler and McFeely 1991). There are small intrusive bodies of various ages within the inlier.

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[1] The subject of stratigraphic nomenclature and correlations for the Paleozoic rocks of the Franklin Camp area is complex; a full discussion is beyond the scope of this report. My own preference (Peatfield 1978) is to correlate these rocks with the Anarchist Group in the Boundary District to the south. Other workers prefer correlation with the Harper Ranch Assemblage. For a more complete discussion, refer to Monger et al. 1991.

To the east and slightly south of the camp, across a major fault, there are reported (Templeman-Kluit 1989) to be high-grade metamorphic rocks forming the northern extension of the Grand Forks Gneiss complex (Preto 1970). In the immediate area of the camp, the rocks to the east of the fault are various intrusive units presently assigned (Templeman-Kluit 1989) to complexes ranging in age from middle Jurassic to Eocene.[1] This major north-trending normal fault has in the past been regarded as forming the eastern edge of the northern extension of the Republic Graben.

The so-called Republic Graben is most obvious south of the United States border and is named for its best development at Republic, Washington where Tertiary rocks within the graben host bonanza epithermal precious metals deposits (see, e.g., Full and Grantham 1966). Faults that have been interpreted as bounding the graben extend into Canada, with the fault on the eastern edge traceable at least as far north as the Franklin Camp. However, it is important to note that more recent work (see, e.g. Cheney 1980; Cheney and Rasmussen 1996) has resulted in a radical re-interpretation of the geology in the Republic area. It now seems that more importance should be placed on the presence of relatively flat-lying "detachment" faults in understanding the geology of the area and the distribution of bonanza epithermal precious metal veins at Republic and elsewhere in the graben area. The term Republic Graben, although it is convenient and is firmly entrenched in the literature, should not be invoked simplistically as a possible control of precious metal deposits in the Franklin Camp.

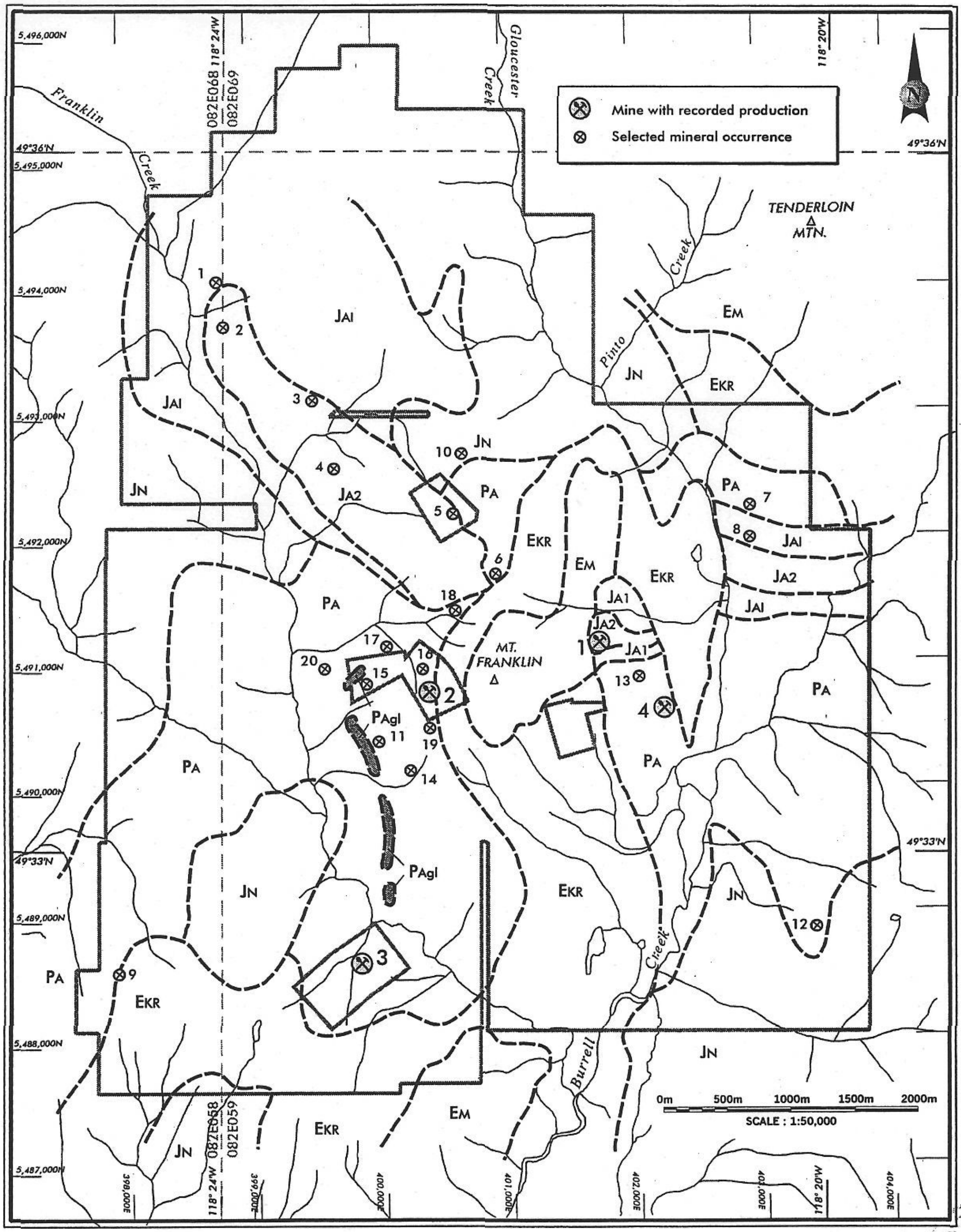
8.3 Property Geology

A grossly simplified summary of the property geology is shown on Figure 5. The basic outlines of the various geological units are derived from the mapping of Drysdale (1915), revised in the north-central portion of the property by reference to the work of Keep and Russell (1992) and mapping by A. Sutherland Brown as reported in Pinsent and Cannon (1988). This depiction is obviously a gross simplification of the rather complex geology of the property area, but is sufficiently detailed to describe the general setting of the various deposits and mineral occurrences.

The older volcanic and sedimentary strata in the Franklin Camp area have been the subject of some controversy for many years. Peatfield (1978, page 46) wrote on this subject as follows:

> Within two isolated regions north of the Boundary - Okanogan district, presumed Paleozoic rocks have been reported. In the Franklin Camp, Drysdale (1915) mapped the Franklin Group of "greenstone, altered tuff and silicified argillite," which he correlated with the "Knobhill [*sic*] group" of LeRoy [1912 – Phoenix area]. Within this group are pods of marble, which he named the Gloucester Formation, and correlated with the Brooklyn Formation at Phoenix and with parts of the Cache Creek at Kamloops, postulating that the marble represents infolded remnants of a later formation. It seems more likely that the pods represent limestone in strata correlative with the upper division of the Anarchist Group.

[1] See, however, the following sub-section for an important revision to Templeman-Kluit's work, regarding the age of certain of the intrusive rocks west of the fault. Such a revision may also apply east of the fault.



Notes: **Geology modified after Drysdale (1915); Pinsent and Cannon (1988).**
For key to geologic units, and names of mines and mineral occurrences, see next page.

Figure 5: Simplified geology map, Franklin Mineral Property. Scale 1:50 000

Table of Geologic Units:

EM	Eocene	Marron Formation	alkalic volcanic flows.
EKR	Eocene	Kettle River Formation	continental clastic sediments, rhyolitic flows and tuffs.
JA2	Jurassic	Averill Plutonic Complex	mafic syenite, pyroxenite.
JA1	Jurassic	Averill Plutonic Complex	syenite, monzonite, gabbro.
JN	Jurassic	Nelson Plutonic Suite	dominantly granodiorite.
PA	Paleozoic	Anarchist Group	greenstone, altered tuff, silicified argillite.
PAgl	Paleozoic	"Gloucester Formation"	marble

List of Mines with Recorded Production:

1	Maple Leaf	small tonnage; copper, gold, silver; PGE's not paid for.
2	Homestake	small tonnage; gold, silver, traces lead and zinc.
3	McKinley	small tonnage; gold, silver, lead, zinc; copper not paid for.
4	Union	gold, silver; about 55,500 troy ounces gold, 1.4 million troy ounces silver.

List of Selected Mineral Occurrences:

1	Columbia (060)[1]	PGE's with copper
2	Ottawa (061)	PGE's with copper
3	Buffalo (008)	PGE's with copper
4	Averill (007)	PGE's with copper
5	Mountain Lion (055)	PGE's with copper
6	Golden Age (053)	PGE's with copper
7	White Bear (056)	PGE's with copper
8	Lucky Jack (056)	PGE's with copper
9	IXL (033)	lead-zinc skarn, porphyry copper.
10	Glou[ce]ster (005)	quartz veins; gold, silver, base metals.
11	Banner (002)	quartz veins; gold, silver, base metals.
12	Little (004)	crustified quartz – carbonate vein, sparse sulphides.
13	Beaver (080)	volcanic rocks with pyrite, chalcopyrite.
14	Bullion (013)	quartz veins; gold, silver, base metals.
15	Aldie (050)	quartz veins, limestone replacements; silver, base metals.
16	Deadwood (063)	quartz veins; gold, silver, base metals.
17	Violet Fraction (020)	quartz veins; gold, silver, base metals.
18	Alpha (052)	poly-metallic; details lacking.
19	Laura (066)	quartz veins; gold, silver, trace base metals, arsenic.
20	Jimmy (042)	quartz veins, limestone replacements; silver, base metals.

[1] Minfile number – complete number format is 082ENExxx.

These rocks were placed by Little (1957) and later by Templeman-Kluit (1989) in the Anarchist Group (Paleozoic). As noted above, some workers prefer to assign these strata to the Harper Ranch Assemblage. As is the case in the Boundary District to the south (Peatfield 1978) the Anarchist equivalent rocks display a wide range of compositions and textures, and are difficult to map in detail. Volcanic units include basic to intermediate flows and pyroclastics. There are large volumes of fine clastic sedimentary rocks, and numerous podiform bodies of re-crystallised limestone. There have been no good age indications reported for these older units in the Franklin Camp area. A much more detailed treatment of these rocks in the property area may be found in Pinsent and Cannon (1988).

The older strata have been intruded by several types of granitic rock. The oldest of these makes up the large bodies assigned to the Middle Jurassic Nelson Plutonic suite (Templeman-Kluit, 1989). The rocks include what were originally mapped by Drysdale (1915) as "granodiorite, gneiss"; for the most part they are relatively equigranular intermediate intrusive types. They appear to have a close spatial and probably a genetic relationship to the contact metamorphic or "skarn" deposits typified by those in the McKinley mine area (see following section).

The most important rocks on the property from a point of view of the PGE potential are those of the Averill plutonic complex. Keep and Russell (1992) described the setting of the complex as follows:

> The geology of the Averill plutonic complex is shown in Fig. 2. The oldest rocks, proximal to the Averill complex, are Permo-Carboniferous sandstones, conglomerates, volcanic tuffs, and porphyries of the Franklin Group (Drysdale 1915), which have been recrystallized by regional metamorphism. Mesozoic (Jurassic) calc-alkaline granite [*sic* – granitic?] intrusions of Nelson and Valhalla affinity intrude the Franklin Group and are themselves intruded by phases of the alkaline Averill plutonic complex (Pinsent and Cannon 1988; Keep and Russell 1989) (Fig. 2). Eocene sedimentary rocks of the Kettle River Formation (Little 1957; Pinsent and Cannon 1988) unconformably overlie the Averill complex rocks. Trachytes of the Marron Volcanics occur at higher elevations in the area and disconformably overlie the Kettle River Formation. North-trending normal faults crosscut the Mesozoic and Eocene rocks (e.g., Parrish *et al.* 1988). Glacial deposits blanket approximately 85% of the map area.

They then described the complex in these terms:

> The Averill plutonic complex . . . comprises pyroxenite, monzogabbro, monzonite, and syenite phases and two compositionally distinct sets of late dikes. The intrusion is concentrically zoned, with pyroxenite at the centre, grading outwards through monzogabbro and monzodiorite, to monzonite at the perimeter. Trachytic syenite occurs along the axis of the pluton as a coarse-grained core and a fine-grained marginal phase (Fig. 2). It is mineralogically distinct and is characterized by a prominent alignment of K-feldspar megacrysts. The alignment does not demonstrably relate to the contacts. This may reflect poor sampling due to lack of exposure or a complicated actual pattern. The syenite intrudes the pyroxenite and monzogabbro, and the mafic phases are brecciated along the margin of the syenite.

The pyroxenite unit mentioned in the preceding quote is the "shonkinite-pyroxenite" or "Black Lead" unit of Drysdale (1915).

The most important point arising from the work of Keep and Russell (1992) is that the Averill plutonic complex, rather than being of Eocene age as originally suggested by Drysdale (1915) and reiterated by essentially all workers through to the present, is actually Jurassic, ". . . dated at 150 ± 5 Ma (K – Ar pyroxene – amphibole age on pyroxenite; R.L. Armstrong, unpublished data)." This has important implications because not only does it place the complex at a different point in the geologic history and thus subject to different events, but also because it raises the question of what the event was that caused intense local alteration of the Kettle River rocks. Drysdale (1915, pages 81-83) thought that this alteration was caused by the intrusion of the rocks now included in the Averill plutonic complex, and thus clearly much older than the Kettle River strata. The supposition that this alteration was caused by an independent event in Eocene time would have a significant influence on the strategy of search for additional epithermal (?) precious metals deposits of the type represented by the Union mine.

Lying above all the previously mentioned units are the Eocene continental clastic sedimentary rocks of the Kettle River Formation. These rocks, described in some detail by Drysdale (1915) include ". . . conglomerates, arkosic grits, and water-laid acidic tuffs." Also included in this unit for the purposes of the present simplification are some areas of rhyolite and rhyolite porphyry, especially well developed on Franklin Mountain south of the McKinley Mine.[1] The geometry of the exposures of the clastic sedimentary rocks suggests that there was considerable topography at the time of deposition, but also that the strata have been subjected to later tectonic activity, probably vertical but possibly some listric faulting.

The Kettle River strata are demonstrably younger than the rocks of the Averill plutonic complex. On my recent visit, I examined an exposure on the west flank of Franklin Mountain, in the Homestake area. Here there are angular fragments of various members of the complex contained in conglomerate lenses in the grit unit.

Lying disconformably above these clastic sedimentary rocks, and capping the highest hills, are flows of Eocene lavas. These trachytic flow rocks are best correlated with the Marron Formation rocks to the south (see, e.g., Peatfield 1978). There are also numerous "pulaskite"[2] or alkali-syenite dykes and irregular masses, related to the Marron lavas, cutting most of the older units.

A large lamprophyre or minette dyke on Mount McKinley appears to represent the youngest rocks in the camp.

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[1] Similar acid volcanic flows and pyroclastics are found within the Kettle River Formation strata elsewhere in the region; see, e.g. Monger (1968); Peatfield (1978, pages 105-106); Little (1983, page 26).

[2] Pulaskite is a regionally popular name for a group of Eocene dykes and plugs of generally alkali syenite composition (see, e.g., Daly 1912, pages 417 - 419 for a description of similar rocks in the Boundary District to the south). These dykes are generally thought to represent feeders for the overlying Marron Formation flows. The name pulaskite has been applied in the past to rocks containing nepheline and others with quartz; it is not currently recommended usage (Jackson 1997).

9.0 PRINCIPAL MINERAL DEPOSIT TYPES

There are three important types of mineral deposit or occurrence presently known in the Franklin Camp. As well, numerous other "showings" do not fit well within any of these three categories. The three principal types, in order of historical importance, are:

1. Epithermal (?) gold-silver dominant vein deposits with significant amounts of base metals. At present, these are known in the older (Paleozoic) Anarchist Group rocks but are not necessarily so restricted. These "veins" for the most part dip steeply and in many cases are composed of zones of intense silicification of country rocks, with irregular boundaries. They have in most cases been disrupted by late, probably syn- or post-Eocene, structures. These deposits and occurrences are referred to herein as the **"Union Mine" type.**
2. Segregations of copper sulphides in mafic alkalic rocks of the Averill plutonic complex. These so-called **"Black Lead"** deposits (Drysdale 1915) carry significant amounts of PGE's. The occurrences are thought to be magmatic segregations, but may in fact have some hydrothermal overprint. Their mineralogy is extremely simple, and they do not appear to carry any significant amount of nickel; pyrrhotite is reported from only one occurrence. These occurrences are called herein the **"Averill plutonic complex copper – PGE" type.**
3. Poly-metallic (copper-lead-zinc-silver-gold) contact metamorphic or metasomatic concentrations. Many are associated with marble lenses within the Anarchist Group; others with contacts of older or younger intrusive bodies with the Paleozoic rocks in general. In some cases, there are spatially related occurrences with "porphyry" overtones. These occurrences are called herein the **"Poly-metallic 'skarn'" types.**

10.0 MINERAL DEPOSITS AND OCCURRENCES

10.1 Geological Settings

Presented in this sub-section are very brief descriptions of the general geological settings of the three principal types of metal occurrence. This is by no means an exhaustive treatment, but is sufficient to give a general feeling for the subject.

A: Union Mine type:

The Union Mine deposit and other occurrences of this general type are for the most part found within structurally controlled zones in the older (Anarchist Group) rocks. They do not appear to be directly related to intrusive rocks, and to date have not been found to extend into the overlying Eocene sedimentary and volcanic units, except possibly in the case of the Laura showing.[1] However, there is room for interpretation

[1] Notwithstanding a comment in Minfile to the effect that the Banner, Homestake and Deadwood occurrences are "... hosted by andesite and dacite flows and tuffs of the Eocene Marron Formation ....", the evidence from Drysdale's (1915) map, and from unpublished work by Newmont Mining Corp. of Canada Ltd. on the Banner and Homestake, suggests that the veins lie within Anarchist Group rocks.

here, and it seems more likely that given the nature of the material in question, the veins were formed after the deposition of the Kettle River strata, probably as part of the event that produced the Marron lavas. If this is the case, then the Kettle River and possibly the Marron rocks become prospective. This is a radical departure from previous concepts, and thus opens up new areas for exploration.

In general, these vein occurrences are irregular, mostly relatively steeply dipping, and in many cases somewhat diffuse and irregular. Some veins should more properly be termed silicified zones, with irregular limits. Many zones are disrupted by later faulting. Attitudes are variable, although the major veins are oriented generally east-west.

B: Averill plutonic complex copper – PGE type (Drysdale's "Black Lead" type):

Copper-PGE occurrences of this type tend to be concentrated in the pyroxenite phases of the Averill plutonic complex. For the most part, this unit tends to be central to the complex, although in places, as on the Maple Leaf claim the pyroxenite is found in contact with the older Anarchist Group rocks. Drysdale (1915) stated that the mineralised material is ". . . usually near the outer margins of the shonkinite-pyroxenite and is very irregularly distributed." In places, as for example on the Maple Leaf claim, the copper sulphides with associated PGE's are found in porphyritic syenite, or in syenitic veins in pyroxenite.

C: Poly-metallic "skarn" types:

Occurrences in this rather loose grouping tend to be located near the contacts of various Jurassic intrusive bodies with Anarchist Group rocks, especially where these older rocks include limestone or limey units. In some cases, as at the Glouster occurrence, the material is contained within shear zones, but the mineralogy is typical of skarn deposits. They occur at several locations within the camp.

10.2 Mineralogy

This sub-section describes, as fully as possible given currently available knowledge, the mineralogy of the three principal deposit types. The information is derived from various sources, mostly in the public record but some in less easily obtainable sources.

A: Union Mine type:

The most detailed work on the mineralogy of this type is that reported by Pike (1935). He described ". . . gold-silver mineralization associated with pyrite.", in a quartz and locally calcite gangue. "Ore" minerals noted were gold (fineness not stated), argentite [*sic* – acanthite], galena, sphalerite and chalcopyrite. These minerals ". . . occur as disseminated particles and minute fracture fillings in the quartz." Pike described, from the highest grade ore from one of the veins at the Union mine, ". . . banded massive chalcopyrite and pyrite with a lesser amount of sphalerite. Galena is rather scarce and where it does occur it is very fine grained." From another of the veins (the "Gold" vein) the bonanza ore contained abundant coarse free gold, which ". . . nearly always occurs surrounded by galen[a], which is in turn enclosed by calcite or occasionally quartz." In this case the galena was coarsely crystalline.

Drysdale (1915) described material from the Banner and Union occurrences. At the Banner, "The ore is zinc blende, galena, chalcopyrite and pyrite in a quartz gangue." He noted that the Union material ". . . very much resembles that of the Banner." At the Little prospect, across Burrell Creek to the east, a vein has very sparse sulphides, but "Some splendid specimens of vein crustification come from this locality." Vein minerals at the Little prospect are botryoidal and globular siderite and well-crystallised calcite and quartz. One suspects that other minerals are present but not reported. Minfile states that at the Union, "Pyrargyrite [a silver sulphosalt] has also been noted.", but gives no reference for this statement.

B: Averill plutonic complex copper – PGE type (Drysdale's "Black Lead" type):

Given the emphasis that has been placed on exploration for this type of material, there is remarkably little detailed information available regarding the minerals of potential economic interest. Keep and Russell (1988) wrote as follows:

> Sulphide mineralization is present in all rocks of the plutonic suite and also in the later dykes. Pyrite and chalcopyrite are ubiquitous, and other minerals such as bornite, malachite, azurite and magnetite are sometimes present. Their concentration on fracture surfaces and in and around crosscutting veins of alkali feldspar suggests that at least one phase of hydrothermal mineralization has occurred.

Wilkinson (2000) has amplified the above picture somewhat:

> Known sulphide mineralization within the Averill Complex occurs as fine-grained disseminations, small calcareous lenses and veinlets, alkali feldspar veinlets, and in quartz-calcite veins in pyroxenite, melanocratic syenite, and along contacts with syenite and the various dykes. The sulphides present are chalcopyrite, bornite, pyrite and pyrrhotite, with minor amounts of sphalerite, galena, and molybdenite also present in the calcite-quartz veins.

The platinum and palladium mineralogy of the various occurrences in the Franklin Camp has not been reported in any detail. Rublee (1986) stated unequivocally but without a reference that "Sperrylite (Pt,As_2) is closely associated with sulphides; it is the major platinum mineral." Thomlinson (1920) was much less dogmatic, saying that "The mode of occurrence of the platinum has not yet been determined, but I think that it may occur mainly in the form of sperrylite, the arsenide of platinum, and closely associated with the sulphides." No reports have been found regarding palladium minerals.

On the Lucky Jack and White Bear claims, at the eastern end of the Averill plutonic complex, there was an early report (MMAR 1906 – page 164) that work ". . . has uncovered [on the White Bear claim] a large body of white iron carrying gold and copper and running from one to ten dollars. There are several chutes of high grade chalcopyrite running through the lead." This delightful description leaves one wondering[1]; later

[1] Indeed, it appears possible that there are two distinct styles of material here: typical Averill plutonic complex copper-PGE material associated with pyroxenite on the Lucky Jack claim and a poly-metallic "skarn" occurrence on the White Bear claim.

Thomlinson (1920) described a sample from the Lucky Jack, from which he obtained an assay of trace gold and 0.08 o/t Pt from ". . . selected pieces of dark-coloured close-grained rock, showing fine particles of chalcopyrite, some pyrite, and small crystals of a whitish metallic mineral."

It has become an article of faith that the platinum (and presumably the palladium) contents of material from the Franklin Camp is roughly proportional to the copper values. Unfortunately, Thomlinson (1920) did not report copper assays for any of his samples, so it is difficult to confirm this supposition. However, at the Mountain Lion prospect, he described ". . . a contact between pyroxenite and a greenstone, where there is a large exposure of sulphides and oxides of iron showing very slight indications of the presence of copper-bearing minerals." From one sample of this material he obtained an assay of trace gold and 0.09 o/t Pt.

C: Poly-metallic "skarn" types:

Drysdale (1915) noted that there were two classes of contact metamorphic mineral deposits. The first he called the "Mesozoic" deposits of the contact metamorphic type, and recognized three sub-types: pyrite-chalcopyrite; galena-blende; and magnetite-pyrite. These are associated with the older (Paleozoic) rocks. Such deposits are best represented at the McKinley mine and the immediately surrounding area. The second type, represented by material at the Maple Leaf mine, he regarded (erroneously, as it turns out) as Tertiary (Miocene) contact metamorphic. As outlined above, the causative intrusive rocks are probably of Jurassic age.

Both contact metamorphic types have, at least as far as is known at present, a simple mineralogy. The older (McKinley) type are typified by some or all of the following minerals: pyrite, chalcopyrite, sphalerite, galena and magnetite; gangue minerals include: quartz, calcite, grossularite garnet, epidote, tremolite, diopside and chlorite. Secondary copper carbonate minerals (probably malachite and azurite) are common. The "younger" (Maple Leaf) type have a similar mineralogy, with an emphasis on the copper species.

Other contact type occurrences are known, generally related to the older, granodioritic intrusive rocks where they are in contact with the Paleozoic units. Again, the mineralogy is simple; in a few places molybdenite has been noted.

11.0 Exploration Results, Past and Present

11.1 Introduction

A report of this nature can in no way be expected to treat all exploration data available for a property of this large size and with so much history. Only the highlights can be mentioned, and then only in simplified form. There is a marked need for a detailed compilation of data for this historic mining camp; such a compilation would be a major undertaking.

11.2 Geology

Many local geological mapping programs have been completed over parts of the property, ranging from very detailed surveys of specific workings to more regional studies of selected properties. For an overview of the entire camp, it is difficult to improve on the 1:24,000 scale map accompanying Drysdale's 1915 Memoir. While there have been numerous refinements over the years, this is still the best property-scale map on which to see the distribution of geologic units and sulphide mineral occurrences. Only in the area of the Averill plutonic complex has there been enough detailed mapping to significantly alter the outlines as presented on Drysdale's map. One notable deficiency on all maps to date is a lack of clear understanding and explication of faulting styles and patterns, especially as they affect the Eocene sedimentary and volcanic rocks.

11.3 Geochemistry

There have been numerous local geochemical surveys of varying types and vintages, but to date there is no unifying survey, and the existing work has not yet been compiled to see if there are any coherent overall patterns. Given the complexity of the geology, the different styles of mineralisation represented, and the possibilities for cultural contamination consequent on a century of exploration and mining in the camp, a property-wide geochemical survey would probably be difficult to interpret. Clearly, the first step would be to compile existing data from all available sources. Following this, some orientation work would be valuable before starting a large program.

11.4 Geophysics

There have been numerous geophysical programs completed to date on Franklin Camp properties, including airborne surveys covering most or all of the camp. Only the more important of these surveys, for which there are data readily available, are described herein.

The entire region was covered by a government aeromagnetic survey flown in the early 1970's. The specific map-sheet covering the camp and the surrounding area (BCDMPR/DEMR 1973) shows a very good correlation between bed-rock geology and aeromagnetic anomalies, although the picture is complicated by the complexity of the geology, especially in terms of overlying units of varying susceptibility. There is especially good correlation between magnetic high features and the distribution of the mafic intrusive rocks of the Averill plutonic complex, which appear to be the principal hosts for PGE occurrences.

The recently completed (March 2001) helicopter airborne geophysical program (Smith 2001) was a combination magnetic and electromagnetic survey, the stated purpose of which was ". . . to detect blind zones of conductive (Pb-Zn) mineralization; to map gabbroic units hosting Platinum Group Elements; to detect auriferous quartz veins; and to provide information that could be used to map the geology and structure of the survey area." It must be said that at least some of the more general of these objectives were met.

The total field magnetic patterns to a very large degree agree with those on the earlier government survey, with the obvious refinements consequent upon increased flight line density and advances in instrumentation. The total field map will be useful for directing ground surveys, including geological mapping and other work. It is important to stress, however, that airborne magnetic surveys by their nature very seldom lead to direct discoveries of mineralised rock.

One interesting observation from the recent aeromagnetic data (confirming the earlier survey work) is that some areas of the Nelson (granodiorite) plutonic rocks show much higher magnetic susceptibility than others. This is especially evident in the case of the north-easterly trending body north-west of Mount McKinley, which has a magnetic signature much like that of the more basic rocks of the core zone of the Averill plutonic complex. This situation requires further study in the field.

Plots of other geophysical parameters, such as apparent resistivity, calculated vertical magnetic gradient and electromagnetic derived susceptibility have patterns which in many case appear to be correlatable with various geological features. However, it must be stressed that the geology is so complex that such patterns are in many cases permissive of several interpretations. Again, while these data are undoubtedly useful for geological studies, they are not likely to lead directly to areas of economic mineral concentrations.

The plot of electromagnetic conductors shows a very large number of these features, but most appear to be short and weak, and whether any of them are related directly to mineral occurrences is not immediately clear. Certainly, those regarded as higher priority on geophysical grounds should be tested by ground surveys, but given the nature of most of the targets sought, it is not likely that these would show up as strong airborne survey conductors.

11.5 Sampling

Over the years, there has been a large amount of sampling of the many mineral occurrences in the Franklin Camp. It is not possible to present more than a few of the results, those of particular interest to show the general metal tenors of the more important occurrence types. It is important to stress that these data represent many different vintages and styles of sampling and analysis; in many cases they are the best obtained. They should be treated with caution, as indicators only, especially in the case of older work. Results are presented in tabular form for the principal occurrence types, in order.

A: Union Mine type:

There are many assay results reported for the various deposits and occurrences included in this category. The more important are presented on Table 1. Because most of these results are from the modern era, I have chosen to present precious metal assays in metric format – in some cases these are conversions from Imperial measure, in which case they are noted as such.

Table 1: Selected results of sampling; Union Mine type occurrences:

Property	Description	g/t Au	g/t Ag	% Cu	% Zn	% Pb
Banner	PDI (AR 17273) 1987: grab # 16783.	1.13	48	0.97	3.12	4.48
Banner	PDI (AR 17273) 1987: grab # 16794.	9.27	45	0.27	6.00	2.12
Banner	Sway Resources (Statement of Material Facts – 14 Feb. 1994) – 3.05 m drill interc.	8.55	n/a	n/a	n/a	n/a
Union	Pearl Resources (AR 13710) 1984: DDH, 6.55 m (3.5 m tr. th.) intercept at west end.	c. 19.9	c. 1110	n/a	n/a	n/a
Union	see production section for grade details.					
Bullion	*PDI (AR 17273) 1987: best chip sample in trenches, # 22069 – length not stated.*	*0.64*	*18*	*0.072*	*0.53*	*0.165*
Violet Fraction	PDI (AR 17273) 1987: sample from trench, length not stated.	1.10	n/a	n/a	n/a	n/a
Violet Fraction	PDI (AR 17273) 1987: sample from trench, length not stated.	1.80	n/a	n/a	n/a	n/a
Aldie	PDI (AR 17273) 1987: grab (?) sample, no details available.	0.47	8	0.0295	0.95	0.42
Homestake	MMAR 1901: # 1 vein $5 gold, 1 ounce silver – assume gold at $20.66 per ounce.	c. 8.3	c. 34.3	n/a	n/a	n/a
Homestake	as above: # 2 vein $19 gold, 26.5 ounces Ag.	c. 31.5	c. 909	n/a	n/a	n/a
Homestake	as above: # 3 vein $36 gold, 16 ounces Ag.	c. 59.7	c. 549	n/a	n/a	n/a
Homestake	MMAR 1931: picked sample from one shaft, dimensions not stated.	c. 854	c. 514	n/a	n/a	n/a
Homestake	as above: sample across 4 feet of vein.	c. 20.6	n/a	n/a	n/a	n/a
Homestake	as above: picked sample in adit – dimensions not stated.	c. 315	n/a	n/a	n/a	n/a
Homestake	as above:	c. 110	n/a	n/a	n/a	n/a
Homestake	as above: 3 feet across vein.	c. 75.4	n/a	n/a	n/a	n/a
Homestake	PDI (AR 17273) 1987: 2nd. vein, width not stated.	12.6	30	0.066	0.047	0.44
Homestake	Sway Resources (S.M.F. – 14 Feb. 1994): drill hole cut 1.2 m.	7.5	n/a	n/a	n/a	n/a
Alpha	Franklin Mines Ltd. (AR 637) 1963: one channel sample (#9835) in adit.	0.684	3.42	0.8	n/a	n/a
Alpha	PDI (AR 17273) 1986: sample #17079 near adit – no details.	16.8	n/a	n/a	n/a	n/a
Deadwood	PDI (AR 17273) 1987: grab near adit.	1.6	4.3	low	low	low
Deadwood	PDI (AR 17273) 1987: grab from 200 metres west of adit.	2.53	11.0	0.93	1.25	0.339
Deadwood	Sway Resources (S.M.F. – 14 Feb. 1994): quartz vein near adit – no sample details.	5.8	n/a	n/a	n/a	n/a
Laura	PDI (AR 17273) 1987: grab – no details.	0.14	56	n/a	low	low
Laura	PDI (AR 17273) 1987: DDH PDI 87-34 – 1.65 m intercept; also has 0.139% As.	0.1	25	low	low	low

Notes

1. AR – Assessment Work Report.
2. Data shown with grey shading refer to material from claims not presently included in the Property.
3. Assays denoted c. refer to conversions from Imperial units.
4. n/a – no data available.
5. *Assay data quoted directly, with no decimal place formatting.*
6. Year quoted after AR # is year of work, not year of reporting.

B: Averill plutonic complex copper – PGE type (Drysdale's "Black Lead" type):

The early interest in the occurrence of PGE's in the Franklin camp was reported by Thomlinson (1920); results from his sampling are listed on Table 2A. Shown on Table 2B are selected assays for more recent sampling of these occurrences. As noted above, I have chosen to report Thomlinson's results in their original format rather than converting to metric measure.

Table 2A: Reported results from Thomlinson (1920); gold and platinum:

Sample	Claim	Description	o/t Au	o/t Pt
T3	Maple Leaf	From small vein at north end of claim.	trace	trace
T4	Maple Leaf	From small vein, 175 ft. from centre post, north end.	trace	trace
T5	Maple Leaf	From 12-inch streak of altered rock crossing short drift near shaft at upper workings.	trace	trace
T6A	Maple Leaf	From main open-cut at upper workings. A large general sample of all ore-minerals in sight at the cut. Taken by hand-cobbing ore similar to that in two carloads previously shipped by owners.	0.04	0.15
T6B	Maple Leaf	From the same open-cut as T6A. Taken as a check sample, in the same manner.	0.04	0.17
T7	Beaver	General sample from an 85-ft drift at lower main workings.	trace	trace
T8	Beaver	General sample of apparently the best ore in lower workings.	0.03	trace
T9	Beaver	Special sample of material indicated by Mr. Young, who stated it gave a malleable bead of white metal on fusion with soda.	trace	trace
T41	Lucky Jack	From dump of pyroxenite at mouth of short drift near west end line. Sample taken from selected pieces of dark-coloured close-grained rock, showing fine particles of chalcopyrite, some pyrite, and small crystals of a whitish metallic mineral.	trace	0.08
T42A	Lucky Jack	From small shaft about 200 ft. easterly from above-mentioned drift. Taken from a lens of dark, close-grained rock at southeast corner of shaft near bottom. Rock contained fine particles of chalcopyrite, some pyrite, and specks of a darker mineral.	0.04	0.04
T42B	Lucky Jack	From open-cut near east end-line. Taken from selected pieces of medium-grained pyroxenite containing particles of chal-copyrite, some pyrite, and stained by copper carbonates.	0.04	0.06
T43	Mountain Lion	From small shaft and large open-cut on the ridge about 1,000 ft. west of shaft on the Gloucester [sic] claim. Mostly oxidized pyroxenite and iron sulphide.	trace	0.09
T44	Mountain Lion	General sample from small shaft and large open-cut. Mainly decomposed pyroxenite and reddish-brown oxides of iron.	0.02	0.02
T45	Golden Age	From small shaft near southwest end of claim. Mainly oxidized pyroxenite showing sulphides and oxides of iron with fine particles of chalcopyrite and stains of copper carbonates.	trace	0.06

Table continued on following page:

Table 2A: Reported results from Thomlinson (1920); gold and platinum (continued):

Sample	Claim	Description	o/t Au	o/t Pt
T46	Averill group	From dump at lower drift near the cabin. Broken from selected pieces of coarse-grained pyroxenite associated with fine-grained syenite, showing specks and small masses of chalcopyrite with a few fine particles of bornite.	trace	0.09
T47	Averill group	From dump at upper shaft. Selected pieces of coarse-textured pyroxenite containing some chalcopyrite and a few particels of bornite.	trace	0.09
T48	Buffalo	From dump of old shaft below and near trail at southwest end of claim. Pyroxenite containing small masses and particles of chalcopyrite, some pyrite and a few stains of copper carbonates.	trace	0.19
T49	Buffalo	From several open-cuts in dry ravine below trail near southeast corner. Selected pieces of chalcopyrite with some pyrite.	trace	0.08
T50	Ottawa	From large open-cut on side-hill north of and near trail and cabin. Selected pieces of pyroxenite containing magnetite, pyrite, and specks of chalcopyrite.	trace	0.06
T51	Columbia	From dumps of two drifts on side-hill north of cabin on north bank of Franklin creek. Selected pyroxenite containing some pyrite and chalcopyrite.	none	0.04

Notes
1. Data shown with grey shading refer to material from claims not presently included in the Property.
2. Descriptions are direct quotes from original reference.
3. Assay data quoted directly, in Imperial units – there has been no metric conversion.

There is also a reference to some earlier assay work on material from the Maple Leaf property. O'Neill and Gunning described this as folows:

> In 1915, a shipment of 23 tons of copper ore from the Maple Leaf property to the Grand Forks smelter was found to assay 0.26 ounce of platinum to the ton, and a further shipment of 17 tons in 1916 assayed 0.20 ounce platinum a ton. These relatively high values immediately drew attention to the property, and several engineers examined it. The highest assay obtained as a result of this work was 0.40 ounce of platinum to the ton of ore. The general tenor of the ore may be seen from the assays of the two shipments referred to above:

	March, 1915 23 tons	October, 1916 17 tons
Platinum	0.26 oz. a ton	0.20 oz. a ton
Gold	0.02 "	0.13 "
Silver	6.7 "	2.6 "
Copper	9.6 per cent	5.6 per cent
Iron	9.5 "	6.8 "
Lime	0.7 "	0.4 "
Sulphur	7.7 "	4.8 "
Insoluble	66.0 "	74.6 "

O'Neill and Gunning further noted information regarding the Buffalo property:

> All the properties in the above list [from Thomlinson 1920, excepting the Maple Leaf] are in the prospect stage. The only property of those mentioned above about which

information is available is the Buffalo. At the smelter at Grand Forks it was learned that a series of eight samples had been taken from the Buffalo property and that three of the eight showed copper and the one highest in copper gave values in platinum. The result of this assay was: copper, 2.2 per cent; gold, trace; platinum, 0.14 ounce a ton

On the Davenport and Dawn (or Don – the records are contradictory), probably part of the Averill group, there is a report (MMAR 1921) of a tunnel 75 feet long where material from the contact between pyroxenite and syenite contained minute specks of bornite and masses of chalcopyrite. "A picked sample of this rock carried values of 11 per cent copper and 0.11 oz. in platinum."

Table 2B contains results of more recent sampling on occurrences of the general Averill plutonic complex copper-PGE type. These results have been abstracted from Minfile and not in most cases checked with the original source data. Data are metric.

Table 2B: Selected results of recent sampling; platinum, palladium and copper:

Occurrence	Description	g/t Pt	g/t Pd	% Cu
Maple Leaf	Franklin Mines Ltd. (AR637) 1963: 106.8 metre channel sample (surface?).	6.02	n/a	n/a
Maple Leaf	Franklin Mines Ltd. (AR637) 1963: 23.9 metre channel sample in adit.	0.034	n/a	0.067
Maple Leaf	Franklin Mines Ltd. (AR637) 1963: reference obscure – DDH reported to have cut 30 cm massive pyrite, chalcopyrite.	8.25	n/a	n/a
Maple Leaf	Franklin Mines Ltd. (AR637) 1963: reference obscure – DDH reported to have cut 4.26 metres.	8.86	n/a	1.36
Maple Leaf	Longreach Resources Ltd. (AR 15746) 1986: DDH-12 – 61 cm.	1.52	2.84	3.52
Maple Leaf	PDI (AR 17273) – 1987: grab sample # 22026.	1.02	2.55	2.64
Beaver	no modern sampling reported.			
Lucky Jack	no modern sampling reported.			
Mtn. Lion	no modern sampling reported.			
Golden Age	no modern sampling reported.			
Averill area	Franklin Mines Ltd. (AR637) 1963: 39 m channel sample, weighted average grade.	0.04	n/a	n/a
Averill area	*Longreach Resources Ltd. (AR15964) 1968: DDH-18 - 0.30 m (also had 8.0 g/t silver).*	*0.36*	*0.25*	*0.42*
Averill area	PDI (AR 17273) 1987: surface grab (also had 53.6 g/t silver).	0.9	3.5	6.90
Averill area	PDI (AR 17273) 1987: DDH PDI 87-32, under adit – traces of chalcopyrite only.	n/a	n/a	n/a
Buffalo	Franklin Mines Ltd. (AR637) 1963: 76.8 m channel sample.	0.1	n/a	n/a
Buffalo	Longreach Resources Inc. (AR 15964) 1986: DDH-29 - 3.05 metres.	0.081	0.121	0.055
Ottawa	no modern sampling reported.			
Columbia	no modern sampling reported.			

Notes
1. AR – Assessment Work Report.
2. Cells shown with grey shading refer to a claim not presently included in the Property.
3. Assay data quoted directly, with no decimal place formatting.
4. n/a – no data available.
5. Year quoted after AR # is year of work, not year of reporting.

C: Poly-metallic "skarn" types:

There is little available information regarding sampling of the poly-metallic "skarn" occurrences. On the McKinley in the very early years, reports (MMAR 1904) are of large cuts averaging 3.5 and 4.5 percent copper and $2.00 and $2.50 in gold and silver. On a western extension of the McKinley the material was said to grade 7.5 percent copper over 11 feet, with some gold and silver. These results are not particularly useful, but they do serve to emphasise the copper rich nature of the McKinley Mine material.

Other contact metamorphic and miscellaneous occurrences in the camp have had some sampling; available data are presented on Table 3. Again, data are metric.

Table 3: Selected results of sampling; contact metamorphic type occurrences:

Property	Description	g/t Au	g/t Ag	% Cu	% Zn	% Pb
IXL	Canamax Resources Ltd. (AR 21768) 1991: average of 14 samples of skarn.	0.088	n/a	0.24	0.36	n/a
IXL	Canamax Resources Ltd. (AR 21768) 1991: average of sampling, silicified porphyry.	0.16	n/a	0.12	n/a	n/a
Glouster	Guy Allen (AR 10953) 1984: grab sample at adit portal.	0.3	5.47	0.28	0.038	0.022
Glouster	R. MacKillop / M.L. Malott (AR 15467) 1987: grab from a pit – also 0.02 g/t Pt.	0.072	1.38	0.108	n/a	n/a
Jimmy	PDI (AR 17273) 1987: grab from adit.	n/a	20	0.027	3.4	1.94
Beaver	Franklin Mines Ltd. (AR 637) 1963: average for 10.6 m channel sample in adit.	0.34	n/a	0.188	n/a	n/a

Notes
1. AR – Assessment Work Report.
2. n/a – no data available.
3. Assay data quoted directly, with no decimal place formatting.
4. Year quoted after AR # is year of work, not year of reporting.

11.6 Drilling

Over the many decades that exploration has been undertaken in the Franklin Camp, there have been a large number of drilling programs. These have involved both surface and underground work, by both diamond coring and rotary methods. Records for many of these programs are not available, or are at best fragmentary.

The results of these programs are not discussed in detail. Where appropriate, in listing assays from certain properties or occurrences on Tables, drilling intercepts have been presented as quoted in Minfile (and in many cases confirmed in source data). It is critical to note that these results have not been independently verified, and must be accepted only with this caveat in mind.

Cores for most of the diamond drilling appear to have been lost or destroyed, although those from some of the more recent holes (such as the PDI work in 1987) may be salvageable, at least in part. Cursory examination suggests that much of the core, at least in some holes, was not sampled for analysis. It may be that with changes in exploration philosophy and emphasis on different styles of mineralisation, at least some of this core might become a resource to be used in future work.

11.6 Comments on Sampling and Analytical Procedures

There is very little information available regarding sampling and analytical techniques, especially for early work. Except in the case of the more recent sampling, laboratory names and procedures are not generally stated. **All historical analytical data should be treated with extreme caution and used only for general conceptual purposes.** The above comments are especially important with respect to PGE assays. Much of the interest in the camp has been generated by reference to platinum assays performed in the early part of the last century. Platinum assays were notoriously difficult in those days, and the quoted values must be regarded with some suspicion.

Finally, one must deprecate the currently popular practice of converting historical assays quoted to the nearest one hundredth of a troy ounce per short ton (e.g. 0.0x ounce metal per ton) into a metric "equivalent" to the nearest one hundredth of a gram per tonne. The second decimal place in the metric value has no significance; indeed, one might argue the same way regarding the first figure after the decimal point. In many cases, the second decimal point in the Imperial unit is an estimate. It is far better to quote an original assay of (say) 0.09 ounce platinum per ton as 3. grams platinum per tonne, or at most 3.1 grams per tonne. **No good purpose is served by making assays appear more precise than they really are.** For this reason, I have chosen to quote most historical assays in their original units; readers may make conversions as they see fit.

11.7 Data Verification

There has been no independent verification of any of the sampling or analytical data on which the arguments presented herein are based. Given that they are derived from so many sources, most of which may be regarded as reliable, they are considered reasonable for general conceptual purposes.

12.0 MINERAL RESOURCE ESTIMATES

There are at present no detailed mineral resource estimates for any of the occurrences on the subject property based on parameters acceptable for Canadian regulatory authorities, as set out by JORC (1996) and CIM (2000). Minfile quotes estimates of tonnages and grades for dumps and vein material in place at the Union mine, but these are very small and almost certainly not rigorously calculated. There are not sufficient backup data available to permit detailed comment on these estimates. **These estimates must not be referred to in any corporate documents requiring regulatory approval.**

13.0 ENVIRONMENTAL CONSIDERATIONS

Any proposed development project in British Columbia under present conditions will face numerous environmentally driven hurdles. There is no reason to believe that the situation in the Franklin Camp would be very much more serious than elsewhere in the Province; indeed, because of the long history of exploration and exploitation in the area, it might be argued that the problems would be less. There are no particular beauty spots here, and it is unlikely that the Franklin Camp would become the "last unspoiled valley" so beloved of environmental protesters.

There is, however, an incipient problem facing any serious programs in the Franklin Camp area. As mentioned above, there was in the late 1980's a heap leaching operation treating tailings from the old Union Mine. This project was started in spite of opposition from residents of the general region, and in the event was closed by the authorities following overflows and leaks of weak cyanide solution from the facility. Although there was no evidence of damage to life forms resulting from these leaks, there was an inevitable "told you so" reaction from the locals, and it is my considered opinion that there would be strong protests against any proposed operation in the area. The fact that such a proposed operation might not involve the use of cyanide would probably not much lessen the protest. This has the potential to become a major public relations issue and should be carefully considered.

14.0 DISCUSSION AND INTERPRETATION

The following paragraphs refer to some of the metallogenic concepts and exploration strategy issues relevant to the Franklin Camp program. There appears to have been a tendency to assume that the potential of the camp lay in a particular deposit type, and this has lead various workers to ignore or down-play certain other target types. This discussion is meant to provide some reasons for a review of basic policies and strategies for mineral exploration in the camp.

The emphasis of much of the exploration activity in the Franklin Camp over the last hundred years has been on two very different situations; on gold-silver-base metal vein deposits and on concentrations of copper minerals with associated PGE's in alkaline rocks, especially clinopyroxenites and mafic syenites. The second occurrence type has been the primary focus of the present program.

The PGE occurrences in the Franklin Camp appear to be members of a relatively little-studied group of deposits, none of which have to date achieved substantial production. Some, however, appear to have good potential and are under active exploration in western North America. These deposits and occurrences are notable in that they contain substantial amounts of copper and essentially no nickel, and that they occur in distinctly alkaline rocks. Some, for example the New Rambler mine in Wyoming (McCallum and Orback, 1968), have been regarded as providing evidence for hydrothermal deposition of copper minerals with associated PGE's. New Rambler was a very minor producer in the first years of hte twentieth century, with high platinum assays reported from shipments of secondary copper sulphide minerals. Data are sketchy, but there seem to be about equal amounts of platinum and palladium; payment was reportedly made for both metals. There is ongoing debate about the hydrothermal nature of some or all of the sulphide mineralisation process for these deposits and occurrences.

A much more substantial deposit is the Salt Chuck mine on Prince of Wales Island in south-eastern Alaska (Foley et al. 1997). Here, copper minerals with associated PGE's occur in "altered magnetite clinopyroxenite", with lesser amounts of gabbro. According to Foley et al. "The Salt Chuck mine produced 295,000 t [tonnes?] containing 0.95 percent Cu, 1.12 ppm Au, 5.29 ppm Ag, 1.96 ppm Pd, and traces of platinum (Holt et al., 1948)" The Salt Chuck property has recently been acquired by Santoy Resources Ltd. ("Santoy" – website www.bmts.bc.ca/san/), who are actively exploring the deposit. Recent underground sampling is reported to have suggested extensions of the originally defined zones and the outlook is positive.

Over the past several years, there have been a number of PGE occurrences described from the Western Cordillera where the association is with copper minerals, without a significant nickel content, in clinopyroxenites, mafic syenites and associated rocks. None of these has yet been found to be a major deposit, but all remain under-explored and in many cases work is on-going. Examples from British Columbia and northern Washington State include, *inter alia.*: the Sappho prospect near Greenwood (O'Neill and Gunning 1934; Church and Robertson 1983; Minfile # 082ESE147); the Dobbin prospect on Whiterocks Mountain north-west of Kelowna (Nixon and Carbno 2001; Minfile # 082LSW005); the Allendale Lake (Lynx, Late) prospect east-north-east of Okanagan Falls (Church 1973a; Minfile # 082ESW060; see Santoy website for recent PGE analytical results); and the Comstock and Gold Dike prospects in Ferry County, Washington, just south of the International Border from Grand Forks (Parker and Calkins 1964; Herdrick and Bunning 1984).

Of considerable interest is the observation that many of the so-called "alkalic porphyry copper" deposits in British Columbia contain measurable quantities of PGE's, especially palladium. In several cases, there is an elevated, though probably not to payable levels, palladium content for the "run-of-mill" material and a considerably higher palladium content for some high-copper veins within or peripheral to the deposit. Data are few and sketchy, but some examples are: Copper Mountain mine, near Princeton (O'Neill and Gunning 1934; Minfile # 092HSE001); Afton mine, west of Kamloops (Kwong 1987; Minfile # 092INE023; DRC Resources Corp.– website www.drcresources.com); and Lorraine (Jeno occurrence), north of Fort St. James (Humphreys and Binns 1991; Bishop et al. 1995; Peatfield 1996; Minfile # 093N 003). These observations suggest that a reverse reasoning process might be applicable. That is to say, the presence of significant amounts of PGE's, especially palladium, with copper minerals, especially bornite and primary chalcocite in veins and breccias in alkalic rocks might be used as an indication of increased potential for discovery of an alkalic bulk copper-gold deposit in the general region. This concept should be considered in future exploration in the Franklin Camp. There are known occurrences of copper-gold mineralisation in the camp, and these showings should be carefully examined and evaluated.

The subject of "epithermal" precious metal vein deposits is a large and complicated one, beyond the scope of this report. Suffice it to say that the Union Mine was a small but relatively rich producer of this type, and that the geology of the area is certainly permissive for more material of this type. It is instructive to note that essentially all work to date in the search for such deposits has been in the older (Anarchist Group) rocks, with little attention paid to the Tertiary strata. Historically in southern British Columbia and northern Washington this type of material has been found in and exploited from veins in Tertiary volcanic rocks. Examples are, *inter alia.*, Republic, Washington (Full and Grantham 1968); Dusty Mac at Okanagan Falls (Church 1973b; Minfile # 082ESW078); and Blackdome, west of Clinton (Vivian 1988; Minfile # 092O 053). Many other similar occurrences in Washington and British Columbia have been explored to various degrees; none have achieved significant production.

The literature on epithermal precious metal deposits is voluminous. A few benchmark papers and work specifically relating to British Columbia are: Berger and Bethke (1985); Panteleyev (1986, 1992); Romberger (1993); and Sillitoe (1993) among many others. These deposits typically have increasing base metal contents with depth, before the precious metal grades drop off to sub-economic levels. This drop-off phenomenon was clearly described at the Union Mine by Pike (1935). In many epithermal veins, the bonanza gold and silver values tend to be above the base metal zone. This may be the situation in the Franklin Camp, and thus the better target areas are higher in the original stratigraphy. On the other hand, the association of gold and galena in the "Gold Vein" stope suggests that the Union Mine may not be a typical epithermal vein system. More study is required.

Much of the early work in the camp, and indeed continuing into the 1960's, was based on the premise that the pre-Tertiary stratigraphy was correlative with that in the Boundary District to the south. There the Phoenix (Minfile # 082ESE020), Motherlode (Minfile # 082ESE034) and other "skarn" copper-silver-gold deposits were major producers in the early years of the last century, producing direct-shipping ore for three smelters, including the Granby facility at Grand Forks. Phoenix was reactivated in 1959 and worked until 1976 as a milling operation.

Many workers thought that they could see direct camp-to-camp correlations of various stratigraphic units, especially the very important "sharpstone conglomerate" and massive limestone units of the Triassic Brooklyn Formation at Phoenix (see, e.g., Peatfield 1978). However, as described above, it now appears likely that the rocks at Franklin, including the Gloucester Limestone, are Paleozoic Anarchist Group units rather than Brooklyn correlatives. Another reason for doubting the correlation is that the skarn deposits in the Franklin Camp tend to be relatively rich in zinc and lead, whereas these metals are very scarce in the Boundary deposits. It seems more likely that the Franklin skarns are direct contact effects of intrusive bodies, most likely those of the Jurassic Nelson plutonic suite. There is a good possibility that at least some of these occurrences may be peripheral to more standard porphyry copper systems within or adjacent to the intrusive rocks, and there are indeed showings described that support this point of view. Clearly, this is something that ought to be considered in the course of further work in the camp.

15.0 CONCLUSIONS

1. The Franklin Camp property has attractive target areas for both PGE's associated with copper minerals in alkaline mafic and ultramafic rocks of the Averill plutonic complex, and for bonanza (epithermal?) gold and silver-bearing deposits in structurally controlled silicified zones and quartz veins probably related to Eocene volcanism. In particular, it appears that while the Union Mine type occurrences have attractive grades and historically produced significant tonnages, they have not been well studied in light of modern theories of epithermal precious metal deposits.

2. There is an urgent need for a detailed, comprehensive compilation of all available exploration data for all work to date in the camp. This must be the first step in any exploration program. Data are at present scattered in numerous published and unpublished sources, and no coherent picture exists of the results of work in the camp.

3. The recent airborne geophysical program has identified a number of discrete electromagnetic anomalies that require ground follow-up in order to define drilling targets. It seems most likely that detailed induced polarization ("I.P.") surveys would be most useful in this regard. Interpretation of existing geophysical data would benefit from a review by an independent professional

4. Aggressive exploration in the camp is justified, based on the results obtained to date. The gold-silver veins are perhaps the most attractive targets, and certainly deserve serious consideration. Other targets, for example porphyry copper or stockwork gold occurrences, are possible and should not be ignored. The real value of this project lies not so much in Tuxedo having identified specific targets but in the Company having assembled substantially all mineral rights in an obviously well-mineralised area.

16.0 RECOMMENDATIONS

1. Exploration should be pursued aggressively on the Franklin Camp property, directed toward the search for epithermal precious metal veins and for concentrations of platinum group elements in association with copper minerals in alkalic ultramafic intrusive rocks.
2. All available data should be compiled in detail, following a diligent search for as much historical information as can be found. This work should be done before any substantial expenditures are contemplated for field work.
3. The existing geophysical data should be independently reviewed. When the program proceeds, a multi-disciplinary geophysical program should be designed to test various targets.
4. The work program for the project should be independently designed and periodically reviewed, keeping an open mind as regards target types and exploration strategies.

17.0 PROPOSED WORK PROGRAM

Phase I:

Data compilation, including search for and acquisition of existing exploration data, interviews with previous workers, field checks, setting up of computerised data base, digitising existing data	$15,000.00
Claim location survey, using Global Positioning Satellite ("GPS") technology, staking of any internal fractions	5,000.00
Preparation of orthophotographic topographic base, digitising of existing data	10,000.00
Surface geological mapping, field checks of various anomalies from existing and planned surveys	15,000.00
Surface geophysical surveys (induced polarization, magnetics, electromagnetics) – includes grid establishment and an independent review of existing data	35,000.00
Geochemical survey, principally soils but including some stream sediment and rock sampling – includes field orientation studies	10,000.00
Mechanical trenching on selected targets	10,000.00
Diamond drilling on selected targets – 500 metres @ $100 per metre	50,000.00
Supervision and reporting, periodic independent reviews	20,000.00
Office overheads	5,000.00
Sub-total	$175,000.00
Contingency @ 15%	26,250.00
Grand total Phase I	**$201,250.00**

Contingent on a review of the results of Phase I and approval by an independent qualified person, the project should continue to the second phase.

Phase II:

Full review of the results of Phase I work, follow-up geology, geophysics or geochemistry as required	$25,000.00
Diamond drilling on selected targets: 4,000 metres @ $100 (includes allowance for site preparation, road building, etc.	400,000.00
Supervision, geology, etc.	50,000.00
Office costs, permitting, public relations, etc.	50,000.00
Independent qualified person reviews, reporting	25,000.00
Sub-total	$550,000.00
Contingency @ 10%	55,000.00
Grand total Phase II	**$605,000.00**

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31 August, 2001

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19.0 STATEMENT OF QUALIFICATIONS OF G.R. PEATFIELD, Ph.D., P.Eng.

I, Giles R. Peatfield, do hereby certify that:

1. I am a consulting Geological Engineer with an office at 104-325 Howe Street, Vancouver, British Columbia, V6C 1Z7.

2. I am a graduate of the University of British Columbia (B.A.Sc., Geological Engineering, 1966) and of Queen's University at Kingston (Ph.D., 1978).

3. I am a Fellow of the Geological Association of Canada, and a Member of the Association of Professional Engineers and Geoscientists of British Columbia, of the Canadian Institute of Mining and Metallurgy, of the Association of Exploration Geochemists, and of the Society of Economic Geologists. I am a "qualified person" as defined in National Instrument 43-101.

4. I have practised my profession as an exploration geologist for more than thirty years, as a graduate student, as an employee of a major mining company and latterly as an independent consultant.

5. To complete this review, I have relied on published and unpublished data referring to the Franklin Camp mineral property supplied by Tuxedo Resources Ltd. and additional information derived from various published and unpublished sources. I have recently visited the property area with Ms. L.J. Caron, P.Eng., a Grand Forks based consulting engineer with experience in the area, and with Dr. G. Nixon, P.Geo. of the Geological Survey Branch, British Columbia Ministry of Energy and Mines.

6. I have no interest, direct or indirect, nor do I expect to receive any interest in the Franklin Camp mineral property, or in other mineral properties in the immediate Franklin Camp area, or in Tuxedo Resources Ltd., or in the securities of any other corporate entity involved in mining exploration or development projects in the area.

7. I hereby give permission for use of this report by Tuxedo Resources Ltd. for any appropriate corporate purpose. Written permission must be acquired before publication or dissemination of any excerpt or summary.

G.R. Peatfield

G.R. Peatfield, Ph.D., P.Eng.

Dated at Vancouver, B.C. this 31st day of August, 2001.

APPENDIX I

Listing of mineral tenure data

Franklin Camp Mineral Property

This Appendix lists the mineral tenures included in each of the agreements mentioned in Section 3.0 above. In each case a few words are given regarding the terms of the agreement, but this must not be construed as a legal summary. Refer to the figures in the text of the report for locations of claims and outlines of blocks referring to each agreement.

Agreement #1:

Agreement between **Kettle River Management Ltd. ("Optionor")** and **Tuxedo Resources Ltd. ("Optionee")** and **John W. Carson ("Carson")**, made as of the 14th day of February, 2001. Option is to earn a 100% undivided interest in certain mineral tenures in return for cash and share considerations, with the optionor to retain the right to receive a Net Smelter Return royalty ("NSR") upon production. There is an underlying agreement between Carson and a third party allowing for a sharing of any NSR derived from the Crown Grants[1,2].

Table I-1: Listing of mineral tenures:

Claim Name	Tenure #	Units	Owner	Interest	Expiry Date[1]
MGS Claim					
BUCK #1	374675	12	John Wesley Carson	100%	2004/Feb/26
"Two-post claims"					
I.X.L. #1-99	373230	1	John Wesley Carson	100%	2003/Nov/10
I.X.L. #2-99	373231	1	John Wesley Carson	100%	2003/Nov/10
PAR 99	370045	1	John Wesley Carson	100%	2003/Jul/09
DODGE 99	370046	1	John Wesley Carson	100%	2003/Jul/09
CAT #1	383039	1	John Wesley Carson	100%	2003/Nov/20
CAT #2	383040	1	John Wesley Carson	100%	2003/Nov/20
CAT #3	383041	1	John Wesley Carson	100%	2003/Nov/20
CAT #4	383042	1	John Wesley Carson	100%	2003/Nov/20
Crown Grants	Lot #	Area	Owner	Interest	Expiry Date[2]
UNION C.G.	1022S	20.9 ha	John Wesley Carson	100%	n/a
UNION FRAC-TION C.G.	1678S	0.63 ha	John Wesley Carson	100%	n/a
PAPER DOLLAR FRACTION C.G.	1677S	20.04 ha	John Wesley Carson	100%	n/a

Notes:
1. **Expiry date assumes acceptance of recently filed work for assessment credit.**
2. **Taxes payable yearly.**

[1] The Paper Dollar Fraction C.G. is listed in the agreement as the Paperdoll C.G. , with an incorrect Lot number [3672]. – a correction is necessary in the agreement.

[2] The Idaho C.G. (Lot 1679S) is to be added to the agreement.

Agreement #2:

Agreement between **Kettle River Management Ltd. ("Optionor")** and **Tuxedo Resources Ltd. ("Optionee")** and **John W. Carson ("Carson")**, made as of the 14th day of February, 2001. Option is to earn a 100% undivided interest in certain mineral tenures in return for cash and share considerations, with the optionor to retain the right to receive a Net Smelter Return royalty ("NSR") upon production.

Table I-2: Listing of mineral tenures:

Claim Name	Tenure #	Units	Owner	Interest	Expiry Date[1]
"Two-post claims"					
BUCK #2	374676	1	John Wesley Carson	100%	2004/Feb/23
BUCK #3	374677	1	John Wesley Carson	100%	2004/Feb/23
BUCK #4	374678	1	John Wesley Carson	100%	2004/Feb/23
BUCK #5	374679	1	John Wesley Carson	100%	2004/Feb/23
AL #1	375137	1	John Wesley Carson	100%	2004/Mar/30
AL #2	375138	1	John Wesley Carson	100%	2004/Mar/30
AL #3	375139	1	John Wesley Carson	100%	2004/Apr/01
AL #4	375140	1	John Wesley Carson	100%	2004/Apr/01
AL #5	375141	1	John Wesley Carson	100%	2004/Apr/01
AL #6	375142	1	John Wesley Carson	100%	2004/Apr/01
AL #7	375143	1	John Wesley Carson	100%	2004/Apr/07
AL #8	375144	1	John Wesley Carson	100%	2004/Apr/07
AL #9	375145	1	John Wesley Carson	100%	2004/Apr/07
AL #10	375146	1	John Wesley Carson	100%	2004/Apr/07
AL #11	375147	1	John Wesley Carson	100%	2004/Apr/07
AL #12	375148	1	John Wesley Carson	100%	2004/Apr/07

Notes:
1. **Expiry date assumes acceptance of recently filed work for assessment credit.**

Agreement #3:

Agreement between **William John Wilkinson and John David Crellin ("Optionors")** and **Tuxedo Resources Ltd. ("Optionee")**, made as of the 14th day of February, 2001. Option is to earn a 100% undivided interest in certain mineral tenures in return for cash and share considerations, with the optionors to retain the right to receive a Net Smelter Return royalty ("NSR") upon production.

Table I-3: Listing of mineral tenures:

Claim Name	Tenure #	Units	Owner	Interest	Expiry Date[1]
Reverted C.G.'s					
ALPHA	214604	1	John David Crellin	100%	2003/Sep/24
BUFFALO	214310	1	John David Crellin	100%	2006/Aug/17
"Two-post claims"					
AB 1	214183	1	John David Crellin	100%	2006/Aug/09
AB 2	214184	1	John David Crellin	100%	2006/Aug/09
AB 3	214185	1	John David Crellin	100%	2006/Aug/09
AB 4	214186	1	John David Crellin	100%	2006/Aug/09
BUFF 1	369123	1	William John Wilkinson	100%	2004/May/17
BUFF 2	369124	1	William John Wilkinson	100%	2004/May/17
BUFF 3	369125	1	William John Wilkinson	100%	2004/May/17
BUFF 4	369126	1	William John Wilkinson	100%	2004/May/17
BUFF 5	369440	1	William John Wilkinson	100%	2004/May/27
BUFF 6	369441	1	William John Wilkinson	100%	2004/May/27
BUFF 7	369442	1	William John Wilkinson	100%	2004/May/28
WOLF 1	369434	1	William John Wilkinson	100%	2004/May/29
WOLF 2	369435	1	William John Wilkinson	100%	2004/May/29
WOLF 3	369436	1	William John Wilkinson	100%	2004/May/29
WOLF 4	369437	1	William John Wilkinson	100%	2004/May/29
WOLF 5	369438	1	William John Wilkinson	100%	2004/May/29
WOLF 6	369439	1	William John Wilkinson	100%	2004/May/29
SEAL 3	373423	1	William John Wilkinson	100%	2003/Nov/04

Notes:
1. **Expiry date assumes acceptance of recently filed work for assessment credit.**

Note: For the purposes of the outlines given on Figure 4, this agreement has been sub-divided into parts 3A for the Crellin Claims and 3B for the Wilkinson claims.

Agreement #4:

Agreement between **Northern Natural Resource Services Ltd. ("Optionor")** and **Tuxedo Resources Ltd. ("Optionee")** and **Michael Scott Elson ("Elson")**, made as of the 14th day of February, 2001. Option is to earn a 100% undivided interest in certain mineral tenures in return for cash and share considerations, with the optionor to retain the right to receive a Net Smelter Return royalty ("NSR") upon production.

Table I-4: Listing of mineral tenures:

Claim Name	Tenure #	Units	Owner	Interest	Expiry Date[1]
MGS Claims					
FRANKLIN #1	383136	15	Michael Scott Elson	100%	2003/Dec/10
BURRELL #1	383137	20	Michael Scott Elson	100%	2003/Dec/06
BURRELL #9	383101	12	Michael Scott Elson	100%	2006/Dec/07
"Two-post claims"					
FRANKLIN #2	383172	1	Michael Scott Elson	100%	2003/Dec/09
FRANKLIN #3	383173	1	Michael Scott Elson	100%	2003/Dec/09
FRANKLIN #4	383174	1	Michael Scott Elson	100%	2003/Dec/13
FRANKLIN #5	383175	1	Michael Scott Elson	100%	2003/Dec/13
FRANKLIN #6	383176	1	Michael Scott Elson	100%	2003/Dec/13
BURRELL #2	383138	1	Michael Scott Elson	100%	2003/Dec/06
BURRELL #3	383139	1	Michael Scott Elson	100%	2003/Dec/06
BURRELL #4	383140	1	Michael Scott Elson	100%	2003/Dec/06
BURRELL #5	383141	1	Michael Scott Elson	100%	2003/Dec/06
BURRELL #6	383102	1	Michael Scott Elson	100%	2003/Dec/07
BURRELL #7	383103	1	Michael Scott Elson	100%	2003/Dec/07
BURRELL #8	383104	1	Michael Scott Elson	100%	2003/Dec/07

Notes:
1. **Expiry date assumes acceptance of recently filed work for assessment credit.**

Agreement #5:

Agreement between **N. Tribe & Associates Ltd. ("Optionor")** and **Tuxedo Resources Ltd. ("Optionee")** and **Norm Tribe ("Tribe")**, made as of the 15th day of March, 2001. Option is to earn a 100% undivided interest in a certain mineral tenure in return for cash and share considerations, with the optionor to retain the right to receive a Net Smelter Return royalty ("NSR") upon production.

Table I-5: Listing of mineral tenures:

Claim Name	Tenure #	Units	Owner	Interest	Expiry Date[1]
MGS Claim					
DOE 2	373066	20	Norman Lloyd Tribe	100%	2004/Oct/21

Notes:
1. **Expiry date assumes acceptance of recently filed work for assessment credit.**

Agreement #6:

Agreement between **Northern Natural Resource Services Ltd. ("Optionor")** and **Tuxedo Resources Ltd. ("Optionee")** and **Michael Scott Elson ("Elson")**, made in principal as of the date of this report. Option is to earn a 100% undivided interest in certain mineral tenures in return for cash and share considerations, with the optionor to retain the right to receive a Net Smelter Return royalty ("NSR") upon production.

Table I-6: Listing of mineral tenures:

Claim Name	Tenure #	Units	Owner	Interest	Expiry Date
"Two-post claims"					
DANE #1	386490	1	Michael Scott Elson	100%	2002/May/12
DANE #2	386491	1	Michael Scott Elson	100%	2002/May/12
DANE #3	386492	1	Michael Scott Elson	100%	2002/May/12
DANE #4	386493	1	Michael Scott Elson	100%	2002/May/12
DANE #5	386494	1	Michael Scott Elson	100%	2002/May/12
DANE #6	386495	1	Michael Scott Elson	100%	2002/May/12
DANE #7	386496	1	Michael Scott Elson	100%	2002/May/12
DANE #8	386497	1	Michael Scott Elson	100%	2002/May/12
DANE #9	386498	1	Michael Scott Elson	100%	2002/May/13
DANE #10	386499	1	Michael Scott Elson	100%	2002/May/13
DANE #11	386500	1	Michael Scott Elson	100%	2002/May/13
DANE #12	386501	1	Michael Scott Elson	100%	2002/May/13
PINTO #1	386502	1	Michael Scott Elson	100%	2002/May/17
PINTO #2	386503	1	Michael Scott Elson	100%	2002/May/17
PINTO #3	386504	1	Michael Scott Elson	100%	2002/May/17
PINTO #4	386505	1	Michael Scott Elson	100%	2002/May/17
PINTO #5	386506	1	Michael Scott Elson	100%	2002/May/17
PINTO #6	386507	1	Michael Scott Elson	100%	2002/May/17

Agreement #7:

Agreement between **William John Wilkinson and John David Crellin ("Optionors")** and **Tuxedo Resources Ltd. ("Optionee"),** made in principal as of the date of this report. Option is to earn a 100% undivided interest in certain mineral tenures in return for cash and share considerations, with the optionors to retain the right to receive a Net Smelter Return royalty ("NSR") upon production.

Table I-7: Listing of mineral tenures:

Claim Name	Tenure #	Units	Owner	Interest	Expiry Date
"Two-post claims"					
ANT 1	386475	1	William John Wilkinson	100%	2002/May/12
ANT 2	386476	1	William John Wilkinson	100%	2002/May/12
ANT 3	386477	1	William John Wilkinson	100%	2002/May/12
ANT 4	386478	1	William John Wilkinson	100%	2002/May/12
ANT 5	386479	1	William John Wilkinson	100%	2002/May/13
ANT 6	386480	1	William John Wilkinson	100%	2002/May/13
ANT 7	386481	1	William John Wilkinson	100%	2002/May/13
ANT 8	386482	1	William John Wilkinson	100%	2002/May/13
ANT 9	386483	1	William John Wilkinson	100%	2002/May/13
ANT 10	386484	1	William John Wilkinson	100%	2002/May/13
ANT 11	386485	1	William John Wilkinson	100%	2002/May/14
ANT 12	387657	1	William John Wilkinson	100%	2002/Jun/20
ANT 13	387658	1	William John Wilkinson	100%	2002/Jun/20