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GEOLOGICAL REPORT

on the

SULLIVAN DEEPS PROJECT

Sullivan Mine – Kimberley Area
Fort Steele Mining Division
British Columbia

Latitude: 49°43.8' – 49°48.5' North
Longitude: 115°56.8' – 116°05.0' West
NTS Map-Areas 82F/16W,09W; 82G/12W,13W

Prepared for

STIKINE GOLD CORPORATION

By

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January 14, 2004

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SUMMARY

Stikine Gold Corporation has entered into an option agreement with Teck Cominco Ltd. to earn a minimum 50% interest in the Sullivan Deeps property which is situated immediately north of the past-producing Sullivan lead-zinc-silver mine in southeastern British Columbia. The Sullivan Deeps property consists of 284 contiguous Crown granted, reverted Crown granted and recorded mineral claims which collectively cover an area of 72.25 square kilometres between 5 and 14 kilometres north-northwest of Kimberley. Access to the central property area is by way of two main road systems.

This report, prepared at the request of Stikine Gold Corporation, is based in part on a personal examination of the Sullivan Deeps property and a review of an extensive database stored at the Sullivan minesite September 10 and 11, 2003. A subsequent review of published and unpublished information pertaining to the regional geological setting and past exploration work on the property was also undertaken.

Initial mineral claims comprising the current Sullivan Deeps property were located in the 1920s. Early exploratory work included some 5000 metres shallow diamond drilling in widely spaced holes. More recent work, between 1971 and 1996, has consisted of detailed geological mapping, airborne, surface and borehole geophysical surveys and 12000 metres of diamond drilling in seven holes.

The Kimberley – Cranbroook area of southeastern British Columbia is underlain mainly by late Precambrian sedimentary rocks of the Purcell Supergroup. Oldest units are comprised of the Lower, Middle and Upper Aldridge Formations which consist of deep water turbidites cut by mafic sills. The world class Sullivan deposit, a bedded, gently east-dipping, syngenetic, sedimentary exhalative (Sedex) deposit hosted by Lower Aldridge sediments immediately below overlying Middle Aldridge Formation units, is related to a submarine hydrothermal system.

Sullivan mine closed in late 2001; over a hundred year span, some 150 million tones were processed yielding average recovered grades of 5.5% lead, 5.3% zinc and 62 grams/tonne silver plus recoverable cadmium and tin. *In situ* base metal grades, particularly zinc, were appreciably higher than the recovered grades. The northern limits of the deposit are defined by the east-west, moderately north-dipping Kimberley Fault. Initial investigation of this structure suggested a vertical displacement of more than 2 kilometres; the amount of lateral offset remained unknown until the recognition of distinctive marker units within the Middle Aldridge Formation. These distinctive marker units also provided a tool to accurately forecast the depth to the prospective Sullivan horizon from any point within the overlying Middle Aldridge Formation.

The potential of the Sullivan Deeps property is directly related to its location relative to the adjacent Sullivan deposit. Several deep (1600 – 2600 metres) drill holes completed on the property over the past 30 years have provided details of the direction and extent of offset along the Kimberley Fault. Good potential for Sullivan-type mineralization north of the fault is suggested by the intersection of lithologies characteristic of the hangingwall of the Sullivan deposit near final hole depths in some of the deeper drill holes. A down-hole UTEM survey of the last hole drilled identified a strong off hole conductor at a hole depth of 2500 metres. This shallowly dipping conductor, interpreted as being 150 metres east of the hole, extends over a 3 x 3 kilometre area

and could accommodate a Sullivan size deposit. A higher than average geothermal gradient measured in this hole may be indicative of the presence of a sulphide body which may represent the faulted extension of the Sullivan deposit or a separate deposit developed by similar geological processes.

Based on the nature and potential size of the exploration target, the writer is of the opinion that the Sullivan Deeps property is of sufficient merit to warrant further exploratory work. A first phase program, at an estimated cost of $890,400.00, is recommended to consist of the drilling of a vertical hole to a depth of 2600 metres to test the central part of the large UTEM conductor. Should this hole be successful in intersecting a sulphide body, second phase work is recommended to include a number of wedge cuts off the initial hole to further test the conductive zone. Estimated costs of this second phase would amount to $2.4 million dollars.

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INTRODUCTION and TERMS OF REFERENCE

Stikine Gold Corporation is party to an option agreement with Teck Cominco Metals Ltd. with respect to the Sullivan Deeps Project which is situated immediately north of the past producing Sullivan lead-zinc-silver mine at Kimberley in southeastern British Columbia. Previous deep drilling on the Sullivan Deeps property, which is north of the Kimberley Fault bounding the northern limits of the Sullivan deposit, has intersected sedimentary units similar to those immediately above the Sullivan orebody and down-hole geophysical surveys have identified an untested, off hole conductive zone of some extent.

The author of this report has been retained by Stikine Gold Corporation to review and comment on the results of exploratory work completed to date on the subject property by Cominco Ltd., to prepare preliminary comments regarding the potential of the property and to provide recommendations regarding the nature and scope of further exploratory work programs.

This technical report has been prepared in compliance with the requirements of National Instrument 43-101 and Form 43-101F1 and is intended to be used as supporting documentation to be filed, if required, with the British Columbia Securities Commission and the TSX Venture Exchange.

In the preparation of this report, the writer has relied extensively on various unpublished reports pertaining to previous exploratory work on the Sullivan Deeps property. These were prepared by former staff of Cominco Ltd., notably Paul Ransom, geologist, who spent more than 27 years working at Sullivan mine and was intimately involved in Sullivan district exploration during that time. Some of these data are contained in a number of technical reports filed in support of assessment work requirements which are readily available in the BC Ministry of Energy and Mines public files. Sullivan mine and the surrounding area has been the subject of numerous published reports and maps including the Geological Association of Canada, Mineral Deposits Division Special Publication No.1 "The Geological Environment of the Sullivan Deposit, British Columbia" published in 2000. Citations for published and unpublished information used in the preparation of this report are contained in the References section of this report.

The writer spent two days (September 10 and 11, 2003) in the Kimberley area conferring with Paul Ransom, examining files and some drill cores from the property at the Teck Cominco Sullivan mine site and inspecting part of the Sullivan Deeps project area. The writer, the "qualified person" for purposes of this report, has a reasonably good background knowledge of the general area based in part on three underground tours of Sullivan mine between 1969 and 1980.

Units of measure in this report are metric and monetary amounts referred to are in Canadian dollars unless otherwise specified.

PROPERTY DESCRIPTION and LOCATION

The Sullivan Deeps property consists of 196 full and fractional Crown granted mineral claims, 42 reverted Crown granted mineral claims, 40 two-post recorded claims and six 4-post recorded mineral claims (73 units) situated in the Fort Steele Mining Division northwest of Cranbrook in southeastern British Columbia (Figure 1). All mineral claims are contiguous and collectively cover an area of approximately 7225 hectares (72.25 square kilometres) between latitudes 49°43.8' and 49°48.5' North and longitudes 115°56.8' and 116°05.0' West in NTS map-areas 82F/16E, 9E and 82G/12W, 13W. (UTM coordinates (NAD 83, Zone 11) 565500 - 575900 East, 5508150 - 5517800 North).

The configuration of the those mineral claims comprising the original Sullivan Deeps property is illustrated on Figure 2 and a complete listing of all claims details is contained in Appendix I. Two-thirds of the original property holdings condist of mineral claims which were Crown granted between 1921 and 1929. The reverted Crown granted mineral claims, which would undoubtedly have acquired Crown grant status during the same time interval, were acquired between 1983 and 1985. The initial recorded mineral claims (Mark, BAD and Pan claims – Figure 2) were located between 1970 and 1991.

The mineral claims comprising the original Sullivan Deeps property are registered in the name of Cominco Mining Worldwide Holdings Ltd. and were subject to an option agreement as detailed in a July 18, 2003 Memorandum of Understanding between Teck Cominco Metals Ltd. and Mariner Ventures Corporation, a private company. On October 3, 2003, Stikine Gold Corporation entered into an Assignment Agreement with Mariner and Teck Cominco to acquire Mariner's interest in the Sullivan Deeps property. Pursuant to this agreement, Mariner, a non-arm's length company, has assigned to Stikine Gold its option to earn a 50% interest in the Sullivan Deeps property in exchange for reimbursement of costs incurred in the amount of $53,395.50.

Stikine Gold's option consists of two parts. The First Option grants Stikine the right to earn a 50% interest in the property by issuing 100,000 shares (issued) to Teck Cominco and incurring $1.5 million in cumulative exploration expenditures on the property on or before January 31, 2005 and $4 million in cumulative exploration expenditures on or before August 31, 2007.

Upon Stikine Gold earning a 50% interest, Teck Cominco will have 90 days to elect to form a joint venture with Stikine, or Stikine will have the right to earn an additional 20% interest by funding a further $4 million of exploration expenditures. Teck Cominco may elect to participate at a 30% level or convert to a 1.5% Net Smelter Return royalty in production from the property. Stikine will have the right to purchase one-third (0.5%) of the royalty for $2.5 million.

Stikine Gold Corporation located an additional three 4-post and thirteen 2-post mineral claims along the northwest and northern boundaries of the original Sullivan Deeps property between October 10 and 12, 2003. Referred to as the PARK claims, these are contiguous with the BAD, Mark and Pan recorded claims and with the northernmost reverted Crown granted claims. Details are listed in Appendix I and the new claims are shown on Mineral Titles reference maps 82F080 and 82F090. The additional claims, which are subject to the Memorandum of Understanding with Teck Cominco Metals Ltd., extend the property boundary north by some 1.7 kilometres.

The recorded mineral claims comprising the current Sullivan Deeps property are thought to have been located pursuant to procedures specified by regulations of the Mineral Tenure Act of the Province of British Columbia. No claim posts or lines were inspected during the writer's examination of the property September 10, 2003. The Crown granted and reverted Crown granted claims have been legally surveyed.

Recorded mineral claims and reverted Crown granted mineral claims in British Columbia may be kept in good standing by incurring assessment work or by paying cash-in-lieu of assessment work in the amount of $100 per mineral claim unit per year during the first three years following location of the mineral claim. This amount increases to $200 per mineral claim unit in the fourth and succeeding years. Crown granted mineral claims are maintained by payment of annual taxes which are assessed on a per hectare basis.

The writer is not aware of any specific environmental liabilities to which the various mineral claims are subject. The claims are in the Mark Creek drainage immediately north of the former Sullivan Mine infrastructure (Figure 2). Numerous forest access and private roads traverse the property. As a condition of the Memorandum of Understanding with Teck Cominco, Mariner Ventures held meetings with the City of Kimberley and the Mark Creek Integrated Watershed Committee and abtained support for renewed exploration on the property.

Exploration work involving surface disturbance on mineral properties in British Columbia requires the filing of A Notice of Work and Reclamation with the Ministry of Energy and Mines. The issuance of a permit facilitating such work may involve the posting of a reclamation bond.

ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE and PHYSIOGRAPHY

The Sullivan Deeps property is situated between 5 and 12 kilometres north-northwest of the City of Kimberley (Figures 2 and 3) and is accessible by two main road systems. A private road through Teck Cominco property originates in downtown Kimberley and is 13 kilometres long. A second, 25 kilometre route is by way of a logging road constructed in 2002.

The City of Kimberley has a well-developed infrastructure that until recently sustained a community population of 7000 and the 10,000-tons per day Sullivan mine and milling operation. Excellent highways link the community with the Southern Trans Provincial Highway (Provincial highway 3), 30 kilometres south, and the Trans Canada Highway some 250 kilometres to the north. The city of Cranbrook, 30 kilometres south of Kimberley (Figure 3), has a population of 18,000 and offers most supplies and services and has daily scheduled airline service.

BC Hydro and Teck Cominco Ltd maintain high voltage power lines to Kimberley. At present, a CP Rail spur line runs from the main rail line that passes through Cranbrook. While the Sullivan mine and mill were in operation, concentrates were shipped by rail to the Teck Cominco smelter at Trail, a distance of about 320 km. A drainage water treatment plant will operate indefinitely to process acid waters generated from the closed mine, waste heaps and tailings ponds. Most infrastructure associated with operating the Sullivan mine and mill has been dismantled, and the rock dumps and tailings ponds have been or are being reclaimed. The Sullivan Deeps project area covers the Mark Creek drainage (Figure 2) which is one of two community watersheds serving Kimberley.

The population of Kimberley has not dropped substantially since closure of Sullivan mine in 2001. Infrastructure is sufficient to support a new mining operation, considering that the previous 10,000 tons per day mining and milling operation was closed only a few years ago. A new mill could be constructed on the old site but tailings dams would have to be enlarged. The hazardous cave zone above Sullivan would be an ideal repository for waste rock from a nearby mining operation.

Tha project area is immediately west of the Rocky Mountain Trench through which Kootenay River flows (Figure 3). The region is characterized by rolling hills with mean elevations of about 1000 metres above sea level and features a dry belt prairie environment. Further west and north, the Purcell Mountains rise to elevations of 2600 metres.

The Sullivan Deeps property is centred on Mark Creek and its tributary drainages (Figure 3). Elevations range from 1460 metres above sea level in the Mark Creek valley along the southern property boundary to 2500 metres in the northwestern property area. Much of the immediate area includes heavily forested slopes. Bedrock is well exposed at higher elevations and along drainages.

The climate in the area is typical of the East Kootenay region with summer temperatures occasionally reaching +30°Celsius and winter lows rarely below –30°C. A dry season, with the only rainfall from thunderstorms, usually lasts two months. Snow cover, which begins to accumulate at higher elevations in late September and elsewhere in November, is usually gone from lower elevations by April.

HISTORY

The Sullivan mine dominates the history of mining-related activities in the Kimberley area. Earliest prospecting in the general area resulted in the discovery of the nearby North Star lead-zinc-silver deposit in 1892 and initial claims were located on the outcrop of the Sullivan ore body the following year. Spokane interests acquired the rights to the property in 1896 and surface stripping and the sinking of shallow shafts was undertaken over the ensuing three years. Construction of a rail line from Cranbrook in 1900 enabled shipments of lead-rich ore to smelters in Nelson and Trail and a smelting facility was established south of the mine in 1902. Metallurgical difficulties forced closure of the mine and smelter in 1907.

The Consolidated Mining and Smelting Company of Canada Limited acquired a lease on the property in 1909 and subsequent exploration disclosed the presence of a large tonnage of complex ore. The property was purchased outright in 1913 and zones of high grade lead-silver and low zinc were treated at smelting facilities in Trail. Continuing metallurgical test work was directed to the recovery of zinc and a satisfactory differential flotation process, capable of recovering high-grade lead and zinc concentrates, was identified in 1920. A concentrator with a capacity of 3,000 tons per day was established at the mine site in 1923; capacity was later increased to 11,000 tons per day. Mining of the large Sullivan orebody was by way of adits, inclined shafts from surface and internal shafts and haulageways. Near surface ore was recovered from an open pit.

Sullivan mine ceased operation in late 2001. Over a 100 year period, production was substantial as indicated in the following table.

Years	Tonnes Mined	Tonnes Milled	Lead (kilograms)	Zinc (kilograms)	Silver (grams)
1900-2001	148,173,608	150,453,162	8,412,076,665	7,944,445,846	9,264,200,966

(Source – BC Minfile)

Average recovered grades over the life of the mine were 5.6% lead, 5.3% zinc and 61.6 grams/tonne silver. Appreciable amounts of gold, bismuth, cadmium, copper, antimony and 9.7 million kilograms of tin were also recovered from the Sullivan operation.

The Sullivan Deeps property, immediately north of Sullivan mine, consists mainly of Crown granted mineral claims that were acquired by the predecessor company of Cominco Ltd. (Consolidated Mining and Smelting Company Limited) in the 1920s following the recognition of the 3914 D.N. fault (later to be known as the Kimberley Fault) which was found to truncate host rocks, and probably the deposit itself at its northern limits. In order to obtain an understanding of the extent of offset along this fault, exploratory work between 1923 and 1929 included 5122 metres of surface diamond drilling in 13 widely spaced, vertical holes within the current Crown granted claims north and northwest of the Sullivan deposit. Hole depths ranged from 132 to 579 metres.

The identification well-laminated marker horizons within Middle Aldridge Formation sedimentary rocks in the 1960s provided a better understanding of the geological setting and apparent offset along the Kimberley Fault. Between 1971 and 1996, work by Cominco Ltd. within the boundaries of the Sullivan Deeps property has included detailed geological mapping, soil and rock geochemistry, airborne and surface VLF and horizontal loop electromagnetic surveys, surface and borehole UTEM surveys and 12032 metres of diamond drilling in seven inclined and vertical holes. Five of the seven holes were completed to depths of between 1595 and 2648 metres.

The 42 Reverted Crown granted claims, which constitute the part of the western property area (Figure 2), were acquired between 1983 and 1985 and are part of a larger (110 claims) holding staked by Western Exploration Company Limited in the 1920s and Crown granted in 1929. Minister of Mines Annual Reports indicate drilling on these claims in 1927 but no details are provided. Reeves MacDonald Mines Limited optioned the Western Exploration Crown grants in the 1960s and completed geophysical surveys and 2394 metres of diamond drilling in 11 holes between 1961 and 1966. Available records (Minister of Mines Annual Reports) suggest that most, if not all of this work was directed to claims north of the current Sullivan Deeps property.

Direct drilling costs incurred by Cominco Ltd. within the boundaries of the current property since 1971 are estimated to be more than $3 million (Paul Ransom, personal communication); total costs incurred in carrying out all previous exploratory work on the Sullivan Deeps property would conservatively be in excess of $10 million.

GEOLOGICAL SETTING

Regional Setting

The Kimberley – Cranbrook area of southeastern British Columbia is situated near the margin of the Omineca tectonic belt immediately east of the Rocky Mountain Trench separating the Purcell Mountains on the west from the western ranges of the Rocky Mountains. The area is underlain mainly by sedimentary rocks which were deposited in a rifted intracratonic basin in late Precambrian (Middle Proterozoic) time. Known as the Belt – Purcell basin, it occupies a triangular area some 600 kilometres long and up to 300 metres wide which extends from southwestern Montana into southeastern British Columbia. The northern apex of this triangular area extends north from the U.S. – Canada border a distance of 175 kilometres (Figure 4).

These Middle Proterozoic sedimentary rocks in southeastern B.C., referred to as the Purcell Supergroup, are contained in the Purcell anticlinorium and comprise a thick sequence of clastic and carbonate sedimentary rocks and minor volcanic rocks (Hoy et al, 2000; Hoy, 1993). Oldest units within the Purcell Supergroup include those of the Aldridge Formation which consists of deep water turbidites cut by numerous mafic sills. Aldridge Formation rocks host a variety of mineral deposits including the world class Sullivan mine. Younger sedimentary units within the Purcell Supergroup include shallow water clastic and carbonate sedimentary rocks of the Creston, Kitchener, Dutch Creek and Mount Nelson Formations (Figure 4). These are in turn overlain in the northern and western parts of the anticlinorium by Late Proterozoic (Windermere Supergroup) clastic sediments and locally by Paleozoic and Mesozoic units east and west of Cranbrook. Late Mesozoic granitic plutons cut most of the older layered sequences.

Total thickness of the Purcell Supergroup is estimated to be 19 kilometres, two thirds of which is comprised of the Aldridge Formation (Hoy et al, 2000) which was deposited in a northwest-trending basin developed by rifting within early Precambrian (Archean) basement gneisses. The Aldridge Formation is divided into three members, generally referred to as Lower, Middle and Upper Aldridge Formations. The Lower Aldridge locally overlies shallow marine or fluviatile siliciclastic sediments of the Fort Steele Formation east of the Rocky Mountain Trench

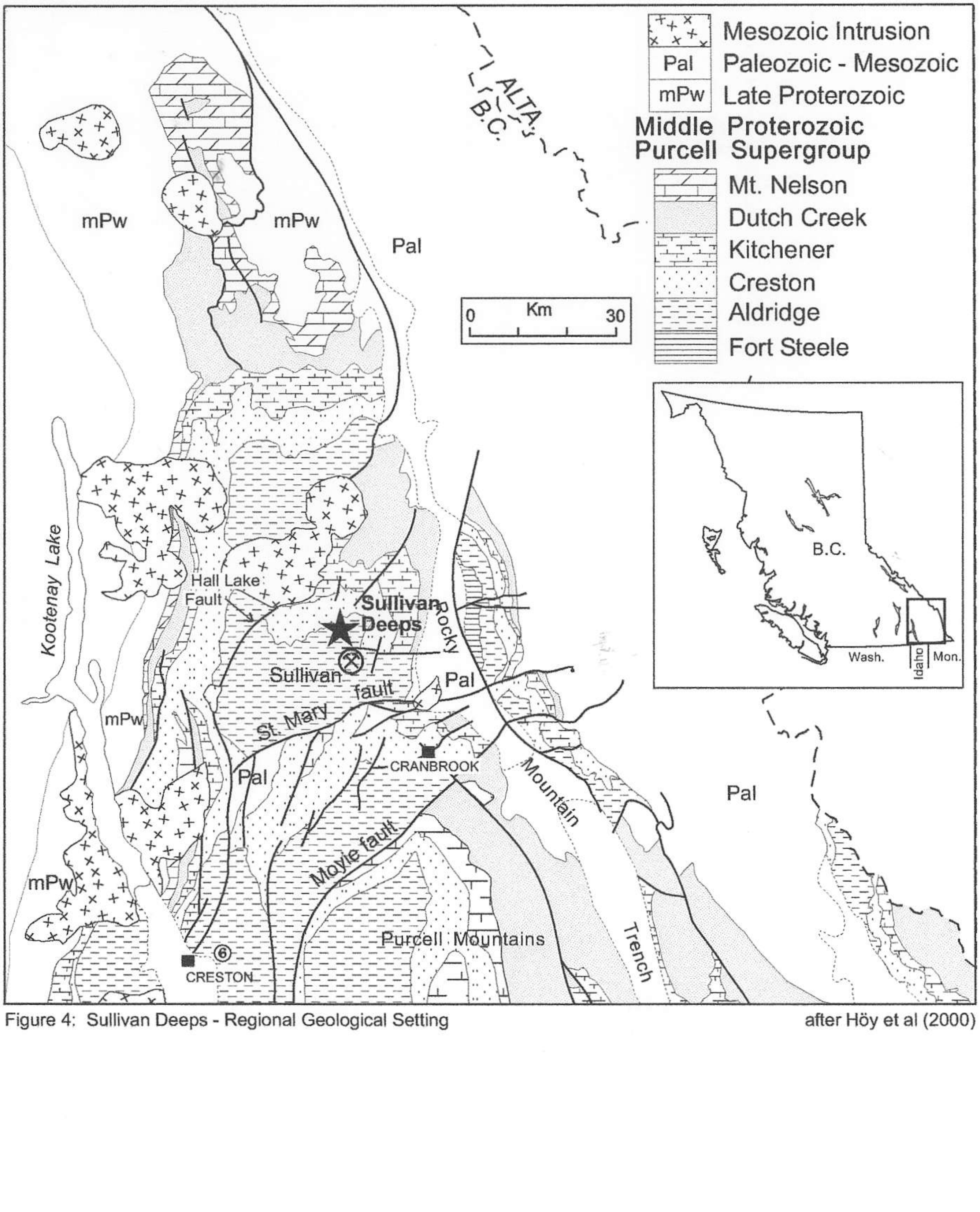

Figure 4: Sullivan Deeps - Regional Geological Setting after Höy et al (2000)

and consists of pyrrhotitic (0.5 to 5%), very thin to medium bedded, siliclastic turbidites with argillaceous tops which represent up to 30% of the total thickness of some beds. The overlying Middle Aldridge formation includes quartz-rich turbidites and significant intervals of laminated siltstone while Upper Aldridge units consist of thin bedded to laminated, pyrrhotite-rich argillites and siltstones deposited in a shallower water environment.

The recognition of well-laminated marker horizons within Middle Aldridge units has enabled correlations of various units over considerable distances.

The exposed parts of the Aldridge Formation are characterized by four, generally fining upward cycles, each featuring coarser, arenaceous turbidites which grade upward to thinner bedded, rusty weathering siltstones and argillites. These transitions are interpreted (Hoy et al, 2000) as reflecting rapid basin deepening during sedimentation.

Numerous mafic sills intrude the upper and middle parts of the Lower and Middle Aldridge sequences respectively. These gabbro and diorite Moyie sills range in thickness from tens to hundreds of metres and are known to extend laterally for tens of kilometres (Hoy, 1993). Radiogenic age determinations for Moyie sills of 1468 Ma (millions of years before present) provide a minimum age for Belt - Purcell Basin rift development and concurrent sedimentation.

Moyie sills generally have sharp contacts with Aldridge sedimentary rocks which have been converted to biotite hornfels over intervals of up to 30 metres outward from the contacts. Other Moyie sill contact zones feature locally intense albite-chlorite alteration particularly in proximity to Aldridge hosted sulphide deposits. There is also some local evidence that these sills were emplaced into unconsolidated sediments.

As indicated on Figures 4 and 5, sedimentary sequences within the Purcell anticlinorium are transected by numerous faults. Sedimentation within the anticlinorium is thought to have been terminated by Middle Proterozoic uplift and crustal thinning resulting in local tight folding and regional metamorphism.

The main fault structures now evident formed over an extensive period during Mesozoic time. North, northeast and northwest-trending faults (Figure 4), interpreted as growth faults related to basin development in Middle Proterozoic time, were reactivated in the late Proterozoic to early Paleozoic and again during the Mesozoic.

Northeast-trending faults, segment the Purcell anticlinorium (Figures 4 and 5), expose Lower Aldridge strata and govern the distribution of many of the known mineral deposits hosted by Aldridge Formation sediments. Deposit types include stratiform sulphides, discordant stockworks, disseminated sulphides and vein deposits. Extensive tourmalinite alteration is a feature of many of the deposits shown on Figure 5.

Stratiform lead-zinc-silver deposits include the world class Sullivan mine (detailed in the following section) and the adjacent North Star deposit, both of which occur at the transition between Lower and Middle Aldridge Formations. The Kootenay King deposit to the east of Sullivan (Figure 5) is a massive sulphide lens hosted in upper Middle Aldridge units.

Discordant hydrothermal vent breccias, or feeder pipes, host lead-zinc-silver mineralization at the Fors property southwest of Cranbrook and at the Stemwinder deposit west of Sullivan mine. Disseminated galena and sphalerite are hosted by Middle Aldridge sandstones at the Canam and Star properties south of Cranbrook (Figure 5). The past-producing St. Eugene mine and the Vine property, also south of Cranbrook, consist of polymetallic quartz veins which may have been a single deposit prior to movement on the Moyie Fault. Gabbro dykes related to the Moyie sills intrude the Vine structure, but are not known at St. Eugene.

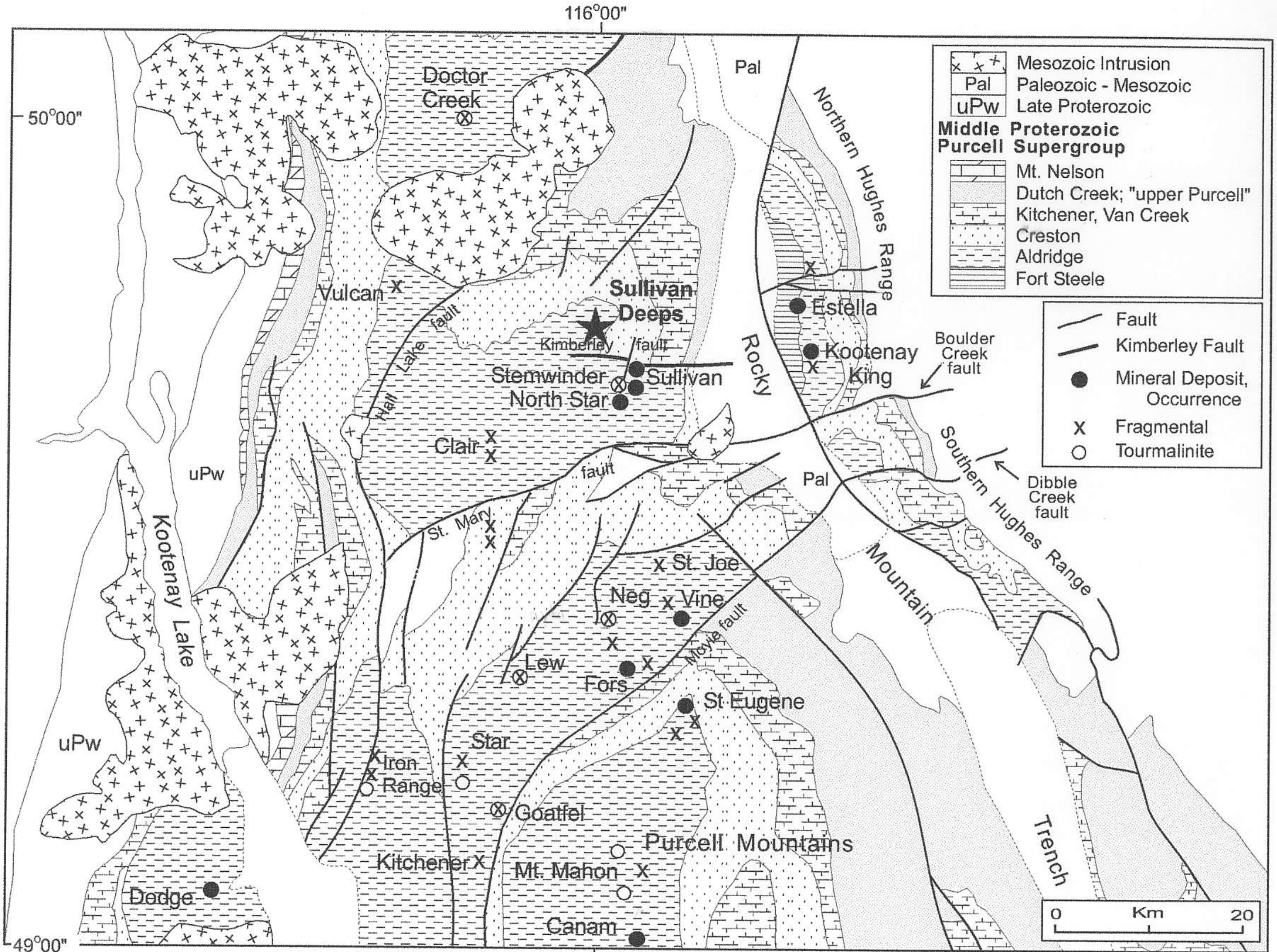

Figure 5: Sullivan Deeps - Regional Distribution of Sulphide Deposits

after Höy et al (2000)

Property Geology

The geological setting within and adjacent to the Sullivan Deeps property is illustrated on Figure 6. The immediate property area is underlain by northerly trending Middle Proterozoic metasedimentary sequences including Middle Aldridge Formation thin- to thick-bedded turbidites within which individual turbidite beds grade upward from quartzite bases through finer-grained wackes and argillites. Overlying Upper Aldridge Formation units, which consist mainly of rusty-weathering, thinly laminated argillites and lesser siltstones, are in turn overlain by argillites, siltstones and quartz arenites of the Creston Formation.

The Aldridge Formation strata within the property area are transected and offset by three north-northeast-striking, steeply northwest-dipping normal faults. These are referred to as the Cue, Cub and Kent Faults (Figure 6) and offsets are in the order of several hundred metres. Although not shown on Figure 6, Middle Aldridge rocks in the southwestern property area are cut by Moyie diorite-gabbro sills.

The potential of the Sullivan Deeps property is directly related to its location relative to the adjacent Sullivan mine property and environs. As indicated on Figure 6, the property is immediately north of the past-producing Sullivan mine which is hosted by Lower Aldridge metasediments immediately below overlying Middle Aldridge units. A lead-zinc-silver-bearing stratigraphic interval, known as the Sullivan Horizon, has been described as a distinctive, laminated argillaceous siltstone averaging 20 metres in thickness which extends east and west of Sullivan Mine (Figure 6) and, based on previous drilling, is known to be present at depth on the Sullivan Deeps property.

As noted in the previous section, Middle Proterozoic Purcell Supergroup metasedimentary rocks were deposited in an intracratonic rift of regional extent. Aldridge Formation metasediments form the basal part of the Supergroup, and, in the Sullivan mine – Kimberley area, were deposited in the deepest part of the regional rift basin. Known as the Sullivan Sub-basin (Ransom and Lydon, 2000) and thought to be the product of a graben system (Turner et al, 2000), it extends about 2 kilometres west and 10 km east of Sullivan mine. It is truncated on the north by the Kimberley Fault and is inferred to have extended south at least 12 kilometres to the St. Mary Fault, however it has been eroded from most of the area immediately south of Sullivan. The Sullivan – North Star "corridor" (Figure 6) marks the axis of the asymmetric Sub-basin near its western boundary.

In contrast to typical Lower Aldridge Formation turbidite sequences present on a regional scale in the Purcell Supergroup, the units within the Sullivan Sub-basin are characterized by exotic (allochthonous), discordant and concordant sedimentary fragmental rocks ("conglomerates"), mud flows and slurry deposits, anomalously thick turbidites, hydrothermal exhalites and sulphide-rich horizons. The sedimentary fragmental rocks consist of typical Lower Aldridge rock types but feature atypical textures. Various units range from massive sediments with few or no clasts through matrix supported pebble fragmentals and coarse, chaotic breccias. Clasts may be rounded to angular with some suggestion of sorting. Both concordant and cross-cutting sedimentary fragmental units have been documented.

The exotic or allochthonous lithologies of the Sullivan Sub-basin are thought to be related to three inter-related processes including syn-sedimentary normal faulting, mud volcano activity and seafloor venting of hydrothermal fluids, the latter two possibly being possibly related to Moyie diorite-gabbro intrusions at depth. By their very nature, the lateral extents of these units are limited although some components of the overall stratigraphy are consistent throughout the Sub-basin.

The foregoing lithologies of the Sullivan Sub-basin are separated by layers of dark grey, laminated, carbonaceous and argillaceous siltstone or arenite, referred to as carbonaceous wacke laminate (CWL – Ransom and Lydon, 2000), which also forms the top of the Lower Aldridge Formation. This distinctive unit is 20 metres thick on a regional scale but attains gross thicknesses of up to 200 metres within the Sub-basin where multiple units are intercalated with the fragmental units. The CWL is a product of deep sea sedimentation adjacent to a continental margin and represents periods of quiescence, particularly in the upper part of the Lower Aldridge where it marks a "quiet period" between the deposition of Lower Aldridge turbidites and more arenaceous turbidites of the Middle Aldridge Formation.

The overlying Middle Aldridge Formation within the area illustrated on Figure 6 is approximately 2200 metres thick and is comprised mainly of a monotonous succession of thin to thickly bedded, light and dark grey, locally rusty, wackes, siltstones and argillites. CWL or carbonaceous wacke laminate, which is characteristically found separating almost every graded bed of the Lower Aldridge, is much less common in the Middle Aldridge.

A 1500 metres interval within the Middle Aldridge contains a number of 0.10 to 10 metres thick, distinctive light and dark grey laminated wackes. A variation of CWL, these marker beds have 1 to 10 millimetres thick laminations that match, lamination for lamination, in bedrock exposures and drill cores over distances of up to several hundreds of kilometres. These distinctive markers, first recognized by Cominco geologists in the 1960s (Hamilton et al, 2000), represented a major breakthrough in the deciphering of regional and local Aldridge stratigraphy. The recognition of more than a dozen of these markers has enabled detailed stratigraphic positioning within Middle Aldridge sequences and, most importantly, has provided a tool to forecast the depth to the prospective underlying Sullivan horizon from any point within the overlying Middle Aldridge Formation.

The light and dark grey laminations of the various marker units resemble retail bar codes. The markers consist of fine quartz, feldspar and clay, and the dark laminations represent carbonaceous material similar to that in CWL (carbonaceous wacke laminate). While the individual marker units proper range in thickness from 0.10 to 10 metres, they may be spread out over varying thicknesses by intercalated turbidites. Matching the thicknesses of these intercalated turbidite horizons on opposite sides of faults provides a mechanism for determining the directions and limits of offsets (Ransom and Hagen, 1985).

Tholeiitic intrusions, in the form of Moyie gabbro-diorite sills, cut both Lower and Middle Aldridge metasedimentary rocks but are most prevalent in the Lower Aldridge where they constitute 30% of the sequence by volume. Moyie Sills are 1 to 700 metres thick, and , as the name implies, are mainly concordant with enclosing Aldridge metasediments although some are partly or wholly transgressive, cutting the strata at low to moderate angles. These Moyie intrusions, thought to have been injected into unconsolidated sediments (Lydon, 2000), feature granophyre or hornfels border phases and the generally accepted radiometric age of 1468 Ma suggests that these intrusions were contemporaneous with Middle Aldridge sedimentation (Turner et al, 2000).

Two sets of sills have been recognized including an upper sill complex cutting Middle Aldridge strata and a lower sill complex within the Lower Aldridge below the Sullivan deposit. Alteration of Aldridge rocks marginal to Moyie Sills is typically biotite (± albite) hornfels and occasionally, thin zones of coarse amphibole and massive albitite. The "footwall" sill below the Sullivan deposit consists of two gabbro sills separated by a 150 metres interval of granophyric, hornfelsed metasediments referred to as granofels by Turner et al (2000).

Significantly younger (Cretaceous) intrusions cutting Aldridge strata include narrow lamprophyre dykes.

Aldridge Formation metasediments and other units of the Purcell Supergroup were affected by a number of episodes of regional deformation and related metamorphism beginning with the mid-Proterozoic East Kootenay orogeny which resulted in local tight folding, amphibolite facies metamorphism and granitic intrusion following the end of sedimentation in the Purcell basin. Extensional block faulting was also a product of this orogeny and many of the faults indicated on Figure 6 were reactivated in the late Proterozoic, early to mid-Paleozic and Mesozoic-Cenozoic time. The direction of movement along many of the earlier normal and strike-slip faults was reversed during a period of compression and thrust faulting related to the formation of the Rocky Mountain fold and thrust belt and the Purcell Anticlinorium in late Cretaceous and early Tertiary time.

The Sullivan Deposit

Sullivan is one of the largest base metal massive sulphide deposits world-wide, having produced 149 million tonnes with recovered grades of 5.6% lead, 5.3% zinc and 62 grams/tonne silver plus recoverable quantities of cadmium and tin between 1909 and 2001. The average recovered grades are not representative of the higher *in situ* base metal grades originally within the deposit . A relatively low cutoff grade (3 – 4.5% combined lead-zinc), employed in mining over much of the mine life effectively expanded the reserve base, but when coupled with significant dilution from unconsolidated stope backfill, effectively masked the high grade nature of the deposit (Ransom, personal communication). Production records (Ransom, 1977) show annual lead, zinc and silver output peaking in the early 1940s and declining thereafter, corresponding to increased mining of pillars and a focus on mining of the eastern part of the deposit which incorporated significant waste intervals.

Initially regarded as a hydrothermal replacement deposit in spite of its concordant nature, detailed geological work in the late 1950s suggested a syngenetic origin (Hamilton et al, 2000). The Sullivan deposit is regarded as a classic example of a synsedimentary, sedimentary exhalative (Sedex) massive sulphide deposit formed near the top of the Lower Aldridge Formation and related to a submarine hydrothermal system (Ransom and Lydon, 2000) developed on a collapsing mud volcano.

In plan, the Sullivan sulphide deposit measures 1.9 kilometres north-south by 2.2 kilometres east-west and includes a thin, 700 metres wide pyrrhotite-rich lens on the east. The economic limits within the overall sulphide zone are 1.8 kilometres north-south by 1.5 kilometres east-west (Figure 6). As previously noted, the deposit occurs at the top of the Lower Aldridge Formation, on the eastern limb of a northward plunging anticlinorium. The deposit is conformable with Lower Aldridge strata and on average dips gently to the northeast and is exposed only near its southwestern limits where open pit mining was undertaken in the past. The deposit consists of conformable lenses of pyrrhotite, pyrite, sphalerite, galena and minor boulangerite; associated minerals include magnetite and cassiterite.

Figure 7 is a generalized cross-section through the central part of the Sullivan deposit (Figure 6). The deposit consists of a thicker, western part referred to by Lydon et al (2000) as the Vent Complex (Western Part of Hamilton et al, 1983) and an eastern part consisting of Bedded Ores (Lydon et al, 2000) or "ore bands and/or hangingwall interbedded sulphides and argillites" by Owens (2000).

Most of the ore recovered from Sullivan was from the Vent Complex which is crudely layered and, as illustrated on Figure 7 and 8, consists of a lower pyrrhotite-rich lens and an upper zone of massive bedded galena-sphalerite-pyrrhotite massive sulphides which ranges up to 100 metres in thickness and averages 50 metres. Sulphide layering is conformable with bedding in the enclosing host rocks. The Vent Complex is underlain by a footwall conglomerate and north-trending, near vertical chaotic breccias, both featuring abundant tourmaline alteration (Figure 7 and 8).

The Bedded Ores make up the eastern half of the deposit and are separated from the Vent Complex by a structurally complex transition zone which occurs directly above the eastern margin of tourmaline alteration in the footwall of the deposit. Bedded Ores consist of a conformable sequence of alternating sulphide and argillaceous sedimentary layers (waste) within a stratigraphic interval of 30 metres, tapering to less than 10 metres near the economic eastern limits of the deposit. Five main sulphide bands include the 3-20 metres thick Main Band and the overlying 1 to 2.5 metres thick A, B, C and D Bands (Figure 11). Intervening waste bands range in thickness from less than a metre to 5.7 metres. The upper part of the Main Band and the A through D Bands consist of delicately laminated pyrrhotite-galena+sphalerite interlayered with 0.10 to 20 centimetres argillite-siltstone layers. The waste beds collectively make up between 25 and 40% of the Bedded Ores. Pyrite and magnetite are common near the eastern extremities of the deposit.

Three graded sedimentary beds are present in the hangingwall sequence above the main part of the Sullivan deposit (Figures 8,11). From oldest to youngest, these include the "I", "H" and "HU". Each bed consists of a basal quartz arenite to wacke up to 10 metres thick and an upper, laminated, pyrrhotite-rich argillite 3 to 8 m thick. The uppermost, or "HU" graded bed is overlain by a 10-15 metres thick CWL (carbonaceous wacke laminate) which marks the top of the Lower Aldridge Formation. An additional graded bed, the "Little HU", occurs locally between the H and HU sequences. The middle, "H" pyrrhotite laminated argillite interval contains an intraformational conglomerate above most of the deposit. The pyrrhotite laminated argillites (Figure 11) are distal to the local "I, H and HU Ore" horizons developed locally above the central part of the deposit.

Several stages of hydrothermal alteration are recognized marginal to the Sullivan deposit including broad zones of tourmaline alteration in the footwall of the deposit and albite (+chlorite-pyrite) in the hangingwall (Figures 7,8). Immediately below the hangingwall "albitite" is a zone about 200 metres in diameter in which sulphides, over the entire thickness of the deposit, have been replaced by pyrite, chlorite and carbonate. Pyrite-carbonate replacement of pyrrhotite also occurs along the Kimberley fault which marks the northern limits of the Sullivan sulphide deposit (Figures 6 and 11).

A crudely concentric zonation outward from the Vent Complex is evident in terms of thickness of sulphide layers and overall metal grades and compositions, most notably declining lead:zinc ratios.

Subsequent deformation of the deposit has been substantial and includes low-angle thrust faulting and isoclinal folding. In several parts of the deposit, the folding is particularly intense within the transition zone. A series of steeply west-dipping normal faults locally displace sulphide layers by up to 25 metres (Figure 7). As noted, the northern part of the deposit is truncated by the Kimberley Fault (see subsequent section). Increased thicknesses of the sulphide bands resulting from thrusting and associated folding no doubt improved mining economics in several parts of the deposit.

Kimberley Fault

As noted previously, the Kimberley Fault truncates host rocks of the Sullivan sub-basin and probably the northern end of the Sullivan deposit. This fault was originally identified in the 1920s and while vertical displacement was estimated to be at least 2000 metres (north side down), the lateral offset was not known.

The Kimberley Fault, which strikes in a general east-west direction and dips 55^0 degrees north (Figures 6, 8), marks the boundary between two structural blocks. The Kimberley block south of the fault features Lower Aldridge and the lower part of the Middle Aldridge Formations; the Hope block to the north is characterized by exposures of Middle Aldridge and younger formations of the Purcell Supergroup. Both blocks consist of a large, open anticlinal structure plunging gently north (Ransom and Lydon, 2000).

Detailed geological mapping over the years has refined the surface trace of the fault. As indicated on Figures 6 and 9, the Kimberley Fault extends in a westerly direction through the northern limits of the Sullivan sulphide deposit to Mark Creek where it turns abruptly south-southwest for slightly more than a kilometre prior to resuming a westerly direction. Formational contacts indicated both normal and left lateral offset but a subsequent detailed structural study suggested that strain observed on the north side of the eastern segment of the fault was indicative of right lateral offset, probably developed during compression associated with the development of the Rocky Mountain fold and thrust belt in Mesozoic and Cenozoic time. The Matthew Creek thrust fault, which intersects the Kimberley fault west of Mark Creek (Figures 6 and 9), is probably a product of this later tectonic event, and may in part be responsible for the apparent right lateral offset.

The identification of a dozen or more marker units within the lower part of the Middle Aldridge Formation has permitted a more precise estimate of lateral and vertical movement along the Kimberley Fault. As noted in a previous section of this report, individual marker units proper range in thickness from 0.10 to 10 metres but may be spread out over varying thicknesses by intercalated turbidites. Matching the thicknesses of these intercalated turbidite horizons can provide a method for determining the directions and limits of offsets across fault structures (Ransom and Hagen, 1985).

With respect to the Kimberley Fault, the strike-slip or lateral offset was determined by comparing the tapering geometry of individual turbidites within Middle Aldridge marker units on opposite sides of the fault. Offset was estimated by measuring the amount of restoration required to align equal thicknesses of the tapering beds. The assumptions made in this exercise were that progressive east to west changes in thickness of these turbidites was consistent in a north – south sense; in other words, there was no significant change in thickness in these horizons from south to north. When portions of a tapering turbidite bed present on both sides of the fault are restored, a thicker tapering portion of that bed cannot be moved past the position where its counterpart becomes thinner. A corollary is that no limit can be provided for fault displacement in an opposite sense. Turbidite beds within marker units closest to the Kimberley Fault, and also stratigraphically closest to the Sullivan horizon, were considered less likely to produce errors related to deviations from the first two assumptions and from structures affecting rocks at higher levels.

Several turbidite beds within marker units in drill core and bedrock exposures within the Middle Aldridge Formation both north and south of the fault were studied. Limiting amounts of left-lateral strike slip offset on the Kimberley Fault determined in this manner on four different turbidite beds were 10.5, 6.0, 5.3 and 1.3 kilometres. The 1.3 kilometres value was determined from the lowest marker unit above the Sullivan horizon and closest (0.5 kilometre south and 2 kilometres north) to the fault. All offset values are limits, consequently the lesser value of 1.3 kilometres is most likely the best approximation of maximum left-lateral offset.

The apparent left-lateral offset of up to 2.3 kilometres along the Kimberley Fault, indicated by the distribution of Moyie gabbro sills and Sullivan Sub-basin comparisons in recent drill holes north of the fault, is indicative of additional offset related to the three steeply northwest-dipping normal faults which affect strata above the north-dipping Kimberley Fault.

The consensus of opinion is that the best estimate of net left-lateral offset north of the Kimberley Fault is 1.3 kilometres and that this represents a combination of right-lateral compressional offset that was less than previous cumulative left lateral offset developed during several periods of extension. The vertical or down-dropped component, based on several recent, deep drill holes, is in the order of 2.5 kilometres.

MINERALIZATION

The Sullivan Deeps property was tested by a number of shallow diamond drill holes for a possible extension of the Sullivan deposit north of the Kimberley Fault in the 1920s. Most of these holes were drilled directly north of Sullivan before vertical and lateral fault offsets were properly understood. Consequently, all of these holes tested the Middle Aldridge Formation only and no mineralization of consequence was reported. Deep drilling campaigns between the early 1970s and 1996 provided additional information regarding fault offsets and most of these holes penetrated the upper part of the Lower Aldridge Formation.

The only mineralization of consequence encountered to date was in the second last hole drilled and included a 30 centimetres clast of deformed, bedded sulphides grading 0.2% lead, 4.1% zinc, 33.7% iron and 9 grams/tonne silver within an upper part of the Lower Aldridge Formation characterized by lithologies similar to those of the Sullivan Sub-basin to the south.

The net result of recent, deeper drilling is illustrated in Figure 9 which shows the trace of the prospective Sullivan horizon at depth north of the Kimberley Fault in the west-central part of the Sullivan Deeps property. The postulated target area for either a faulted extension of the Sullivan deposit or a separate vent area remains to be fully tested by further deep drilling.

EXPLORATION

Previous geological mapping programs on the Sullivan Deeps property were complemented by soil and rock geochemistry. Soil sampling included the collection of more than 340 reconnaissance samples at 300 x 300 metres spacings. Subsequent analyses returned low levels of copper, lead and zinc. A number of Sullivan-type sulphide boulders were found at elevations significantly higher than the mine during geological mapping programs and some 490 soil samples were collected on grid spacings of 30 x 30 and 60 x 60 metres in an attempt to locate the source of these boulders. Results were negative and it was subsequently determined that the sulphide boulders were most likely eroded from the Sullivan deposit by a tongue of the thick ice sheet occupying the Rocky Mountain Trench in Pleistocene time that flowed into and up adjacent valleys after ice had melted from the mountains and upper valleys.

An additional 242 soil samples, collected along four 3 kilometres long lines over the inferred faulted offset of the Sullivan deposit, were analyzed for mercury only. Twenty-four samples contained more than 50 parts per billion (ppb) mercury; twelve of these occur on one survey line and may be and expression of leakage along a fault.

Geophysical surveys conducted over the Sullivan Deeps property include a Federal-Provincial government regional airborne magnetic survey in the mid 1960s and a more detailed multi-parameter (high-resolution electromagnetic, magnetic, gamma-ray spectrometry and VLF-EM) airborne survey in 1995/96. While interesting in a regional sense, no significant insights regarding property geology emanated from these surveys.

Surface geophysical surveys carried out on the Sullivan Deeps property have utilized electromagnetic instruments on the assumption that a buried target would have a high electrical conductivity similar to the Sullivan deposit. VLF-EM and Horizontal Loop electromagnetic surveys, both methods having only shallow (up to 100 metres) depth penetration, were used to search for a possible source of the aforementioned sulphide boulders. Several weak anomalies were outlined but none were considered significant. A regional airborne electromagnetic survey, carried out for Cominco Ltd. in 1973 and which covered 30% of the Sullivan Deeps property, identified two single point, lowest level anomalies.

UTEM (University of Toronto Electromagnetic system) surveys are particularly effective in exploring for conductive targets buried by highly resistive (and relatively electromagnetically transparent) rocks such as the quartz rich sediments of the lower part of the Middle Aldridge Fm. The Sullivan deposit is highly conductive with conductive values of about 200 Siemen (Lajoie, 1997, 2001) and surface UTEM surveys are capable of detecting a Sullivan-size target at depths of approximately 1 kilometre. Seven line-kilometres of UTEM survey was performed on three separate, large grids that overlapped edges of the Property. Because of the anticipated target depth of about 2500 metres, no areas of high conductivity were identified.

The most significant UTEM results on the property have been obtained from a down-hole survey of the last drill hole completed (DDH 6465 – 2608 metres) in 1996. This survey, performed jointly by Cominco Ltd. and Lamontagne Geophysics Ltd., consisted of a single axial component receiver in the hole and four transmitter loops on surface. One transmitter loop was centred on the drill hole while the second and third loops were established 2 kilometres west and east of the hole respectively to provide and east-west component to any anomalous responses. A fourth loop, one kilometre south of the drill hole, provided some north-south control (Lajoie, 1997). Low resistivities characterized the upper half of the drill hole while a broad conductive zone was identified near the bottom of the hole.

Down-hole UTEM response is illustrated on Figure 10. The broad anomaly between hole depths of 2450 and 2560 metres ("A") was initially interpreted (Multiloop computer-based modeling program) as being caused by a gently-dipping conductive zone 150 metres east of the hole and having a conductance value of 80 Siemen and a dip length of between 2 and 4 kilometres. Within the broad anomaly are two sharp anomalies; the upper "B" anomaly is interpreted as being 25 metres north of the drill hole with a conductance value of about 30 Siemen and possibly reflecting a sulphide band. The lower "C" anomaly is thought to be due to a 10 to 15 Siemen conductive zone some 15 metres south of the hole, apparently in footwall gabbro.

Subsequent ENIGMA computer modeling of the down-hole UTEM survey results (Lajoie, 2001) suggests that the broad anomaly "A" represents a gently-dipping 3 x 3 kilometre zone with 100 Siemen conductance values.

In conjunction with the down-hole survey, a surface (6 line kilometres) Conductivity Depth Image Profiling (CDI) survey was carried out using UTEM equipment. This is a deep probing survey method which involves the use of three transmitter loops for each survey line. Data retrieved are processed in a manner similar to that used in seismic analysis resulting in a conductivity versus depth profile for each survey line. The cumulative effects of low resistivities in the upper part of the Middle Aldridge Fm. resulted in depth penetration of only 1400 metres, well above the target horizon which is 2500 metres below surface.

DRILLING

Historic diamond drilling within and adjacent to the current Sullivan Deeps property includes that of Western Exploration Company in the 1930s which reportedly consisted of a limited number of holes in the vicinity of the north fork of Mark Creek. There are no precise records of this drilling. Between 1961 and 1966, Reeves Macdonald Mines Limited completed several holes of which some are thought to have been drilled on claims that now constitute a part of the current property (Ransom, personal communication) that is underlain by Upper Aldridge Formation sedimentary rocks.

Diamond drilling completed by Cominco Ltd. and its predecessor company within the boundaries of the current property consisted of 17154.8 metres in 20 inclined and vertical holes. Thirteen of these holes (5123.1 metres) were drilled to relatively shallow depths (132.0 – 579.4 metres) between 1923 and 1929. More recent drilling, between 1971 and 1996, includes seven vertical and inclined holes for a total of 12031.7 metres. Drilling contractors were Heath and Sherwood, Longyear and Connors Drilling Ltd. and most core recovered was NQ-size (4.76 centimetres diameter). These deep holes were initiated at a larger hole diameter (PQ and HQ – 12.22 and 95.6 centimetres diameter) and reduced to NQ down hole. Core recoveries were generally good, in excess of 90%. Hole deviation was substantial, as can be expected in any deep drilling program, and was measured by various bore hole surveys.

Drill hole locations are shown on Figure 9 and the 1971-1996 holes are identified by hole number. Details are listed in the following table.

Table 1- Listing of Diamond Drill Holes

Hole Number	Easting	Northing	Elevation(m)	Total Depth(m)	Inclination	Azimuth	Year
266	570009	5508720	1557.47	236.8	-90		
271	570603	5511241	1512.06	415.4	-90		1923
328	573389	5511658	1656.2	538.0	-90		
354	574616	5510398	1497.1	579.4	-90		1926
358	572315	5512459	1527.6	536.8	-90		1926
360	571253	5512418	1472.1	487.7	-90		1926
361	569401	5509058	1395.6	484.9	-90		1926
386	567739	5509589	1517.5	557.5	-90		1927
389	566500	5509846	1613.9	478.5	-90		1927
406	567241	5512879	1664.8	196.0	-90		1928
409	565876	5509189	1713.5	196.6	-90		1928
413	569746	5508665	1493.5	132.0	-90		1929
420	570212	5508232	1547.4	283.5	-90		1929
5489	569275	5510224	1444.8	2673.1	-90		1971/72
6434	565531	5509351	1840.3	1595.6	-69	223	1979
6435	569608	5508473	1462.1	448.1	-90		1979
6448	567449	5508901	1707.3	1811.7	-68	270	1981
6458	570649	5508239	1602.6	246.9	-90		1985
6464	567880	5510432	1687.6	2648.1	-65	270	1988
6465	568635	5511143	1495.6	2608.2	-68	270	1991-96

The thirteen holes drilled between 1923 and 1929 obviously utilized standard drilling equipment and tested only the Middle Aldridge Formation or well short of the prospective horizon in the upper part of the Lower Aldridge. Detailed re-examinations of drill cores from these holes in subsequent years provided valuable stratigraphic and structural information which assisted in planning the more recent, deep drilling programs. This is a vivid illustration of the value of retaining core from previous drilling campaigns.

The seven holes drilled between 1971 and 1996 were directed to the search for the potential faulted offset of the Sullivan deposit on the north side of the Kimberley Fault. The first of these, drill hole 5489, was collared near Mark Creek some 2 kilometres north of the Kimberley Fault and 3 kilometres northwest of the northern limits of the Sullivan deposit (Figure 9). Drilled to a depth of 2673 metres, the hole passed through two overturned fold limbs and a zone of steeply dipping normal faults within Middle Aldridge Formation strata. The hole penetrated the Kimberley Fault at 2265 metres, or several hundred metres above the projected Sullivan Horizon, and at 2311 metres intersected the Lower Aldridge Formation.

Drill hole 6434, an inclined hole drilled on a southwest azimuth, was collared in the extreme southwest part of the Sullivan Deeps property 2.2 kilometres north of the western segment of the Kimberley Fault and 6 kilometres west of the Sullivan deposit (Figure 9). This was the first hole to intersect stratigraphy typical of the Sullivan Horizon north of the Kimberley Fault, encountering a 15 metres thick, massive carbonaceous wacke laminate (CWL) at the top of the Lower Aldridge Formation at a hole depth of 1492 metres.

Hole 6435, a vertical hole collared east of Mark Creek a few hundred metres north of the Kimberley Fault, intersected the fault at a hole depth of 236 metres. This point also roughly marked the contact between the Middle and Lower Aldridge Formations which was obscured by silicified and fractured sedimentary rock weakly mineralized with pyrite, pyrrhotite and chalcopyrite. An interval of medium to thickly bedded wackes and argillite, some with quartzitic bases typical of the western part of the Sullivan Sub-basin, was intersected between 272 to 323 metres. The following 70 metres consisted of pebble conglomerate and massive fragmental rocks, both containing variable, patchy and fracture-filling pyrite, pyrrhotite and rare chalcopyrite, and a basal, 2 metres thick carbonaceous wacke laminate (CWL).

Drill hole 6448, a steeply inclined hole drilled on a westerly azimuth near the southern property boundary and 2 kilometres north of the west segment of the Kimberley Fault, encountered Middle Aldridge Formation strata prior to intersecting the north-northeast-striking, shallowly northwest-dipping segment of the fault at a hole depth of 1564 metres. Below the fault, some 200 metres of intensely altered sedimentary rock overlies recognizable Lower Aldridge Formation rocks which continue to the end of the hole at 1812 metres.

Hole 6458, a relatively shallow (247 metres) vertical hole collared immediately north of the Kimberley Fault several hundred metres west of the Sullivan deposit (Figure 9), was drilled through the fault in an attempt to explore the Sullivan Horizon. Below the fault at a hole depth of 104 metres, intensely silicified metasedimentary rock, containing trace element levels similar to those in rocks peripheral to the Sullivan deposit, are intruded by Moyie gabbroic rocks which continue to final hole depth.

The last two holes, 6464 and 6465, both drilled to depths of more than 2600 metres, were steeply inclined holes drilled on west azimuths between 2.7 and 3.4 kilometres north of the Kimberley Fault (Figure 9) between 1988 and 1996. A generalized vertical section of both these holes is included as Figure 11.

Hole 6464 intersected the Lower Aldridge Formation at a hole depth of 2472 metres (Figure 11). The characteristic carbonaceous wacke laminate (CWL) unit, rather than being a thick continuous unit typical of the top of the Lower Aldridge Formation, was found to be intercalated with several different and unique sedimentary beds. Over the following 129 metres, these included several thick beds of massive argillite, thin quartzitic beds, thick massive quartzitic beds, massive subwacke/argillite having a resedimented appearance containing wispy pyrrhotite grains and rare sphalerite and galena, altered subwacke/argillite that is otherwise similar to the preceding but in which vague laminations are flat and parallel, a 30 centimetres interval (clast) of deformed bedded sulphides (grading 0.2% lead, 4.1% zinc, 33.7% iron and 9 grams/tonne silver) followed by vaguely bedded and laminated subwacke and argillite. The foregoing assemblage, interpreted as Sullivan Sub-basin infill sediments, correlates well with the western part of the Sullivan Sub-basin as known from drill cores recovered from a number of holes some 2 kilometres west of the Sullivan deposit.

A Moyie gabbro sill, 37 metres thick, is in contact with the foregoing infill sedimentary assemblage (Figure 11). Sedimentary rocks between the sill and final hole depth at 2648 metres, have been converted to "granofels" (hornfels) and this sill-granofels interval is typical of the upper part of the "gabbro arch" below and west of the Sullivan deposit. The nature of the Sub-basin sedimentary rocks and the apparent upper part of the "gabbro arch" seen in this hole are thought to be correlative with the western part of the apex of the "gabbro arch" roughly 2 kilometres west of Sullivan (Paul Ransom, personal communication).

Diamond drill hole 6465, an inclined hole drilled at -68^0 on a west azimuth, was collared in 1991 and drilled to a depth of 182 metres. The hole was re-entered in 1995 and extended to a depth of 1936 metres or near the limits of capability of the drill rig. Connors Drilling built a new machine (H.H. 60), capable of drilling to depths of 3000 metres, in order to complete the hole to a final depth of 2608 metres in 1996. The major part of this hole passed through Middle Aldridge Formation sediments and contained marker units and essentially conformable gabbro sills. Three low angle thrust faults, intersected between hole depths of 1109 and 1368 metres, repeat the lowermost of the two principal gabbro sills encountered in the upper part of this hole (Figure 11; Ransom, 1998). The thrusts coalesce into a single structure in the vicinity of hole 6464 (Figure 11).

The top of the Lower Aldridge Formation was intersected at 2385 metres and although the characteristic carbonaceous wacke laminate (CWL) unit is present, it is intercalated with other sediments to 2413 metres and the original character of this interval is obscured by alteration. Of significance is the fact that progressively down hole several sedimentary intervals that correlate with key beds of the formal Sullivan mine hangingwall stratigraphic sequence were recognized. These include the "Hu" Laminated Interval, the "Hu" Graded Bed, the "H" Laminated Interval, the "H" Conglomerate, "H" Graded Bed, and "I" Laminated Interval (Figure 12) which was found to contain anomalous concentrations of lead (400 parts per million) and zinc (2000 parts per million). The "I" laminated interval was seen to be overturned above an apparently minor low angle fault (Figure 11) at a hole depth of 2469 metres beyond which the hole passed into sediments typical of footwall rocks below the Sullivan deposit (Ransom, 1998). These contained one 10 centimetres zone of tourmalinite alteration and two smaller possible tourmalinite occurrences were also noted. The last 100 metres of hole penetrated Moyie gabbro and granofels or hornfelsed sediments (Figure 11).

The "I" Laminated Interval in the eastern part of Sullivan mine is about 10 metres stratigraphically above uppermost or "D" ore band (Figure 12). As noted, the "I" unit in drill hole 6465 is transected by a low angle fault, referred to as the Hope fault (Ransom, 1998), which is interpreted to be a normal fault (west side down). Clearly, this fault displaced the prospective Sullivan horizon (Figure 11) which may well be the cause of the previously described, strong UTEM conductor immediately east of the drill hole (Figure 10).

Information obtained from hole 6465 has assisted in refining estimates of offset north of the Kimberley Fault. Net slip is estimated to be 4200 metres in a west-northwest direction with horizontal and vertical components of 3500 and 2300 metres respectively (Ransom, 1998).

SAMPLING METHODS AND ANALYSES

All soil and drill core samples collected from the Sullivan Deeps property were analyzed at the Cominco Exploration Research Laboratory facility in Vancouver. Soil samples were collected in Kraft paper bags and dried before shipping. Core samples were sawn lengthwise, labeled and placed in plastic bags for shipping. Drill cores were collected at 30 to 50 metres intervals from some drill holes for determination of trace elements. One sample of massive sulphides (hole 6464) and selected intervals of adjacent core were sawn lengthwise, labeled and bagged for shipping.

Laboratory procedures included screening of soil samples to –80 mesh prior to being subjected to hot aqua regia digestion and subsequent analyses by atomic absorption until the early- to mid-1990s after which induced coupled plasma (ICP) methods were used. Mercury trace analyses on soils were determined by cold vapour / atomic absorption. Core samples submitted for trace element analyses were crushed, screened, digested and analyzed in using the same analytical methods. Whole rock analyses were determined by X-ray fluorescence. Samples containing appreciable sulphide minerals were analyzed using standard assay procedures. No special security measures were deemed to be necessary.

The writer is of the opinion that sampling methods and analytical procedures employed during investigation of the Sullivan Deeps property over the past 30 years are in accordance with industry standards.

DATA VERIFICATION

Information used in the preparation of this report includes a number of readily available, published scientific papers plus a number of detailed, internal reports dealing with previous exploration conducted on the Sullivan Deeps property by Cominco Ltd. and its predecessor company. The writer has no reason to doubt the quality or veracity of these data. All of the exploration work and subsequent reporting was performed by competent, qualified persons.

The writer did not collect any samples for analyses during the course of the September, 2003 property examination. Some drill cores from some of the drilling completed over the past 15 years were examined as were a number of Cominco documents, plans and sections stored in a vault at the former Sullivan mine.

INTERPRETATION AND CONCLUSIONS

Exploration programs on the Sullivan Deeps property since 1971 have provided significant details regarding the nature of the Kimberley Fault and the extent and direction of offset along it. Comparisons of the geometry of individual turbidite units within Middle Aldridge Formation marker units both north and south of the fault have confirmed left-lateral offset of at least 1.3 kilometres. Since the Kimberley Fault truncates the northern part of the Sullivan Sub-basin and probably the deposit itself, the foregoing re-interpretations served to guide deep drilling north of the fault in the search for the possible offset of the Sullivan deposit.

Several deep diamond drill holes, completed on the Sullivan Deeps property over the past number of years, suggest good potential for Sullivan mine type mineralization north of the Kimberley Fault. The last two drill holes, 6464 and 6465, intersected lithologies characteristic of the Sullivan Sub-basin, the Sullivan – North Star corridor and the footwall gabbro intrusive complex as known on the south side of the fault structure.

For example, drill hole 6464 cored a resedimented interval in the Lower Aldridge Formation that is thought to be correlative with a sequence of extruded or slumped sedimentary fragmental rocks between 0.5 and 1 kilometre west of Sullivan mine. This hole also intersected 30 centimetres of deformed, bedded, lead-zinc sulphides similar to those sulphide clasts, up to 1metre thick and several metres across, which are found in debris flows at Sullivan mine.

Drill hole 6465 intersected unique sedimentary intervals which correlate precisely with the formal hanging wall sequence immediately above the Sullivan deposit. This hole encountered a normal fault some 10 metres stratigraphically above the expected uppermost ore band (D Band), routinely mined in the eastern part of Sullivan mine, and passed into typical Sullivan deposit footwall sedimentary rocks and Moyie gabbro intrusions found to be consistent with the configuration of similar intrusions below Sullivan.

Near the hole depth of the normal fault which apparently displaced the upper sulphide band, a down hole geophysical (UTEM) survey identified a strong (80 – 100 mho or Siemen), flat to shallowly dipping conductive zone 150 metres east of the hole. The strong response of this conductor suggests that it extends to the east over a 3 x 3 kilometre area. The apparent size of this conductor could accommodate something the size of the Sullivan sulphide deposit which in plan measures 2.2 x 1.9 kilometres.

Rock temperatures at the bottom of drill holes and down-hole temperature gradients have been routinely obtained from Cominco's deep holes drilled north of the Kimberley Fault and elsewhere in the Kimberley area. The average geothermal gradient in the district is 23^0 Celsius per kilometre of depth and it may be significant that the highest gradient yet determined (28^0 C/ kilometre) was encountered in drill hole 6465, the last hole drilled north of the Kimberley Fault. At a hole depth of 2470 metres, or about the level of UTEM conductor and the normal fault which apparently displaced the sulphide horizon, rock temperature is 76^0 Celsius. Sulphide minerals, particularly sphalerite, have significantly higher thermal conductivities than Aldridge sedimentary rocks. Immediately south of the Kimberley Fault, the northern limits of the Sullivan orebody are characterized by high zinc values. A number of drill holes, which tested this part of the deposit over a strike length of 600 metres, returned average grades of 21.7% zinc and 9% lead over average widths of 8 metres (Pauwels, 1998). Thus, the anomalous temperature gradient evident in hole 6465 lends further credence to the interpretation that the strong UTEM conductor is due to the presence of a sulphide body.

In summary, the results of deep drilling and a down-hole UTEM survey indicate good potential for the existence of a sulphide deposit on the north side of the Kimberley Fault. Such a deposit could be either the faulted continuation of the Sullivan deposit or a completely separate (and new) deposit developed in similar lithologies by geological processes analogous to those responsible for the formation of Sullivan. At the projected depth of about 2500 metres, the objective should be the identification of several tens of millions of tonnes with grades of between 15 and 20% combined lead-zinc.

RECOMMENDATIONS

Based on the results of exploratory work completed to date, and the nature and potential size of the exploration target, the writer is of the opinion that the Sullivan Deeps property is of sufficient merit to warrant further exploratory work. It is recommended that this additional work be undertaken in two phases, both of which will involve additional diamond drilling to properly test the strong UTEM conductor identified immediately east of the last hole drilled.

The following recommended program is essentially as proposnd by Paul Ransom, geologist, and with which the writer concurs. The proposed first phase program will consist of the drilling of a vertical hole to a depth of 2600 metres. If collared adjacent to previous hole 6465, normal down-hole deviation should result in it intersecting the UTEM conductor approximately 750 metres east of hole 6465. If warranted, addilonal testing of the conductor could be by way of four additional holes wedged off the initial hole at a hole depth of about 1500 metres. The objective would be to use a number of wedges within each of the four wedge cuts to further test the UTEM conductor at four points, each several hundred metres distant from the original hole pierce point. A number of additiooal, retrievable wedges in sach of the wedge cuts will be required to either flatten or steepen each cut as required prior to reaching the targeted objective.

Both phases of proposed work will involve significant time and expenditures. Direct drilling costs to test the deep target will be substautial; associated cests will be incurred in upgrading access to the drill site, supervision and support, vaiious equipment rentals, analytical charges, property maintenance fees, environmental permitting and monitoring and reporting requirements.

COST ESTIMATE

Phase I

Mobilization – demobilization	$15,000.00
Diamond drilling – 2600 metres @ $175/metre	$450,000.00
Drilling field costs – setup, tear down, hole surveys, etc.	$25,000.00
Survey equipment rental – 5 months @ $2,000/month	$10,000.00
Access road maintenance and repair, snow clearing	$30,000.00
Analytical costs, rock mechanics testing	$17,000.00
Supervision, core logging, reporting – 180 days @$400/day	$72,000.00
Geological assistant – 50 days @ $200/day	$10,000.00
Travel and accommodation	$15,000.00
Transportation – vehicle rental – 150 days @ $60/day	$9,000.00
Environmental monitoring	$10,000.00
Equipment rentals, supplies	$3,000.00
Property maintenance – assessment work recording fees	$6,000.00
Project Management	$50,000.00
Reporting	$15,000.00
Contingencies @ 20%	$148,400.00
Total, Phase I	**$890,400.00**

Phase II

First Wedge Costs:	
Coring - 1500 to 2500 metres – 1000 metres @ $260/metre	$260,000.00
Set casing wedge – field cost - 40 hours	$6000.00
24 Retrievable wedges - field cost - 40 hours each	$144,000.00
Wedging tools cost – estimate	$14,000.00
Survey equipment rental - 3 months at $2000/month	$6,000.00
Analytical costs	$12,000.00
Equipment rentals	$3,000.00
Supervision, core logging, reporting – 90 days @ $300/day	$27,000.00
Geological assistant – 20 days @ $200/day	$4,000.00
Travel, accommodation	$3,000.00
Transport – vehicle rental – 90 days @ $60/day	$5,000.00
Project Management	$30,000.00
Contingencies @ 20%	$103,800.00
Subtotal	$622,800.00
Three Additional Wedge Holes – average estimated cost - $600,000/wedge	$1,800,000.00
Total, Phase II	**$2,422,800.00**

N.C. Carter, Ph.D. P.Eng.

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Consulting Geologist

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CERTIFICATE of AUTHOR

I, NICHOLAS C. CARTER, Ph.D., P.Eng., do hereby certify that:

1. I am a Consulting Geologist, with residence and business address at 1410 Wende Road, Victoria, British Columbia.

2. I graduated with a B.Sc. degree in geology from the University of New Brunswick in 1960. In addition, I obtained a M.S. degree in geology from Michigan Technological University in 1962 and a Ph.D. degree in geology from the University of British Columbia in 1974.

3. I have been registered with the Association of Professional Engineers and Geoscientists of British Columbia since 1966. I am a Fellow of both the Canadian Institute of Mining, Metallurgy and Petroleum and the Geological Association of Canada and am a past director of The Prospectors and Developers Association of Canada and a past president of the British Columbia and Yukon Chamber of Mines.

4. I have practiced my profession as a geologist, both within government and the private sector, in eastern and western Canada and in parts of the United States, Mexico and Latin America for more than 35 years. Work has included detailed geological investigations of mineral districts, examination and reporting on a broad spectrum of mineral prospects and producing mines, supervision of mineral exploration projects and comprehensive mineral property evaluations.

5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirement to be a "qualified person" for the purposes of NI 43-101.

6. I am responsible for the preparation of all sections of the technical report titled Geological Report on the Sullivan Deeps Project, Sullivan – Kimberley Area, Fort Steele Mining Division, British Columbia, dated November, 2003. I visited the project area and examined data pertaining to same William's property September 10 and 11, 2003.

7. I have not had prior involvement with the property that is the subject of the Technical Report.

8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.

N.C. Carter, Ph.D. P.Eng.
Consulting Geologist

9. I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.

10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 14th day of January, 2004

N.C. Carter, Ph.D. P.Eng.

APPENDIX I

SULLIVAN DEEPS PROJECT

MINERAL CLAIMS

N.C. Carter, Ph.D. P.Eng.
Consulting Geologist

Crown granted Mineral Claims

Lot No	Claim Name	Record Date	Area (hectares)
5272	Whizz	October 24, 1924	20.90
8960	V.D.	October 24, 1924	20.90
8961	Paris	October 24, 1924	20.90
8962	Durham	October 24, 1924	20.90
9089	Lena	October 24, 1924	20.90
9389	Clancy	October 24, 1924	20.90
9390	Maggie	October 24, 1924	20.90
9964	Garden	October 23, 1924	20.90
9974	Dugan	October 24, 1924	20.90
9975	Jiggs	October 24, 1924	20.90
9979	Gas	October 24, 1924	20.90
10137	Tar Fr.	December 11, 1923	12.65
10984	Sky	October 24, 1924	20.90
10985	Law	October 24, 1924	20.90
10986	Oil	January 02, 1924	20.90
10997	Blue Fr.	October 24, 1924	10.94
10998	Tina Fr.	October 24, 1924	11.53
10999	Lorry Fr.	December 11, 1923	9.68
12006	Ken	October 15, 1914	19.49
12925	J.Y.A. Fr.	March 30, 1921	4.76
12926	Mosquito Fr.	March 30, 1921	17.87
12927	Rossland	March 30, 1921	18.76
12928	Enough Fr.	March 30, 1921	17.02
12929	Summit	March 30, 1921	20.90
12930	Mt. Moriah	December 15, 1921	20.55
12931	Sirus	December 09, 1921	20.55
12932	Thor	December 09, 1921	17.98
12933	Horeb Fr.	December 09, 1921	20.67
12934	Ruby Fr.	December 09, 1921	12.92
12935	Rex Fr.	December 09, 1921	14.29
12948	Bull	October 24, 1924	20.90
13188	Ferian Fr.	December 12, 1923	12.44
13189	San Fr.	December 12, 1923	9.92
13190	Ack Ack	December 12, 1923	20.90
13191	Cayuse Fr.	December 11, 1923	20.22
13192	Aoe	December 11, 1923	20.90
13193	Parachute	December 11, 1923	20.74
13194	Spad	December 11, 1923	17.57
13195	Blimp	December 11, 1923	17.70
13196	Too Much	December 11, 1923	20.74
13197	Observer Fr.	December 11, 1923	20.11
13198	Ritz Fr.	December 11, 1923	11.74
13199	Dud Fr.	December 11, 1923	4.69
13200	Park	December 11, 1923	20.90
13201	Pilot	December 04, 1923	20.90
13202	D.O.R.A. Fr.	October 23, 1924	19.98
13203	Plage	October 23, 1924	20.90
13204	Ozone	October 23, 1924	20.90
13205	Taxi	October 23, 1924	20.90
13206	White	October 23, 1924	20.90
13207	Hawes Fr.	October 23, 1924	19.01

Lot No	Claim Name	Record Date	Area (hectares)
13208	Berry Fr.	October 23, 1924	18.43
13209	Bang	October 23, 1924	20.90
13211	Spark	January 24, 1928	20.90
13212	Pick	January 24, 1928	20.90
13213	Axe	January 24, 1928	20.90
13214	Plug	January 24, 1928	20.90
13215	Wheel	January 24, 1928	20.90
13216	Pelton	January 24, 1928	20.90
13217	Rust	January 24, 1928	20.90
13218	Hub	January 24, 1928	20.90
13219	Flange	January 24, 1928	20.90
13220	Scraper	January 24, 1928	20.90
13221	Tillie	January 24, 1928	20.90
13222	Valve	January 24, 1928	20.90
13223	Gear	January 24, 1928	20.90
13224	Flood	September 24, 1927	20.90
13225	Noah	September 24, 1927	20.90
13226	Toiler	January 24, 1928	20.90
13227	Eden	August 24, 1927	20.90
13228	Ark	September 24, 1927	20.90
13229	B.C.	September 24, 1927	20.90
13230	Skin	September 24, 1927	20.90
13231	Calf	September 24, 1927	20.90
13232	Cow	September 24, 1927	20.90
13233	Pig	September 24, 1927	20.90
13235	Game	September 24, 1927	20.90
13236	Sal	September 24, 1927	20.90
13237	Board	September 04, 1927	20.90
13238	Walk	September 04, 1927	20.90
13239	Na	September 24, 1927	20.90
13240	Cl	September 24, 1927	20.90
13241	Co	September 24, 1927	20.90
13242	Bi	September 24, 1927	20.90
13243	Sr	September 24, 1927	20.90
13244	Duck	September 24, 1927	20.90
13245	Goose	September 24, 1927	20.90
13246	As	September 24, 1927	20.90
13247	Hot	September 24, 1927	20.90
13248	Sharp	September 13, 1927	20.90
13249	Find	September 24, 1927	20.90
13250	Hunt	September 24, 1927	20.90
13251	Lister	September 24, 1927	20.90
13252	Ball	September 24, 1927	20.90
13253	Joe	September 24, 1927	20.90
13254	Creston	September 24, 1927	20.90
13255	Shoot	September 24, 1927	20.90
13256	Si	September 24, 1927	20.90
13257	Ni	September 24, 1927	20.90
13258	Ore	September 24, 1927	20.90
13259	Dan	September 24, 1927	20.90
13260	Fe	September 24, 1927	20.90
13261	Zn	September 24, 1927	20.90
13262	Sow	September 24, 1927	20.90

Lot No	Claim Name	Record Date	Area (hectares)
13263	Pb	September 24, 1927	20.90
13264	Bay	September 24, 1927	20.90
13265	Pt	December 24, 1927	20.90
13266	Cu	September 24, 1927	20.90
13267	Ca	September 24, 1927	20.90
13268	Al	September 24, 1927	20.90
13269	Sn	September 24, 1927	20.90
13270	Hg	September 24, 1927	20.90
13271	Harry	September 24, 1927	20.90
13272	Bevan	September 24, 1927	20.90
13273	Peele	September 24, 1927	20.90
13274	Harriet	September 24, 1927	20.90
13275	Club	September 24, 1927	20.90
13276	Gauge	September 24, 1927	20.90
13277	York	September 24, 1927	20.90
13278	Kent	September 24, 1927	20.90
13279	Surrey	September 24, 1927	20.90
13280	Fence	September 24, 1927	20.90
13281	Shrub	November 24, 1927	20.90
13282	Ag	September 24, 1927	20.90
13283	Au	September 24, 1927	20.90
13284	Yale	September 24, 1927	20.90
13285	Bowl	September 24, 1927	20.90
13286	Kay	September 24, 1927	20.90
13287	Vase Fr.	September 24, 1927	14.42
13288	Daisy Fr.	September 24, 1927	9.92
13289	Zoom Fr.	December 01, 1927	20.90
13290	Bed	December 01, 1927	20.90
13291	Rose	December 01, 1927	20.90
13292	Harvard	November 25, 1926	20.90
13293	SPS	November 25, 1926	20.90
13294	Lilac	November 25, 1926	20.90
13295	Bush	November 25, 1926	20.90
13296	Wire	November 25, 1926	20.90
13297	Tire	November 24, 1926	20.90
13298	Spoke	September 24, 1927	20.90
13299	Tube	September 24, 1927	20.90
13300	Test	September 24, 1927	20.90
13301	Dull	November 24, 1926	20.90
13302	Rim	November 24, 1926	20.90
13303	Round	November 25, 1926	20.90
13304	Point	November 25, 1927	20.90
13305	Sand	November 25, 1926	20.90
13306	Old	November 24, 1926	20.90
13307	Jetsam	November 24, 1926	20.90
13308	Chase	January 08, 1927	20.90
13309	Post Fr.	November 21, 1927	19.07
13310	Flotsam	November 24, 1926	20.90
13311	Flower	December 01, 1927	20.90
13312	Petal Fr.	December 01, 1927	9.89
13313	Grass Fr.	December 01, 1927	8.38
13314	Zip	December 01, 1927	20.90
13315	Clover Fr.	December 01, 1927	8.84

Lot No	Claim Name	Record Date	Area (hectares)
13316	Parr	November 24, 1927	20.90
13532	Turtle	January 24, 1928	20.90
13533	Tortoise	January 24, 1928	20.90
13534	Rhino	January 24, 1928	20.90
13535	Camel	January 24, 1928	20.90
13541	Huronian	January 24, 1928	20.90
13542	Yahk	September 27, 1928	20.90
13543	Graph	September 27, 1928	20.90
13544	Hippo	September 27, 1928	20.90
13545	Giraffe	September 27, 1928	20.90
13546	Phosphate	September 27, 1928	20.90
13547	Ozalid	September 27, 1928	20.90
13548	Paper	September 27, 1928	20.90
13552	Level	September 27, 1928	20.90
13553	Telfer	September 27, 1928	20.90
13554	Panta	September 27, 1928	20.90
13555	Beltian	September 27, 1928	20.90
13556	Silurian	September 27, 1928	20.90
13563	Cretaceous	September 27, 1928	20.90
13579	Galton	September 27, 1928	20.90
13580	Doug	September 27, 1928	20.90
13581	Burgess	September 27, 1928	20.90
13582	Abney	September 27, 1928	20.90
13586	Bee	September 27, 1928	20.90
13587	Bin	September 27, 1928	20.90
13588	Hell	September 27, 1928	20.90
13589	Human	October 21, 1929	20.90
13590	Veal	October 21, 1929	20.90
13605	Beat	October 21, 1929	20.90
13606	Bit	October 21, 1929	20.90
13607	Heaven	October 21, 1929	20.90
13608	Impel	October 25, 1929	20.90
13609	Vat	October 24, 1929	20.90
13618	Timid	October 25, 1929	20.90
13619	Imp	October 25, 1929	20.90
13620	Haze	October 25, 1929	20.90
13621	Ena	October 25, 1929	20.90
13622	Bath	October 25, 1929	20.90

Reverted Crown granted Mineral Claims

Claim Name	Tenure No.	Units	Record Date	Expiry Date
Cue 10	209972	1	06/21/1983	06/21/2004
Cue 11	209973	1	06/21/1983	06/21/2004
Cue 12	209974	1	06/21/1983	06/21/2004
Cue 2	210153	1	12/17/1985	12/17/2008
Cue 3	210156	1	12/17/1985	12/17/2008
Cue 4	210162	1	12/17/1985	12/17/2008
Cue 5	210163	1	12/17/1985	12/17/2008
Cue 6	210170	1	12/17/1985	12/17/2008
Cue 7	209969	1	06/21/1983	06/21/2004
Cue 8	209970	1	06/21/1983	06/21/2004

Claim Name	Tenure No.	Units	Record Date	Expiry Date
Cue 9	209971	1	06/21/1983	06/21/2004
Hope 10	209966	1	06/21/1983	06/21/2004
Hope 11	209967	1	06/21/1983	06/21/2004
Hope 12	209968	1	06/21/1983	06/21/2004
Hope 2	210154	1	12/17/1985	12/17/2008
Hope 3	210157	1	12/17/1985	12/17/2008
Hope 4	210161	1	12/17/1985	12/17/2008
Hope 5	210164	1	12/17/1985	12/17/2008
Hope 6	210165	1	12/17/1985	12/17/2008
Hope 7	209963	1	06/21/1983	06/21/2004
Hope 8	209964	1	06/21/1983	06/21/2004
Hope 9	209965	1	06/21/1983	06/21/2004
Sun 10	209960	1	06/21/1983	06/21/2004
Sun 11	209961	1	06/21/1983	06/21/2004
Sun 12	209962	1	06/21/1983	06/21/2004
Sun 2	210155	1	12/17/1985	12/17/2008
Sun 3	210158	1	12/17/1985	12/17/2008
Sun 4	210160	1	12/17/1985	12/17/2008
Sun 5	210165	1	12/17/1985	12/17/2008
Sun 6	210168	1	12/17/1985	12/17/2008
Sun 7	209957	1	06/21/1983	06/21/2004
Sun 8	209958	1	06/21/1983	06/21/2004
Sun 9	209959	1	06/21/1983	06/21/2004
Tip 10	209954	1	06/21/1983	06/21/2004
Tip 11	209955	1	06/21/1983	06/21/2004
Tip 12	209956	1	06/21/1983	06/21/2004
Tip 4	210159	1	12/17/1985	12/17/2008
Tip 5	210166	1	12/17/1985	12/17/2008
Tip 6	210167	1	12/17/1985	12/17/2008
Tip 7	209951	1	06/21/1983	06/21/2004
Tip 8	209952	1	06/21/1983	06/21/2004
Tip 9	209953	1	06/21/1983	06/21/2004

Recorded Mineral Claims

Claim Name	Tenure No.	Units	Record Date	Expiry Date
Bad 10	212947	1	10/20/1970	10/20/2015
Bad 12	212949	1	10/20/1970	10/20/2015
Bad 14	212951	1	10/20/1970	10/20/2015
Bad 16	212952	1	10/20/1970	10/20/2015
Bad 17	212954	1	10/20/1970	10/20/2015
Bad 18	212955	1	10/20/1970	10/20/2015
Bad 19	212956	1	10/20/1970	10/20/2015
Bad 20	212957	1	10/20/1970	10/20/2015
Bad 21	212958	1	10/20/1970	10/20/2015
Bad 22	212959	1	10/20/1970	10/20/2015
Bad 23	212960	1	10/20/1970	10/20/2015
Bad 24	212961	1	10/20/1970	10/20/2015
Bad 26	212962	1	10/27/1970	10/27/2015
Bad 27	212963	1	10/27/1970	10/27/2015
Bad 28	212964	1	10/27/1970	10/27/2015
Bad 29	212965	1	10/27/1970	10/27/2015

Claim Name	Tenure No.	Units	Record Date	Expiry Date
Bad 30	212966	1	10/27/1970	10/27/2015
Bad 31	212967	1	10/27/1970	10/27/2015
Mark 1	210180	2	12/17/1985	12/17/2006
Mark 2	210181	6	12/17/1985	12/17/2006
Mark 3	210182	9	12/17/1985	12/17/2006
Pan 1	300524	1	07/06/1991	07/06/2004
Pan 2	300525	1	07/06/1991	07/06/2004
Pan 3	300536	1	07/06/1991	07/06/2004
Pan 4	300538	1	06/18/1991	06/18/2004
Pan 5	300539	1	06/18/1991	06/18/2004
Pan 6	300541	1	06/18/1991	06/18/2004
Pan 7	300543	1	06/18/1991	06/18/2004
Pan 8	300544	1	06/18/1991	06/18/2004
Pan 9	300546	1	06/18/1991	06/18/2004
PARK 1	406010	20	10/11/2003	10/11/2004
PARK 2	406011	20	10/11/2003	10/11/2004
PARK 3	406012	16	10/11/2003	10/11/2004
PARK 4	406048	1	10/10/2003	10/10/2004
PARK 5	406049	1	10/10/2003	10/10/2004
PARK 6	406050	1	10/10/2003	10/10/2004
PARK 7	406051	1	10/10/2003	10/10/2004
PARK 8	406052	1	10/10/2003	10/10/2004
PARK 9	406053	1	10/10/2003	10/10/2004
PARK 10	406054	1	10/10/2003	10/10/2004
PARK 11	406055	1	10/10/2003	10/10/2004
PARK 12	406056	1	10/10/2003	10/10/2004
PARK 13	406057	1	10/10/2003	10/10/2004
PARK 14	406058	1	10/12/2003	10/12/2004
PARK 15	406059	1	10/12/2003	10/12/2004
PARK 16	406060	1	10/12/2003	10/12/2004

Figure 1: Location

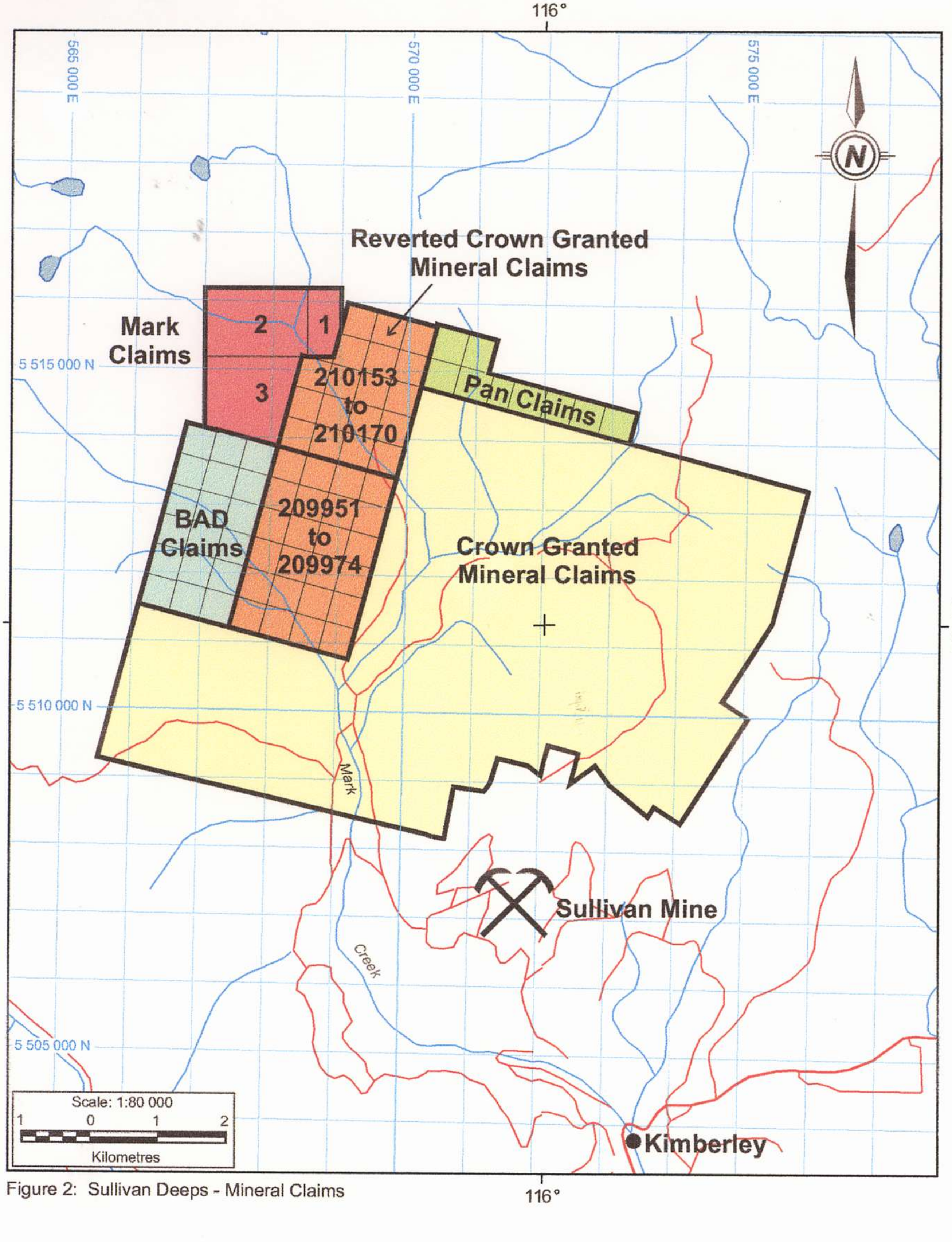

Figure 2: Sullivan Deeps - Mineral Claims

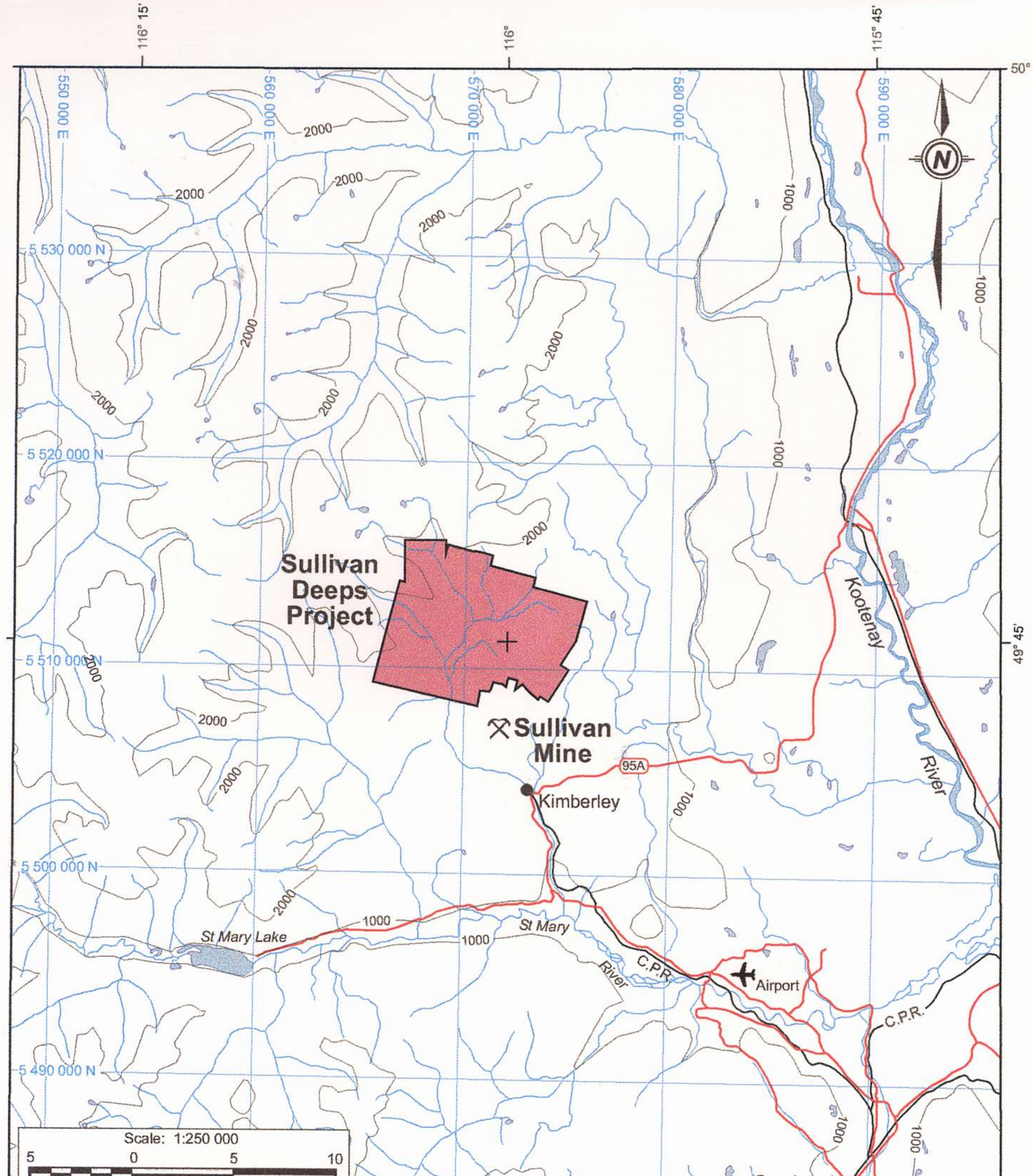

Figure 3: Location - Sullivan Deeps Project

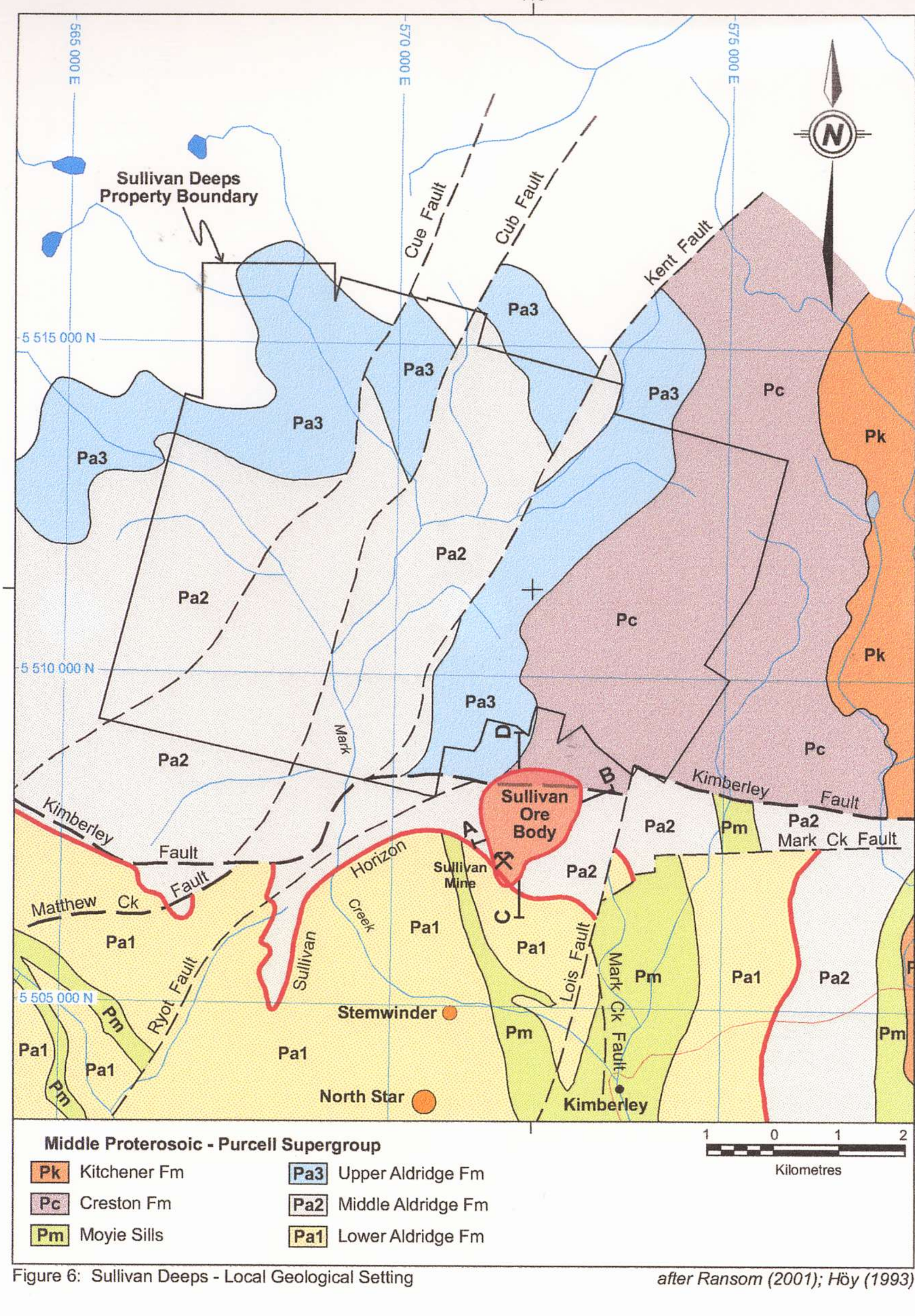

Figure 6: Sullivan Deeps - Local Geological Setting *after Ransom (2001); Höy (1993)*

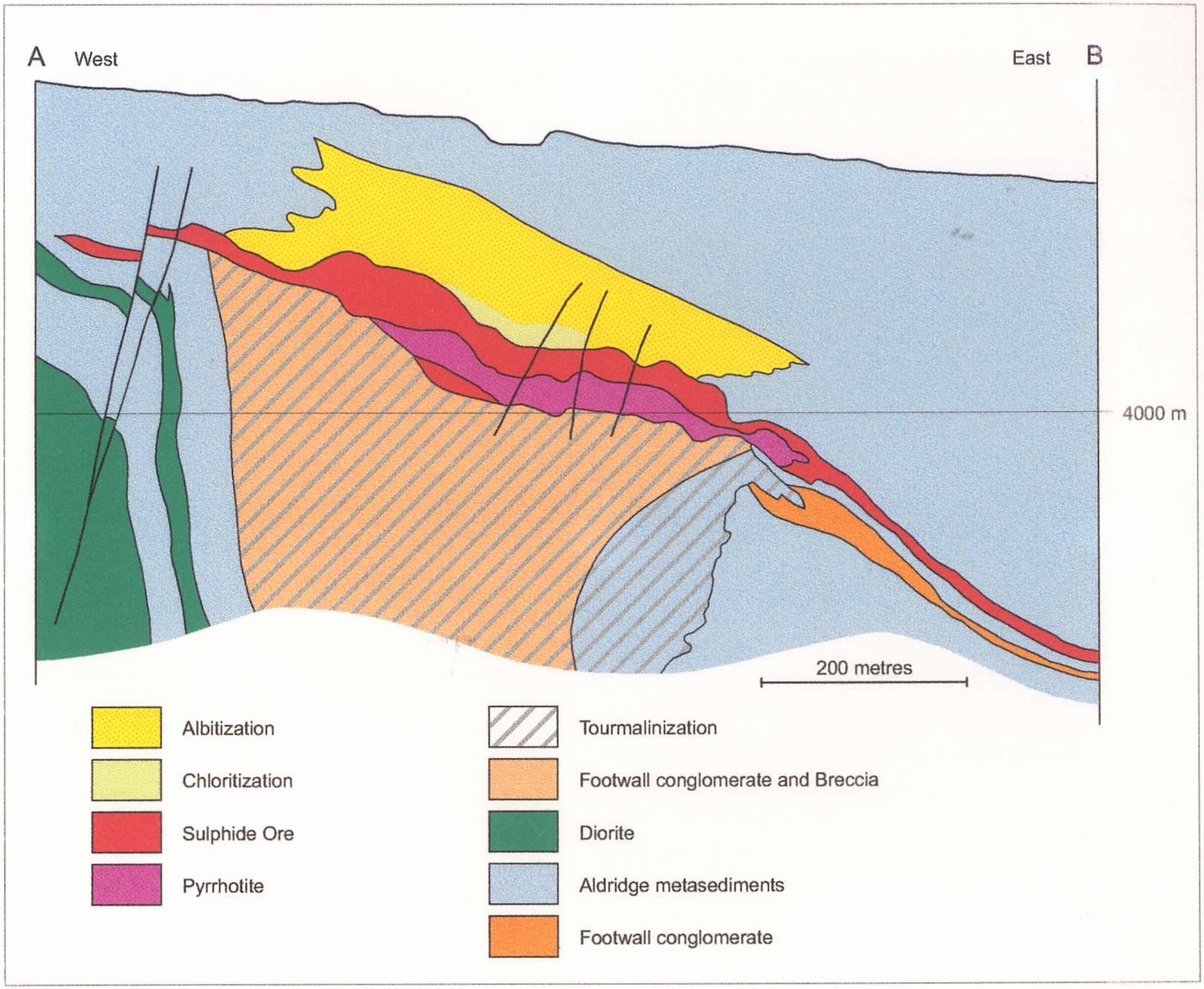

Figure 7: Sullivan Mine Cross Section *(after Höy, 1993)*

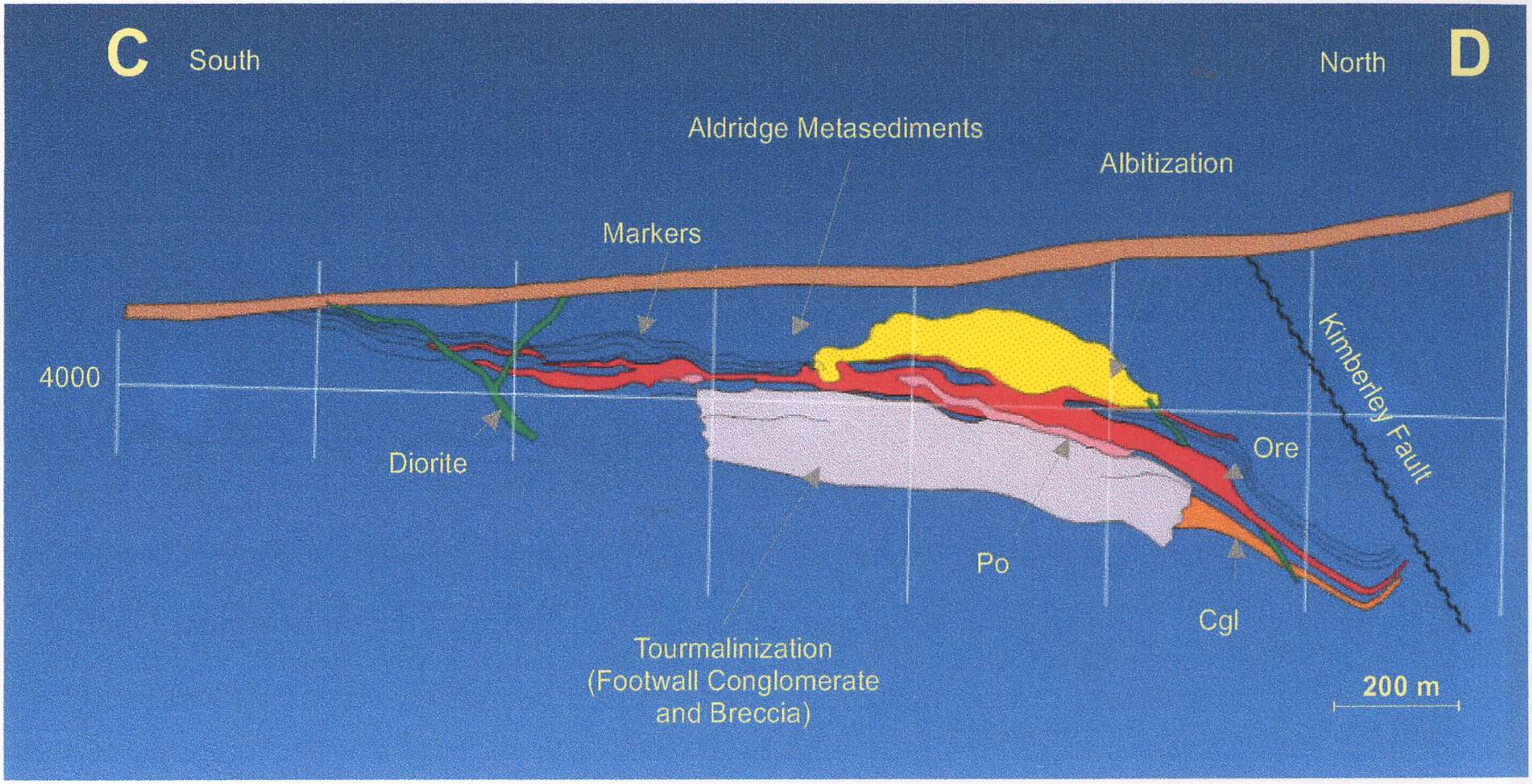

Figure 8: Sullivan Mine - Longitudinal Section (after Ransom, Lajoie and Pauwels, 2001)

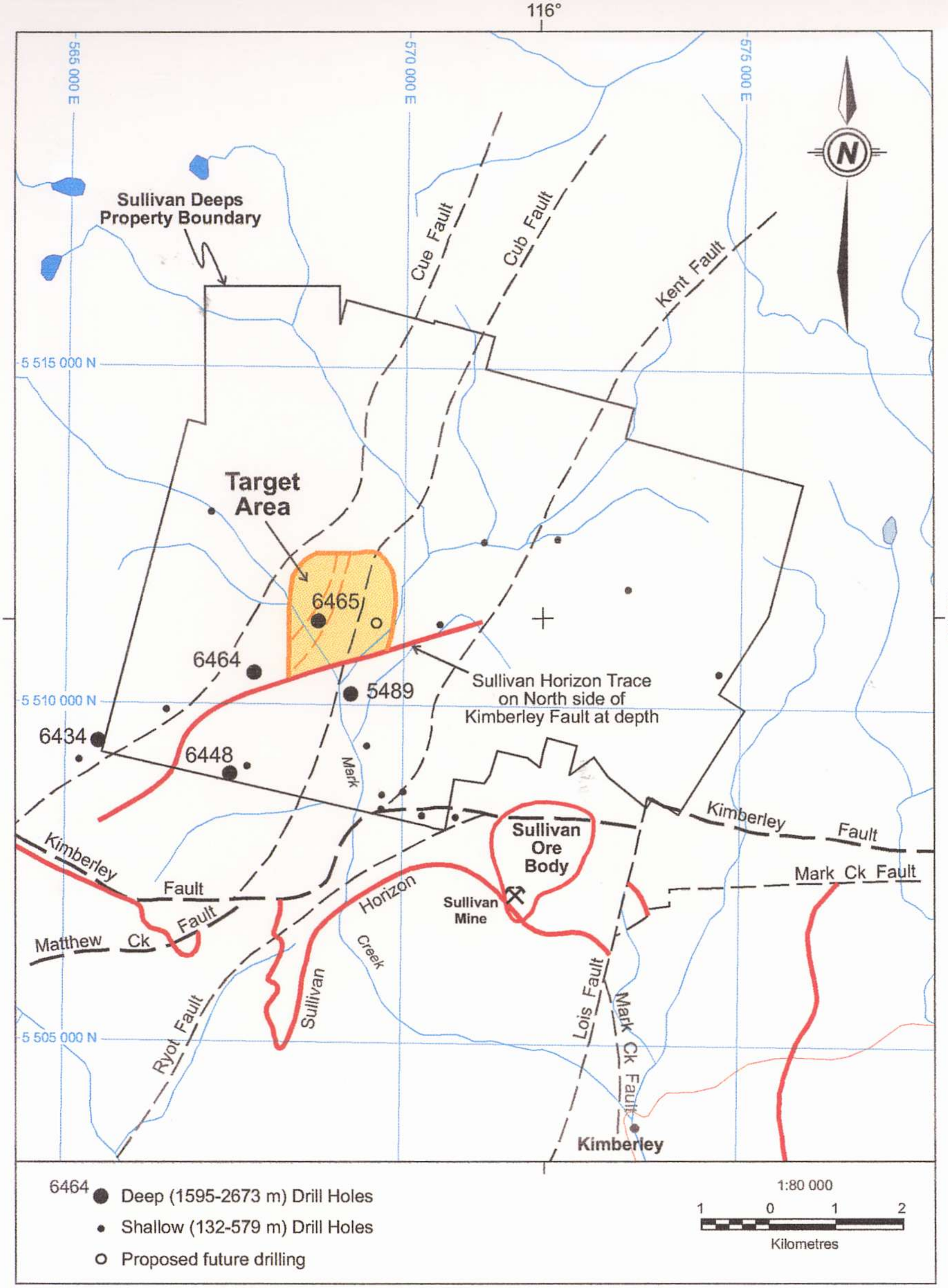

Figure 9: Sullivan Deeps - Target Area *after Ransom (2001)*

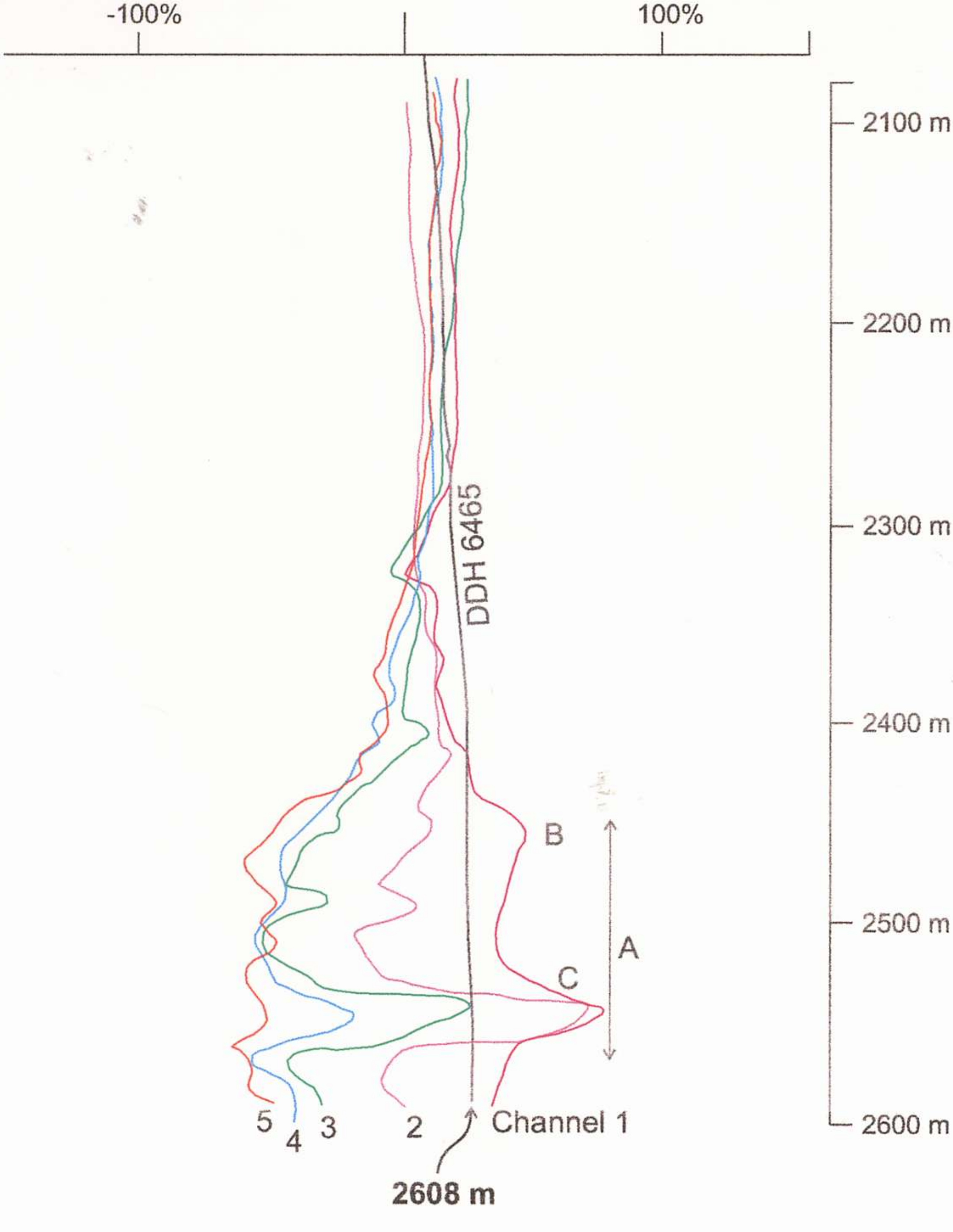

Figure 10: Sullivan Deeps - Borehole UTEM Survey - Lower portion of DDH 6465
(after Lajoie, 1997)

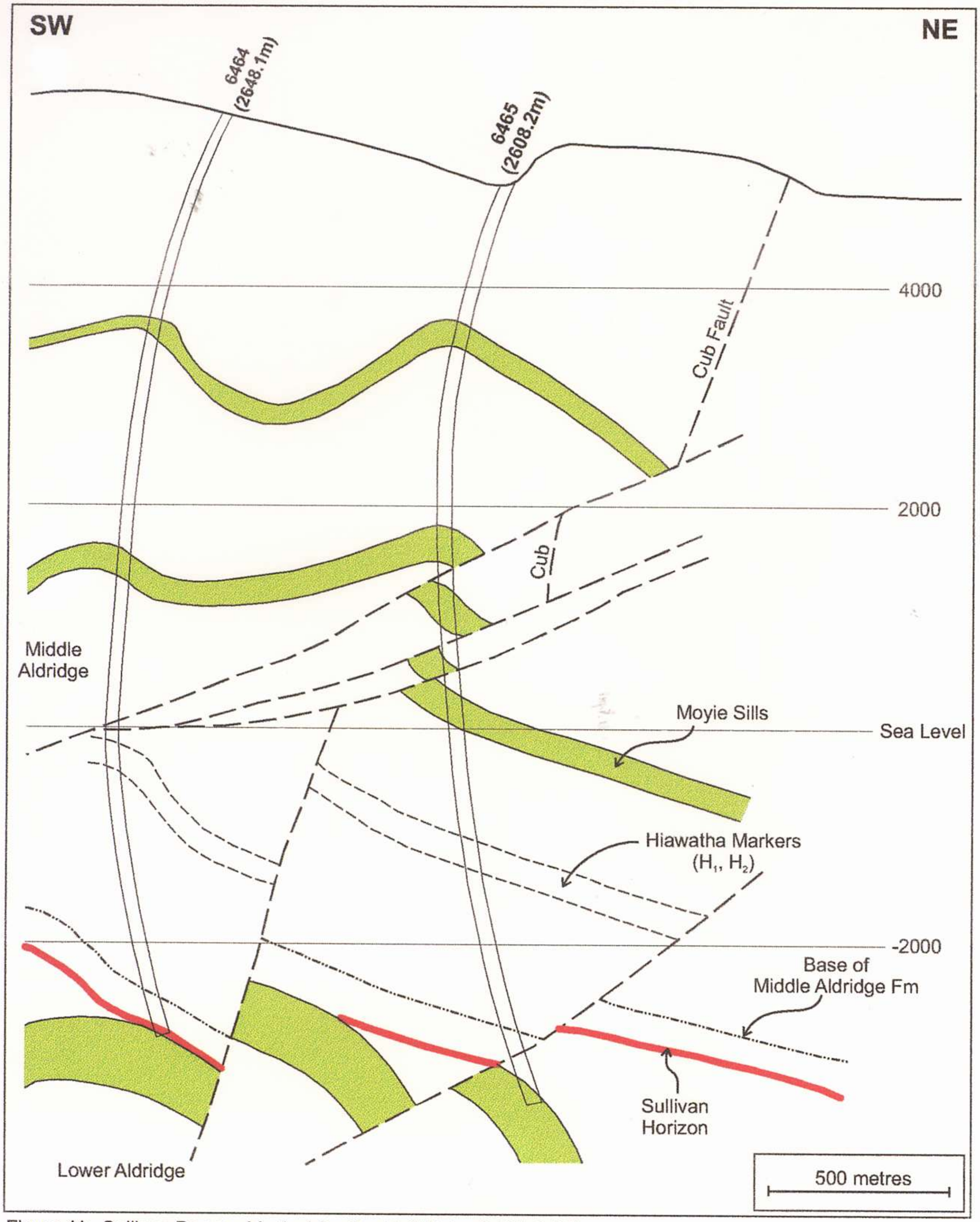

Figure 11: Sullivan Deeps - Vertical Section Drill Holes 6464, 6465

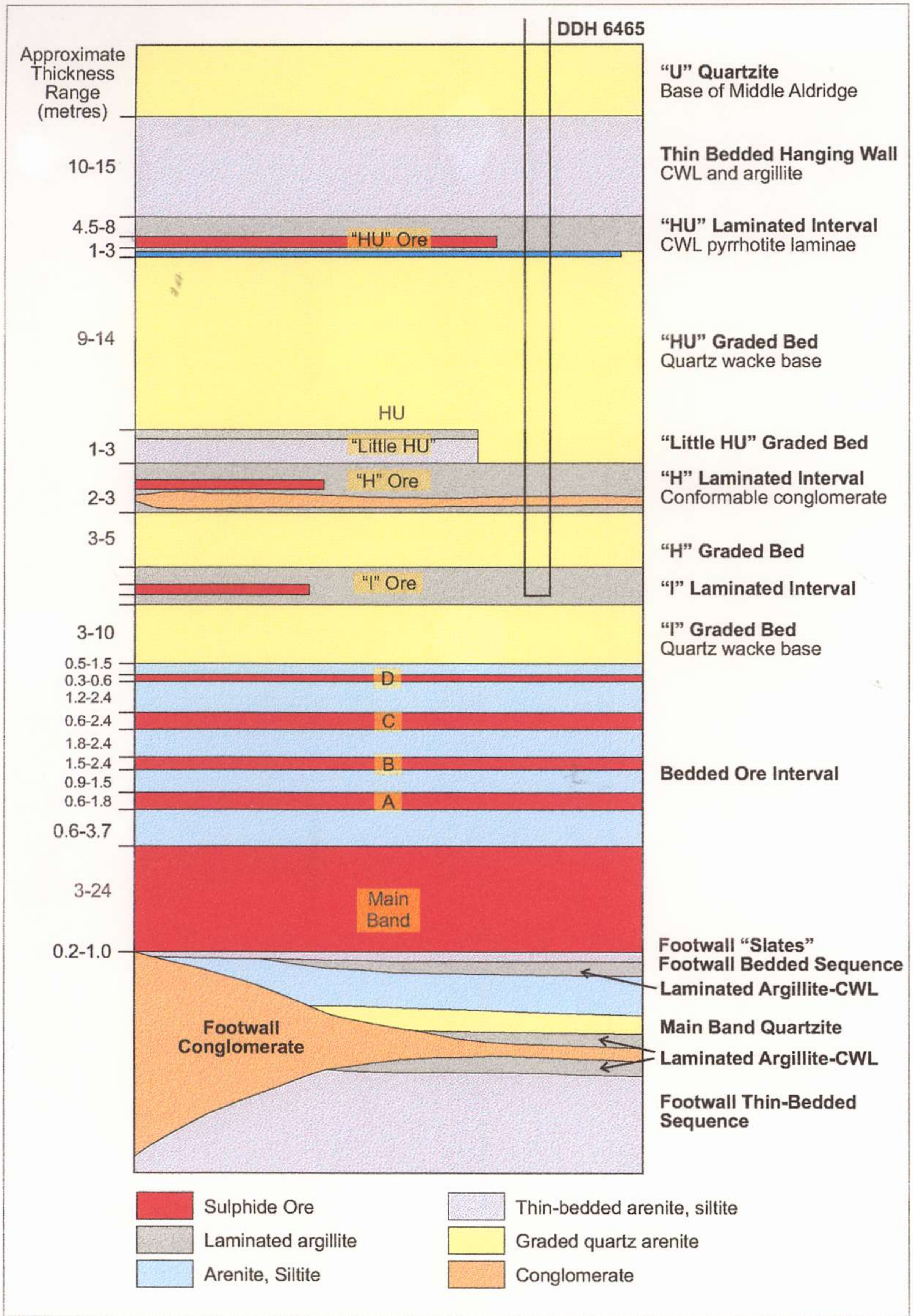

Figure 12: Idealized Sullivan deposit stratigraphy and section cored by DDH 6465
(after Lydon, 2000; Ransom, 2001)