

# **Assessment Report**

*on the*

## **ATHELSTAN - JACKPOT PROPERTY**

### *Trenching & Rock Sampling*

NTS 82E/2

Lat: 49° 03' 40'' N

Long: 118° 34' 00'' W

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British Columbia, Canada

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## **1.0 SUMMARY**

The Athelstan-Jackpot property is located about 8 kilometres west of Grand Forks, B.C. and 3 kilometres southeast of the former Phoenix mine. Access and infrastructure are both excellent. The property is situated within the Greenwood Mining District and consists of 9 crown grants, 1 reverted crown grant and 1 2-post mineral claim.

The property was staked in the late 1890's, and was worked intermittently from 1901 through to 1940. Total production during this period was about 35,200 tonnes of direct smelting ore at an average grade of about 6.2 g/t Au. Production was from a number of small lenses of massive sulfide ore (up to 12 x 30 x 8 metres in size). The sulfide lenses are comprised of massive arsenopyrite-pyrite (+/- pyrrhotite and lesser galena) and occur within a large mass of serpentinite and listwanite situated along the regional Lind Creek thrust fault. The lenses sit conformably within the altered serpentinite, and typically plunge gently eastwards. Near surface sulfide lenses tend to be strongly oxidized, to a depth of up to 5 metres down dip.

Previous work on the Athelstan-Jackpot property has largely focussed on a number of these discrete, boudin-like zones of auriferous massive pyrite-arsenopyrite mineralization within listwanite. While the zones are commonly very high grade, they are typically limited in size. Work during 2003 identified an area of mineralization along a diorite/listwanite contact at the B-1 Zone, as well as structurally controlled mineralization within diorite at the J-12 Zone. The J-34 lower zone is also situated close to the diorite contact. Similar diorite hosts gold mineralization in quartz and massive sulfide veins on the adjoining Golden Crown property. There has been minimal exploration on the Athelstan-Jackpot property outside areas of listwanite and little is known about the extent and distribution of diorite, or its relationship to zones of mineralization. Previous geological mapping has not been sufficiently detailed to determine the relationship between the different zones of known mineralization or to define controls to mineralization. Detailed property scale geological mapping is recommended for 2004 to attempt to resolve these questions and to identify possible targets for future trenching or drilling.

The 2003 trenching program (7 trenches, 275 lineal metres) tested the J-34 and B-1 Zones. At the J-34 Zone, two mineralized zones occur. The upper zone is exposed intermittently for a strike of about 100 metres and is open in both directions. It is comprised of numerous boudins of massive to semi-massive (+/- oxidized) pyrite-arsenopyrite, which pinch and swell and commonly splay into two or more parallel zones. An impressive looking zone of sulfide mineralization occurs in Trench J34-5, that returned 6.6 g/t Au, 12 g/t Ag and 6% As over a true thickness of 3.7 metres in one section sampled. A second section sampled, a few metres to the west, returned 9.2 g/t Au, 18 g/t Ag and 6.6% As over a 2.5 metre true thickness.

The lower J-34 zone is roughly parallel to the upper zone and situated about 15 metres into the footwall. The lower zone is a large, strong, impressive looking rusty, shear zone that ranges up to about 2.5 metres in true width, within listwanite. Gold grades in the lower zone were in the range of 1-4 g/t Au, however one section across the zone and hangingwall returned an average grade of 1.9 g/t Au over a 6.8 metre true width. Given the close spacing of the upper and lower zones, and the indication of mineralization in the country rock between the zones, the possibility of a bulk tonnage target, including the upper and lower zones plus the listwanite between the zones, should be considered.

Detailed mapping and sampling of J-12 Zone was undertaken during 2003. A large northwest trending, flat to gently dipping, oxidized shear zone occurs in diorite and is exposed in old trenches and workings in this area. The best result from the zone was 21.8 g/t Au (with 16.7 % As) across a 0.8 metre true width. More typical results from the shear zone were in the range of 1-5 g/t Au. The J-12 Zone is on-strike with, and similar in appearance and orientation to, the lower zone in the J-34 area. Gold grade in the two areas are similar, and although the host rocks are different, diorite was noted in the road just south of the J-34 lower

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zone. It seems likely that the J-12 Zone is the on-strike extension of the J-34 lower zone.

Trenching was also done at the B-1 Zone, about 500 metres east of the J-12 Zone. An irregular, undulating mineralized zone, containing local cobbles of massive pyrite-arsenopyrite, occurs at the contact of listwanite and underlying diorite. The mineralized contact zone trends at about 105°/0-10°N and has a true thickness ranging from about 0.5 - 1.5 metres. The zone was traced intermittently on strike for about 30 metres, and where exposed by trenching, was strongly oxidized. Grades range from about 1 g/t Au up to a maximum of 8 g/t Au; the best result obtained from this zone was 8.0 g/t Au, 190 g/t Ag and 8.2% As over a true thickness of 1.3 metres.

A ferricrete blanket, up to 1.5 metres in thickness, occurs at the colluvium contact, at or downslope of the B-1 mineralized contact zone. Grades within the ferricrete zone are erratic, but locally significant. One sample returned 28.4 g/t Au, 166 g/t Ag and 13% As across 0.3 metres, while several other samples returned grades in the range of 2-7 g/t Au, over the true thickness of the zone.

**2.0 INTRODUCTION**

Much of the general information contained in this report is repeated from an earlier report by the same author (Caron, 2003a).

**2.1 Location, Access, Infrastructure and Physiography**

The Athelstan-Jackpot property is located about 8 kilometres west of Grand Forks, B.C. and 3 kilometres southeast of the former Phoenix mine, as shown in Figure 1. Access and infrastructure are both excellent. The two main access roads are the Athelstan-Hartford road which leaves Highway 3 about 10 kilometres west of Grand Forks, and the Hartford Junction road which heads east from the Lone Star haul road 3 kilometres south of Phoenix. The property is crossed by a major high voltage powerline. Most services needed for exploration are available in Grand Forks. The closest full-service airports are located in Kelowna, Penticton or Castlegar.

The claims are situated north of Skeff Creek, on the moderate east facing slope above July Creek. Elevations range from about 950 metres in the eastern part of the property, to about 1280 metres in the west.

Vegetation consists of mature, moderate to open, fir, larch and pine forest. A portion of the claims has been clearcut logged. Outcrop is moderate to scarce throughout forested areas. Along the abandoned railgrade in the eastern part of the property and along the powerline there is good rock exposure. Numerous areas of disturbance from past mining and exploration efforts also provide good rock exposure.

The climate is moderately dry, with hot summers and little rainfall. Snowfall is minimal, generally in the order of 1-2 metres and the property is generally snow free from early May to mid-November. Water would be available for drilling from Skeff Creek just south of the property, or from flooded mine workings on the adjoining Golden Crown property.

**2.2 Property and Ownership**

The Athelstan - Jackpot property consists of eleven mineral claims (9 crown grants, 1 reverted crown grant and 1 2-post mineral claim) located on map sheet 082E.008 in the Greenwood Mining District. The claims are shown in Figure 2 and summarised below in Table 1. Expiry dates listed are after filing this report. All claims are owned 50% by Merry Hallauer and 50% by Teresa Hallauer.

<b>CLAIM NAME</b>	<b>TENURE #</b>	<b>UNITS</b>	<b>EXPIRY DATE</b>
MP Fraction	214153	1	July 16, 2013
Bay Horse Fraction	215520	1	July 16, 2013
Coronet Fr.	L 677	1	
Athelstan Fr.	L 1065	1	
Butte	L 1067	1	
Oro	L 1167	1	
Athelstan Fr.	L 1320	1	
Iron Clad	L 1489	1	
Molley Pritchard	L 1554	1	
Jackpot	L 2224	1	
Jackpot Fr.	L 3158	1	

Table 1: Claim Information

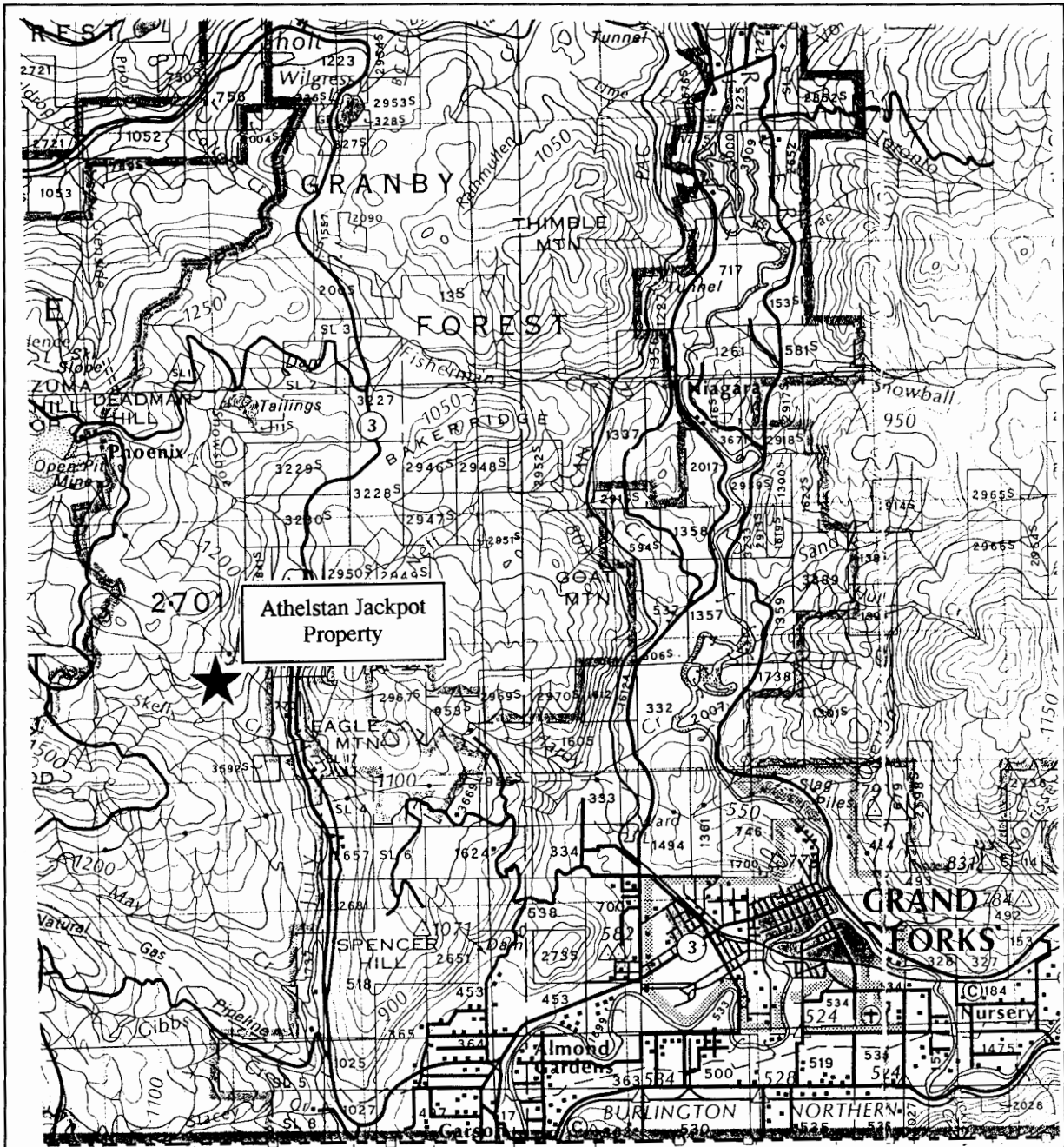


Figure 1

Athelstan-Jackpot Property, Greenwood Mining Division

Location Map

082E/SE

Scale 1:100,000

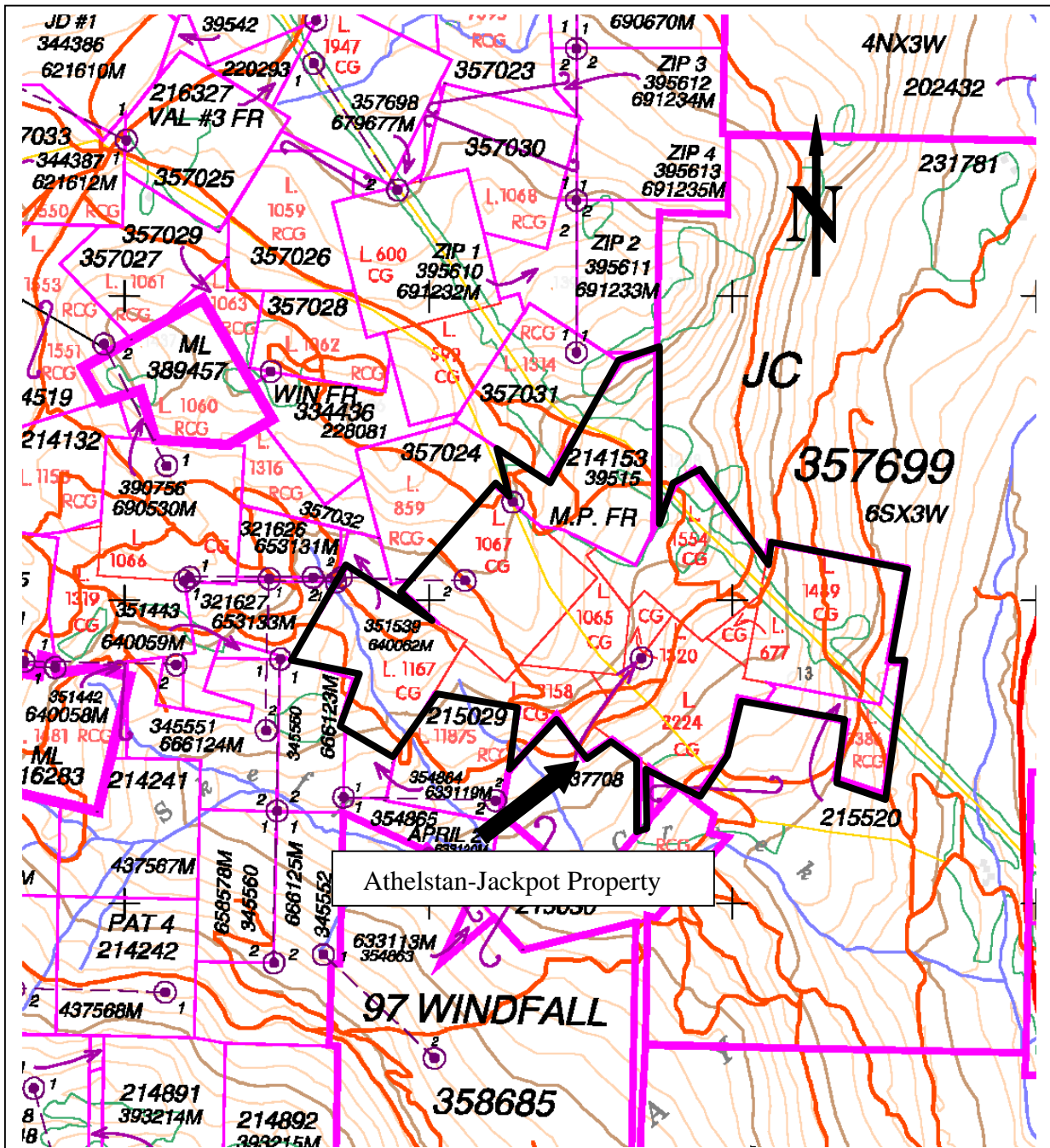


Figure 2

Athelstan-Jackpot Property, Greenwood Mining Division  
Claim Map

082E.008  
Scale 1:20,000



### **2.3 History of Exploration**

#### ***Regional Exploration History***

The Athelstan-Jackpot property is situated within the Boundary District. This area has a long history of exploration and mining activity. Excellent historical accounts for portions of the district are provided by Peatfield (1978), Church (1986), Fyles (1984), Parker and Calkins (1964), Bancroft (1914), Brock (1906) and Muessig (1967). The reader is referred to these sources for a more thorough discussion of the subject. The following discussion pertains primarily to the regional exploration history in the Greenwood Camp, in the more immediate vicinity of the Athelstan-Jackpot property, although some discussion of recent exploration successes nearby in Washington State is also included. The following is taken with only minor changes from an earlier report by the same author (Caron, 2003b).

In the Greenwood Camp, exploration dates back to the early 1880's. This first phase of exploration and development focused on high grade gold and silver veins, such as the Skylark, Providence, City of Paris, and Jewel (Dentonia) Mines. Exploration and development of the various veins in the camp continued intermittently through the early 1900's. Significant producers were the Jewel, with about 124,000 tonnes averaging 9.9 g/t Au produced, the Athelstan (33,000 tonnes @ 5.4 g/t Au), the Winnipeg (56,000 tonnes @ 7.2 g/t Au), and the Providence (10,500 tonnes @ 17.5 g/t Au, 4060 g/t Ag) (Church, 1986).

In 1890, high grade copper skarn mineralization was discovered at Phoenix, about 5 kilometres east of Greenwood. The Granby Company was formed to work in the Phoenix area in 1896, and in 1900 the Granby Smelter in Grand Forks was completed to process ore from the Phoenix mine. Mining continued until 1919, when the Granby mine and smelter closed due to low copper prices, lower ore grades and a shortage of coking coal for the smelter furnaces. The discovery and development of copper skarn mineralization in the Deadwood Camp (Motherlode mine) just west of Greenwood was happening concurrently to the work at Phoenix, with ore processed in the British Columbia Copper Company smelter at Anaconda.

In 1956, Woodgreen Copper Mines renewed mining at the Motherlode mine. A 900 tonne per day mill was constructed to process ore mined via open pit methods, although production had dropped to 450 tonnes per day by 1959. Mining continued until 1962, at which point the mill was dismantled and removed. The total production from the Motherlode mine to 1962, including the early direct smelting ore, is quoted at 4.2 million tonnes at a grade of 0.8% Cu and 1.3 g/t Au (Church, 1986).

Similarly, in 1956 the Granby Company re-evaluated the Phoenix property and open pit production at Phoenix began in 1960 at a rate of 900 tons per day, was increased to 2000 tons per day in 1961 and further increased to 3000 tons per day in 1972. Granby terminated mining operations at Phoenix in 1976, and later dismantled and moved the Phoenix mill. Total production at Phoenix during the period 1900 - 1976 is reported at 27 million tonnes at a grade of 0.9% Cu and 1.12 g/t Au, from a number of different ore bodies (Church, 1986). This amounts to over 1 million ounces of gold production from the Phoenix deposit.

Exploration in the camp was rekindled in the early 1980's with the discovery of the Sylvester K gold bearing massive sulfide zone north of the Phoenix. The Sylvester K is contained within a very characteristic, repeatable sequence of Brooklyn sediments and volcanics (the upper portion of the regionally mapped sharpstone unit), sitting just below massive Brooklyn limestone. Complex faulting offsets mineralization and has hampered exploration.

Skylark Resources was active in the area during the mid-late 1980's, on their wholly owned Skylark property and on the adjoining OB property, which they held in a joint venture with Viscount Resources. Skylark discovered and explored the H and Serp Zones, straddling the boundary between the Skylark and

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OB properties. A 458 metre decline was completed on the H Zone, with drifting onto the Serp Zone. Production from the H Zone started in December 1987, at a rate of 90 tonnes per day. Ore was processed in the Robert's Mill at Boundary Falls and in the Dankoe Mill near Keremeos. Mining continued through to early 1989, with total production of 33,300 tonnes grading 353 g/t Ag and 2.7 g/t Au from the H Zone. Significant exploration work was also done on the Golden Crown property (adjoining the Athelstan-Jackpot property) and on the Lexington property during this period.

The discovery of numerous gold mines in the late 1980's and early 1990's, nearby in Washington State, further revived exploration in the Greenwood area. In Washington State, Crown Resources discovered the as yet undeveloped Buckhorn Mtn. (Crown Jewel) deposit at Chesaw. The deposit is a gold skarn, hosted in probable Triassic rocks in a similar geological setting to the major skarn deposits (Phoenix, Motherlode, Oro Denoro) in the Greenwood area. Exploration of the property led to the delineation of an open pittable gold resource, however permitting issues prevented the development of the project and Battle Mountain eventually returned the property to Crown Resources. During the winter of 2002-03, Crown carried out a 41 hole infill diamond drill program on the Southwest Zone to define a resource for underground development. Highlights of the drill program included hole D02-201, intersecting 10 feet grading 1.21 oz/t Au, and hole D02-202 which intersected 32 feet grading 0.99 oz/t Au (Hickey, 1992; Crown Resources news releases Jan 23/03, Feb 25/03).

Crown Resources and Echo Bay Mines discovered a new style of gold deposit in the Belcher District, just south of the Canada-USA border, during the late 1980's and early 1990's. Gold-bearing, magnetite-pyrrhotite-pyrite syngenetic volcanogenic mineralization is hosted within Triassic Brooklyn Formation, with as least part of the gold mineralization attributed to a later stage epigenetic event. Four deposits were discovered in the Belcher District, and were subsequently mined. The Lamefoot deposit was the largest of the four deposits, with production of 2 million tonnes at an average grade of 7 g/t Au. Total production from the four deposits, all of which were milled at the Kettle River Operations mill, was 1 million ounces of gold. Similar host rocks occur in the Greenwood area and in 1997, Echo Bay Minerals Co. entered into a joint venture agreement to explore certain claims in the Greenwood camp for this style of mineralization, with little success (Rasmussen, 1993, 2000).

The Kettle epithermal gold-silver vein deposit immediately west of Curlew (discovered by Crown Resources in 1985 as the Granny property) was also developed and mined by Echo Bay Mines during the late 1980's, with the ore processed at the Kettle River Operations mill. In 1990, Echo Bay Mines discovered the K2 mine 5 kilometres west of Curlew, in follow-up to a gold stream sediment anomaly. Production began in January 1997 and the deposit was mined at a rate of 800 tons per day until mid-2002, with ore trucked to the Kettle River Operations mill and blended with the Lamefoot ore for milling. By late in 2002, with both the Lamefoot and K2 deposits mined out, the mill was placed on a care-and-maintenance basis as exploration in the district continued (Gelber, 2000).

In 2002, Gold City Industries Ltd. acquired the Golden Crown, Lexington and JD properties, as well as the Robert's Mill at Boundary Falls (together "The Greenwood Gold Project"). Gold City's intention is to develop a small scale gold mining operation with production from a number of smaller deposits that individually might not be economic. In the fall of 2003, Gold City completed a 47 hole diamond drill program (2140 metres) on the Golden Crown property, adjoining the Athelstan-Jackpot property, with some encouragement. Twenty-one holes were close spaced (15 metre centres) infill holes drilled on the near surface portion of the King Vein. The King Vein is a massive pyrite-pyrrhotite vein hosted within diorite, near the contact with serpentinite. In the area drilled, the vein averaged about 1 metre in width, with typical results in the order of 5 to 10 g/t Au. Results to 1.86 metres at 327 g/t Au and 1.25 metres at 72.14 g/t Au were reported in two of the drill holes on the King Vein. The remainder of the holes were drilled to test 5 other veins/zones elsewhere on the property, with only limited success (Gold City news releases Nov 5,

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2003, Nov 25, 2003). On the Lexington property, Gold City drilled six holes (about 900 metres) to test the Grenoble zone in the area targeted for bulk sampling in 2004 and to provide samples for metallurgical testing. The Grenoble Zone consists of multiple massive pyrite-chalcopyrite veins near the Lexington intrusive/serpentinite contact along the No. 7 Fault zone. Previous drilling (98 holes) and underground testing of the Grenoble zone (via a 900 metre decline) identified a resource of 94,923 tons at a grade of 0.297 oz/t Au and 1.49% Cu (Seraphim et al, 1995; Cowley, 2002). Gold City plans to commence development with a 10,500 tonne bulk sample from the Grenoble Zone in the summer of 2004. The nearby Robert's Mill at Boundary Falls was to be used to process the bulk sample, however late in 2003, Gold City announced that the option on the mill had been dropped and that they intend to build their own 200 tonne per day plant at a site closer to the mining properties (Gold City news releases Oct 27, 2003, Nov 4, 2003; Dec 16, 2003; website [www.gold-city.net](http://www.gold-city.net)).

In the spring of 2003 Echo Bay merged with Kinross Gold, and in April, 2003, Kinross announced the discovery of the Emanuel Creek epithermal gold vein approximately 1 kilometre east of the K2 mine near Curlew, Washington. The Emanuel Creek vein is a blind discovery under an average 350 metres of post-mineral sediments. The deposit is being fast-tracked to production, with mining slated to begin in January 2004. This discovery means that the 2000 ton per day Kettle River mill, on care-and-maintenance since November of 2002 when the K2 deposit was mined out, will be re-opened in the spring of 2004 to process the Emanuel Creek ore and will provide a further custom milling option for properties in the district (Kinross webcast, April 3, 2003). Late in 2003, Kinross also announced that they had acquired the Buckhorn Mtn. gold skarn deposit from Crown Resources (Kinross news release Nov 20, 2003).

#### ***History of Exploration - Athelstan-Jackpot Property***

The Athelstan-Jackpot property is described by Minfile 082ESE047, and has a long history of exploration. The following section of this report is taken, with only minor changes, from an earlier report by the same author (Caron, 2003a).

The first record of work on the Athelstan-Jackpot Property dates back to 1898, and most of the claims within the present property were staked, by separate owners, prior to 1900. Intermittent production is reported from 1901-1912, with the Athelstan and Jackpot mines operated separately in these years. Total production for the property to 1930 is reported as 33,300 tonnes averaging 5.4 g/t Au and 6.3 g/t Ag (McNaughton, 1945).

The property was acquired by W.E. McArthur in the 1930's, and further production of 1865 tonnes averaging 19.9 g/t Au, 24.7 g/t Ag and 12.47% As is reported for the years 1934 and 1936-40. By 1942, the total underground development on the property is said to have included 91 metres of shaft sinking and 570 metres of tunnelling.

Kermeen (1983) reports that limited exploration programs were carried out on the property during the late 1960's and early 1970's by Sabina Mines, Colby Resources and Scurry Rainbow Oil and Gas. This work apparently included 12 percussion drill holes, of which 8 encountered open stopes. No significant results were reported from the drilling.

Mr. W. Hallauer acquired the claims from W.E. McArthur in the 1970's. Arrowhead Resources Ltd. explored the property from 1978-83, under the direction of A.R. Grant. Significant work programs were completed including geological mapping and sampling of surface outcrops and mine workings, soil sampling, and magnetometer and VLF/EM surveys. Arrowhead Resources also drilling 28 vertical percussion drill holes over an area of about 200 x 600 metres, to test for a near surface, open-pit resource. Values were found to be erratic although some good intersections were returned in the vicinity of the Jackpot workings. Arrowhead then drilling 3 vertical diamond drill holes adjacent to percussion holes

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near the Jackpot workings.

The property was optioned to Rimacan Resources Ltd. in 1983 and Canadian Pawnee in 1985, but apart from very minor rock sampling (Kermeen, 1983) there is no record of any work completed.

Max Minerals Inc optioned the property in 1986 and significant work programs were carried out in 1986 and 1987. Detailed geochemical and geophysical programs were completed. A very strong Au-As soil anomaly was defined, roughly east-west trending and in the area of the Athelstan and Jackpot workings. The anomaly is in the order of 500 x 150 metres, with numerous values exceeding 1000 ppb Au and 10,000 ppm As. Several strong VLF-EM conductors were identified, coincident with the soil anomalies. A number of old trenches and shallow tunnels on the property were reopened and resampled. Several areas of high grade gold mineralization were identified, including the Trench A-1 and J-34 Zones. Thirteen diamond drill holes, totalling 452 metres, were then completed. The most significant result was 0.384 oz/t Au over 6 feet in hole 87-8. A 1989 report by McDougall summarizes the work by Max Minerals Inc.

Toscano Resources Ltd. optioned the property in 1989, but did no further work on the claims.

In 1991, Minnova Inc. optioned the claims and completed a 6 hole diamond drill program, totalling 946 metres. The program was designed to test for large, bulk tonnage targets at the intersection of the low angle thrust faults with steeply dipping, later cross faults and was unsuccessful in this regard.

R.E. Miller, completed a program of data review, rock chip sampling and preliminary metallurgical testing in 2001 on behalf of Web Hallauer. The possibility of selective mining of near surface gold ore from the property was suggested (Miller, 2001). In the spring of 2002, a further review of available data on the property was completed to pursue this idea (Caron, 2002a). Six target areas were defined and a program of fieldwork and metallurgical testing was recommended to test the two highest priority targets. The first phase of fieldwork work was completed during May and June, 2002 as described in Caron (2002b). This work included establishing the property boundary in several key areas, geological mapping and rock sampling in the target areas, and collecting samples for initial petrographic and metallurgical testing.

A program of trenching and metallurgical testing was carried out in the summer of 2002 (Caron, 2003a) to test areas of oxidized massive arsenopyrite-pyrite mineralization, with gold, in listwanite. The A-1 Zone was exposed intermittently on strike for 75 metres, of which a 45 metre strike length was continuously exposed. The zone is flat lying to gently north dipping and pinches and swells from less than 0.5 metres to locally up to 3 metres in thickness. The best results from the A-1 Zone was a 3 metre true thickness averaging 35.2 g/t Au, 105 g/t Ag and 6.3% As. Fifteen metres to the east on strike, a 2.5 metre true thickness returned 26.2 g/t Au, 35 g/t Ag and 4.4% As. Trenching was also done in the J-34 area, about 200 metres northwest of the Trench A-1 Zone where a second zone of massive arsenopyrite-pyrite mineralization, with gold, occurs in the listwanite. Two short trenches were dug to determine whether additional trenching was warranted in this area. Oxidation was less here than at the A-1 Zone, and the best results obtained were a 0.9 metre true thickness grading 16.2 g/t Au, 11 g/t Ag and 3.4% As, and a 0.85 metre true thickness grading 24.5 g/t Au, 29 g/t Ag, and 17.2 % As.

Metallurgical testing (cyanide leach and flotation) was also conducted during 2002. Results to date indicate that cyanide leach is a suitable method for recovering gold from oxide ore, with up to 91% gold recovery. Recovery of gold from sulfide ore is more problematic.

During 2003, title to the property was transferred from Web Hallauer to his daughters, Merry and Teresa Hallauer and the work program described in this report was completed.

**2.4 Summary of Work Program (May 2003 - December 2003)**

A trenching program was completed on the Athelstan-Jackpot property between June 9 and June 20, 2003 using a 300 series Hitachi excavator owned by Lime Creek Logging of Grand Forks and operated by H. Funk. Seven trenches were dug on 2 different targets (J-34 and B-1 Zones), for a total of 275 lineal metres of excavation. Trenches have been left open for further examination and sampling during 2004. Reclamation of 2002 and 2003 trenches is anticipated for late in 2004.

A total of 123 rock samples were collected from the 2003 trenches and from old workings at the J-12 Zone. Samples were shipped to ALS Chemex Labs in Vancouver for analysis for Au, Ag, As and for cyanide soluble Au. Select samples were also analysed for Cu, Pb and Zn.

The program was managed by R. Walters of Spokane, Washington. L. Caron of Grand Forks completed trench layout, geological mapping and reporting. J. Kemp of Grand Forks assisted in the trenching program with trench cleanout and sampling. Logging and timber removal was done under contract by Son Ranch Logging of Grand Forks.

### **3.0 GEOLOGY**

#### **3.1 Regional Geology, Structure and Metallogeny**

The Athelstan-Jackpot property is situated within the Boundary District of southern British Columbia and northern Washington State. The following discussion of the geological setting and metallogeny of the Boundary District is taken largely from an earlier report by the same author (Caron, 2003a).

The Boundary District straddles the Canada-USA border and includes the Republic, Belcher, Rossland and Greenwood Mining Camps. It is a highly mineralized district with total contained gold (produced + known reserves) exceeding 10 million ounces. Within the Boundary District, the majority of gold production is from the Republic and Rossland areas. At Republic, an excess of 2.5 million ounces of gold, at an average grade of better than 17 g/t Au, has been produced from epithermal veins. In the Rossland Camp, almost 3 million ounces of gold averaging 16 g/t Au was mined from massive pyrrhotite-pyrite-chalcopyrite veins associated with a Jurassic intrusive.

Portions of the Boundary District have been mapped on a regional basis by numerous people, including Fyles (1984, 1990), Little (1957, 1961, 1983), Church (1986), Parker and Calkins (1964), Muessig (1967) and Cheney and Rasmussen (1996). While different formational names have been used within different parts of the district, the geological setting is similar.

The Boundary District is situated within Quesnellia, a terrane which accreted to North America during the mid-Jurassic. Proterozoic to Paleozoic North American basement rocks are exposed in the Kettle and Okanogan metamorphic core complexes. These core complexes were uplifted during the Eocene, and are separated from the younger overlying rocks by low-angle normal (detachment) faults. The distribution of these younger rocks is largely controlled by a series of faults, including both Jurassic thrust faults (related to the accretionary event), and Tertiary extensional and detachment faults.

The oldest of the accreted rocks in the district are late Paleozoic volcanics and sediments. In the southern and central parts of the district, these rocks are separated into the Knob Hill and overlying Attwood Groups. Rocks of the Knob Hill Group are of dominantly volcanic affinity, and consist mainly of chert, greenstone and related intrusives, and serpentinite. The serpentinite bodies of the Knob Hill Group represent part of a disrupted ophiolite suite which have since been structurally emplaced along Jurassic thrust faults. Commonly, these serpentinite bodies have undergone Fe-carbonate alteration to listwanite, as a result of the thrusting event. Serpentinite is also commonly remobilised along later structures. Unconformably overlying the Knob Hill rocks are sediments and volcanics (largely argillite, siltstone, limestone and andesite) of the late Paleozoic Attwood Group.

The Paleozoic rocks are unconformably overlain by the Triassic Brooklyn Formation, represented largely by limestone, clastic sediments and pyroclastics. Both the skarn deposits and the gold-bearing volcanogenic magnetite-sulfide deposits in the district are hosted within the Triassic rocks. Volcanic rocks overlie the limestone and clastic sediments of the Brooklyn Formation and may be part of the Brooklyn Formation, or may belong to the younger Jurassic Rossland Group. In the western part of the district, the Permo-Triassic rocks are undifferentiated and grouped together as the Anarchist Group.

At least four separate intrusive events are known regionally to cut the above sequence, including the Jurassic aged alkalic intrusives (i.e. Lexington porphyry, Rossland monzonite, Sappho alkalic complex), Triassic microdiorite related to the Brooklyn greenstones, Cretaceous-Jurassic Nelson intrusives, and Eocene Coryell (and Scatter Creek) dykes and stocks.

In the Greenwood area, Fyles (1990) has shown that the pre-Tertiary rocks form a series of thrust slices,

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which lie above a basement high grade metamorphic complex. A total of at least five thrust slices are recognised, all dipping gently to the north, and marked in many places by bodies of serpentinite. There is a strong spatial association between Jurassic thrust faults and gold mineralization in the area.

Eocene sediments and volcanics unconformably overlie the older rocks with the distribution of these Tertiary rocks largely controlled by a series of faults. Regionally, three Tertiary fault sets are recognised, an early gently east dipping set, a second set of low angle west dipping, listric normal (detachment-type) faults, and a late, steep dipping, north to northeast trending set of right or left lateral or west side down normal faults (Fyles, 1990). Epithermal gold mineralization, related to Eocene structural activity, has been an important source of gold in the district.

The oldest of the Tertiary rocks are arkosic and tuffaceous sediments of the Eocene Kettle River Formation (O'Brien Creek Formation in the US). These sediments are overlain by andesitic to trachytic Eocene Marron volcanics (termed Sanpoil volcanics in the US part of the Boundary District), which are in turn unconformably overlain by lahars and volcanics of the Eocene Klondike Mountain Formation.

The important gold deposits within the district can be broadly classified into six deposit types, including gold and copper-gold skarns, mesothermal gold veins, epithermal gold veins, Jurassic alkalic intrusives with Cu, Au, Ag +/- PGE mineralization, gold mineralization associated with serpentinite (or listwanite), and gold-bearing volcanogenic magnetite-sulfide deposits. Details of the different styles of mineralization are given in Caron (2003b) and will not be repeated here.

### **3.2 Property Geology and Mineralization**

The geology of the Athelstan-Jackpot property is described in Caron (2003a) and in numerous old reports on the property, including McNaughton (1945), Grant (1983) and McDougall (1989). The following discussion is adapted from these earlier reports, with some changes.

The property is situated at the intersection of two major, regional fault zones. The Lind Creek fault is an east-west trending, moderate north dipping, Jurassic thrust fault and has a close spatial relationship with much of the gold mineralization in Greenwood area. The fault zone is commonly marked by serpentinite which is locally altered to listwanite (as at the Athelstan-Jackpot property). On the property, the serpentinite/listwanite body is a gently north dipping body, exposed intermittently along the Lind Creek fault for up to 2 kilometres in strike. The serpentinite has an exposed thickness of several hundred metres in the hanging wall of the thrust fault, where it intrudes greenstones and diorite of probable Knob Hill Group. In the eastern part of the property, the Lind Creek fault is cut by the July Creek fault, a northeast trending, steeply dipping, Tertiary fault. The serpentinite is smeared out along the July Creek fault, resulting in a significant thickening near the intersection of the two regional structures.

A Jurassic aged quartz-feldspar porphyry also occurs along the Lind Creek fault at the Athelstan-Jackpot property. This intrusive has a regional association with gold mineralization in the Greenwood area. At the Lexington property, located about 7 kilometres southwest of the Athelstan-Jackpot, mineralization occurs in altered quartz feldspar porphyry along a regional thrust fault with serpentinite.

The total production from the Athelstan-Jackpot property was about 35,200 tonnes of direct smelting ore at an average grade of about 6.2 g/t Au. Production was from a number of small lenses of massive sulfide ore (up to 12 x 30 x 8 metres in size on the Jackpot crown grant). The sulfide lenses are comprised of massive arsenopyrite-pyrite (+/- pyrrhotite and lesser galena) and occur within the large mass of serpentinite and listwanite situated along the Lind Creek fault zone. The lenses sit conformably within the altered serpentinite, and typically plunge gently eastwards. They are displaced by a number of northeast trending,

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moderate northwest dipping, normal faults. These faults are related to the larger July Creek fault, which cuts and offsets the earlier Lind Creek fault. Near surface sulfide lenses tend to be strongly oxidized, to a depth of up to 5 metres down dip.

No detailed property scale geological map of the Athelstan-Jackpot property has been done. Although outcrop is limited, there is sufficient rock exposed in scattered outcrops and in old workings and more recent trenches, that detailed geological mapping could be undertaken. This would add to the overall understanding of the geology and mineralization on the property, and is recommended for completion during 2004. In particular, the nature, extent and distribution of the listwanite and diorite should be mapped, major structures such as at the J-34 lower zone and the J-12 zones should be traced on strike and correlated where possible, all known zones of mineralization and all old workings should be accurately located and their relative positions plotted, and an attempt should be made to understand controls to mineralization.



#### **4.0 TRENCHING**

A trenching program was completed on the Athelstan-Jackpot property from June 9 - 20, 2003 using a 300 series excavator owned by Lime Creek Logging of Grand Forks and operated by H. Funk. Seven trenches were dug on 2 different targets as shown on Figures 3 and 4. Trenches are shown in more detail in Figures 5 - 7. Trenches averaged 1-2 metres in depth, locally ranging up to 5 metres deep; in total, 275 lineal metres of trenching was completed. The program was managed by R. Walters. Trench layout and geological mapping was completed by L. Caron. J. Kemp assisted with trench cleanout and sampling. Logging and timber removal required to complete the trenching program was done under contract by Son Ranch Logging of Grand Forks.

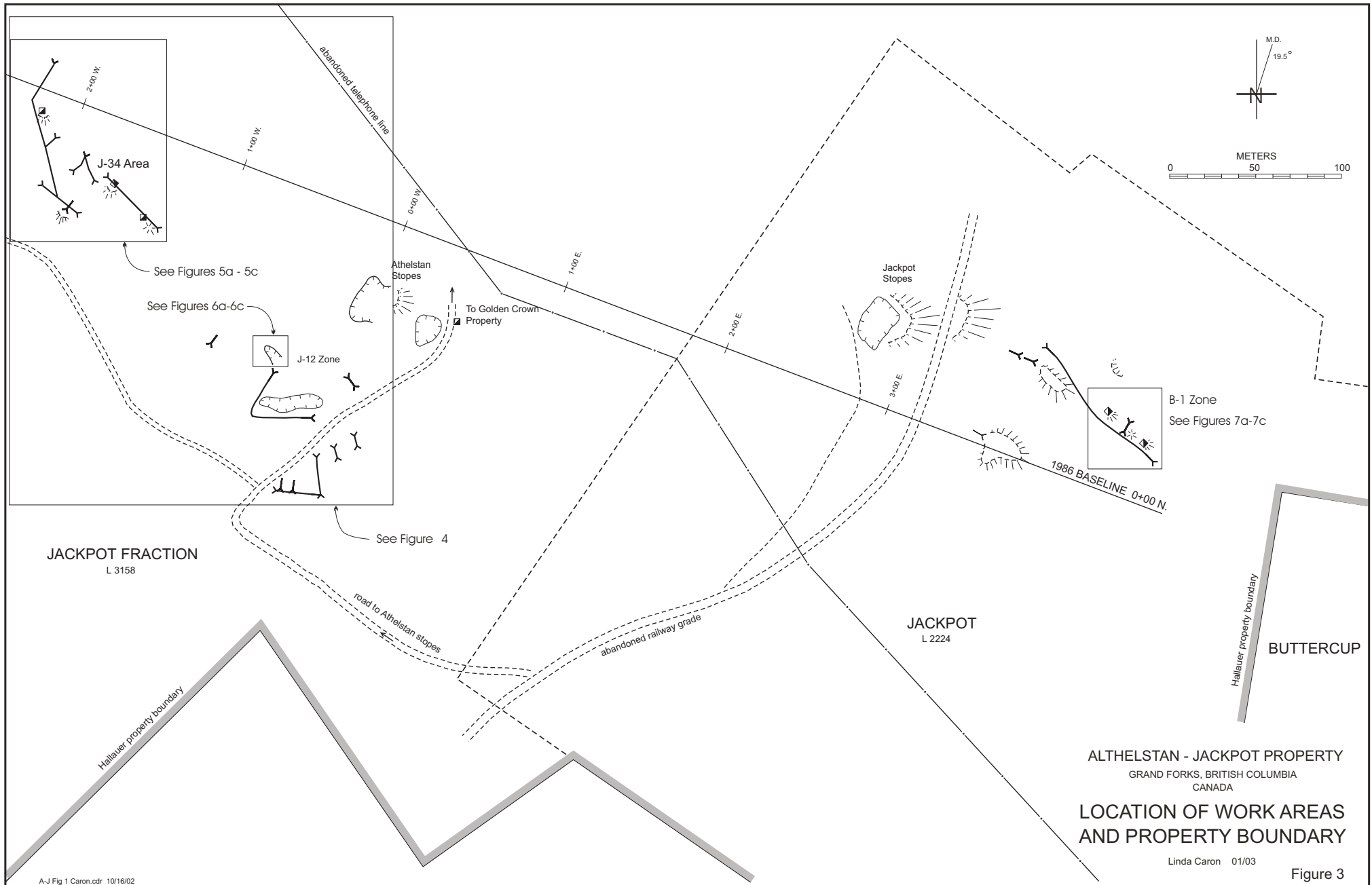
A total of 123 rock samples were collected from the trenches and from existing old workings, as shown on Figures 5a, 6a and 7a and discussed in more detail below. Sample descriptions are included in Appendix 1. Samples were shipped to ALS Chemex Labs in Vancouver for analysis for preparation and analysis. Sample preparation involved weighing samples and crushing the entire sample to 70% <2 mm. The crushed sample was then split using a riffle splitter. A 30 gram split was pulverized to 85% < 75 microns. For all samples, gold and silver were analysed by Chemex ME-GRA21 method (fire assay - gravimetric finish of a 30 gram sample). Gold was also analysed by method AA13, (cyanide leach followed by atomic absorption spectroscopy). All samples were also analysed for arsenic by method AA46 (aqua-regia digestion followed by atomic absorption spectroscopy). Select samples were also analysed for copper, lead and zinc using method AA45 (aqua-regia digestion and atomic absorption analysis). More details of the analytical procedure are available from ALS Chemex on their website ([www.alschemex.com](http://www.alschemex.com)). Analytical results are shown on Figures 5b-c, 6b-c, and 7b-c and are also included in Appendix 2.

Significant timber disturbance was necessary as a result of the trenching in the J-34 Zone. Marketable timber was removed under a License to Cut, while tops and butts were piled for burning during the winter of 2003/4. All of the 2003 trenches have been left open for subsequent examination during 2004. Most of the trenches from the 2002 program also remain open. Final reclamation of trenches, including backfilling and reseeded, is planned for late in 2004, upon completion of the planned 2004 work program.

#### **J-34 Area                      see Figures 5a - 5c**

The J-34 area is the site of several shafts, old trenches and short adits, located about 200 metres northwest of the A-1 Zone and 150 metres northwest of the Athelstan stopes, as shown in Figure 3. More detail of this area is shown on Figure 4.

The J-34 Zone occurs entirely within listwanite. There is minimal outcrop in this area and rock exposure is limited to old workings and trenches. Two short trenches were dug in this area during 2002 to test a northwest trending, moderate northeast dipping massive arsenopyrite-pyrite zone within listwanite. In general, gold grades, zone thickness and level of oxidation were all lower than at the A-1 Zone. The best results from the 2002 program were a 0.9 metre true thickness grading 16.2 g/t Au, 11 g/t Ag and 3.4% As, with 96% gold recovery in the cyanide soluble gold assay, and a 0.85 metre true thickness grading 24.5 g/t Au, 29 g/t Ag, and 17.2 % As, with only 57% gold recovery by cyanide soluble gold assay (Caron, 2003a). An additional area of mineralization was noted at the J-34 Zone that was untested by the 2002 trenches, and further trenching was recommended for this area. During the current program, six trenches were dug at the J-34 Zone, as shown on Figure 5a.



Rock chip sampling was done in trenches as well as underground in an old adit on the southern part of the zone. Sample locations are shown on Figure 5a and descriptions of samples are included in Appendix 1. Results for gold (assay and cyanide soluble) are included on Figure 5b. Silver and arsenic results are plotted on Figure 5c. The true thickness of the mineralized zone sampled is also noted on Figures 5b and 5c. Locations and results from 2002 samples, previously reported and discussed in Caron (2003a) are included on Figures 5a - 5c for completeness (3500 sample series).

As shown on Figures 5a-c, two main areas of mineralization are present at the J-34 Zone, an upper zone exposed in Trenches J34-1 to J34-5, and a lower zone exposed in J34-6. Two old inclined shafts/stopes, which were sampled in detail during the 2002 program, test the upper zone. A shaft, located some 30 metres northeast of the upper zone, appears to have attempted to reach the upper zone at depth, without success. The dump of this shaft is entirely within listwanite. A short adit, sampled during the current program, explores the lower zone.

The upper zone (in Trenches J34-1 to J34-5) is exposed intermittently for a strike of about 100 metres and is open on strike in both directions. It is comprised of numerous irregular boudins of massive to semi-massive (+/- oxidized) pyrite-arsenopyrite. Individual pods of mineralization can be traced for a maximum of 15 metres along strike. They pinch and swell rapidly, commonly splaying into two or more parallel zones, and often showing rapid changes in strike and dip. While the strike of individual lenses can change by as much as 90° in just a few metres, the overall trend of the mineralized zone is relatively consistent, at about 140°/20-45°NE and conformable with the foliation in the listwanite. An impressive zone of sulfide mineralization occurs in Trench J34-5, that returned 6.6 g/t Au, 12 g/t Ag and 6% As over a true thickness of 3.7 metres in one section sampled (samples 7585-7593). A second section sampled, a few metres to the west, returned 9.2 g/t Au, 18 g/t Ag and 6.6% As over a 2.5 metre true thickness (samples 7580-7584). Cyanide soluble gold recovery is 56 and 64%, respectively and is indicative of the unoxidized nature of the mineralization at this point.

The lower zone (in Trench J34-6) is roughly parallel to the upper zone and situated about 15 metres into the footwall of the upper zone. The main part of the lower zone, exposed in the trench just west of the adit and in the adit, is a large, strong, impressive looking rusty, shear zone within listwanite. The zone ranges from about 1 metre in true width, up to about 2.5 metres in true width. On strike to the northwest, it appears to pinch out into a series of pods, similar to the upper zone, while to the southeast the zone is truncated by an east-west striking, moderate north dipping fault. Depth of overburden in this area exceeds 4 metres, and hampers exploration by trenching. No attempt was made to test the lower zone on strike to the northwest or the southeast of Trench J34-6.

Gold grades in the lower zone were in the range of 1-4 g/t Au. What was interesting, however, is that a section including a 2 metre true width of the zone plus 4.8 metres into the hangingwall, returned an average of 1.9 g/t Au, <5 g/t Ag and 1.3% As over a 6.8 metre true width (with 94% recovery of gold by the cyanide soluble method). Grades in the hangingwall section were as high as grade within the zone, and gold was present in the uppermost sample collected within the hangingwall (sample 7607 - 2.3 g/t Au). Additional sampling should be done to determine the extent of gold mineralization in the hangingwall of the lower zone. Given the close spacing of the upper and lower zones, and the indication of mineralization in the country rock between the zones, the possibility of a lower grade bulk tonnage target, including the upper and lower zones plus the listwanite between the zones, should be considered.

Although the J-34 Zone occurs entirely within listwanite, diorite was seen in subcrop in the access road south of Trench J34-6. The extent of the diorite and its relationship to mineralization are unknown. Further work is needed to test this area.

**J-12 Zone**      **see Figures 6a - 6c**

The J-12 Zone is an area of extensive previous disturbance (historic and more recent (1980's?)) situated immediately north of the A-1 Zone (see Figures 3 and 4). Samples from this area by Jaworksi in 1986 returned an average grade of 0.418 oz/t Au. Subsequent sampling by the author had much lower gold grades, which may have been due in part to poor exposure of the zone due to sloughing in the trenches and old workings since Jaworksi's sampling (Caron 2002b). In contrast to the J-34 and A-1 Zones, the host rock for mineralization in this area is diorite, rather than listwanite.

Detailed mapping and sampling of this area was undertaken during 2003 to further assess the mineralization, particularly in light of the different host rock. The results of this work are shown in plan and section view in Figure 6a-6c. The area is structurally complex, with numerous (+/- mineralized) shear/shatter zones. A flat lying to northwest trending, gently southeast dipping oxidized shear zone is visible in the walls of the large open cut, in two short adits on the north side of the open cut, and in the inclined stope on the southeast side of the open cut. The shear zone ranges from about 0.5-2 metres in true width, and is cut, but not significantly offset, by a wide breccia zone associated with a northeast trending, steeply dipping fault zone.

The best result returned from the mineralized shear was from sample 7642, at the base of the inclined stope. This sample, across a 0.8 metre true width, returned 21.8 g/t Au, <5 g/t Ag and 16.7 % As. Several cobbles of massive arsenopyrite occurred within the shear zone at this location. Cyanide soluble gold recovery was 49%, reflecting the unoxidized nature of the sample. More typical results from the shear zone were in the range of 1-5 g/t Au.

The J-12 Zone is on-strike with, and similar in appearance and orientation to, the lower zone in the J-34 area. Gold grade in the two areas are similar, and although the host rocks are different, diorite was noted in the road just south of the J-34 lower zone. It seems likely that the J-12 Zone is the on-strike extension of the same structure seen at the J-34 lower zone, and that this structure cuts both the listwanite and the diorite. In both areas it is a strong looking structure that may have better continuity than some of the other zones.

**B-1 Zone**      **see Figures 7a - 7c**

The B-1 Zone is located about 500 metres east of the J-12 Zone, downhill from both the railgrade and the Jackpot workings, as shown on Figure 3. Two old shafts are present in this area, as well as a shallow, sloughed trench that was re-excavated and deepened as Trench B-1. An irregular, undulating, flat lying iron oxide/breccia zone, containing local cobbles of massive pyrite-arsenopyrite, occurs at the contact of listwanite and underlying diorite and is exposed in the trench. Locally a ferricrete blanket, up to 1.5 metres in thickness, occurs at the colluvium contact, at or downslope of the contact zone. The upper shaft dug through the ferricrete and presumably down to the contact zone. The lower shaft was dug in ferricrete, down to the diorite. The mineralized contact zone daylights between the upper and lower shafts.

Sample locations from the B-1 Zone are shown on Figure 7a. Gold (assay and cyanide soluble) grade is plotted on Figure 7b, while silver and arsenic values are shown on Figure 7c. Malachite staining is locally present within both the contact zone and the adjacent rocks and several samples from this area were analysed for copper, lead and zinc, in addition to gold, silver and arsenic. Results for these elements, where significant, are summarised below. All analytical results are included within Appendix 2.

The B-1 contact zone trends at about 105°/0-10°N and has a true thickness ranging from about 0.5 - 1.5 metres. The zone was traced intermittently on strike for about 30 metres. Grades range from about 1 g/t Au up to a maximum of 8 g/t Au. The best result obtained from this zone was 8.0 g/t Au, 190 g/t Ag and 8.2% As over a true thickness of 1.3 metres (sample 7548). Cyanide soluble gold recovery in this sample was 45%. This sample was also analysed for copper, lead and zinc and returned 1970 ppm Cu. Lead and zinc

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values were elevated, but not significantly so. Overburden in this area is moderate, typically 1-2 metres, and further trenching could be done to trace the B-1 contact zone on strike to the southeast and to the northwest.

The ferricrete blanket zone thickens downslope from the mineralized contact, and also locally contains cobbles of massive pyrite-arsenopyrite. Grades within the ferricrete zone are erratic, but locally significant. One sample, from the base of an old shaft, returned 28.4 g/t Au, 166 g/t Ag and 13% As across 0.3 metres (sample 7555). This sample contained several cobbles of massive pyrite-arsenopyrite, and had cyanide soluble gold recovery of only 25%. Several other samples from the ferricrete returned grades in the range of 2-7 g/t Au, over the true thickness of the zone. Copper is also locally elevated within the ferricrete zone, with one sample returning 1050 ppm Cu (sample 7547).

The diorite footwall to the contact zone has strong chlorite alteration, and moderate Fe and Mn oxidation on fractures. Minor malachite staining is also present. One sample, in the immediate footwall of the contact zone, returned 1345 ppm Cu over 1.6 metres, but without accompanying elevated gold or silver.

## **5.0 RECOMMENDATIONS**

Previous work on the Athelstan-Jackpot property has largely focussed on a number of discrete, lenticular zones of auriferous massive pyrite-arsenopyrite mineralization within listwanite. These zones are commonly very high grade, but typically of limited size, presumably because of the ductile nature of the host rock. Work during 2003 identified an area of contact mineralization along a diorite/listwanite contact at the B-1 Zone, as well as structurally controlled mineralization within diorite at the J-12 Zone. The J-34 lower zone is also situated close to the diorite contact. Similar diorite hosts gold mineralization in quartz and massive sulfide veins on the adjoining Golden Crown property. Little is known about the extent and distribution of diorite on the Athelstan-Jackpot property, or its relationship to zones of mineralization. There has been minimal exploration on the property outside areas of listwanite. Furthermore, previous property scale geological mapping has not been sufficiently detailed to determine the relationship between the different zones of known mineralization or to define controls to mineralization.

Detailed property scale geological mapping is recommended to attempt to resolve these questions and to identify possible targets for future trenching or drilling. A detailed grid is recommended, for control during geological mapping.

An accurate survey of the property boundary is also recommended, in light of the extent of work being done on the adjoining Golden Crown property, and the location of several zones of mineralization very near this and other adjoining properties.

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**7.0 STATEMENT OF QUALIFICATIONS**

I, Linda J. Caron, certify that:

1. I am an independent consulting geologist residing at 717 75<sup>th</sup> Ave (Box 2493), Grand Forks, B.C., V0H 1H0
2. I obtained a B.A.Sc. in Geological Engineering (Honours) in the Mineral Exploration Option, from the University of British Columbia (1985) and graduated with an M.Sc. in Geology and Geophysics from the University of Calgary (1988).
3. I have practised my profession since 1987 and have worked in the mineral exploration industry since 1980. Since 1989, I have done extensive geological work in Southern B.C. and particularly in the Greenwood - Grand Forks area, both for exploration companies and as an independent consultant.
4. I am a member in good standing with the Association of Professional Engineers and Geoscientists of B.C. with professional engineer status.
5. I carried out the geological field work on the Athelstan-Jackpot property described in this report.
6. I have no direct or indirect interest in the property described herein.

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Linda Caron, M.Sc., P. Eng.

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Date

## APPENDIX 1

### Trench Sample Descriptions

ATHELSTAN-JACKPOT PROPERTY

JUNE 2003 TRENCHING PROGRAM

Sample #	Au g/t	CN Sol. Au g/t	CN Sol. %	Ag g/t	As %	Trench	Sample Interval (m)	Type	Description
7525	0.4	0.3	63	<5	0.6	Trench B-1, W wall	0.5	vert channel	0.5m on W wall. Fe ox brecciated zone on approx contact of diorite (below) and listwanite (above). Contact zone is an irregular, undulating, generally W-NW trending & gently E dipping (~10°) zone of strong Fe ox, bx'd, with minor cobbles of massive apy-py. Note that at approx 0-8 m in trench, fwall of zone is listwanite, not diorite. Sample 7525 is across the entire exposed thickness of the zone, from soil down to the footwall of zone. Hwall is not exposed
7526	0.9	0.8	94	<5	0.6	Trench B-1, W wall	0.45	vert channel	3 m on W wall. Same as 7525.
7527	1.5	1.2	82	7	1.1	Trench B-1, E wall	0.65	vert channel	3 m on E wall. Same as 7525.
7528	1.6	1.1	70	<5	2.1	Trench B-1, E wall	0.9	vert channel	5 m on E wall. Same as 7525.
7529	0.1	0.1	38	<5	0.5	Trench B-1, E wall	0.5	vert channel	5 m on E wall. Vert channel below 7528. Sheared listwanite below Fe ox zone.
7530	1.9	1.4	72	5	2.5	Trench B-1, W wall	1.35	vert channel	5 m on W wall. Sample across tt of Fe ox bx zone, from colluvium down to listwanite footwall.
7531	0.8	0.8	96	<5	2.3	Trench B-1, E wall	0.6	vert channel	8 m in trench. At sample flag J-23-86. 7531 is weak Fe ox listwanite hwall above the zone.
7532	5.1	2.8	55	17	5.8	Trench B-1, E wall	0.9	vert channel	8 m in trench. Vert channel across Fe ox zone, below sample 7531, from hwall listw down to fwall (listw? or dior?) on trench floor. Zone has 20% cobbles of semi-massive sulfides (apy-py).
7533	2.5	2.1	84	<5	3.1	Trench B-1, E wall	0.85	vert channel	10 m in trench, E wall. Fe & Cu ox diorite in contact zone. Sample is from floor of trench up to sheared diorite above.
7534	<0.05	0.1		<5	0.3	Trench B-1, E wall	1	vert channel	18 m in trench. Blocky fractured diorite with mod Fe + Mn oxide on fractures.
7535	2.5	1.8	71	5	1.3	Trench B-1, W wall	0.8	vert channel	27 m in trench. 0.8 m tt ferricrete zone on diorite/colluvium contact. 10-15% cobbles of massive apy-py, to 20 cm, in ferricrete.
7536	0.6	0.6	103	<5	0.1	Trench B-1, floor	1.1 (0.8 m vert)	subvert channel	27 m in trench. Diorite in floor of trench, just below soil contact. Mal stain.
7537	6.0	3.4	56	15	6.5	Trench B-1, E wall	0.75	vert channel	27.2 m in trench. 0.75 m tt ferricrete zone on diorite/colluvium contact.
7538	1.4	1.1	78	62	0.4	Trench B-1b	0.85	vert channel	7538-41 are continuous vertical chip samples. 7538-40 are across zone, 7541 is fwall. Zone is on list/dior contact. 1.45 m tt, flat lying, heavy Fe oxide + massive apy-py. Zone is preferentially in diorite, immed below the dior/listw contact. 7538 is upper sample of series, from listw contact down in mod-str Fe ox, sheared diorite.
7539	5.0	2.7	54	48	8.2	Trench B-1b	0.35	vert channel	See 7538. Sample is below 7538. Includes 4 cm siliceous, massive apy-py(+minor cpy) zone (60-80% massive sulfides in v hard siliceous gmass).
7540	1.7	1.7	102	45	2.8	Trench B-1b	0.25	vert channel	See 7538. Sample is below 7539. Heavy Fe ox diorite zone below massive apy-py.
7541	<0.05	0.1		<5	0.2	Trench B-1b	1.6	vert channel	See 7538. Diorite fwall of zone. V broken, mod Cu ox.
7542	2.4	1.9	78	56	4.6	Trench B-1b	0.7	vert channel	7542-7544 are continuous vertical chip samples in a section 1.1 m north along the trench wall from 7538-41 (see above). Total tt of zone here is 1.25 m. 7542 is upper sample in sequence, from listw contact down in mod Fe ox, bx, sheared diorite.
7543	6.7	4.1	61	88	7.7	Trench B-1b	0.2	vert channel	See 7542. 0.2 m sample below 7542. Fe ox zone with 7-10 cm massive apy-py. Approx 50% massive apy-py in sample.
7544	0.2	0.3	125	<5	1.0	Trench B-1b	0.35	vert channel	See 7542. 0.35 m sample below 7543. Strong Fe ox dior zone below massive apy-py.
7545	6.9	4.5	65	48	3.4	Trench B-1b	0.7	vert channel	Ferricrete zone at diorite-colluvium contact in N wall of Trench B1-b (down slope from contact zone).
7546	0.2	0.2	86	<5	1.2	Trench B-1b	1	vert channel	Same as 7545.
7547	0.7	0.7	96	6	0.6	Trench B-1b	1.6	vert channel	Same as 7545.
7548	8.0	3.6	45	190	8.2	Trench B-1b	1.3	vert channel	Strong Fe ox contact zone with 50 cm massive apy-py (+minor cpy) at dior/listw contact. Same zone sampled as 7538-40 and 7542-44.
7549	1.4	1.2	87	100	1.3	Trench B-1b	2.4 (~1.3 m tt)	subvert channel	Strong Fe ox diorite at contact zone with minor massive apy-py. May include some str talc all'd listw above zone. Same zone sampled as 7548, 7538-40 and 7542-44.
7550	1.3	1.4	107	5	1.3	Trench B-1	0.6	vert channel	Ferricrete and colluvium on diorite/soil contact. 7550 is 0.6 m tt. Ferricrete apron thickens down trench, to about 1.5 m tt at shaft.
7551	0.6	0.7	107	9	0.6	Trench B-1	0.7	vert channel	Same as 7550. 0.7 m tt.
7552	0.1	0.1	157	<5	0.3	Trench B-1	0.5	vert channel	Same as 7550. 0.5 m tt.

Sample #	Au g/t	CN Sol. Au g/t	CN Sol. %	Ag g/t	As %	Trench	Sample Interval (m)	Type	Description
7553	3.1	2.4	77	6	2.9	Trench B-1	0.5	vert channel	Same as 7550. 0.5 m tt. May include a small amt of fwall diorite.
7554	0.1	0.1	100	<5	0.2	Trench B-1	0.9	vert channel	Same as 7550. 0.9 m tt. Contains well rounded boulders (to 40 cm) of listw + glacial debris, plus occasional rounded massive sulfide cobbles. Sulfide cobbles are concentrated at the base of the ferricrete zone, on the diorite bedrock surface.
7555	28.4	7.1	25	166	13.0	Trench B-1	0.3	vert channel	Same as 7550. 7555 is 0.3 m sample at base of 1.5 m tt ferricrete zone, in old shaft. Sample contains abundant sulfide cobbles.
7556	0.3	0.2	92	<5	0.9	Trench B-1a	1 x 0.5	panel	Random chip over 1 x 0.5 m panel from ferricrete zone on listw-soil contact at old inclined shaft. Looks like qtz-sulfide shear along 105/30N structure (this is what shaft is dug on). Zone was perhaps 1 m wide. V complex, sheared zone at ferricrete-listw contact at top of qtz-sulfide shear.
7557	0.2	0.2	112	<5	2.0	Trench B-1a	0.8	vert channel	On face above inclined stope, in complex shear-ferricrete zone in listwanite above stoped out shear zone.
7558	0.5	0.4	86	15	2.4	Trench B-1a	1.2	horiz channel	Horiz channel across complex shear-ferricrete zone in listw above stoped out zone.
7559	5.8	4.2	73	<5	6.1	Trench B-1a	-	grab	Random grab from ore dump at inclined stope. Sample is several shovelfuls of sand and small rocks, abund quartz vn material. Vn is qtz with massive (to 70%) apy-py + poss fine grained galena. Note this was sampled as 3451 in 2002.
7560	<0.05	<0.03		<5	0.1	Trench J34-3	1	horiz channel	weak Fe ox, punky listw along shearing @ 020/85°W-90°. Spotty Fe ox along this structure. Sample is not across true width. Tt is ~ 0.5 - 1 m.
7561	<0.05	<0.03		<5	0.1	Trench J34-3	2	horiz channel	Same as 7560.
7562	12.9	12.8	99	8	7.5	Trench J34-1	0.4	subvert channel	poddy mod Fe ox zone in listw. Zone does not continue W past this sample.
7563	0.7	0.8	120	<5	0.4	Trench J34-1	0.5	vert channel	Samples 7563-65 are a section across the hwall, zone and fwall. 7563 is a 0.5 m vert chip across the tt of the hwall of the zone. Sample is sheared listw.
7564	14.7	14.1	96	8	3.4	Trench J34-1	0.35	vert channel	Poddy dark brown str Fe ox zone, below 7563.
7565	<0.05	0.1		<5	0.0	Trench J34-1	1	horiz channel	1 m horiz sample in fwall of zone (tt would be v small). This is immediate fwall of zone, below 7564. V hard siliceous listw.
7566	1.4	1.6	110	<5	0.5	Trench J34-1	1	vert channel	Poddy zone. Sample is across tt of zone, includes ~ 80 cm str sheared listw (+ hwall) and ~ 20 cm strong Fe ox listw.
7567	<0.05	<0.03		<5	0.0	Trench J34-3	0.6	horiz channel	mod Fe ox, punky listw zone in floor of trench. Can't tell dip on zone, may be tt of 0.4 m?
7568	<0.05	<0.03		<5	0.1	Trench J34-1	0.4	vert channel	Samples 7568-70 are a section across the hwall, zone and fwall. 7568 is 0.4 m tt in hwall listw.
7569	1.8	1.9	103	15	1.3	Trench J34-1	0.4	vert channel	Below 7568. 7569 is 0.4 m tt across str Fe ox zone with local chocolate brown gossan.
7570	0.3	0.2	96	<5	1.2	Trench J34-1	0.7 (~ 0.15 m tt)	horiz channel	Below 7569. 7570 is a 0.7 m horiz sample (~ 0.15 m tt) in fwall listw.
7571	<0.05	<0.03		<5	0.1	Trench J34-1	1	horiz channel	Typical listwanite.
7572	<0.05	<0.03		<5	0.0	Trench J34-4	1.5 (~0.8 m tt)	horiz channel	weak Fe ox zone in listw on zone trending 105/3°N.
7573	1.0	0.7	68	<5	0.2	Trench J34-5	1	subvert channel	Samples 7573-75 are a section across the hwall, zone and fwall. 7573 is 1 m tt in hwall, white siliceous listw.
7574	15.7	12.4	79	10	4.8	Trench J34-5	0.25	subvert channel	Below 7573. 7574 is dark red-brown str Fe ox zone + gossan.
7575	0.1	0.1	70	<5	0.6	Trench J34-5	0.8 (~0.25 m tt)	horiz channel	Below 7574. 0.8 m horiz sample (~0.25 m tt) in fwall listw.
7576	2.1	1.9	90	<5	0.8	Trench J34-5	0.3	subvert channel	mod Fe ox listw on projection of zone. Not strong zone here.
7577	<0.05	0.1		<5	0.2	Trench J34-5	1	subvert channel	Samples 7577-79 are a section across the hwall, zone and fwall. 7577 is typical mottled Fe ox sheared listw hwall.
7578	19.2	10.3	54	23	8.1	Trench J34-5	0.7	subvert channel	Below 7577. 7578 is a sample across the tt of the zone. Contains ~ 40% massive apy-py.
7579	<0.05	0.1		<5	0.3	Trench J34-5	1 (~ 0.4 m tt)	horiz channel	Below 7578. Weak Fe ox listw footwall.
7580	0.7	0.6	93	<5	0.4	Trench J34-5	0.7	subvert channel	Samples 7580-84 are a completed section across the hwall, zone and fwall. Two sulfide zones present in this section. 7580 is uppermost sample, in sheared Fe ox listw hwall.
7581	26.7	8.8	33	32	17.8	Trench J34-5	0.5	subvert channel	Below 7580. 7581 is 0.5 m tt massive apy-py lense.

Sample #	Au g/t	CN Sol. Au g/t	CN Sol. %	Ag g/t	As %	Trench	Sample Interval (m)	Type	Description
7582	1.4	1.0	72	<5	1.0	Trench J34-5	0.9	subvert channel	Below 7581. 7582 is 0.9 m tt Fe ox, mottled, weakly sheared, siliceous listw.
7583	19.7	6.5	33	64	16.0	Trench J34-5	0.4	subvert channel	Below 7582. 7583 is 0.4 m tt massive apy-py.
7584	<0.05	0.0		<5	0.4	Trench J34-5	1 (~0.2 m tt)	horiz channel	Below 7583. Fwall listw.
7585	3.9	1.8	45	<5	4.7	Trench J34-5	0.9	subvert channel	Samples 7585-93 are a complete section across the zone, from hwall through to fwall. 2 sulfide, 2 oxide zones present in this section. 7585 is uppermost sample across 0.9 m tt str sheared, weak-mod Fe ox listw. Includes 0.2 m strong Fe ox zone on strike of apy lense (sampled as 7581).
7586	<0.05	<0.03		<5	0.2	Trench J34-5	0.6	subvert channel	See 7585. Sample 7586 is below 7585, in typical listwanite.
7587	23.9	9.0	38	42	18.3	Trench J34-5	0.4	subvert channel	See 7585. Sample 7587 is below 7586, across 0.4 m tt massive apy-py zone trending 272/15°N.
7588	4.1	4.0	97	8	3.9	Trench J34-5	0.7	subvert channel	See 7585. Sample 7588 is below 7587, between 2 massive apy-py lenses/bands. 0.7 m tt across str Fe ox listw.
7589	25.0	9.0	36	48	26.3	Trench J34-5	0.2	subvert channel	See 7585. Below 7588 across 0.2 m tt massive apy-py zone.
7590	0.8	0.7	86	<5	1.2	Trench J34-5	0.7	subvert channel	See 7585. Below 7589 in weak-mod Fe ox listw fwall.
7591	20.3	11.4	56	27	8.1	Trench J34-5	1	horiz channel	See 7585. 1 m horiz sample in fwall listw, below 7590. V little true thickness. Samples 7591-93 together are ~0.2 m tt. Mod Fe ox punky listw. Includes a scab of the zone that was sampled as 7588.
7592	11.0	7.9	72	22	5.8	Trench J34-5	1	horiz channel	Same as 7591.
7593	17.0	12.1	71	51	9.5	Trench J34-5	1	horiz channel	Same as 7591. Str Fe ox listw + local pods of gossan as a scab of the 7588 zone.
7594	5.9	6.1	104	43	2.1	Trench J34-2	0.5	channel	6 m on strike to E from 2002 sample 3561. Mod str Fe ox, sheared zone in listw. Zone is 0.5 m tt at this point, trending 140/45°N.
7595	<0.05	0.0		<5	0.2	Trench J34-2	0.9	subvert channel	Samples 7598, 7595-97 are a section across the upper zone, fwall listw, lower zone, and fwall 7595 is 0.9 m hwall of the lower zone, below 7598. Typical mottled orange weathering listwanite.
7596	1.4	1.2	90	12	0.9	Trench J34-2	0.2	subvert channel	See 7595. Below 7595. 0.2 m tt across mod-str Fe ox, sheared listw at edge of shallow inclined shaft. Same zone sampled as 7594.
7597	<0.05	0.0		<5	0.2	Trench J34-2	0.4	subvert channel	See 7595. Below 7596. Listwanite in fwall of lower zone.
7598	5.2	4.3	81	<5	3.7	Trench J34-2	0.3	subvert channel	See 7595. Upper zone (note that this sample is the uppermost sample in the section). Shallower dip than lower zone (~25°N). Sheared, str Fe ox listw with minor gossan. Includes 2 cm band of massive apy-py.
7599	0.4	0.4	100	<5	0.3	Trench J34-2	0.6	subvert channel	Samples 7599-7602 are a section across the hwall, upper zone, fwall to upper zone & lower zone. Sample 7599 is uppermost sample in section, across 0.6 m tt of sheared, mottled, listw hwall.
7600	12.4	9.7	78	102	5.8	Trench J34-2	0.7	subvert channel	See 7599. Sample 7600 is below 7599, across 0.7 m tt upper zone. Mod-str Fe ox sheared listw with 10% cobbles of massive apy-py, particularly in the upper part of the zone.
7601	<0.05	0.1		<5	0.2	Trench J34-2	0.5	subvert channel	See 7599. Sample 7601 is footwall to upper zone, below 7600. 0.5 m tt across typical mottled listw.
7602	7.3	6.4	88	11	2.2	Trench J34-2	0.3	subvert channel	See 7599. Lowest sample in section. Lower zone, just before it pinches out. Fe ox sheared listw. Zone is weak looking and skinny.
7603	7.0	5.4	76	20	3.9	Trench J34-2	1	subvert channel	Upper zone, zone becomes wider here, but weaker looking. Mod Fe ox sheared listw, include 2 10-20 cm str Fe ox pods with minor gossan.
7604	16.9	12.8	76	31	7.0	Trench J34-2	0.2	subvert channel	Upper zone. Narrow, mod-str zone of dark brown Fe ox listw + gossan, just before zone pinches out into typical listw.
7605	<0.05	0.1		<5	0.1	Trench J34-1	1.7	horiz channel	6 m down trench from TP-6. Sample is across trench in weak Fe ox listw on 155/20E structure.
7606	<0.05	0.1		<5	0.0	Trench J34-1	1.3	horiz channel	16 m down trench from TP-6. 1.3 m tt in fwall of fault zone (see 7605). Massive, mottled listw.
7607	2.3	2.3	99	<5	1.9	Trench J34-6	2 m (1.2 m tt)	subvert channel	Samples 7607-13 are a complete section across the hwall, zone and fwall at the junction of Trenches J34-1 and J34-6. 7607-10 are in the weak-mod Fe ox listw hwall of the zone. Hwall contains str Fe ox pods for ~ 5 m above zone. 7607 is the uppermost sample in the hwall (3.6-4.8 m in hwall).

Sample #	Au g/t	CN Sol. Au g/t	CN Sol. %	Ag g/t	As %	Trench	Sample Interval (m)	Type	Description
7608	2.3	2.2	96	<5	0.6	Trench J34-6	2 m (1.2 m tt)	subvert channel	See 7607. Sample 7608 is below 7607, from 2.4-3.6 m in hwall.
7609	2.2	2.0	92	6	0.7	Trench J34-6	2 m (1.2 m tt)	subvert channel	See 7607. Sample 7609 is below 7608, from 1.2-2.4 m in hwall.
7610	0.5	0.5	98	<5	0.7	Trench J34-6	1.8 m (1.2 m tt)	subvert channel	See 7607. Sample 7610 is below 7609, from 0-1.2 m in hwall (immed hwall to zone).
7611	2.4	2.2	94	<5	2.1	Trench J34-6	1	vert channel	Zone is 2 m tt, on face in trench. Upper part sampled as 7611, lower part as 7612. Sample 7611 is gossan + str Fe ox sheared listw.
7612	2.2	1.8	83	<5	4.1	Trench J34-6	1	vert channel	See 7611. Lower part of zone. Gossan + mod-str Fe ox listw with 10% massive apy-py cobbles.
7613	0.1	0.0	57	<5	0.4	Trench J34-6	1 m (0.2 m tt)	horiz channel	Below 7612. Weak Fe ox listw in fwall of zone.
7614	4.7	4.3	91	<5	9.4	Trench J34-6	0.7	subvert channel	Soil to footwall across zone. Zone is partly eroded away. Same zone sampled as 7611,12.
7615	2.9	2.7	92	<5	5.8	Trench J34-6	0.7	subvert channel	Soil to footwall across zone. Zone is partly eroded away. Same zone sampled as 7611,12.
7616	<0.05	0.1		<5	0.5	Trench J34-6	0.7	subvert channel	Below 7515. Footwall of zone. Str Fe ox listw.
7617	1.4	1.5	104	<5	2.9	Trench J34-6	1.3	vert channel	1.3 m tt across zone on face, from soil to fwall. Zone may be in part eroded away.
7618	1.7	1.7	103	<5	2.4	Trench J34-6	1	vert channel	Samples 7618-19 are a section across the zone on the N wall of the trench about 2 m W of the adit portal. TT of zone is 2.5 m here. 7618 is upper 1 m (from soil down), 7619 is lower 1.5 m. 7618 is mod-str Fe ox, sheared listw with pockets of gossan & iron cake & with siliceous cobbles with minor py-apy. Zone trends 140/1°E.
7619	1.1	1.0	97	9	1.8	Trench J34-6	1.5	vert channel	See 7618. Sample is lower 1.5 m of zone, as in 7618.
7620	0.6	0.5	91	<5	1.4	Trench J34-6	1.4	vert channel	Samples 7620-21 are a section across the zone on the face at the W side of the adit portal. Zone is 2.4 m tt here. 7620 is upper 1.4 m, 7621 is lower 1 m. 7620 is from hwall down (can't sample hwall - too high, loose). Str sheared, str Fe ox listw + gossan + iron cake. Zone trends 195/35°E.
7621	1.0	0.4	35	<5	1.9	Trench J34-6	1	vert channel	See 7620. 7621 is lower 1 m of zone, from 7620 down to fwall listw. V siliceous/qtz with 10-40% apy-py.
7622	7.3	7.1	97	<5	1.8	Trench J34-6	1.5	subvert channel	Listw hwall of zone, above sample 7623.
7623	1.5	1.4	99	<5	2.7	Trench J34-6	0.9	subvert channel	Sample across zone, from hwall to fwall. Str Fe ox listw + iron cake. Minor gossan.
7624	4.0	3.1	78	<5	2.1	Trench J34-6	1.1	subvert channel	Sample across zone from hwall to fwall. Sheared, mod Fe ox listw with v minor gossan & iron cake.
7625	0.3	0.4	118	<5	0.3	Trench J34-6	0.8	subvert channel	Weak zone, weak-mod Fe ox listw. Zone trends under trench muck pile.
7626	4.5	4.3	96	15	0.7	Trench J34-6	0.3	subvert channel	Sample across tt of weak looking, mod Fe ox zone on strike of 7625. Hwall and fwall are listw.
7627	<0.05	0.0		<5	0.1	Trench J34-6	0.35	subvert channel	Sample across tt of skinny, mod-str Fe ox, silic'd listw @ soil contact, on strike of 7626. Hwall not exposed. Zone is poddy looking and doesn't appear to continue in either direction.
7628	0.1	0.0	67	<5	0.0	Trench J34-6	1.8	subvert channel	Sample across 1.8 m tt fwall to 7627. Str sheared serp/listw with abund marip.
7629	1.9	2.0	109	<5	2.8	Trench J34-6	1.5	subvert channel	Samples 7629-30 are a section across the zone and footwall in the E wall of the trench, ~ 3 m south of the adit portal. 7629 is across 1.5 m tt of zone, from hwall listw to fwall listw. Zone is str sheared, str Fe ox listw & iron cake + 20% gossan. Zone is cut off by fault @ 275/5°N ~ 1 m to south of sample section.
7630	<0.05	0.1		<5	0.4	Trench J34-6	1.9 m (0.4 m tt)	subhoriz channel	See 7629. Mottled siliceous listwanite footwall.
7631	<0.05	<0.03		<5	0.2	Trench J34-6	1.1	subvert channel	On E wall of trench, 2 m south of fault zone that cuts off minz'd zone. Str sheared, sericitic listw with well developed platy fracture @ 125/3°S.
7632	<0.05	<0.03		<5	0.1	Trench J34-6	1.2	subhoriz channel	Below 7632. Typical massive mottled listw.

Sample #	Au g/t	CN Sol. Au g/t	CN Sol. %	Ag g/t	As %	Trench	Sample Interval (m)	Type	Description
7633	1.4	1.4	101	<5	0.6	Trench J12	1.5	vert channel	W wall of large, deep trench (a previous excavation of an old stoped area). Sample is 1.5 m vert across a flat lying, v shattered, chl, weak Fe ox zone in diorite. Sample is E of 225/90° fault that offsets (& tips) the minz'd zone. Zone is weak-mod, with minor gossan patches. Same zone sampled on opposite wall of trench as 7637
7634	2.5	2.6	102	9	0.9	Trench J12	0.8	vert channel	W wall of trench, near back face. Sample is across 0.8 m tt of well defined 140/15°NE zone, immed west of the 225/90° fault. Same zone sampled as 7635,36. Str Fe ox shear zone in diorite. ~ 50% of sample is gossand and v strong iron cake
7635	5.6	5.1	92	5	3.1	Trench J12 (pillar)	0.9	vert channel	Sample in pillar on back wall of trench, between two old stoped areas. Str Fe ox zone with minor cobbles of massive apy. ~ 30% of sample is dark brown gossan. Fwall is chl diorite. Hwall is very sheared, talc-chl alt'd probable diorite.
7636	0.6	0.5	93	<5	1.5	Trench J12 (stope)	0.5	vert channel	Sample across tt of zone in E wall of stope at back of trench. Mod Fe ox shear zone.
7637	1.6	1.7	102	<5	0.5	Trench J12	2	vert channel	On E wall of trench, immed south of the v large fault zone that offsets/tips the minz'd zone. Sample is of large, flat lying, weak-mod Fe ox, v bx'd, broken up shear zone. Same zone sampled on opposite wall as 7633. Diorite hwall to zone. Fwall not exposed.
7638	2.0	2.0	101	6	0.6	Trench J12	1.2	vert channel	at portal to stoped area. 1.2 m tt across str sheared, mod Fe ox diorite (on strike of 7637).
7639	0.4	0.4	100	<5	0.2	Trench J12	0.7	vert channel	below 7638 at portal to stoped area. 0.7 m tt across chl-talcose sheared serp? or dior? fwall to zone.
7640	<0.05	0.1		<5	0.2	Trench J12 (stope)	1.35	vert channel	at back of stope/adit on E wall. Weak shear zone in silic dior with diss py, trends 212/28°SE.
7641	4.7	4.6	99	<5	1.6	Trench J12 (stope)	0.85	vert channel	in stope/adit, on wall opposite portal. Sheared chl-talcose diorite? or serp? on strike of zone sampled as 7640. Included 10 cm str Fe ox zone.
7642	21.8	10.8	49	<5	16.7	Trench J12 (stope)	0.8	vert channel	at base of inclined stope. tt of zone not exposed due to sloughing in stope. Sample is gossan with 30% cobbles of massive apy-py.
7643	0.3	0.3	86	<5	0.4	Trench J12	1.1	vert channel	on S face above portal to stoped area. Weak-mod Fe ox shear zone in diorite in hwall of zone that was stoped on.
7644	0.8	0.6	85	<5	1.0	Trench J34-6 (adit)	1.7	vert channel	On N wall of adit, 3 m in from portal. 1.7 m tt across v sheared, mod-str Fe ox listw with minor gossan.
7645	4.2	0.7	16	<5	10.0	Trench J34-6 (adit)	1.2	vert channel	1.2 m tt from backs down at end of adit (9 m from portal). Mod Fe ox listw with 2 bands of str Fe ox + gossan (these make up about 40% of sample). Sample includes 10% massive apy cobbles. Sharp hwall to zone @ 100/38°S.
7646	3.0	0.5	15	8	6.9	Trench J34-6 (adit)	1.4	vert channel	1.4 m tt across weak-mod Fe ox zone with minor massive apy cobbles. Sample is on S wall of adit, 7 m in from portal.
7647	1.4	1.0	73	<5	1.6	Trench J34-6 (adit)	1.4	vert channel	Same as 7646, @ 5 m from portal.

## APPENDIX 2

### Analytical Results





# ALS Chemex

EXCELLENCE IN ANALYTICAL CHEMISTRY

ALS USA Inc.

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406 EAST LAKE ROAD  
OROVILLE WA 98844

Page #: 1  
Date : 8-Jul-2003  
Account: HALWIL

## CERTIFICATE VA03021413

Project : Athelstan

P.O. No:

This report is for 123 ROCK samples submitted to our lab in North Vancouver, BC, Canada on 19-Jun-2003.

The following have access to data associated with this certificate:

LINDA CARON

DICK WALTERS

## SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

## ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
As-AA46	Ore grade As - aqua regia/AA	AAS
Cu-AA45	Trace Cu-Aqua Regia Digestion	AAS
Pb-AA45	Trace Pb - aqua regia/AAS	AAS
Zn-AA45	Trace Zn - aqua regia/AAS	AAS
ME-GRA21	Au Ag 30g FA-GRAV finish	WST-SIM
Au-AA13	Au by cyanide leach and AAS	AAS

To: HALLAUER, WILBUR  
ATTN: LINDA CARON  
BOX 2493  
GRAND FORKS BC V0H 1H0 CANADA

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

Signature:



# ALS Chemex

**EXCELLENCE IN ANALYTICAL CHEMISTRY**

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Page #: 2 - A  
 Total # of pages : 5 (A)  
 Date : 8-Jul-2003  
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Project : Athelstan

<b>CERTIFICATE OF ANALYSIS</b>	<b>VA03021413</b>
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Sample Description	Method Analyte Units LOR	WEI-21	ME-GRA21	ME-GRA21	Au-AA13	As-AA46	Cu-AA45	Pb-AA45	Zn-AA45
		Recvd Wt kg 0.02	Au ppm 0.05	Ag ppm 5	Au ppm 0.03	As %	Cu ppm 1	Pb ppm 1	Zn ppm 1
7525		4.30	0.40	<5	0.25	0.61			
7526		4.64	0.85	<5	0.80	0.57	473	49	94
7527		5.34	1.52	7	1.24	1.13			
7528		5.48	1.57	<5	1.10	2.13			
7529		3.00	0.13	<5	0.05	0.52			
7530		7.86	1.93	5	1.39	2.49			
7531		4.20	0.79	<5	0.76	2.30			
7532		5.34	5.14	17	2.81	5.81			
7533		4.80	2.50	<5	2.09	3.07			
7534		4.52	<0.05	<5	0.06	0.31	267	123	165
7535		5.26	2.54	5	1.81	1.25			
7536		4.82	0.60	<5	0.62	0.08	828	9	396
7537		4.20	6.01	15	3.37	6.52			
7538		4.56	1.41	62	1.10	0.37			
7539		3.64	4.98	48	2.67	8.24			
7540		1.96	1.67	45	1.70	2.75			
7541		6.04	<0.05	<5	0.06	0.21	1345	58	467
7542		3.54	2.43	56	1.89	4.63			
7543		2.48	6.69	88	4.10	7.65			
7544		2.38	0.20	<5	0.25	0.99			
7545		4.40	6.85	48	4.45	3.42			
7546		4.54	0.21	<5	0.18	1.19			
7547		7.68	0.68	6	0.65	0.63	1050	58	180
7548		7.54	7.95	190	3.55	8.22	1970	548	125
7549		9.16	1.36	100	1.18	1.28			
7550		3.22	1.31	5	1.40	1.34			
7551		4.06	0.61	9	0.65	0.57			
7552		2.56	0.07	<5	0.11	0.34			
7553		2.24	3.10	6	2.39	2.89			
7554		4.06	0.13	<5	0.13	0.24	551	30	60
7555		3.88	28.4	166	7.14	12.95			
7556		4.18	0.25	<5	0.23	0.85			
7557		3.32	0.17	<5	0.19	1.98			
7558		5.34	0.51	15	0.44	2.42			
7559		6.74	5.83	<5	4.23	6.12			
7560		2.56	<0.05	<5	<0.03	0.07			
7561		3.52	<0.05	<5	<0.03	0.09			
7562		1.84	12.85	8	12.75	7.53			
7563		1.98	0.70	<5	0.84	0.44			
7564		1.64	14.70	8	14.10	3.36			



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ALS USA Inc.

994 Glendale Avenue, Unit 3  
 Sparks Nevada 89431-5730 USA  
 Phone: 775 356 5395 Fax: 775 355 0179

To: HALLAUER, WILBUR  
 406 EAST LAKE ROAD  
 OROVILLE WA 98844

Page #: 3 - A  
 Total # of pages : 5 (A)  
 Date : 8-Jul-2003  
 Account: HALWIL

Project : Athelstan

CERTIFICATE OF ANALYSIS	VA03021413
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Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt kg 0.02	ME-GRA21 Au ppm 0.05	ME-GRA21 Ag ppm 5	Au-AA13 Au ppm 0.03	As-AA46 As % 0.01	Cu-AA45 Cu ppm 1	Pb-AA45 Pb ppm 1	Zn-AA45 Zn ppm 1
7565		1.90	<0.05	<5	0.07	0.02			
7566		3.76	1.44	<5	1.58	0.50			
7567		1.76	<0.05	<5	<0.03	0.03			
7568		1.78	<0.05	<5	<0.03	0.05			
7569		1.78	1.80	15	1.85	1.29			
7570		2.12	0.25	<5	0.24	1.20			
7571		2.40	<0.05	<5	<0.03	0.09			
7572		3.20	<0.05	<5	<0.03	0.01			
7573		2.42	0.95	<5	0.65	0.15			
7574		2.38	15.70	10	12.35	4.78			
7575		1.72	0.10	<5	0.07	0.59			
7576		2.60	2.13	<5	1.91	0.76			
7577		2.62	<0.05	<5	0.09	0.22			
7578		4.04	19.15	23	10.25	8.11			
7579		2.28	<0.05	<5	0.08	0.34			
7580		1.88	0.67	<5	0.62	0.38			
7581		3.10	26.7	32	8.84	17.80			
7582		3.28	1.37	<5	0.99	1.00			
7583		3.68	19.70	64	6.53	16.00			
7584		3.18	<0.05	<5	0.04	0.40			
7585		5.04	3.87	<5	1.76	4.73			
7586		3.22	<0.05	<5	<0.03	0.16			
7587		3.60	23.9	42	9.00	18.30			
7588		2.54	4.08	8	3.95	3.92			
7589		1.84	25.0	48	8.96	26.3			
7590		2.82	0.78	<5	0.67	1.24			
7591		2.36	20.3	27	11.35	8.14			
7592		2.12	10.95	22	7.93	5.76			
7593		2.94	17.00	51	12.05	9.53			
7594		2.36	5.87	43	6.09	2.11			
7595		2.36	<0.05	<5	0.04	0.18			
7596		1.58	1.36	12	1.23	0.91			
7597		3.14	<0.05	<5	0.04	0.15			
7598		3.76	5.24	<5	4.26	3.70			
7599		2.02	0.42	<5	0.42	0.26			
7600		5.60	12.40	102	9.66	5.75			
7601		2.24	<0.05	<5	0.05	0.22			
7602		2.66	7.31	11	6.43	2.15			
7603		2.24	7.03	20	5.36	3.88			
7604		1.82	16.85	31	12.75	7.04			



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10. HALLAGER, WILBUR  
 406 EAST LAKE ROAD  
 OROVILLE WA 98844

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 Total # of pages : 5 (A)  
 Date : 8-Jul-2003  
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Project : Athelstan

**CERTIFICATE OF ANALYSIS**      **VA03021413**

Sample Description	Method Analyte Units LOR	WEI-21	ME-GRA21	ME-GRA21	Au-AA13	As-AA46	Cu-AA45	Pb-AA45	Zn-AA45
		Recvd Wt kg 0.02	Au ppm 0.05	Ag ppm 5	Au ppm 0.03	As % 0.01	Cu ppm 1	Pb ppm 1	Zn ppm 1
7605		3.62	<0.05	<5	0.08	0.09			
7606		4.08	<0.05	<5	0.07	0.03			
7607		2.54	2.30	<5	2.28	1.86			
7608		4.72	2.29	<5	2.19	0.59			
7609		3.48	2.19	6	2.01	0.74			
7610		3.26	0.46	<5	0.45	0.65			
7611		4.66	2.36	<5	2.22	2.08			
7612		4.26	2.19	<5	1.81	4.10			
7613		2.66	0.07	<5	0.04	0.43			
7614		4.98	4.69	<5	4.28	9.44			
7615		3.32	2.92	<5	2.70	5.79			
7616		2.78	<0.05	<5	0.05	0.53			
7617		4.52	1.40	<5	1.46	2.87			
7618		4.92	1.67	<5	1.72	2.44			
7619		4.66	1.05	9	1.02	1.77			
7620		4.06	0.57	<5	0.52	1.38			
7621		4.60	1.01	<5	0.35	1.87			
7622		3.92	7.32	<5	7.07	1.80			
7623		4.38	1.45	<5	1.44	2.70			
7624		2.04	3.98	<5	3.12	2.09			
7625		2.18	0.33	<5	0.39	0.33			
7626		1.46	4.49	15	4.33	0.72			
7627		1.66	<0.05	<5	0.03	0.10			
7628		2.26	0.06	<5	0.04	0.04			
7629		5.38	1.87	<5	2.03	2.80			
7630		2.24	<0.05	<5	0.05	0.40			
7631		2.16	<0.05	<5	<0.03	0.22			
7632		1.46	<0.05	<5	<0.03	0.14			
7633		5.36	1.39	<5	1.40	0.57			
7634		2.12	2.49	9	2.55	0.85			
7635		3.00	5.56	5	5.09	3.12			
7636		2.32	0.56	<5	0.52	1.51			
7637		6.72	1.62	<5	1.65	0.51			
7638		2.58	2.01	6	2.03	0.64			
7639		2.02	0.42	<5	0.42	0.19			
7640		2.06	<0.05	<5	0.05	0.16			
7641		2.44	4.65	<5	4.59	1.59			
7642		2.60	21.8	<5	10.75	16.65			
7643		2.46	0.29	<5	0.25	0.35			
7644		3.06	0.75	<5	0.64	0.99			



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Project : Athelstan

## CERTIFICATE OF ANALYSIS VA03021413

Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt kg	ME-GRA21 Au ppm	ME-GRA21 Ag ppm	Au-AA13 Au ppm	As-AA46 As %	Cu-AA45 Cu ppm	Pb-AA45 Pb ppm	Zn-AA45 Zn ppm
		0.02	0.05	5	0.03	0.01	1	1	1
7645		2.82	4.21	<5	0.66	10.00			
7646		2.84	2.97	8	0.45	6.93			
7647		2.64	1.36	<5	0.99	1.59			

## APPENDIX 3

### Cost Statement

## COST STATEMENT

### ATHELSTAN - JACKPOT PROPERTY

May 1/03 to December 30/03

#### Labour

R. Walters	Geologist project supervision, management, geology (including travel, room and board)		\$ 4,460.00
L. Caron	Geologist      13 days @ \$454.75 geological mapping, trench supervision, mapping & sampling, report preparation		\$ 5,911.75
J. Kemp	Prospector      8 days @ \$240.75 trench cleanout and sampling		\$ 1,926.00
			<u>\$12,297.75</u>

#### Trenching

Excavator and Operator - Lime Creek Logging, Grand Forks B.C. 34 hours @ \$133.83/hr including mob and demob		\$ 4,550.18
---	--	-------------

#### Geochemical Analyses

Au, Ag Assay + CN Leach Au Assay + As (& select Cu, Pb, Zn) Chemex Labs, Vancouver B.C. 123 rock samples @ \$ 45.48/sample including shipping		\$ 5,593.50
---	--	-------------

Vehicle rental 10 days @ \$50/day		\$ 500.00
Misc field & office supplies (paint, bags, photocopying, etc)		\$ 125.00
Drafting - W. Reich, Spokane WA		\$ 1,107.21
Drafting & map plotting - Wildrock Resources, Kamloops		<u>\$ 139.10</u>
		\$ 1,871.31

**TOTAL:      \$ 24,312.74**

\* All costs include GST

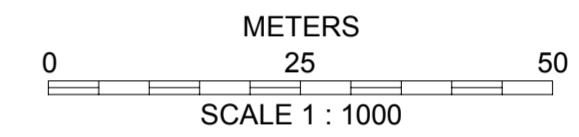
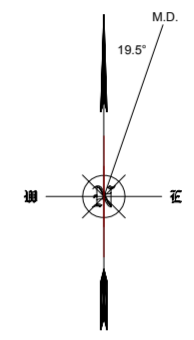
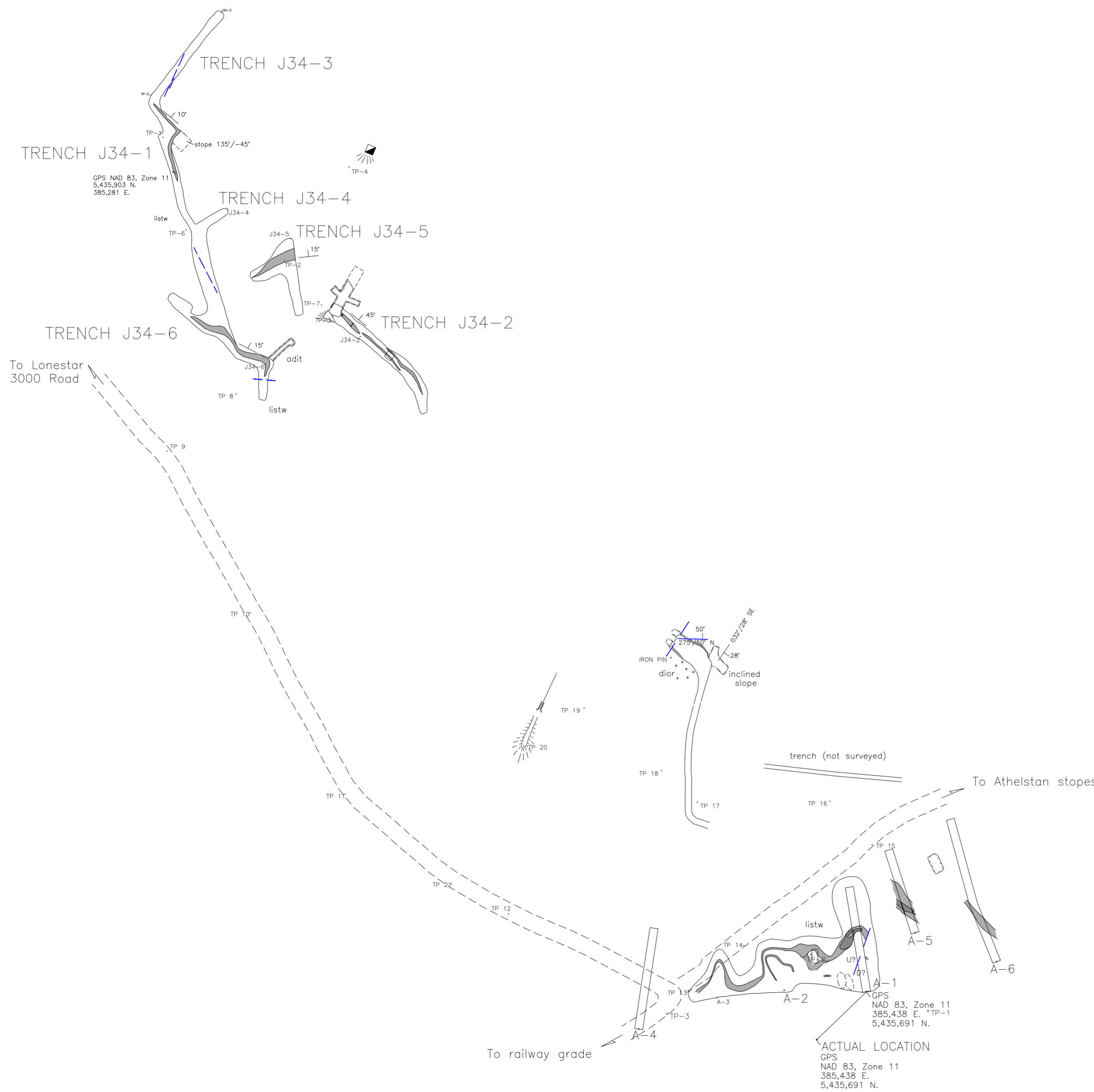
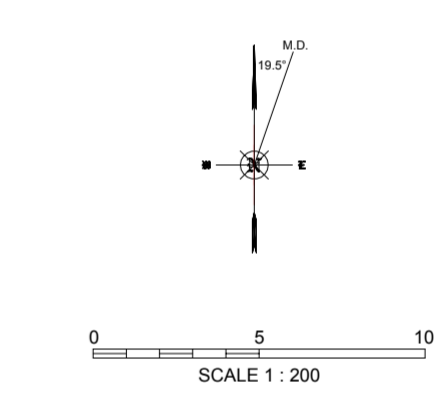
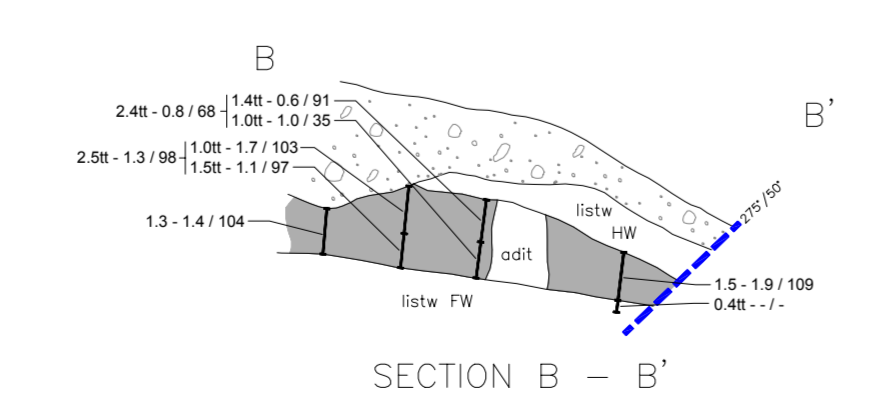
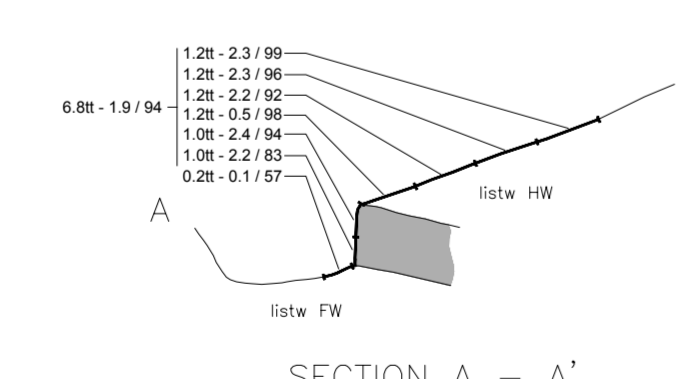
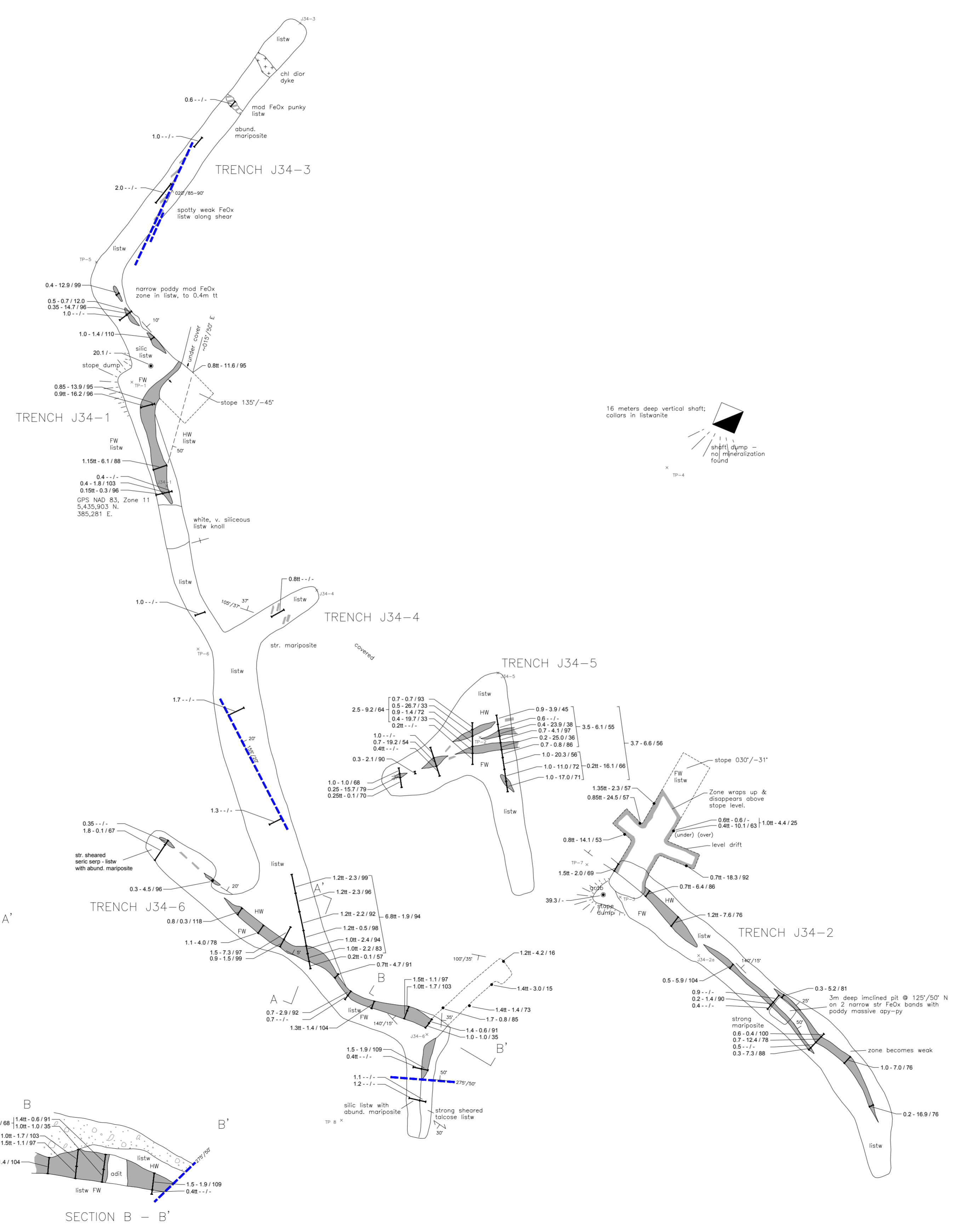


FIGURE 4  
**ATHELSTAN - JACKPOT**  
 PROPERTY OF W. G. HALLAUER  
 GRAND FORKS, BRITISH COLUMBIA  
 CANADA  
**ZONES J-34, J-12 AND "A"**  
**LOCATION MAP**

Linda Caron 07/02

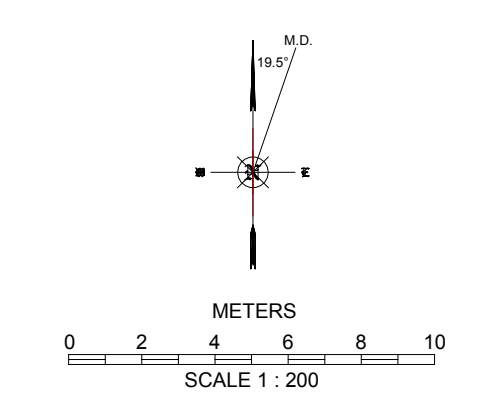
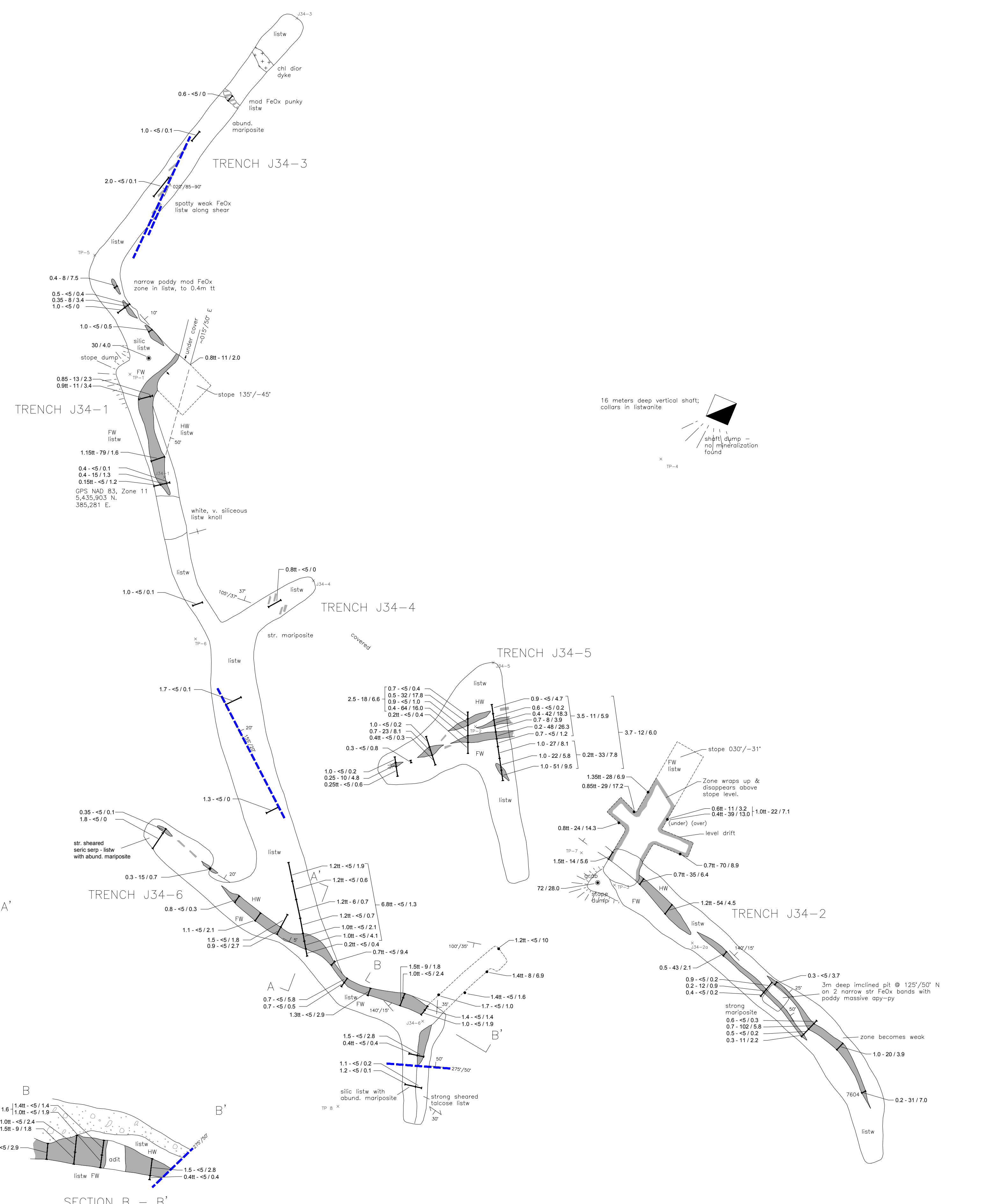






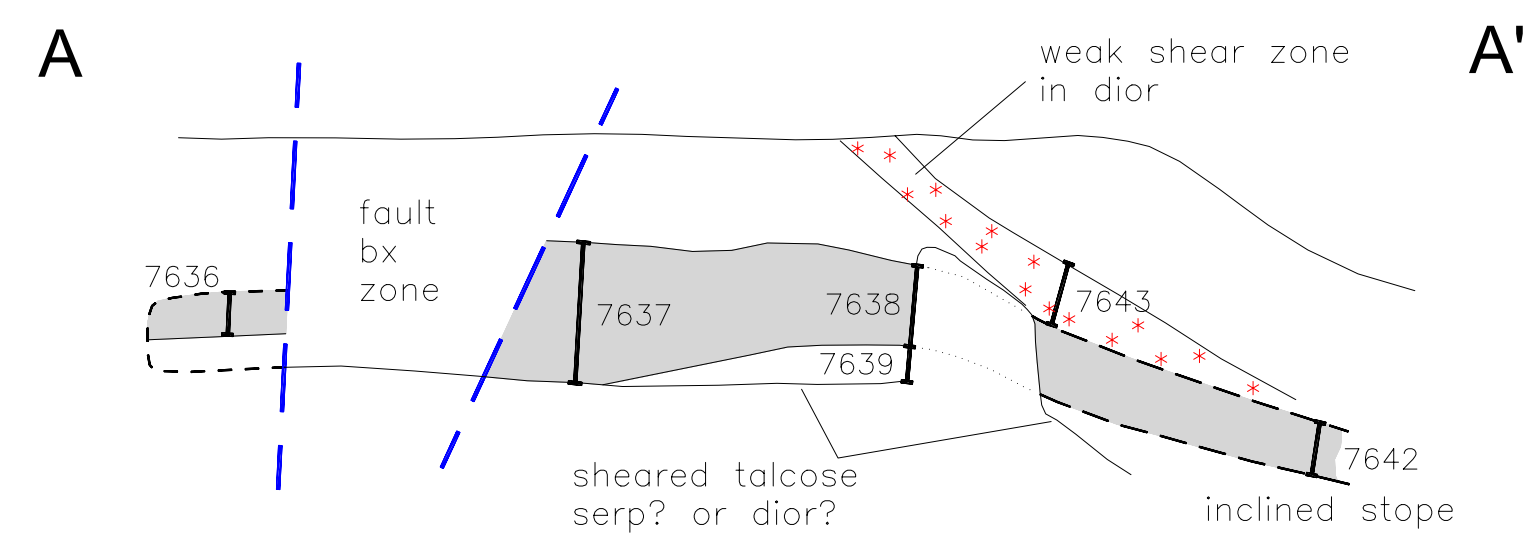
- EXPLANATION**
- Overburden
  - Possible altered diorite.
  - Mineralized horizon: gossan and/or arsenopyrite.
  - Listwanite
  - 1.1 - 2.1 / 46 Channel sampled meters - Au g/t / % CN Sol. Au.
  - tt True thickness
  - Grab sample
  - Vertical channel sample location
  - Horizontal or subhorizontal or subvertical channel sample location.
  - J-34 x Survey control or turning point, (tp).
  - A A' Cross section line

FIGURE 5B  
 ATHELSTAN - JACKPOT PROPERTY  
 GRAND FORKS, BRITISH COLUMBIA  
 CANADA  
**J-34 AREA**  
**GOLD + % CN Sol. GOLD**  
**BASE MAP**  
 LC / DW / JK June, 2003

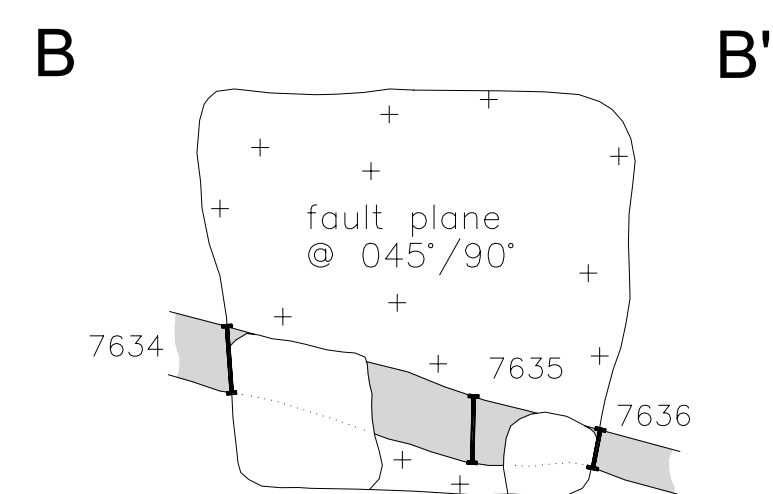


- EXPLANATION**
- Overburden
  - Possible altered diorite.
  - Mineralized horizon; gossan and/or arsenopyrite.
  - Listwanite
  - 1.1 - 2 / .006 Channel sampled meters - Ag gt / As %.
  - tt True thickness
  - Grab sample
  - ⊙ Vertical channel sample location
  - ⊙ Horizontal or subhorizontal or subvertical channel sample location.
  - J-34 × Survey control or turning point, (tp).
  - A-A' Cross section line

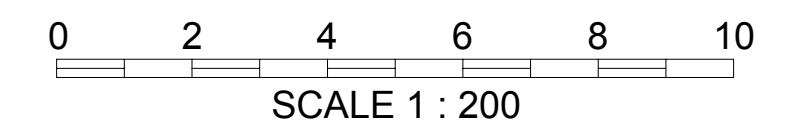
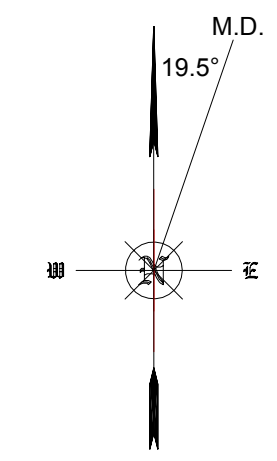
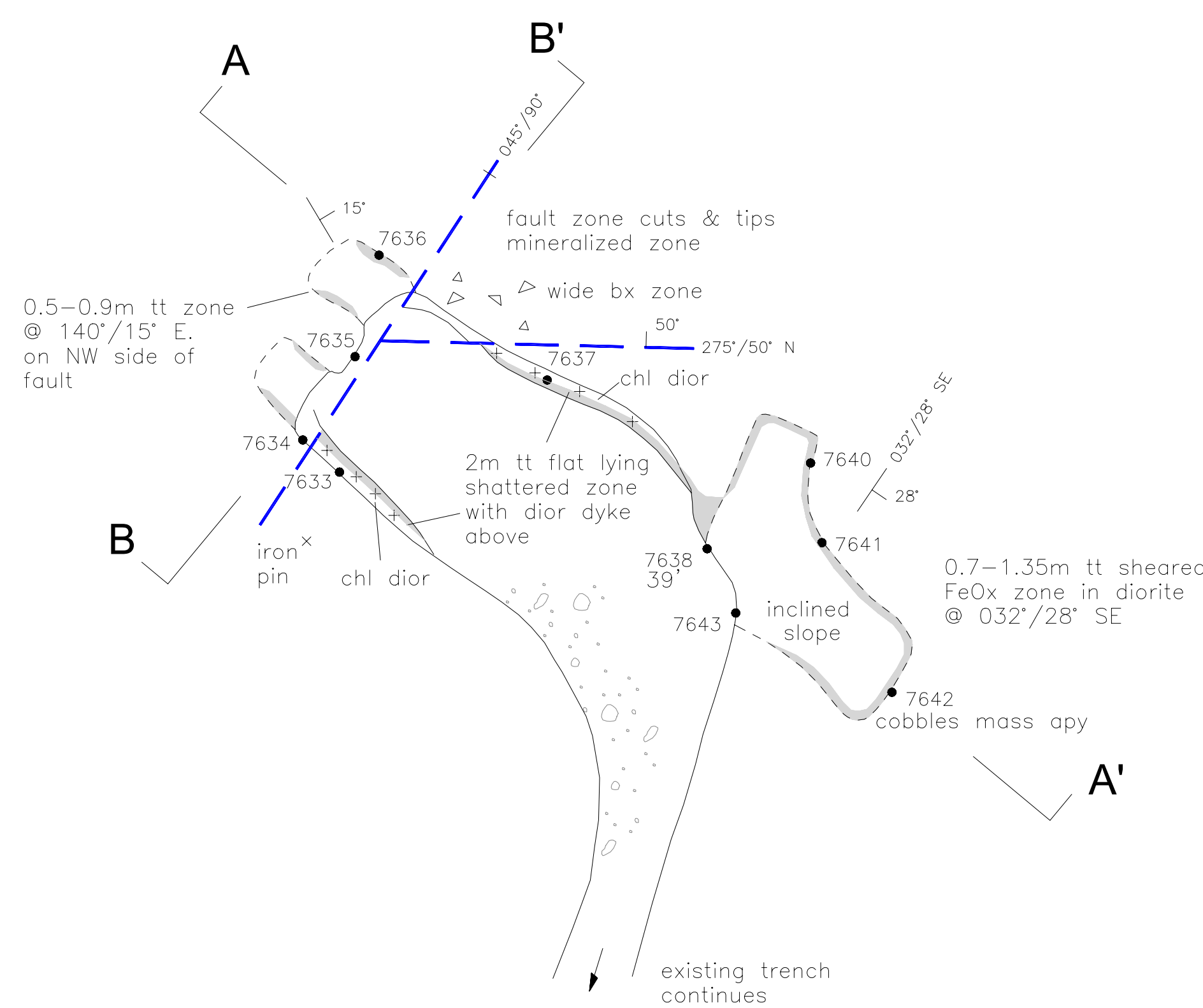
FIGURE 5C  
 ATHELSTAN - JACKPOT PROPERTY  
 GRAND FORKS, BRITISH COLUMBIA  
 CANADA  
**J-34 AREA**  
**SILVER + ARSENIC OVERLAY**  
 LC / DW / JK June, 2003



CROSS SECTION A - A'



CROSS SECTION B - B'

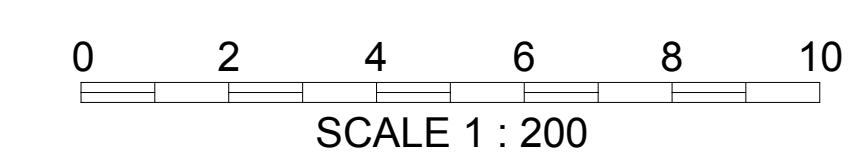
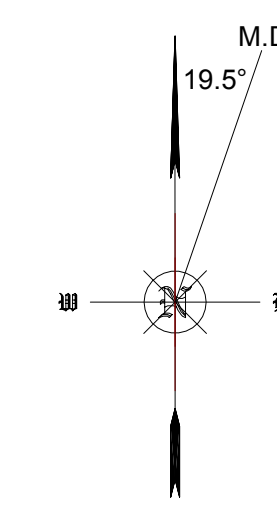


EXPLANATION

- Overburden
- Fine grained diorite (dior)
- Mineralized horizon; sheared FeOx, gossan and/or arsenopyrite.
- Ferricrete zone
- tt** True thickness
- 2556** Sample number
- Grab sample
- Vertical channel sample location
- Horizontal or subhorizontal or subvertical channel sample location.
- J-34** Survey control or turning point, (TP).
- A** Cross section line

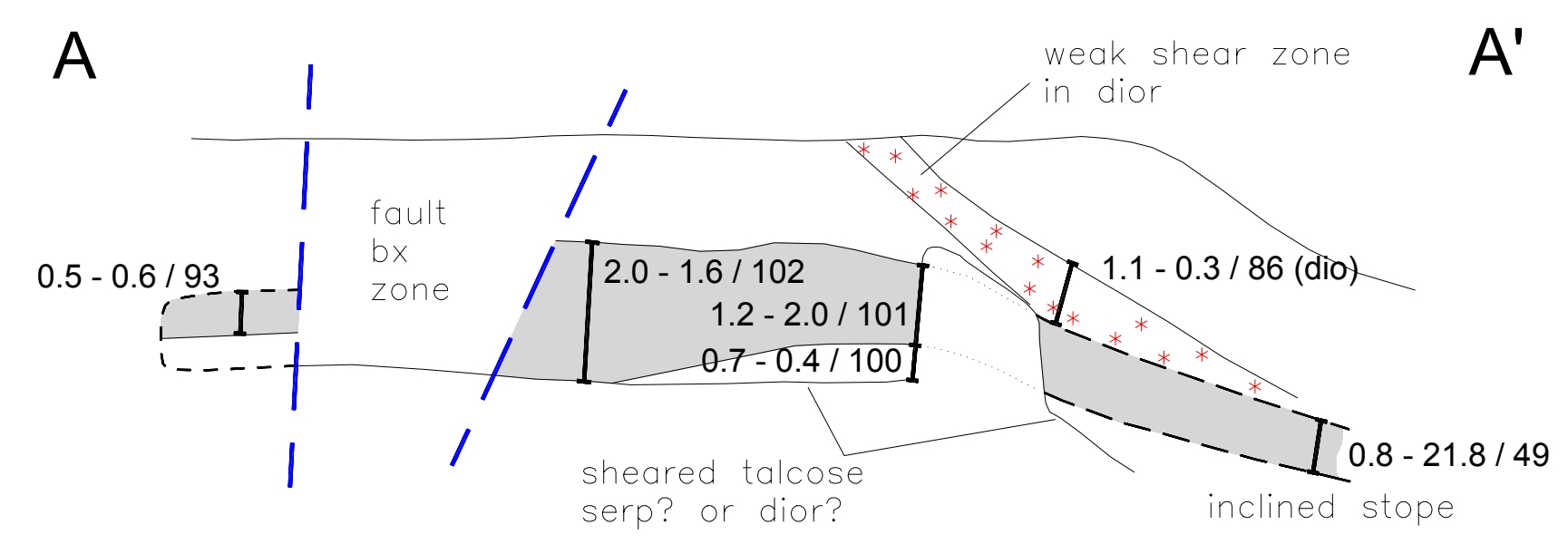
FIGURE 6A  
 ATHELSTAN - JACKPOT PROPERTY  
 GRAND FORKS, BRITISH COLUMBIA  
 CANADA  
**J-12 ZONE**  
**SAMPLE NUMBERS OVERLAY**

LC / DW / JK 07/08/03

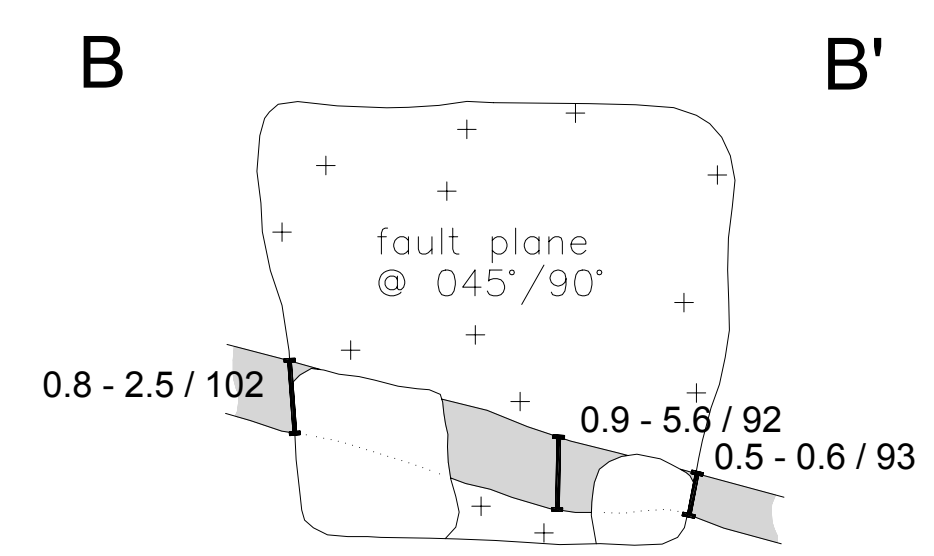


EXPLANATION

- Overburden
- Fine grained diorite (dior)
- Mineralized horizon; sheared FeOx, gossan and/or arsenopyrite.
- Ferricrete zone
- tt True thickness
- 1.1 - 5.6 / 46 Channel sampled meters - Au g/t / % CN Sol. Au.
- Grab sample
- Vertical channel sample location
- Horizontal or subhorizontal or subvertical channel sample location.
- J-34 Survey control or turning point, (TP).
- A A' Cross section line



CROSS SECTION A - A'



CROSS SECTION B - B'

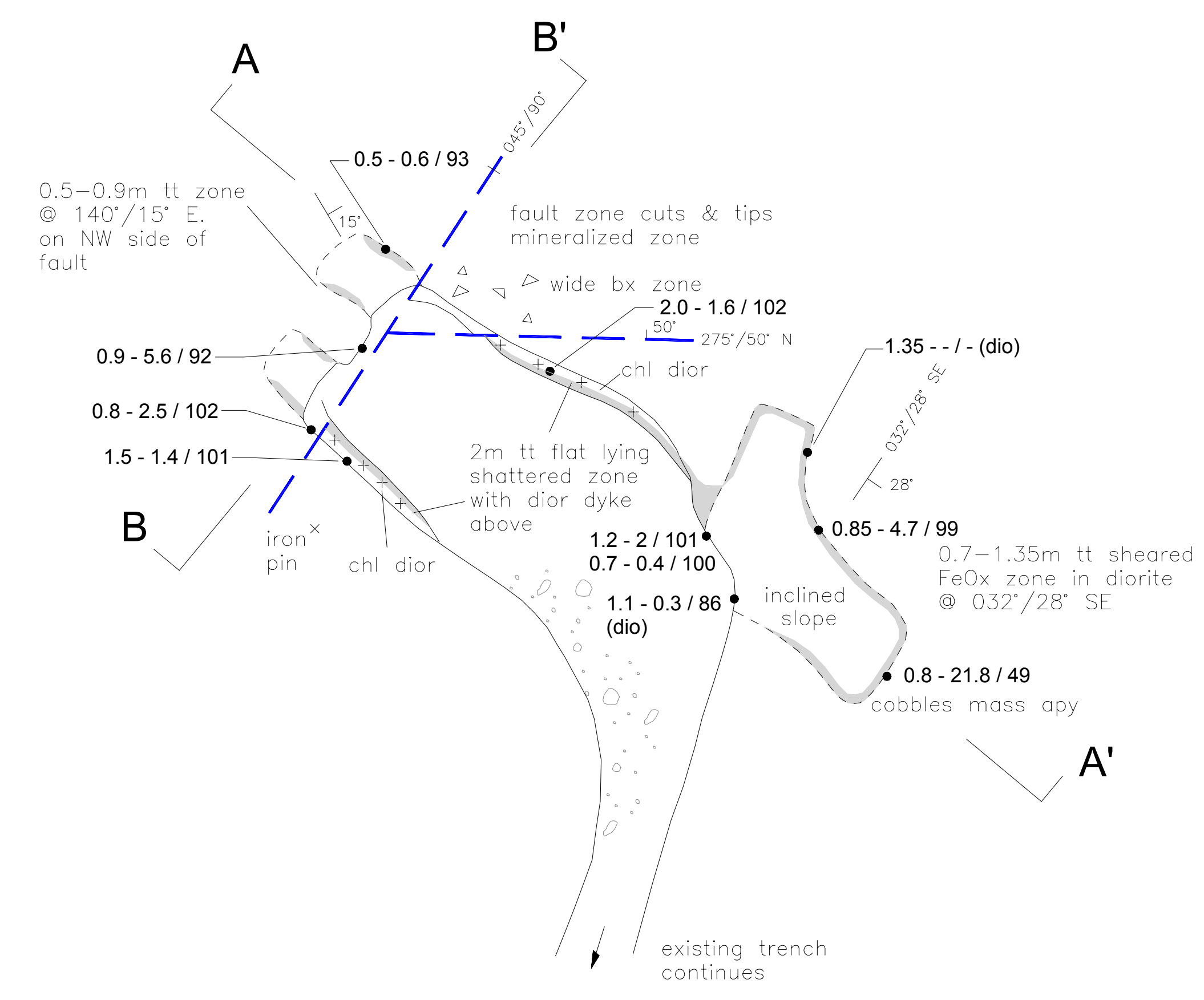
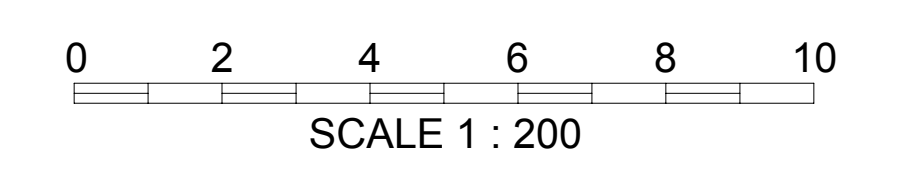
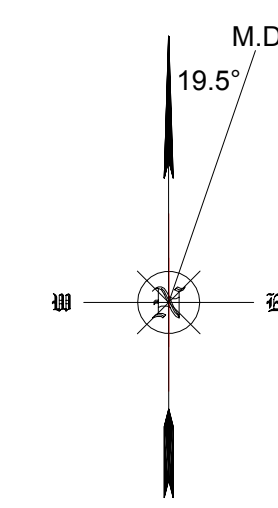
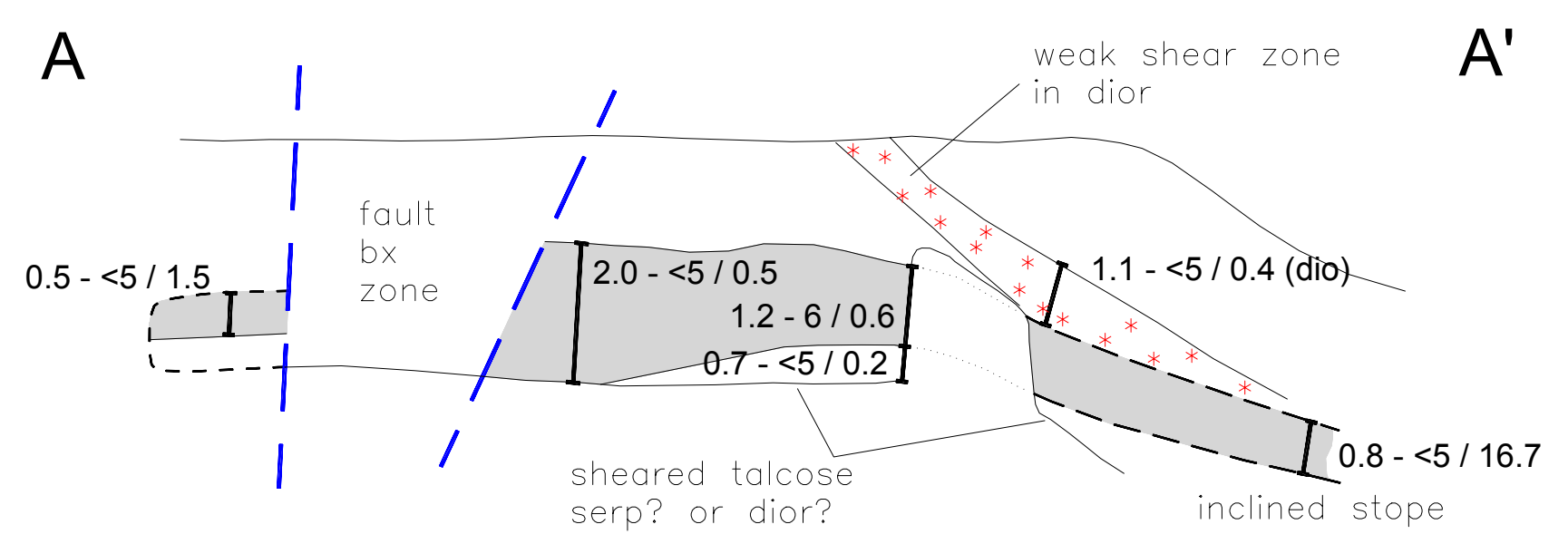


FIGURE 6B  
 ATHELSTAN - JACKPOT PROPERTY  
 GRAND FORKS, BRITISH COLUMBIA  
 CANADA  
**J-12 ZONE**  
**GOLD + % CN Sol. GOLD**  
**BASE MAP**  
 LC / DW / JK 07/08/03

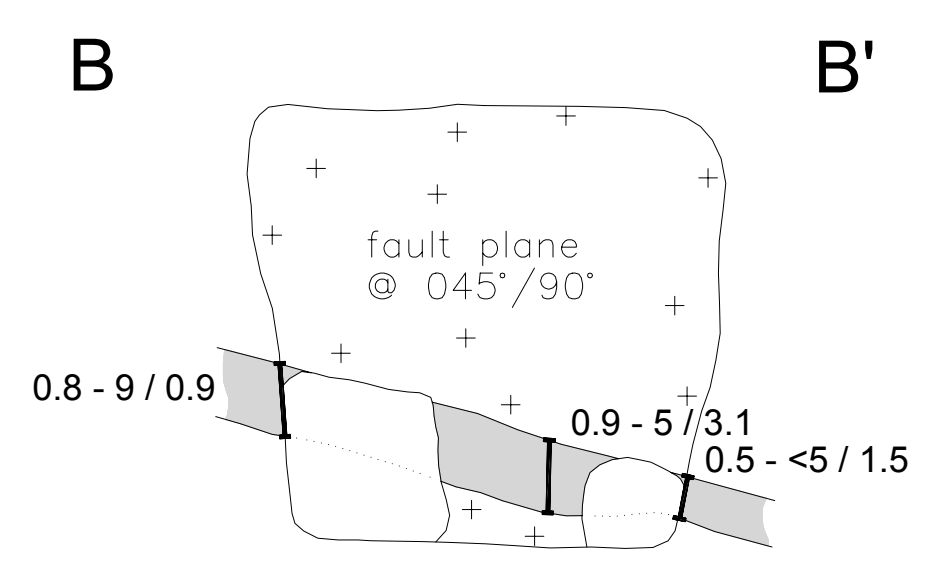


EXPLANATION

- Overburden
- Fine grained diorite (dior)
- Mineralized horizon; sheared FeOx, gossan and/or arsenopyrite.
- Ferricrete zone
- tt True thickness
- 1.1 - <5 / 1.6 Channel sampled meters - Ag g/t / As %.
- Grab sample
- Vertical channel sample location
- Horizontal or subhorizontal or subvertical channel sample location.
- J-34 Survey control or turning point, (TP).
- A A' Cross section line



CROSS SECTION A - A'



CROSS SECTION B - B'

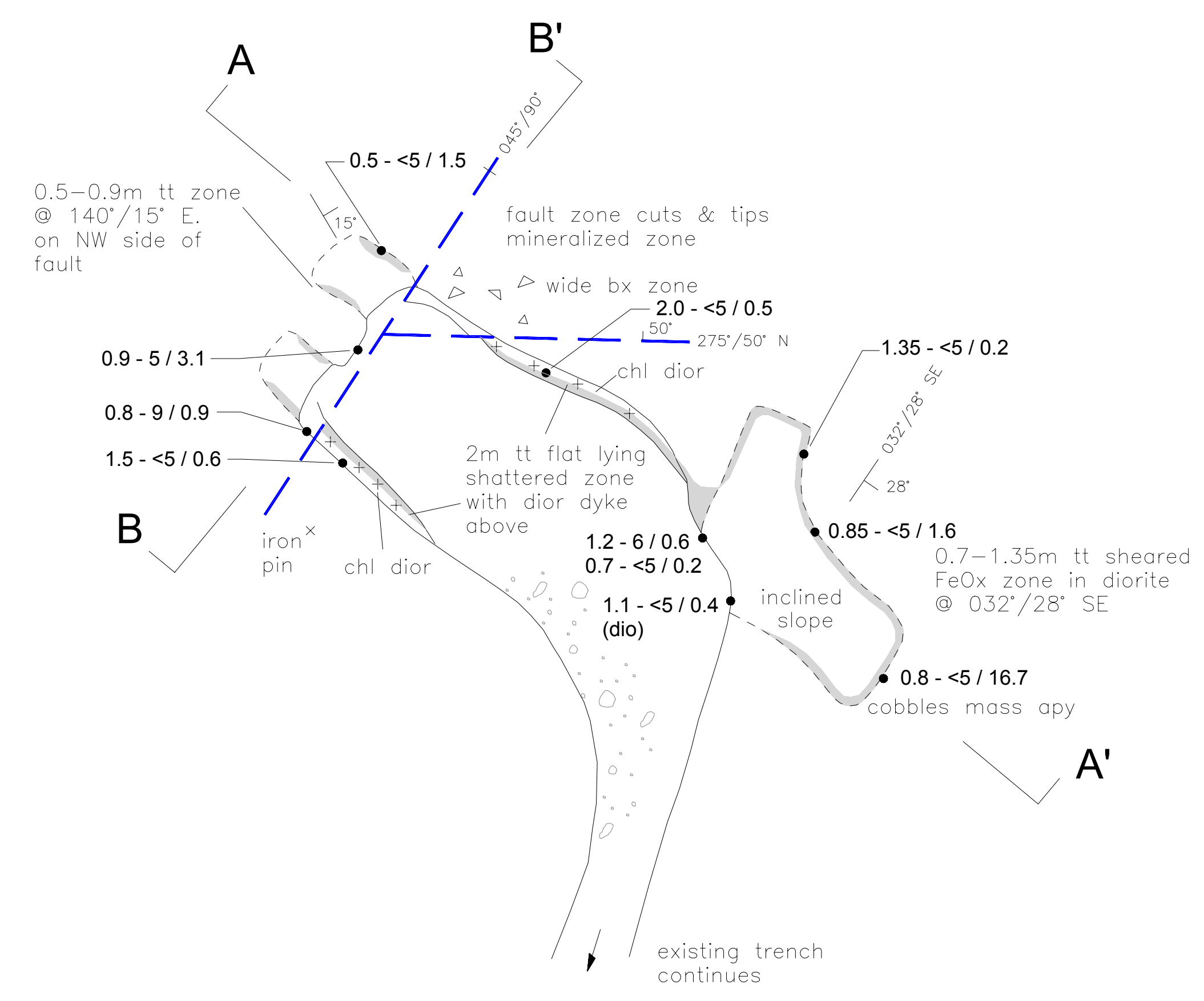
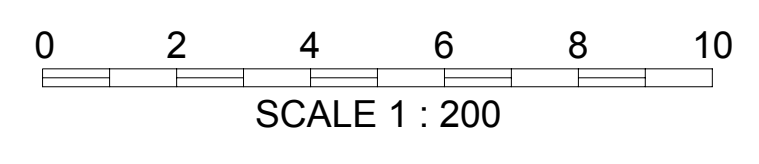
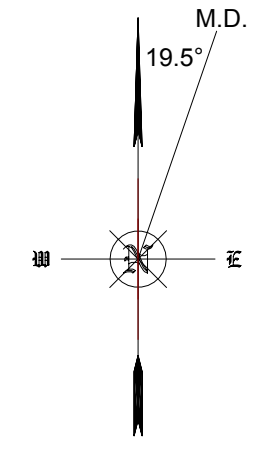
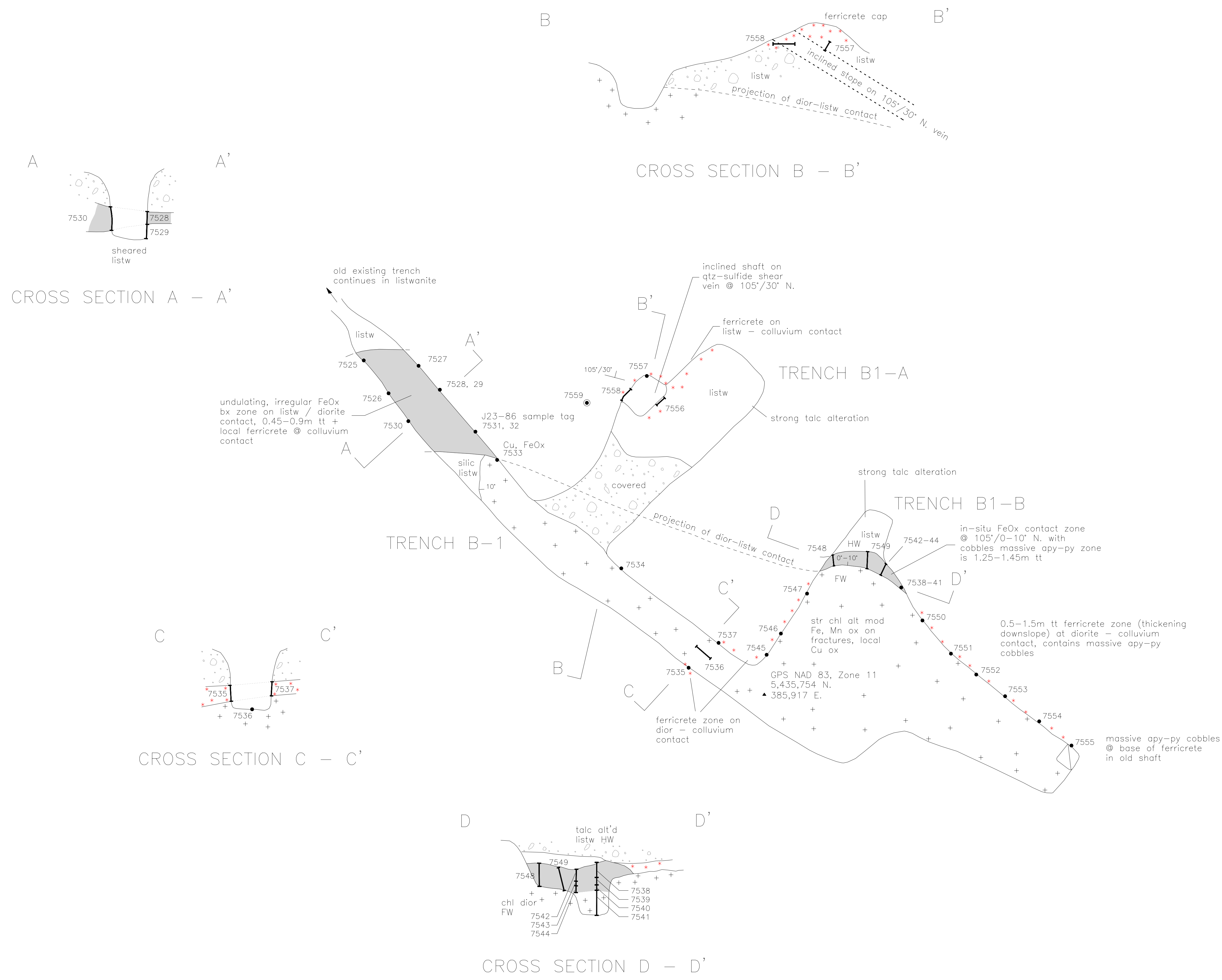


FIGURE 6C  
 ATHELSTAN - JACKPOT PROPERTY  
 GRAND FORKS, BRITISH COLUMBIA  
 CANADA  
**J-12 ZONE**  
**SILVER + ARSENIC OVERLAY**

LC / DW / JK 07/08/03

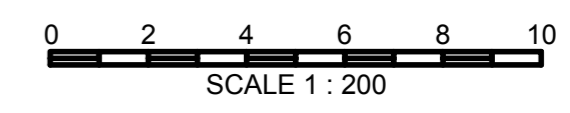
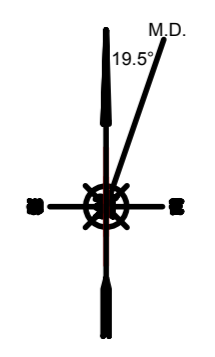
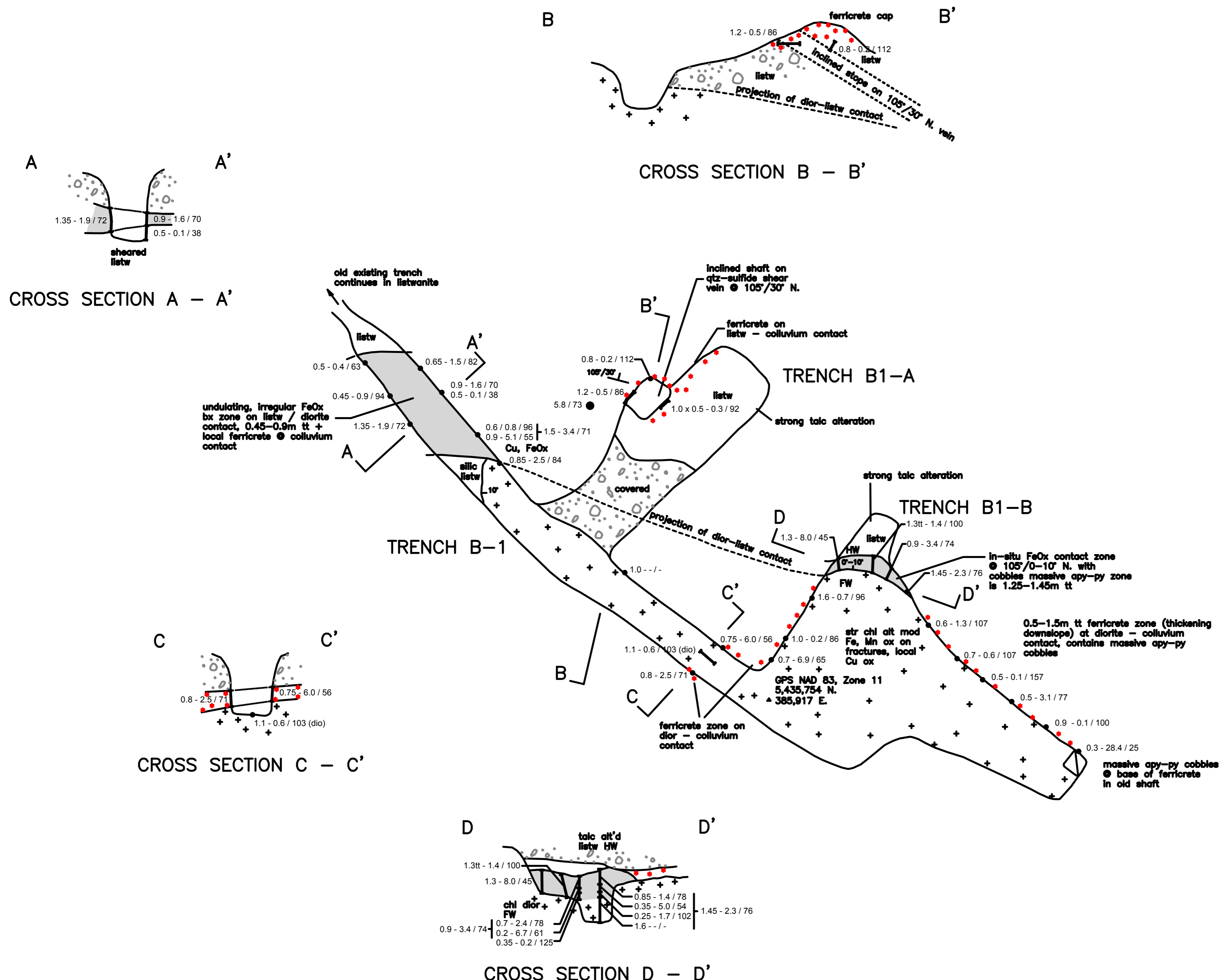


**EXPLANATION**

- Overburden
- Fine grained diorite (dior)
- Mineralized horizon; sheared FeOx, gossan and/or arsenopyrite.
- Ferricrete zone
- Listw** Listwanite
- tt** True thickness
- 2556** Sample number
- Grab sample
- Vertical channel sample location
- Horizontal or subhorizontal or subvertical channel sample location.
- J-34** Survey control or turning point, (TP).
- A A'** Cross section line

FIGURE 7A  
**ATHELSTAN - JACKPOT PROPERTY**  
 GRAND FORKS, BRITISH COLUMBIA  
 CANADA  
  
**B1 ZONE**  
**SAMPLE NUMBERS OVERLAY**

LC / DW / JK 07/08/03



**EXPLANATION**

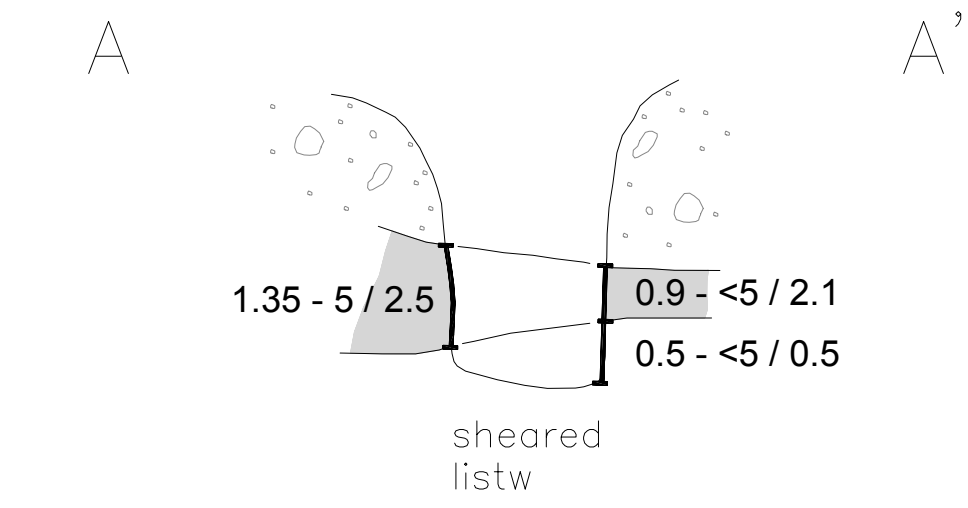
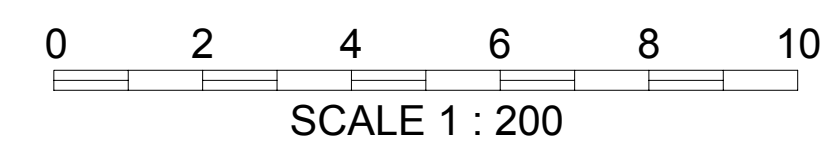
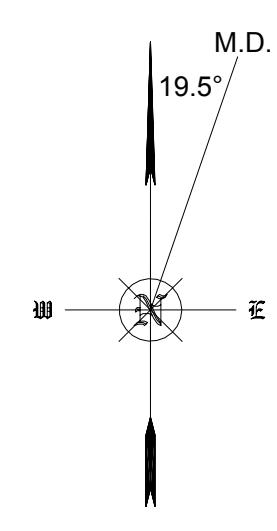
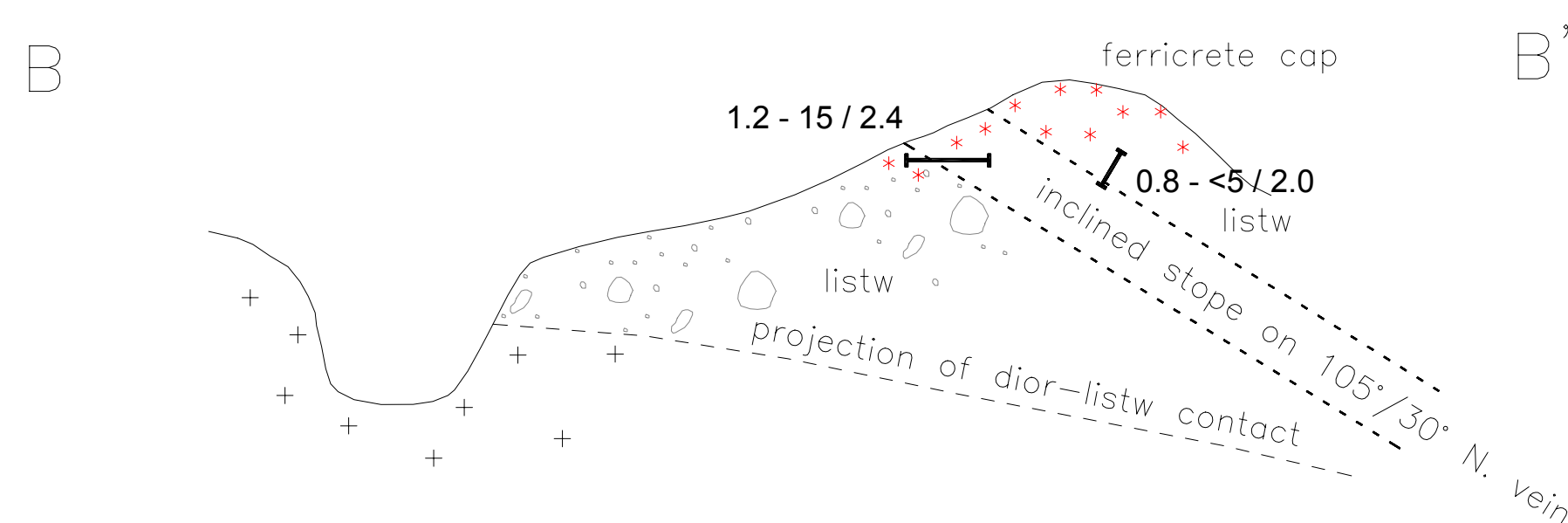
- Overburden
- Fine grained diorite (dior)
- Mineralized horizon; sheared FeOx, gossan and/or arsenopyrite.
- Ferricrete zone
- Listw Listwanite
- tt True thickness
- 1.1 - 2.1 / 46 Channel sampled meters - Au g/t / % CN Sol. Au.
- Grab sample
- Vertical channel sample location
- Horizontal or subhorizontal or subvertical channel sample location.
- J-34x Survey control or turning point, (TP).
- Cross section line

FIGURE 7B  
 ATHELSTAN - JACKPOT PROPERTY  
 GRAND FORKS, BRITISH COLUMBIA  
 CANADA

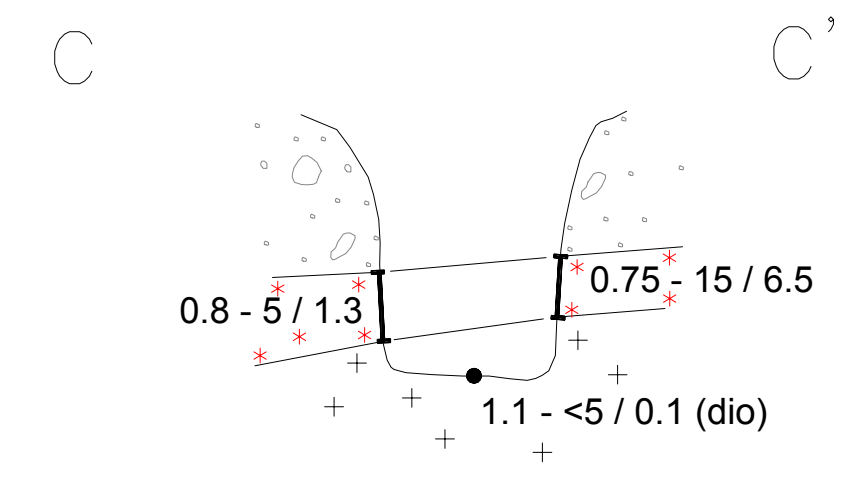
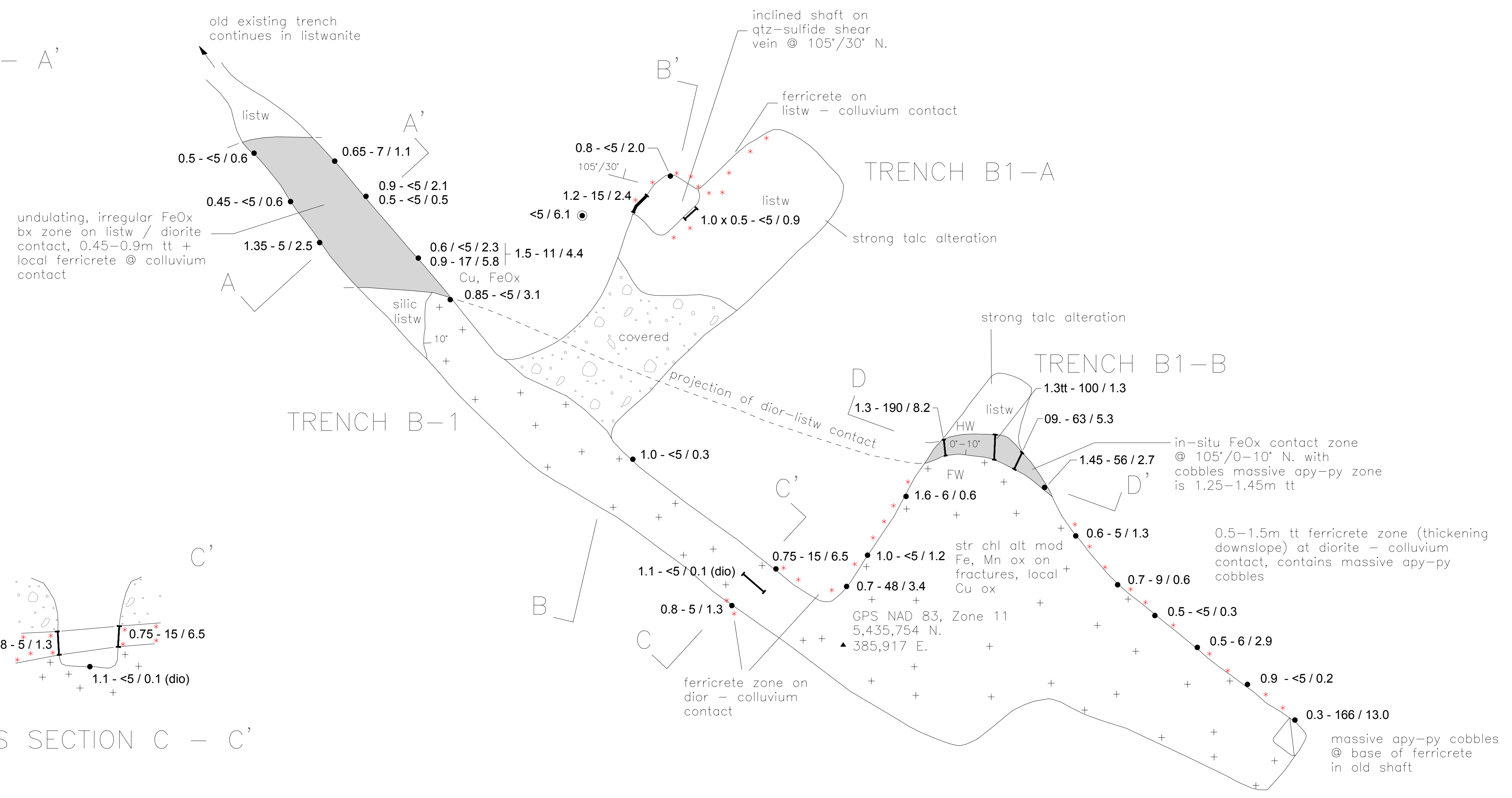
**B1 ZONE**  
**GOLD + % CN Sol. GOLD**  
**BASE MAP**

LC / DW / JK 07/08/03

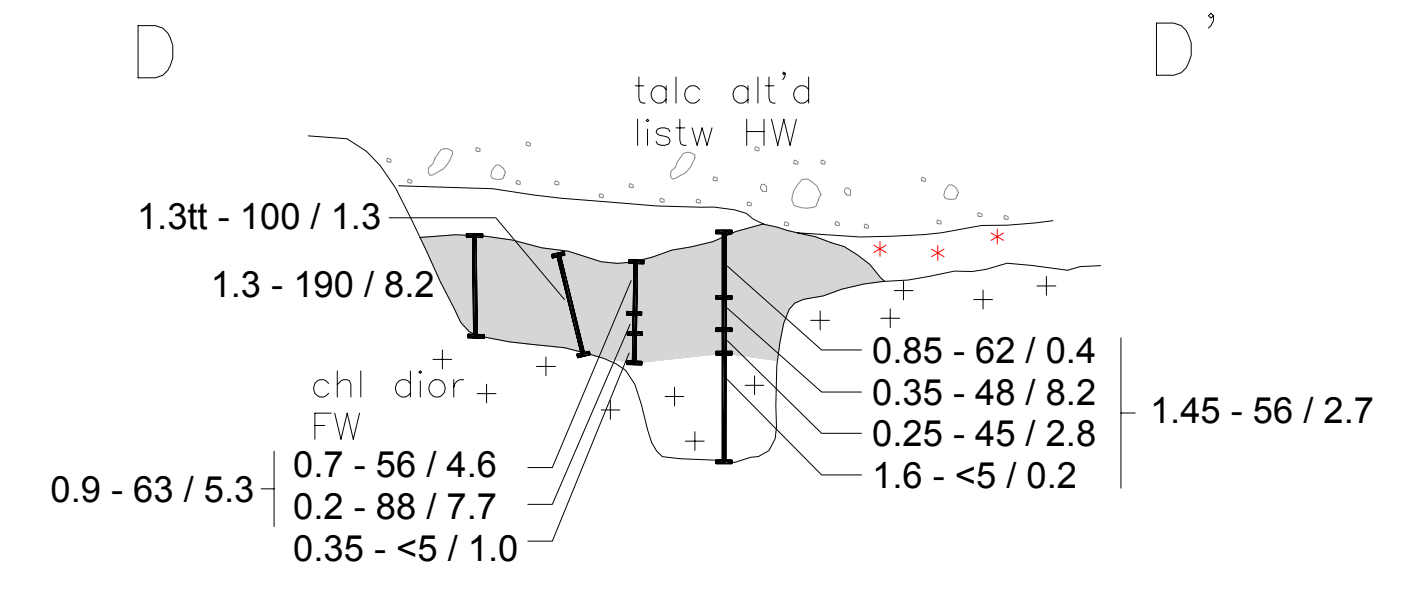




CROSS SECTION A - A'



CROSS SECTION C - C'



CROSS SECTION D - D'

EXPLANATION

- Overburden
- Fine grained diorite (dior)
- Mineralized horizon; sheared FeOx, gossan and/or arsenopyrite.
- Ferricrete zone
- Listw** Listwanite
- tt** True thickness
- 1.1 - 2 / .006 Channel sampled meters - Ag g/t / As %.
- Grab sample
- Vertical channel sample location
- Horizontal or subhorizontal or subvertical channel sample location.
- J-34 x Survey control or turning point, (TP).
- A A' Cross section line

FIGURE 7C  
**ATHELSTAN - JACKPOT PROPERTY**  
 GRAND FORKS, BRITISH COLUMBIA  
 CANADA  
**B1 ZONE**  
**SILVER + ARSENIC OVERLAY**