The mines and geology of the Mongolata Goldfield

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SOUTH AUSTRALIA

Government of South Australia
Department for Energy and Mining

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The mines and geology of the Mongolata Goldfield

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ABSTRACT

Mapping and sampling of 39 adits at Mongolata Goldfield has ensured that a permanent record of the 1930s mines is available for historical and exploration purposes. Many of the workings are no longer accessible. Details of the production history of individual workings are also presented.

Gold mineralisation occurs within multi-orientated, generally cross-cutting quartz-iron oxide (after pyrite and siderite) veins within host quartzite of the Cox Sandstone Member of basal Tarcowie Siltstone, and within an iron oxide-quartz breccia developed on a flat-lying to shallow westerly dipping thrust plane at the contact of Cox Sandstone with underlying Tapley Hill Formation metasiltstone. Geochemical analyses indicate arsenic is a reliable pathfinder for gold, the source of which may be from within host metasediments of lower Umberatana Group and mobilised by saline metamorphic fluids during the Delamerian Orogeny, then deposited in structural and stratigraphic traps.

Mining has been confined to the oxidised zone where gold distribution is irregular, often occurring randomly as high-grade patches of secondary enriched specimen gold. Due to the coarse grain size and uneven distribution of gold, large tonnage bulk samples would be required to test the economic potential of the goldfield.

INTRODUCTION

As part of the ongoing investigation of gold mineralisation within the Adelaide Geosyncline (Preiss 1987), mapping and sampling of the mines at Mongolata Goldfield by the Geological Survey of South Australia (GSSA) have been conducted intermittently between 1984 and 2016.

Mongolata Goldfield, on the *Mongolata* 1:50,000 geological map sheet, is located 16 km northeast of the township of Burra which is some 160 km by road, north-northeast of Adelaide (Fig. 1). The main goldfield workings extend for about 3.5 km along the eastern flank of the north-south trending Mongolata range of hills while minor diggings extend for another 8 km to the north (Plate 1). Most of the main workings comprise westerly driven adits into the range with some having connecting vertical shafts.

Work undertaken as part of this investigation has included surface and underground rock chip sampling, stream sediment sampling, plus mapping and surveying of the historic workings. Thirty-nine adits have been mapped and selected rock chip samples taken over several periods. All samples were analysed for Au, Cu and As while select samples also included Pb, Zn, Ag, Co, Ni, Fe, Ba, Be, Bi, Ca, Cd, Cr, Cs, Ga, Ge, Hf, In, K, Li, Mg, Mn, Mo, Na, Nb, P, Rb, S, Sb, Sc, Sn, Sr, Th, Ti, Tl, U, V, W, Y and Zr. Significant assay results are presented in Appendix 3.

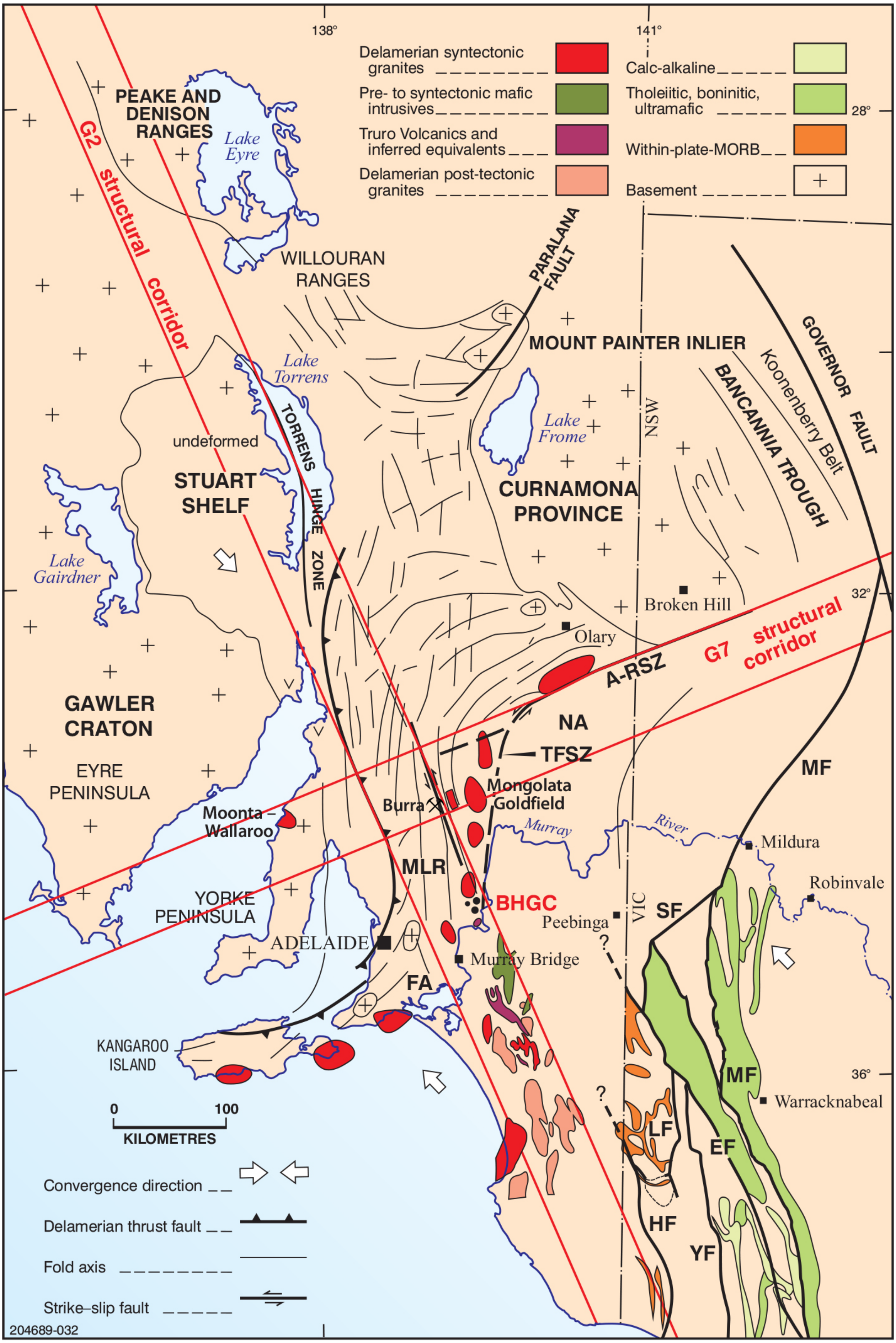


Figure 1. **Location of Mongolata Goldfield and BHGC relative to the G2 structural corridor and tectonic-structural elements of eastern South Australia and western Victoria.**

Plate 1. Westerly view of the Mongolata hills with gold workings along the flank, 2013. Rebuilt battery shed in foreground.

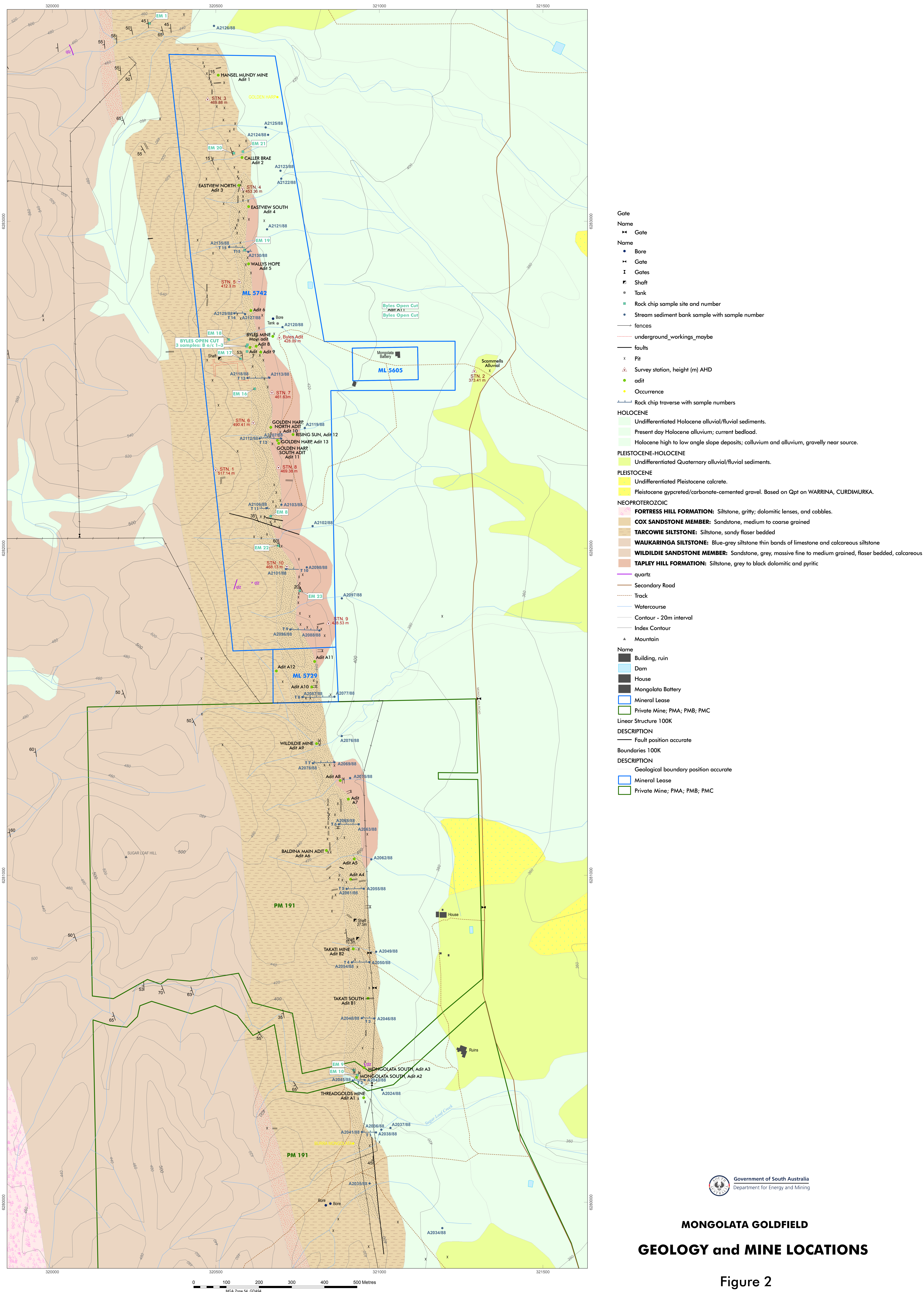
HISTORY

In late 1930 Henry A Byles, a drover, discovered gold on the eastern flank of the Mongolata hills and commenced a drive into the hillside from which he mined 12 tons of ore, which was treated at the Peterborough Government Battery and Cyanide Works, returning 73 oz of gold. The Mongolata Gold Mining Syndicate was formed with a capital of 500 pounds to develop the claim. Eight men were employed and the drive continued and a shaft sunk. A further 76 tons of ore were treated at Peterborough returning 467 oz of gold.

News of the Byles' discovery quickly spread and within weeks claims were taken up nearby including the East View, Golden Harp, Hansel Mundy and Curlew (Fig. 2). By February 1931, more than 50 men were prospecting the field. At its peak more than 120 men were actively working the field.

In 1932 William Pexton and sons opened a new payable reef to the south and within a few months the mine, called Takati, produced rich ore, including 154 oz of hand-picked free gold, prior to being dispatched to Peterborough for treatment. Further discoveries followed including the Wildildie, Baldina, Mongolata South and Mongolata Central.

The need for crushing facilities on the field soon became obvious as the cost of transporting ore to Peterborough was expensive. In 1932 a ten head stamp battery was erected on the field by the State Government with the aid of a Commonwealth Unemployment Relief Loan and the Mongolata Government Battery and Cyanide Works was officially opened by Premier Richards on 2 March 1933 (Plate 2). During the first eighteen months of operation 4,000 oz of gold were produced.



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MONGOLATA GOLDFIELD

GEOLOGY and MINE LOCATIONS

Figure 2

DEM 204689-031

Plate 2. Official opening day of Mongolata Battery and Cyanide Works, 2 March 1933.

Within a few years of its discovery the field was kept alive by only a few companies and small claims. No regular ore producing bodies of any size were found persistent enough to allow for steady mining. Very rich patches of gold were occasionally found but no ore reserves could be established. By the end of 1936 most miners had left the area. In 1945 the Inspector of Mines wrote:

> "The Mongolata Field is a gouger's proposition only, and will no doubt continue to attract this type of miner and more rich pockets will probably be unearthed …….
> The absence of evidence of any serious attempts at fossicking for alluvial in the immediate vicinity below the outcrop is remarkable." (Mansfield, 1946).

There were some attempts to work possible alluvial deposits with Mongolata Alluvial Gold Mining Co. NL. sinking some shafts, the deepest being 57 m, but no payable alluvial lead was found. Another syndicate sank a shaft at Scammell's alluvial claim to 157 m but entered slate without finding payable gold. Prospectors also sank shallow shafts in the banks of creeks but little gold was found.

The Mongolata Government Battery and Cyanide Works operated for almost 20 years and the last parcel was treated on 27 February 1952. The battery was closed in 1954 after treating a total of 7,600 tonnes of ore for 318.25 kg (10,233 oz) of gold bullion from 367 parcels of ore from 55 separate sources. Smelting of bullion produced an additional 1.06 kg (34.2 oz) of gold.

The goldfield was known for its rich patches of coarse specimen gold and the total gold production for the field is uncertain as hundreds of ounces were handpicked from the ore prior to dispatch to the battery. The largest recorded piece, weighing 216 oz, was from the Takati mine. Detailed battery production data and individual mine production data is presented by Smith (1989).

A Government auction was held on 10 March 1954 with all surplus equipment sold. Items deemed useful were transferred to the Peterborough Government Battery in 1963 and the remains of the motor and battery machinery along with the building and tanks were disposed of by tender (Plates 3 and 4).

Plate 3. Remains of 10 head stamp battery, 1987. (Photo 049896)

Plate 4. Rebuilding of battery by lease holder Kevin Wallace, with 5 stamps operating, 1993. (Photo 041482)

The battery tailings were stockpiled on site, parts of them had been cyanided and Horn and South (1988) calculated the tailings would have had an average grade of 2.80 g/t Au. However, over the years a large portion of the original 7,600 tonnes was reportedly removed in the 1960s to repair roads in the vicinity of the township of Hallett. Horn and South (1988) surveyed and sampled the tailings by hand auger, determining that 3,120 tonnes remained on site at an average grade of 1.69 g/t Au.

The old battery was rebuilt by Kevin Wallace with a shed to house it (Plates1 and 4). Small quantities of ore mainly derived from Wallys Hope and Byles open cut are still treated, with a recorded production of 2,810 gm of gold between 1990 and 2009.

PRODUCTION

The main producing mines on the goldfield are described below.

Byles (Fig. 10; Plates 19, 20 and 21). Henry Byles discovered the first mine on the field which was mainly active from 1930 to 1935 with minor production from 1945 to 1952. It was worked by Byles Mongolata Gold Mining Co. and comprised a large number of drives, winzes, stopes and shafts. The 29 m level was driven westerly for about 240 m under the Mongolata Hills and from this level a large three compartment shaft was sunk 82 m to the water level. Mineralised quartz veins were stoped from the 28 m level to the surface. Total production from ore treated at Mongolata Battery was 107.23 kg (3,448 oz) of gold from 3,525.7 tonnes of ore (grade 30.41 g/t Au). Many hundreds of ounces of handpicked gold were extracted from ore material prior to dispatch to the battery.

Takati/Takati South (Figs 35 and 36; Plates 36, 37 and 38). Late in 1932 William Pexton and his sons took up a claim on land owned by John Barker. Initial crushing of 6 tons of ore at Peterborough Battery yielded 41 oz (1.28 kg) of gold along with finds of nuggets weighing 31 oz, 10 oz and 8 oz. In February 1933 Pexton's Takiti Gold Mining Co. was floated and over the next three years produced 2,608 oz (81.11 kg) of gold. Various shafts were sunk, the deepest being 24.4 m with a 15.2 m winze at the bottom. Up to 1936 the mine was a consistent producer and a large amount of specimen gold was produced with the largest recorded piece weighing 216 oz. After this time results were poor and various attempts to rework the mine were unsuccessful. The Takati/Takati South Mines have a total recorded production of 1,051.9 tonnes for 83.289 kg of gold at an average grade of 79.18 g/t Au.

Curlew and Central Mines (Figs 18–31; Plates 30, 31 and 32). In December 1930 H. Morgan found gold in small outcropping quartz veins and took up a claim. The following year the Curlew Gold Mining Syndicate was formed to develop the claim. The first adit failed to produce gold but further workings intersected very rich but discontinuous mineralised veins. Rich patches of ore were mined but values were erratic. The workings here are extensive with numerous adits and drives. The mines were most active between 1930 and 1945 with a total recorded production of 749 tonnes for 51.52 kg of gold at an average grade of 68.79 g/t Au. Mineral Lease 5219 shown on Figure 18 no longer exists.

Baldina (Fig. 39; Plate 41). The mine was worked between 1932 and 1945 by the Baldina Mongolata Gold Mining Syndicate plus many tributers. Many shafts and adits were developed on rich but irregular lodes, the deepest shaft was 30 m deep with several levels. The main adit was stoped to the surface and a winze sunk on the lode from the adit floor. Total recorded production was 489.9 tonnes for 39.235 kg of gold at an average grade of 80.08 g/t Au.

East View (Figs 6 and 7; Plates 16 and 17). The mine was the result of the second claim on the field (November 1930) and was held as a lease until 1942. It was later worked by W Edwards in 1946 and then by F Gerlan in 1955. The workings comprised adits, shafts and an underlie shaft. The ore contained minor copper as malachite and total recorded production was 494.5 tonnes for 11.845 kg of gold at an average grade of 23.95 g/t Au.

Wildildie (Fig. 42 and Plate 44). The mine was mainly worked from 1933 to 1937 and comprised several adits and shafts with workings on both north and south sides of a gully. Only the adit on the north side was mapped and sampled. Total recorded production was 296.4 tonnes for 5.004 kg of gold at an average grade of 16.88 g/t Au.

Golden Harp (Figs 14,15 and 17; Plates 25, 26, 27 and 29). John Barker took a claim in December 1930 and was later worked by Golden Harp Gold Mining Co. from 1931 to 1933 but with little success, producing a recorded 194 gm of gold from 1.2 tonnes of ore. Byles Mongolata Gold Mining Co. then took over finding payable gold. The workings are extensive with several adits and shafts. Total production is unknown as it was included in Byles Mine production figures.

PREVIOUS INVESTIGATIONS

The Government Inspector of Mines visited and reported on the goldfield at various times while the goldfield was active. LK Ward (1936) reported that the sporadic distribution of the gold made prospecting difficult and that all of the recent operations had failed to reveal any regular plan of gold deposition. LJ Winton (1938) reported that very rich patches of secondary gold have been found but their occurrence was very irregular and no reserves of ore could be established.

RW Segnit (1939) prepared the first geological map of Mongolata Goldfield after a field study of the geology and the relationship of mineralisation to the country rock. He noted the importance of a westerly dipping meridional fault zone along the eastern margin of the Mongolata Hills comprising crushed and brecciated feldspathic sandstone and quartzite into which metalliferous quartz reefs and gold-bearing solutions have been introduced. The lodes consist mainly of quartz with limonite, manganese and some pyrite. Gold enrichment along a lode appears to be associated with ironstone. The structure of the lode in most places was seen as complex with a branching system of veins.

Following a request to the South Australian Department of Mines in 1974 by AE Barker, holder of PM 191, to assess the potential of the private mine, a brief inspection of the underground and surface workings was undertaken and samples collected for analysis (Morris 1978). Samples were analysed for gold and silver. Several selected samples were also subjected to semi-quantitative spectrographic analysis and mineragraphic investigation. It was concluded that the gold mineralisation was concentrated in ironstone and ferruginous quartz veins within the oxidation zone by supergene processes and related to a north-south fault zone. It was considered that rich patches of gold may still remain but the patchy nature of the gold made prospecting difficult and the rewards from any mining operation uncertain.

During November 1979 the South Australian Government Prospector visited the Mongolata Goldfield and mapped many of the accessible adits. Several samples were collected from various parts of the workings, dollied and panned for gold to determine the main host of the gold. Several gold grains were recovered from selected iron oxide samples. It was determined that the more iron oxide rich parts of large quartz veins are more likely to contain free gold (Salgo 1980).

CRA Exploration Pty Ltd investigated the goldfield between 1980 and 1981 (Mayer 1981). Underground mapping and sampling was concentrated on the Byles and Golden Harp Mines. Due to the irregular nature of the gold, assay results were erratic with the best assays being 8.2 g/t Au from Byles and 2.3 g/t Au from the Golden Harp. The majority of results were below 1 g/t Au. Assays of +80 mesh and -80 mesh splits confirmed the majority of the gold was coarse grained as indicated by the large amount of specimen gold historically recovered. There was a good correlation of Au values with As, Cu, Mn and Fe.

Seven vertical diamond drillholes were sited between Byles Mine and Golden Harp, five of which went to 50 m depth, however results were disappointing. An inclined percussion hole, adjacent to Byles Mine, was drilled down dip to the water table for 201.5 m. The target was a 30 ft wide lode of 8–10 deadweight tonnage Au reported to be at the 420 ft level of Byles Mine, but no mineralisation was intersected.

A rotary hole was drilled to 92 m in alluvials east of the escarpment plus a percussion hole to 152 m adjacent to the water bore near Byles Mine. Neither hole intersected mineralisation.

It was concluded that due to the patchy nature of the mineralisation in the oxidised zone, drilling could not adequately test the area and that bulk sampling, with minimum 400 tonne samples, would be required to test the mineral potential of the prospect.

Swan Resources Ltd took out an EL near Burra, primarily to test the potential of the Mongolata Goldfield. A literature research programme was conducted during 1985 and 14 rock chip samples were collected from the Mongolata area. Assays ranged from a trace to 0.73 g/t Au but the results were considered inconclusive in testing the potential of the area because of the history of erratic gold distribution within the quartz veins (Byrne 1985). No further effective exploration was undertaken on the EL.

Between 1986 and 1989 Newmont Holdings Pty Ltd completed Bulk Leach Extractable Gold (BLEG), stream sediment and rock chip sampling targeting stratabound, Telfer-style gold mineralisation (Jones et al. 1989). The BLEG survey comprised 110 samples at a density of one sample per 2 km^2 over a 7 km wide zone along 33 km of Cox Sandstone strike length and centred on the Byles Mine. One anomaly was on the Mongolata Goldfield but the remaining strike length of Cox Sandstone was barren. It was concluded that BLEG sampling may not be effective in this area. It was also concluded that the erratic coarse-grained nature of the gold at Mongolata indicated selective supergene enrichment of a source containing <0.3 ppm Au. No further work was undertaken.

Horn and South (1988) completed an appraisal of the gold tailings at the Mongolata Battery site. The battery crushed 7,600 tonnes of ore for 319,246 g of gold (average grade 2.8 g/t Au). The remains of tailings stockpiles were stadia surveys and sampled with hand auger holes. It was estimated that 3,120 tonnes of tailings remain at an average grade of 1.69 g/t Au, 230 ppm Cu, 10 ppm Pb, 85 ppm Zn, 660 ppm As and <1 ppm Ag. Most of the tailings have been cyanided at least once although an estimated 975 tonnes (average grade 2.60 g/t Au) appear to have been uncyanided.

Smith (1989) completed an historical review of the Mongolata Government Battery and summary of ore treated and gold recovered. The battery was opened in 1933, closed in 1954 and was eventually sold in 1966. During its time of operation, the battery crushed 367 parcels of ore from 55 separate sources, cyanided 188 of those parcels and smelted an additional six parcels of bullion. Two of the parcels treated were from Ulooloo Goldfield while some Mongolata ore was treated at Peterborough and Mount Torrens Government Batteries.

In 1997 Redfire Resources NL conducted mapping and sampling of the Byles Mine to determine characteristics of mineralisation within and along strike from pre-existing mines. Two hundred geochemical samples were collected and analysed indicating that gold mineralisation is hosted by the Cox Sandstone and a basal 'Limonite Lode' at the contact with the underlying Tapley Hill Formation. The limonite lode was interpreted as a deeply weathered hydrothermally altered and partially replaced silty ferroan dolomite bed (Plimer 2001). The gold has been concentrated in the oxide zone by secondary enrichment and occurs in a network of cross-cutting quartz – iron oxide veins with the highest grades at the intersection of steeply dipping veins with larger flat-lying veins. The vein system is the result of competency relationships between the brittle Cox Sandstone and the more ductile bounding meta-siltstones (Simpson 1998). Twenty surface calcrete samples were also taken over the Byles Mine and from the 'flats' to the east. The method proved successful with values to 500 ppb Au detected over the Byles mineralised horizons. It was concluded that due to the presence of erratic distribution of coarse-grained gold in the oxidised zone that the bulk grade of the Mongolata Goldfield is difficult to accurately determine. It was suggested that there is high potential east of Mongolata where an inferred anticlinal hinge of the Cox Sandstone is present below alluvium.

Griessman (2011) completed a PhD titled *Gold Mineralisation in the Adelaide Fold Belt* which included gold mineralisation in Mount Lofty Ranges at Woodside, Kitticoola, Lady Alice and Deloraine, plus Nackara Arc at Mongolata, Mount Grainger and Baratta. Investigations included geological setting, mineralogy, geochemistry, fluid inclusions, stable and radiogenic isotopes and timing of mineralisation in relation to Delamerian Orogeny. For Mongolata it was found that the distribution of mineralisation, isotopic signature and fluid characteristics support that the gold mineralising fluids are of metamorphic character and are derived from within the sedimentary sequence of the lower Umberatana Group. Gold mineralisation in the Nackara Arc show commonalities with Telfer-style deposits, in particular the Au-As-Cu association, tectonic setting, host lithologies, mineralogy and involvement of saline metamorphic fluids and a sedimentary source.

GEOLOGICAL SETTING

The Mongolata Goldfield occurs in Neoproterozoic rocks of the Nackara Arc which is an arcuate belt of folded Neoproterozoic meta-sediments, along the eastern part of the Adelaide Geosyncline, that trend from north-south near Burra to east-west near Olary. The broad upright folds, with axial plane cleavage, formed during the ca 514–490 Ma Delamerian Orogeny (Foden et al. 2020) along with regional greenschist facies metamorphism. Fold structures generally comprise Burra Group sediments in the cores of anticlines and Wilpena Group sediments in cores of synclines (Morris and Horn 1989).

The Nackara Arc has produced a total of 6,344 kg of gold of which 85% was produced from Umberatana Group glacial/interglacial sequences. Waukaringa was the first (1873), and most productive, hard rock goldfield discovered in the Nackara Arc and Mongolata the last (1930). The gold mineralisation is hosted by the basal Cox Sandstone Member of Tarcowie Siltstone with mineralisation extending across the unconformable contact with underlying Tapley Hill Formation. This stratigraphic position has been the largest producer of reef gold in the Nackara Arc and also hosts the Waukaringa, Royal Charlie, Ajax, Eukaby and Aureous Line deposits.

Mongolata Goldfield is located on the eastern margin of the Adelaide Geosyncline and occurs within rocks of the Umberatana Group on the eastern limb of a northerly plunging syncline with a northerly plunging anticline, obscured by cover, to the east. The extension of southwest trending Darling-Anabama lineament passes through Mongolata and Burra Copper Mine further to the southwest. The southwest trending G7 structural corridor encompasses mineral deposits at Broken Hill, Mutooroo, Mongolata, Burra and Wallaroo/Moonta and is crossed by the north-northwest trending G2 structural corridor at Burra and Mongolata (Fig. 1; O’Driscoll 1986).

At Mongolata, the basal 30 m wide Cox Sandstone Member of Tarcowie Siltstone, unconformably underlain by Tapley Hill Formation (Fig. 2), strikes north-south and dips about 40-60 degrees to the west. It crops out boldly on the eastern slopes of Mongolata range and appears to be part of an upwarping in the 4 km strike length of the main goldfield (Fig. 3). To the north and south Cox Sandstone is exposed sporadically through cover with only minor gold workings developed.

Cox Sandstone is a medium- to coarse-grained, feldspathic sandstone but at Mongolata it is silicified to a strongly jointed and fractured quartzite. The contact with the underlying Tapley Hill Formation, a dolomitic, pyritic and thinly laminated siltstone, is marked by a 1–2 m wide fault breccias with angular quartzite in a silty matrix with an associated ferruginous silt band (Plates 5 and 6.). The Cox Sandstone appears to be thrust over the Tapley Hill Formation as a result of differential movement during regional deformation.

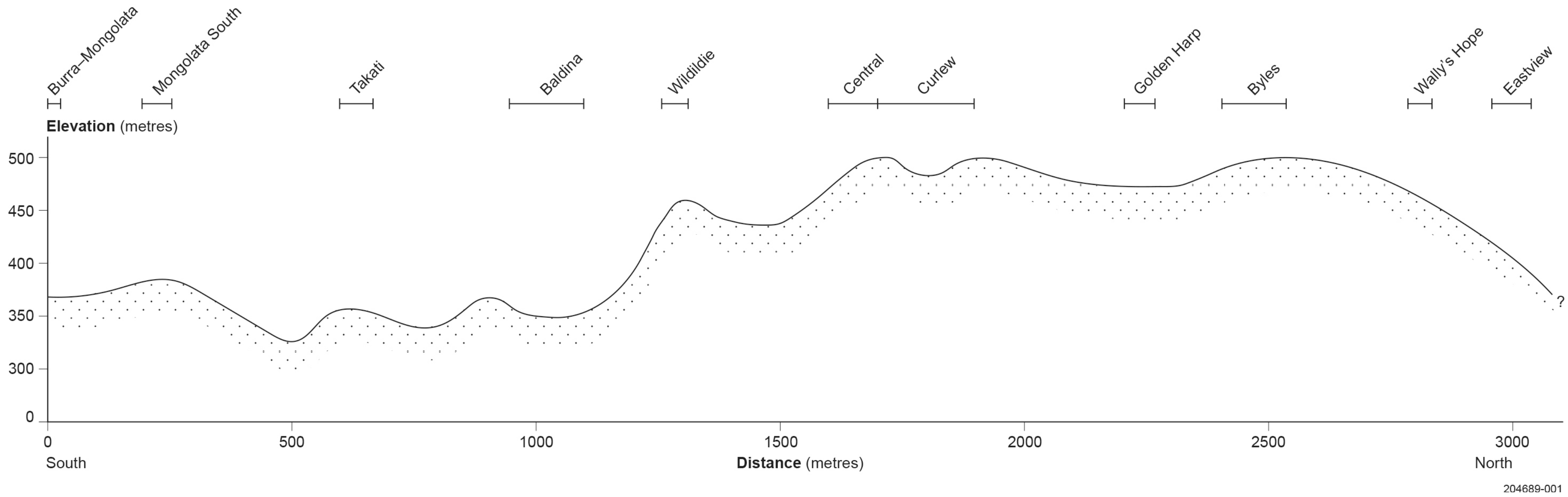

Figure 3. Longitudinal section of Mongolata Goldfield, top of the Cox Sandstone.

Plate 5. Fault breccia with ferruginous silt band at base of Cox Sandstone, Golden Harp Mine.

Plate 6. Fault breccias between Cox Sandstone and underlying Tapley Hill Formation, Golden Harp Mine.

MINERALISATION

The Cox Sandstone Member is host to gold mineralisation that occurs in a largely complex stockwork of quartz–ironstone and ironstone veins with gold often concentrating at the intersection of veins within hematitic ironstone (Plate 7). Cox Sandstone is strongly fractured and jointed and provided an excellent dilational environment for the movement of mineralised hydrothermal fluids. Adjacent to quartz veins it shows silicification, sericitisation and kaolinisation with fine-grained inclusions of pyrite and arsenopyrite (Plimer 2001). All the mining has been within the oxidised zone and the coarse patchy nature of the gold plus the abundance of supergene iron oxide indicate that during oxidation gold has been redistributed and re-deposited from its original source to form secondary enriched deposits.

Typically, quartz veins 10 cm or more wide, contain reddish yellow and brown iron oxide patches possibly after pyrite. Some iron oxide patches, particularly in the ironstone veins, has relict rhombohedral cleavage after carbonate. One persistent set of quartz veins strike generally north-south but dip east across the westerly dipping Cox Sandstone (Plate 8). Other sets of veins strike from northwesterly to northeasterly with variable dips while other veins appear quite random. Mineralisation does not appear to favour one particular set of veining.

Most mining activity has been from veins either near the hanging wall or footwall of Cox Sandstone Member while at its base, the ferruginous band within the fault breccia has also been a target. Very few workings extend into either Tapley Hill Formation or Tarcowie Siltstone.

Plate 7. Coarse gold in iron oxide.

Plate 8. Easterly dipping quartz-iron oxide vein in Cox Sandstone Member.

Fluid inclusion studies of auriferous quartz veins from the major goldfields in the Nackara Arc were completed by Collins (1978) and Bone et al. (1988) and summarised by Morris and Horn (1989). It was concluded that quartz veining occurred over a wide range of conditions, even within a single goldfield with homogenisation temperatures of 115 to >500 °C, a salinity of >23 wt% salts and in some cases enriched in CO_2 at high pressures. These conditions are conducive for magmatic/hydrothermal gold mineralisation. At Mongolata, fluids homogenised at 110 to 230 °C, had a salinity of 25 to 30 wt% salts and contained no CO_2. Two generations of inclusions with similar homogenisation temperatures and salinities are present indicating multiple fluid pulses.

RESULTS OF INVESTIGATIONS

Thirty-nine adits, some of which are no longer accessible, have been mapped by tape and compass (Plate 9), ensuring that a permanent record of the mine workings is retained for both historical and exploration purposes (Appendix 1, Figs 4–45). Selected samples were taken and assayed to provide an indication of the occurrence of gold and its economic potential (Appendix 3).

The assay results from Curlew and Central Mines, which were more intensely sampled than the other workings, show Cox Sandstone, particularly at its base, is the most mineralised part of the stratigraphy.

- Cox Sandstone has an average grade of 0.35 ppm Au, 140.3 ppm As, 82.6 ppm Cu, 13.01% Fe and 651 ppm Mn.
- Base of Cox Sandstone has an average grade of 0.42 ppm Au, 165.4 ppm As, 99.9 ppm Cu, 15.9% Fe and 653 ppm Mn.
- Tarcowie Siltstone has an average grade of 0.03 ppm Au, 49 ppm As, 42 ppm Cu, 3.2% Fe and 325 ppm Mn.
- Tapley Hill Formation has an average grade of 0.07 ppm Au, 91 ppm As, 85 ppm Cu, 7.6% Fe and 847 ppm Mn.

Plate 9. Brian Morris (left) mapping the Golden Harp underground workings.

The Tarcowie Siltstone and Tapley Hill Formation have gold values much greater than the crustal abundance (~ 0.004 ppb) with no indication of hydrothermal alteration. It is likely that gold enrichment in these sediments predates any hydrothermal activity and was a favourable source for gold remobilised by high salinity metamorphic fluids and channelled along faults into open spaces within fractured Cox Sandstone (Griessman 2011).

The average grade of quartz veins within Cox Sandstone was found to be:

- Northeast trending veins of variable dip averaged 2.3 ppm Au, 244 ppm As, 133 ppm Cu, 22.2% Fe and 2123 ppm Mn.
- Northwest trending veins of variable dip averaged 0.26 ppm Au, 134 ppm As, 115 ppm Cu, 16.9% Fe and 836 ppm Mn.
- North-south trending veins of variable dip averaged 0.82 ppm Au, 173 ppm As, 120 ppm Cu, 20.1% Fe and 357 ppm Mn.

The ferruginous zone at the faulted contact between Cox Sandstone and Tapley Hill Formation averaged 0.25 ppm Au, 166 ppm As, 217 ppm Cu, 18.4% Fe and 2950 ppm Mn, while quartz veins of all orientations within Tapley Hill Formation averaged 0.59 ppm Au, 113 ppm As, 88 ppm Cu, 10.3% Fe and 1688 ppm Mn.

Underground gold assays were all above the average crustal abundance as were As, P, S, Mo, In, Fe and Mn. Elevated values of these elements had a good correlation with high gold values while elevated values of Cu, Co, Ni, Bi, U and Y showed minor correlation with high gold values. Correlation coefficients with gold are unreliable due to the erratic occurrence of gold and its coarse nature which amplifies the ‘nugget effect’ of field and assay samples. Arsenic is the most reliable pathfinder element for gold. High gold values invariably have elevated arsenic but high arsenic values do not necessarily have high gold values however it does indicate the presence of gold in the system.

Fifteen rock chip sample traverses were completed across the Cox Sandstone Member at 200 m spacing (Fig. 2) Traverses ranged from 30 to 110 m long with samples collected over 10 m intervals and assayed for Au, As and Cu (Appendix 3). Results were generally low with average values of 0.058 ppm Au (range 0.001–0.42 ppm), 32.3 ppm As (range 6–200 ppm) and 19.0 ppm Cu (range 10–100 ppm). Threshold values were 0.2 ppm Au, 90 ppm As and 40 ppm Cu. Anomalous and elevated values of all three elements were generally in the basal part of Cox Sandstone Member and the most interesting traverses were:

- Traverse 2, near Mongolata South workings with anomalous Au and Cu plus elevated As.
- Traverse 4, near Takati Mine workings with anomalous As and elevated Au and Cu.
- Traverse 9, near Central Mine workings with anomalous As and elevated Au.
- Traverse 13, near Byles Mine with anomalous Au and elevated As.
- Traverse 15, near Wallys Hope Mine with anomalous As, Cu, and elevated Au.

Twenty-three stream sediment bank samples were collected on the flat from creeks draining the Mongolata Hills (Fig. 2) and analysed for Au, As and Cu (Appendix 3). All results were low, averaging 0.013 ppm Au, 9.5 ppm As and 35 ppm Cu. Highest gold values were from creeks draining near Baldina workings (0.031 ppm Au), Central workings (0.046 ppm Au) and Golden Harp workings (0.038 ppm Au).

CONCLUSIONS AND RECOMMENDATIONS

The glacial/interglacial sediments of the lower Umberatana Group is historically the most important gold producing sequence in the Nackara Arc, with gold being most likely derived from the meta-sedimentary sequence by high salinity metamorphic fluids during the Delamerian Orogeny.

Gold mineralisation at Mongolata is hosted predominantly by Cox Sandstone Member of the Tarcowie Siltstone, a competent unit that has been highly fractured by differential movement and gold bearing metamorphic fluids, possibly derived from within the meta-sedimentary sequence, have invaded the prepared ground precipitating mineralised quartz veins.

The major producing gold mines are located where there has been upward flexing and maximum fracturing of the stratigraphy.

This investigation and previous studies have concluded that the gold is generally coarse grained and occurs as intermittent rich patches, enriched by supergene processes in the oxidation zone along a network of ferruginous quartz veins with no real definable lode. Consequently, bulk samples of several hundred tonnes would be the most reliable way of determining the economic potential of the field.

Arsenic is invariably associated with gold and is considered a reliable pathfinder element.

Mapping of most of the underground gold workings at Mongolata has ensured that a permanent record of the 1930s mines is available for historical and exploration purposes.

The goldfield sits on the eastern limb of a regional syncline and is crossed by major southwest trending lineaments that intersect the western limb where there is intense parasitic folding of the Cox Sandstone. This western limb is considered to be an attractive exploration target area.

ACKNOWLEDGEMENTS

Those involved in mapping and sampling of the mines at Mongolata Goldfield include geologists BJ Morris, CM Horn, EA Dubowski, MB Davies and J Talbot with technical assistants SJ Ewen, MW Flintoft, MW Fradd and AJ Smith. This report was improved by reviews of AJ Fabris and R Froud.

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APPENDIXES

APPENDIX 1. MONGOLATA GOLDFIELD ADIT FIGURES

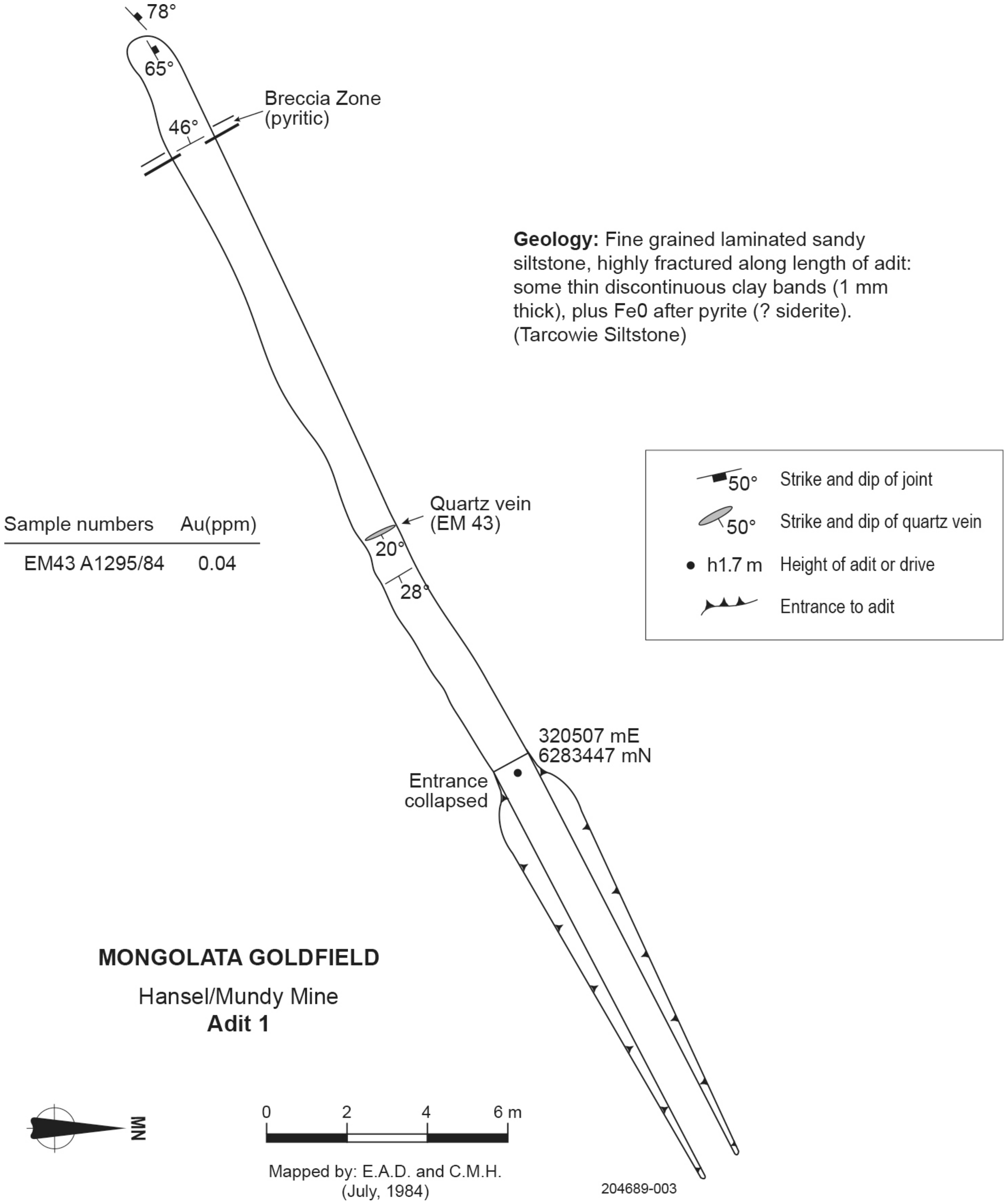
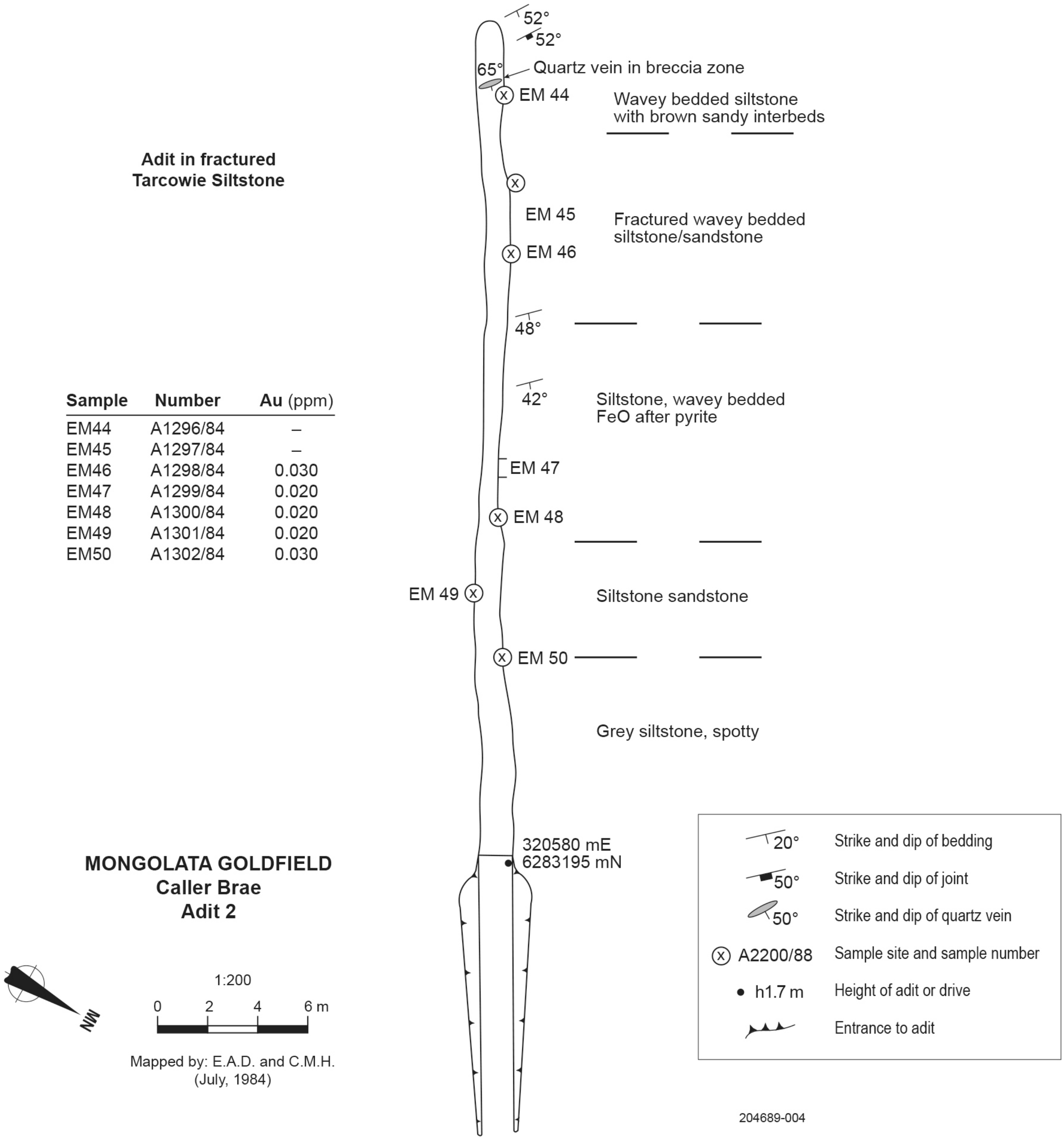
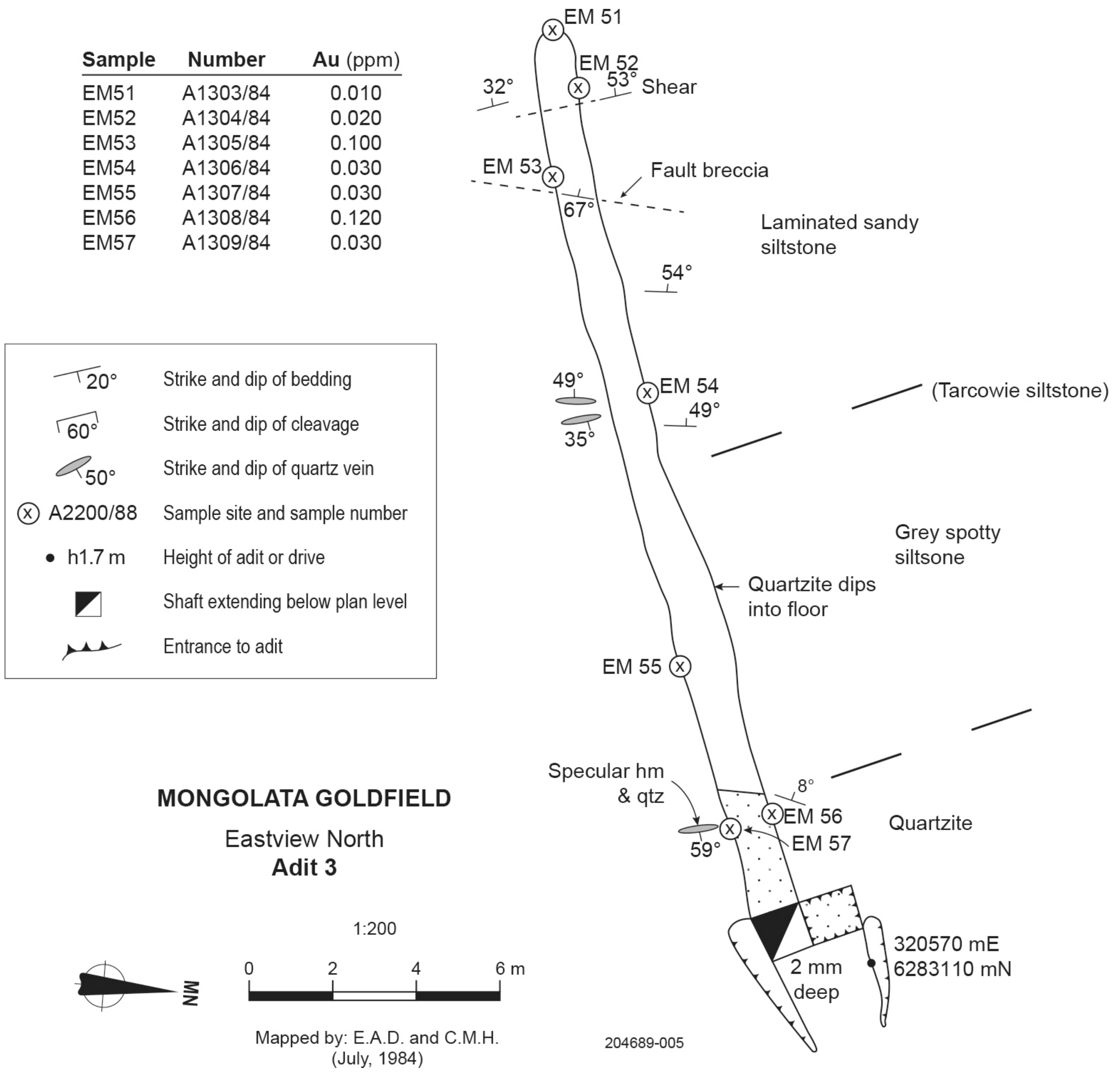


Figure 4. Adit 1, Hansel/Mundy Mine.



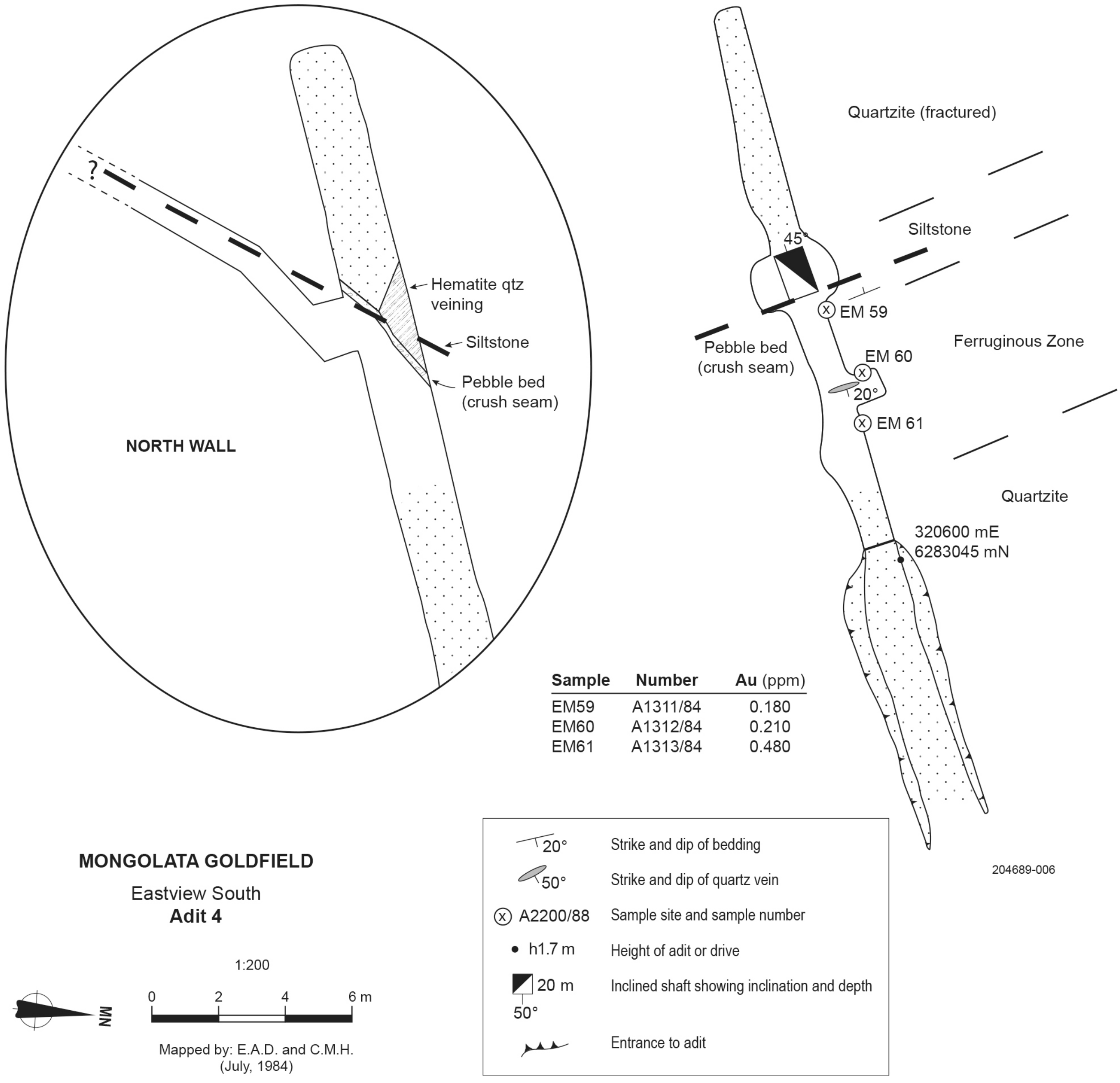
Sample	**Number**	**Au** (ppm)
EM44	A1296/84	–
EM45	A1297/84	–
EM46	A1298/84	0.030
EM47	A1299/84	0.020
EM48	A1300/84	0.020
EM49	A1301/84	0.020
EM50	A1302/84	0.030

Figure 5. Adit 2, Caller Brae.



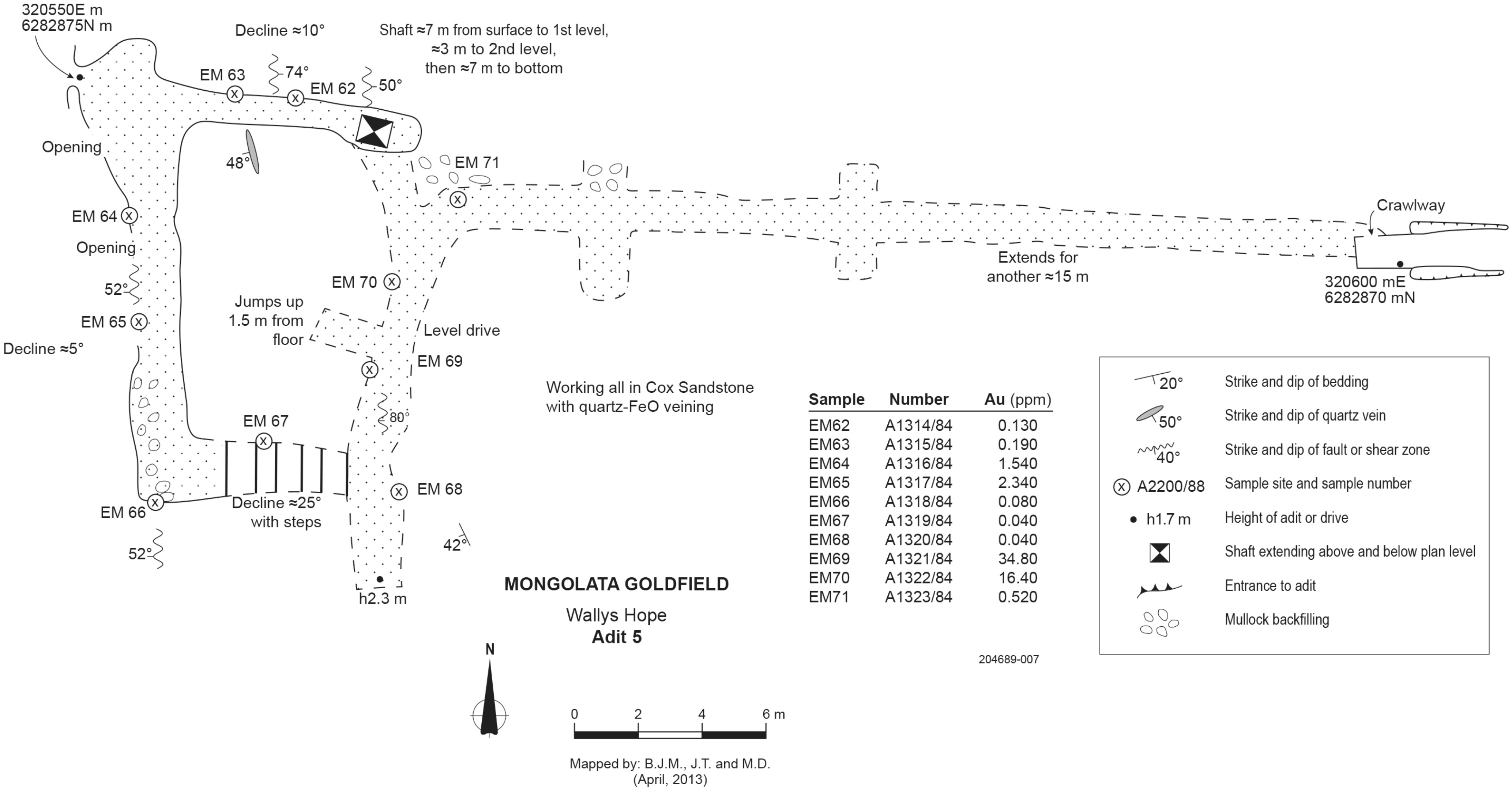
Sample	Number	Au (ppm)
EM51	A1303/84	0.010
EM52	A1304/84	0.020
EM53	A1305/84	0.100
EM54	A1306/84	0.030
EM55	A1307/84	0.030
EM56	A1308/84	0.120
EM57	A1309/84	0.030

Figure 6. Adit 3, Eastview North.



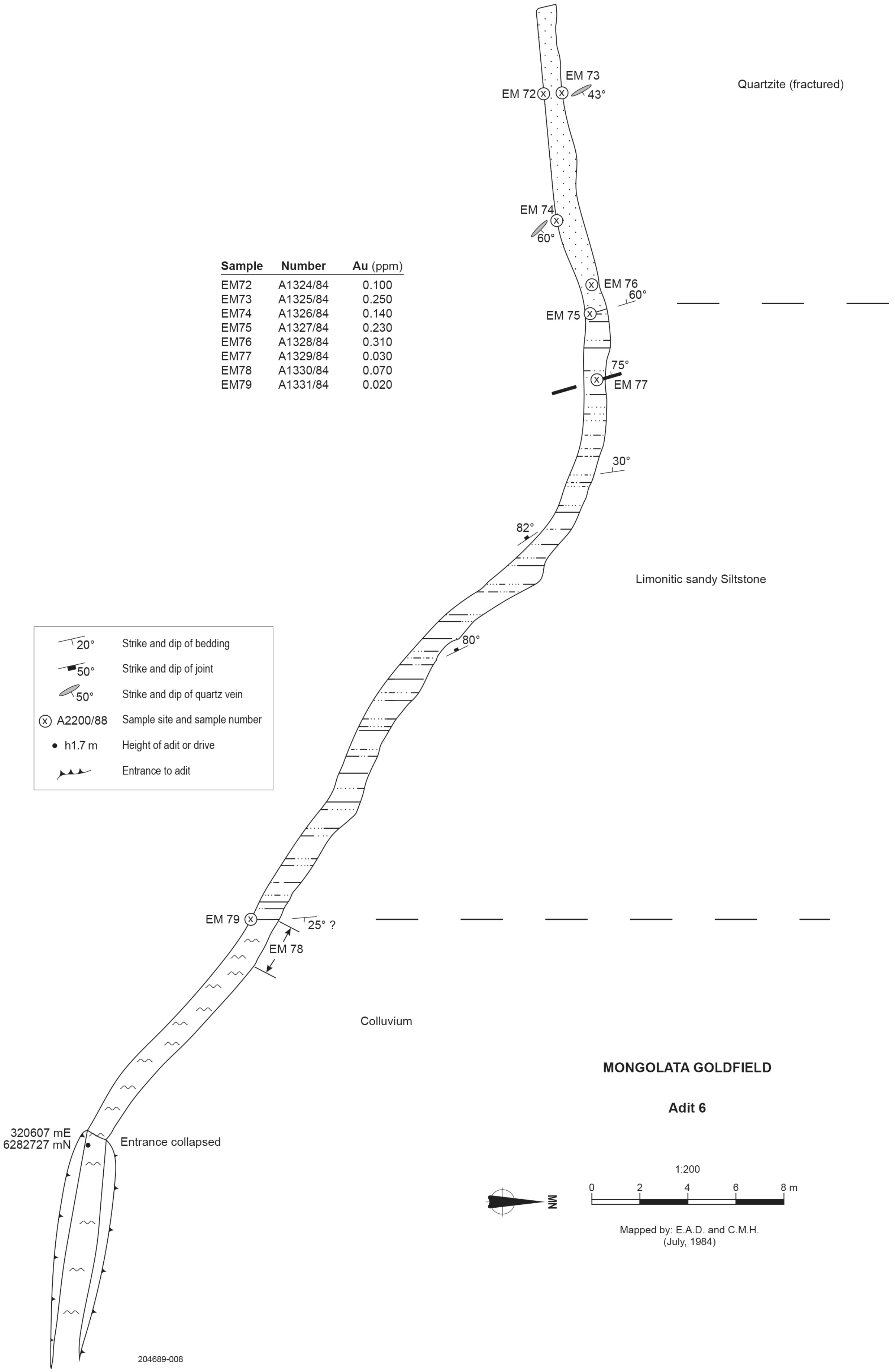
Sample	Number	Au (ppm)
EM59	A1311/84	0.180
EM60	A1312/84	0.210
EM61	A1313/84	0.480

Figure 7. Adit 4, Eastview South.



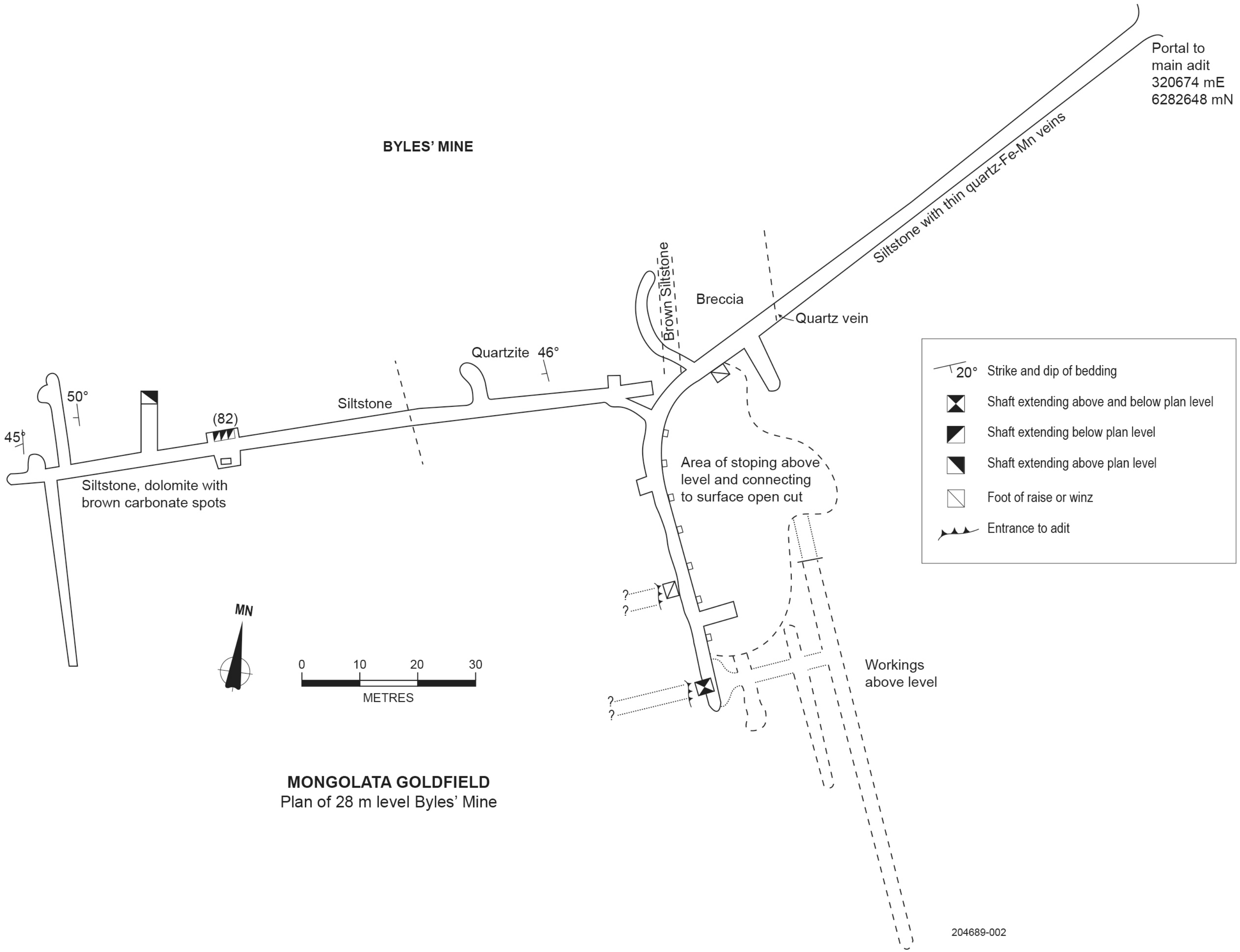
Sample	Number	Au (ppm)
EM62	A1314/84	0.130
EM63	A1315/84	0.190
EM64	A1316/84	1.540
EM65	A1317/84	2.340
EM66	A1318/84	0.080
EM67	A1319/84	0.040
EM68	A1320/84	0.040
EM69	A1321/84	34.80
EM70	A1322/84	16.40
EM71	A1323/84	0.520

Figure 8. Adit 5, Wallys Hope.



Sample	**Number**	**Au** (ppm)
EM72	A1324/84	0.100
EM73	A1325/84	0.250
EM74	A1326/84	0.140
EM75	A1327/84	0.230
EM76	A1328/84	0.310
EM77	A1329/84	0.030
EM78	A1330/84	0.070
EM79	A1331/84	0.020

Figure 9. Adit 6.



MONGOLATA GOLDFIELD
Plan of 28 m level Byles' Mine

Figure 10. Byles' Mine, 28 m level.

Sample	Number	Au (ppm)
EM80	A1332/84	0.030
EM81	A1333/84	0.140
EM82	A1334/84	0.740
EM83	A1335/84	0.160

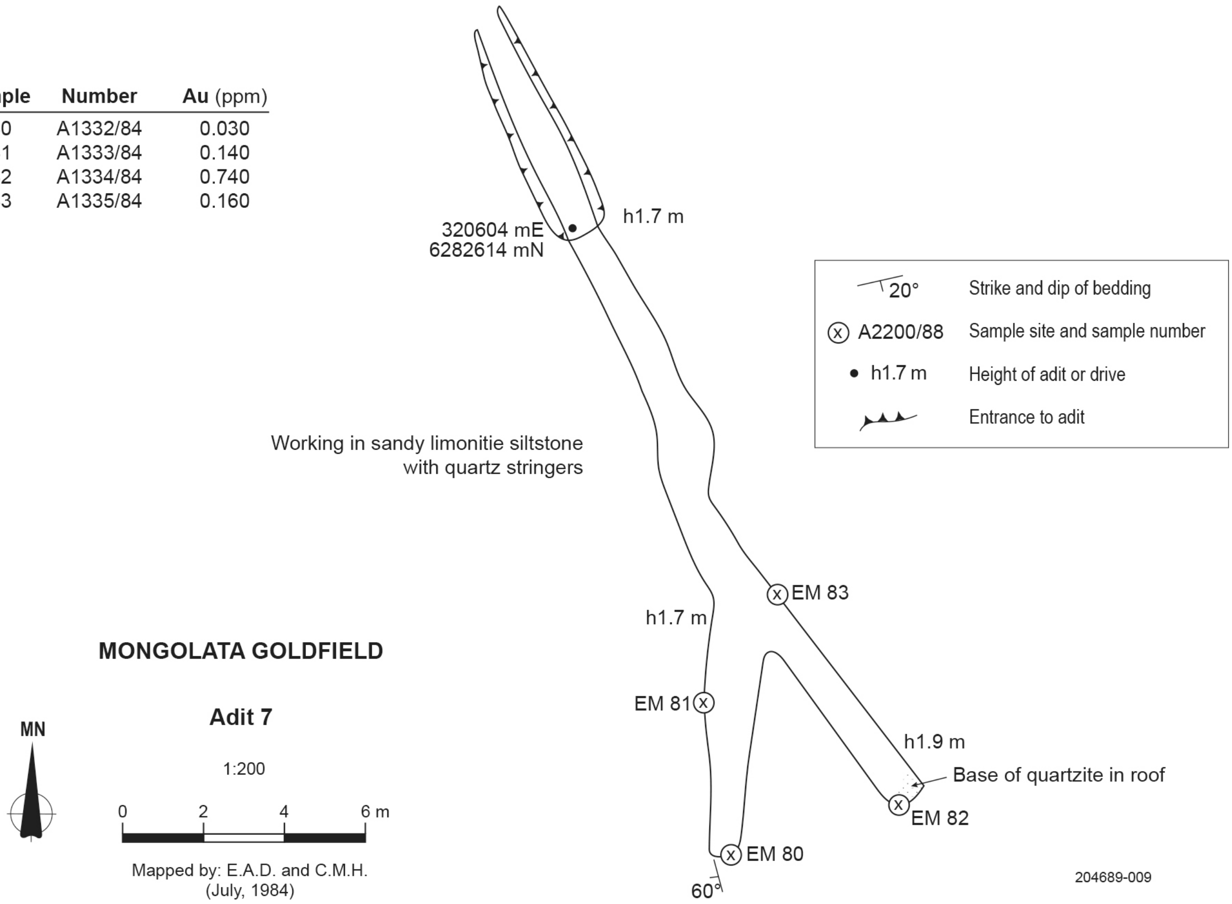


Figure 11. Adit 7.

Sample	Number	Au (ppm)
EM84	A1336/84	0.030
EM85	A1337/84	0.020
EM86	A1338/84	0.020
EM87	A1339/84	0.020
EM88	A1340/84	0.050

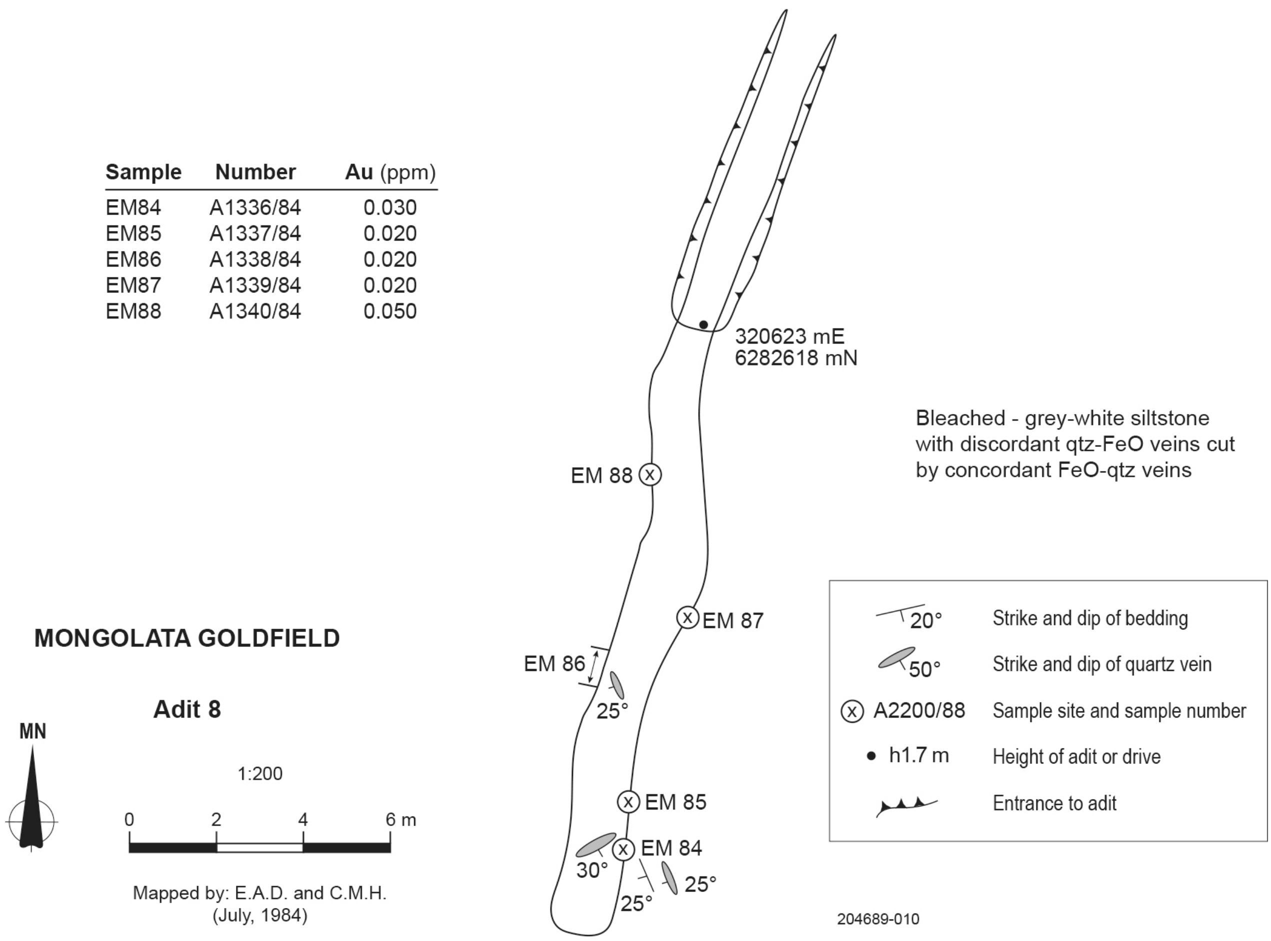


Figure 12. Adit 8.

Sample	Number	Au (ppm)
EM89	A1341/84	0.030
EM90	A1342/84	0.030
EM91	A1343/84	0.070
EM92	A1344/84	0.020
EM93	A1345/84	0.020

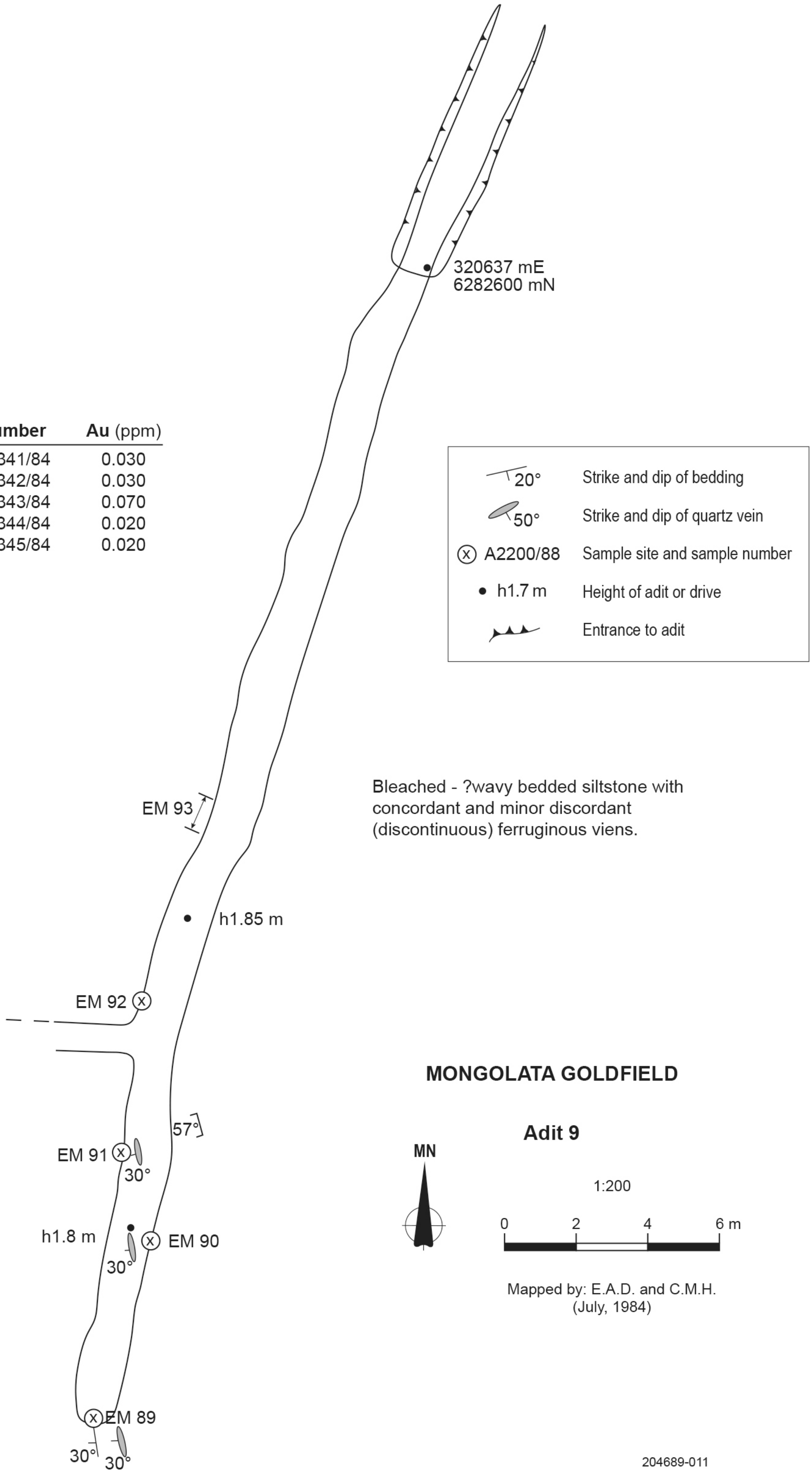
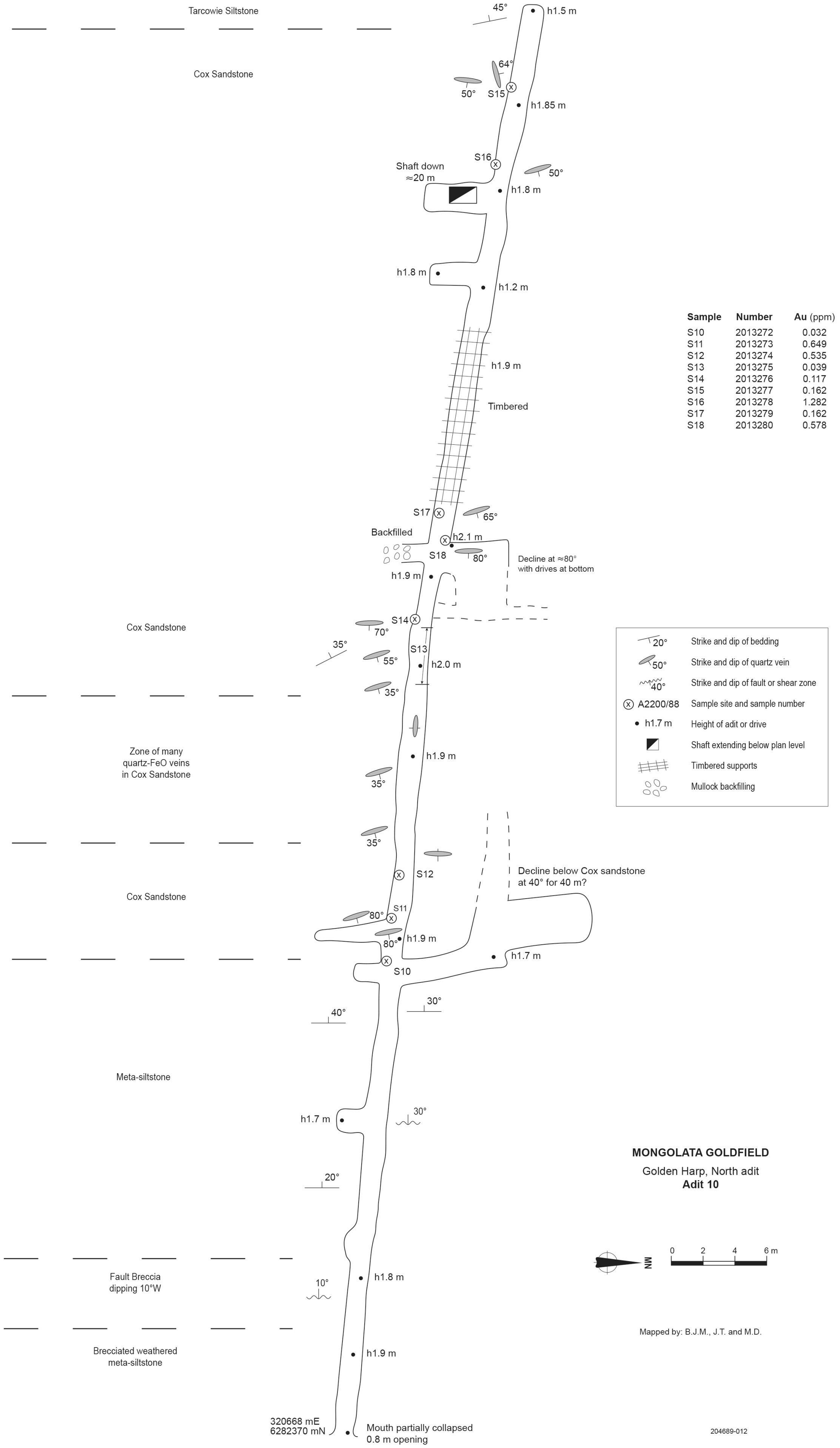
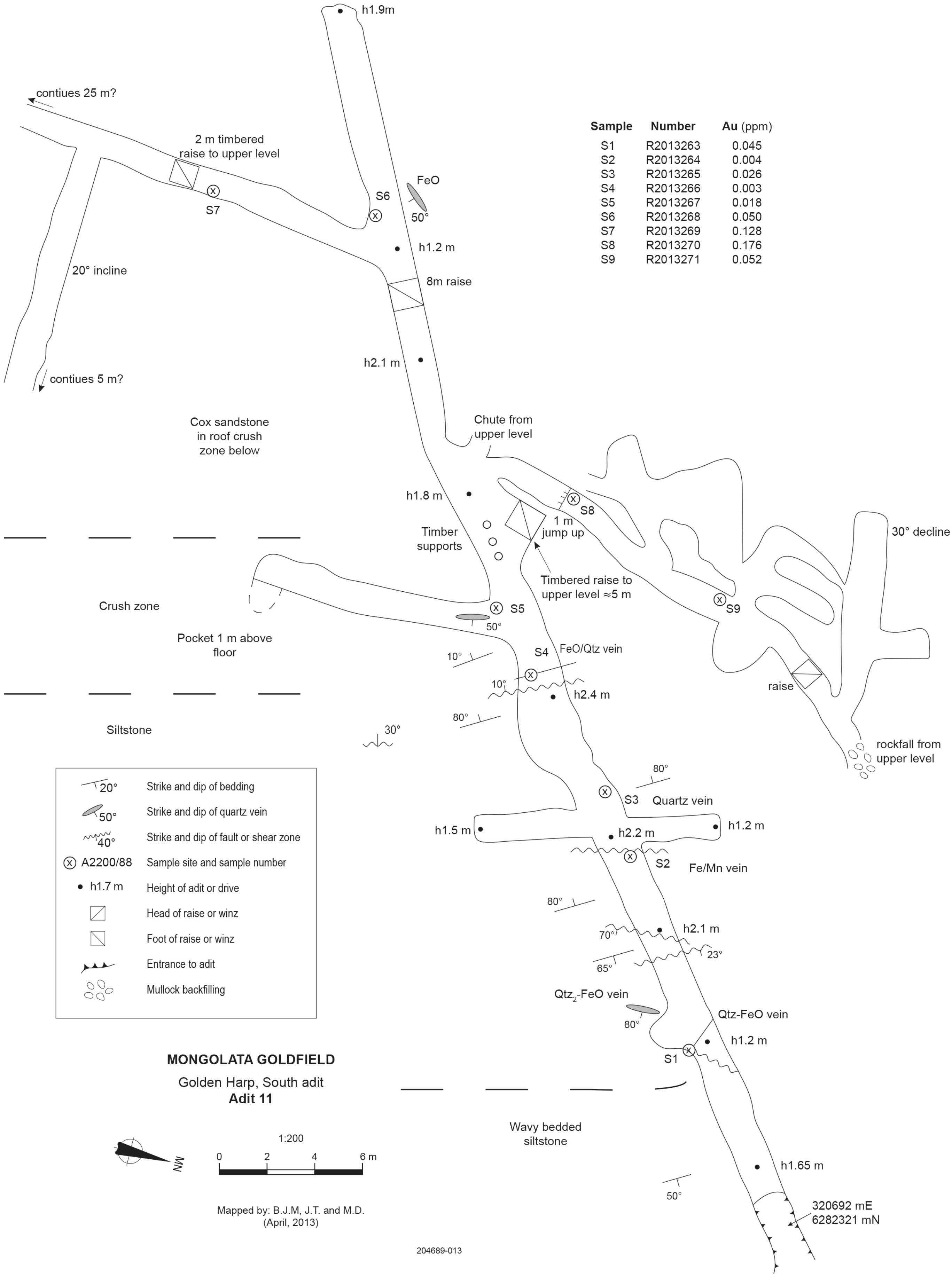


Figure 13. Adit 9.



Sample	Number	Au (ppm)
S10	2013272	0.032
S11	2013273	0.649
S12	2013274	0.535
S13	2013275	0.039
S14	2013276	0.117
S15	2013277	0.162
S16	2013278	1.282
S17	2013279	0.162
S18	2013280	0.578

Figure 14. Adit 10, Golden Harp North Adit.



Sample	Number	Au (ppm)
S1	R2013263	0.045
S2	R2013264	0.004
S3	R2013265	0.026
S4	R2013266	0.003
S5	R2013267	0.018
S6	R2013268	0.050
S7	R2013269	0.128
S8	R2013270	0.176
S9	R2013271	0.052

Figure 15. Adit 11, Golden Harp South Adit.

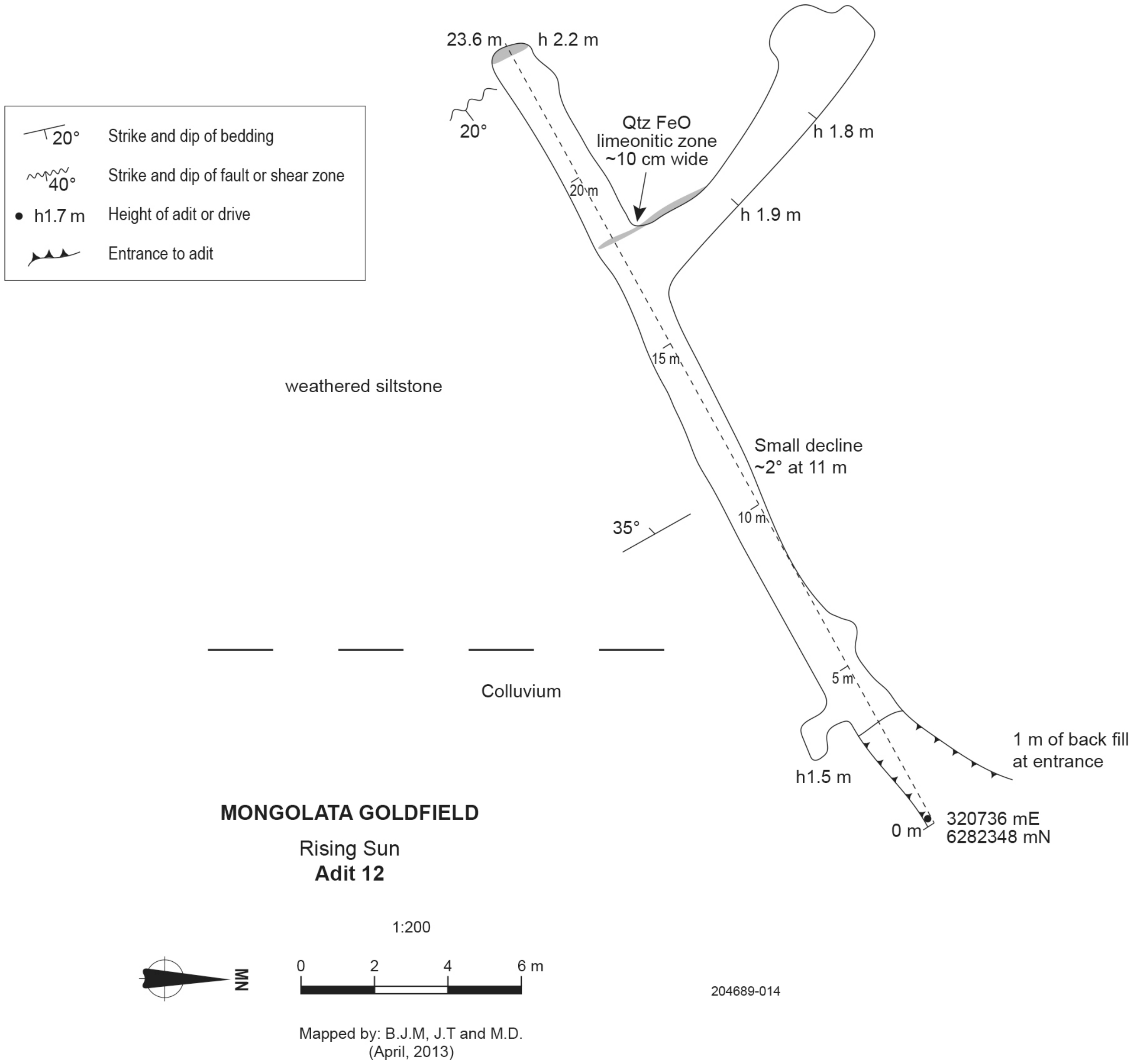
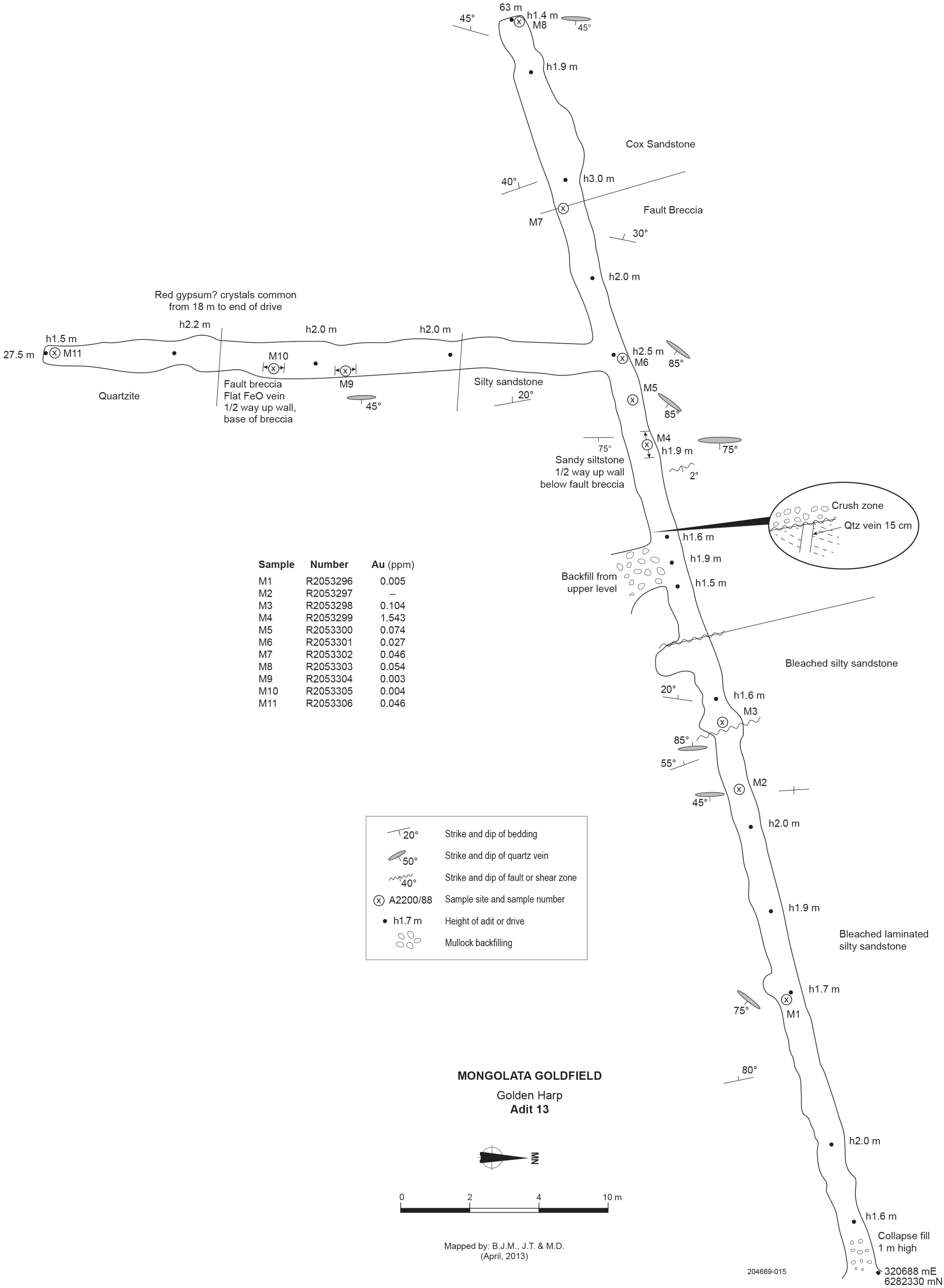


Figure 16. Adit 12, Rising Sun.



Sample	Number	Au (ppm)
M1	R2053296	0.005
M2	R2053297	–
M3	R2053298	0.104
M4	R2053299	1.543
M5	R2053300	0.074
M6	R2053301	0.027
M7	R2053302	0.046
M8	R2053303	0.054
M9	R2053304	0.003
M10	R2053305	0.004
M11	R2053306	0.046

Figure 17. Adit 13, Golden Harp.

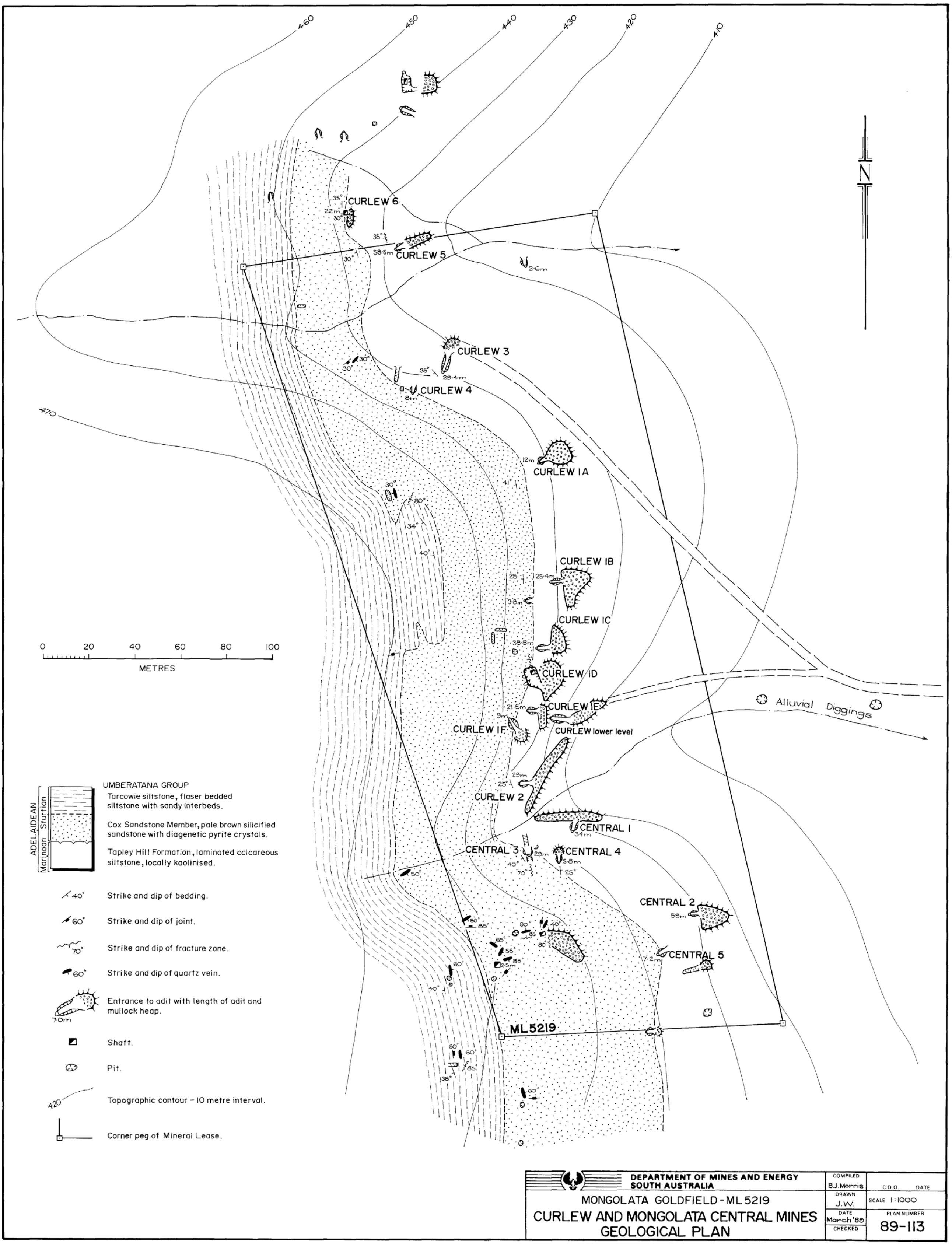
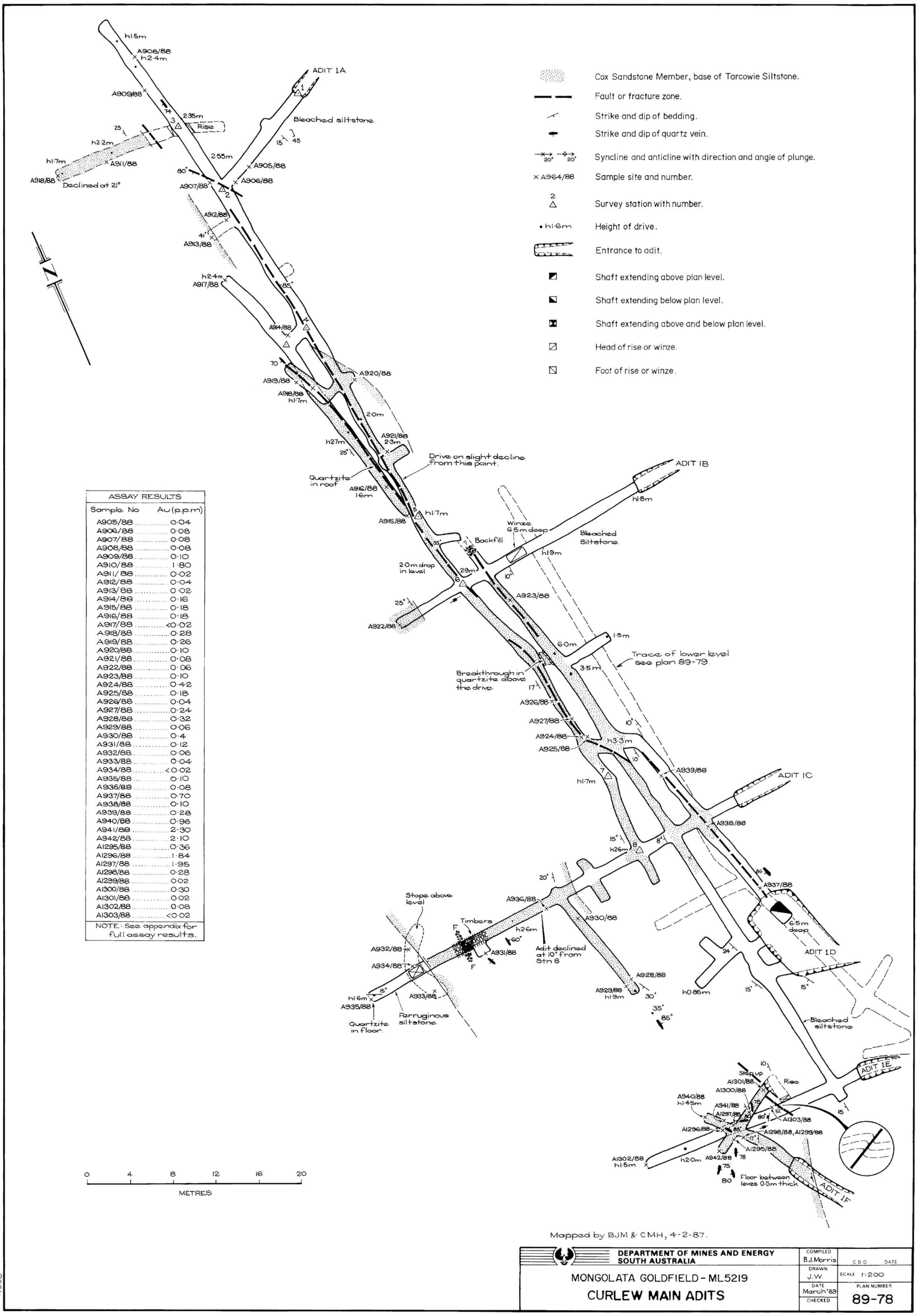


Figure 18. Curlew and Mongolata Central Mines.



ASSAY RESULTS

Sample No	Au (p.p.m)
A905/88	0·04
A906/88	0·08
A907/88	0·08
A908/88	0·08
A909/88	0·10
A910/88	1·80
A911/88	0·02
A912/88	0·04
A913/88	0·02
A914/88	0·16
A915/88	0·18
A916/88	0·18
A917/88	<0·02
A918/88	0·28
A919/88	0·26
A920/88	0·10
A921/88	0·08
A922/88	0·06
A923/88	0·10
A924/88	0·42
A925/88	0·18
A926/88	0·04
A927/88	0·24
A928/88	0·32
A929/88	0·06
A930/88	0·4
A931/88	0·12
A932/88	0·06
A933/88	0·04
A934/88	<0·02
A935/88	0·10
A936/88	0·08
A937/88	0·70
A938/88	0·10
A939/88	0·28
A940/88	0·96
A941/88	2·30
A942/88	2·10
A1295/88	0·36
A1296/88	1·84
A1297/88	1·95
A1298/88	0·28
A1299/88	0·02
A1300/88	0·30
A1301/88	0·02
A1302/88	0·08
A1303/88	<0·02

NOTE: See appendix for full assay results.

Figure 19. Curlew main adits.

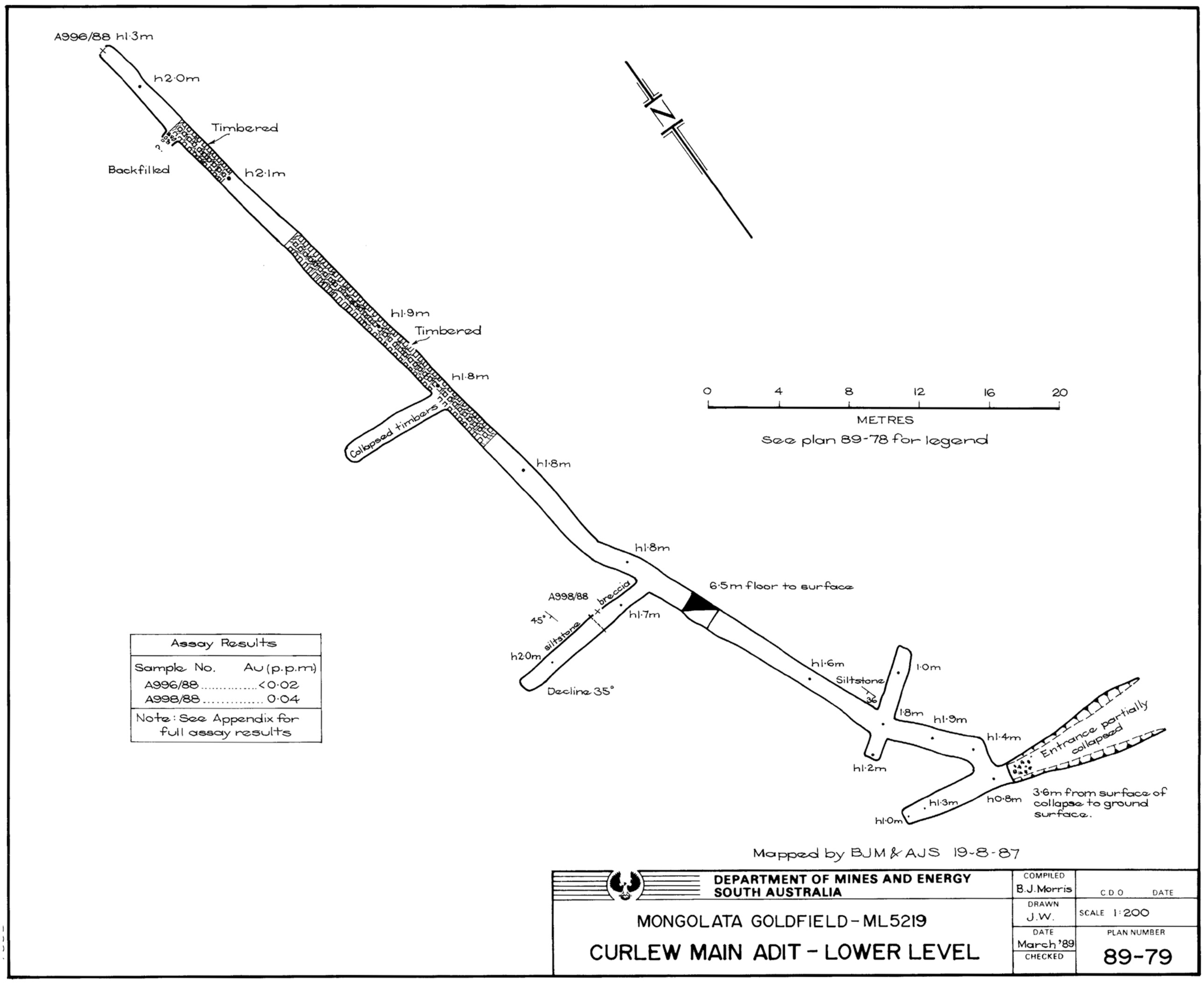


Figure 20. Curlew main adit, lower level. See Figure 19 for legend.

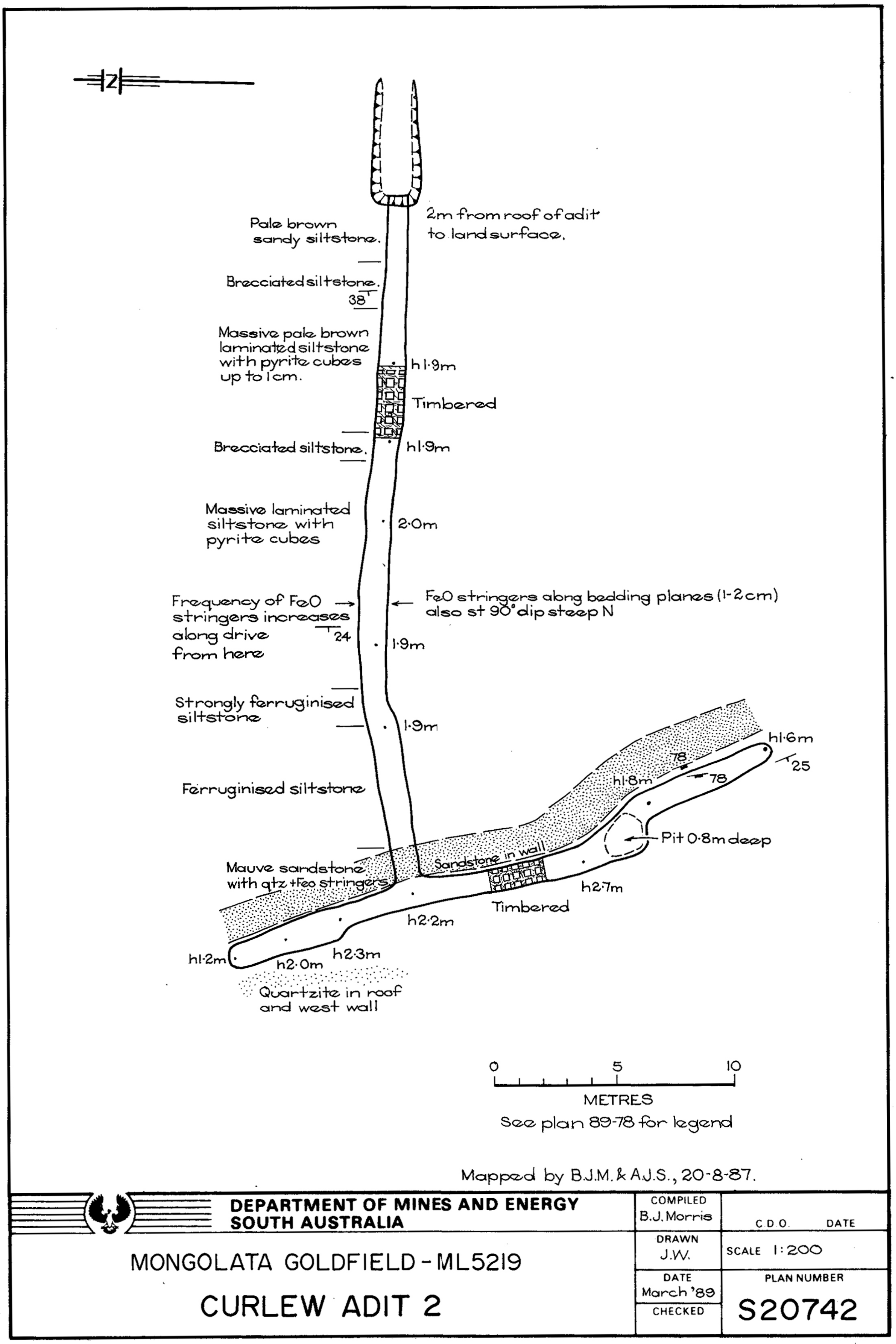


Figure 21. Curlew Adit 2. See Figure 19 for legend.

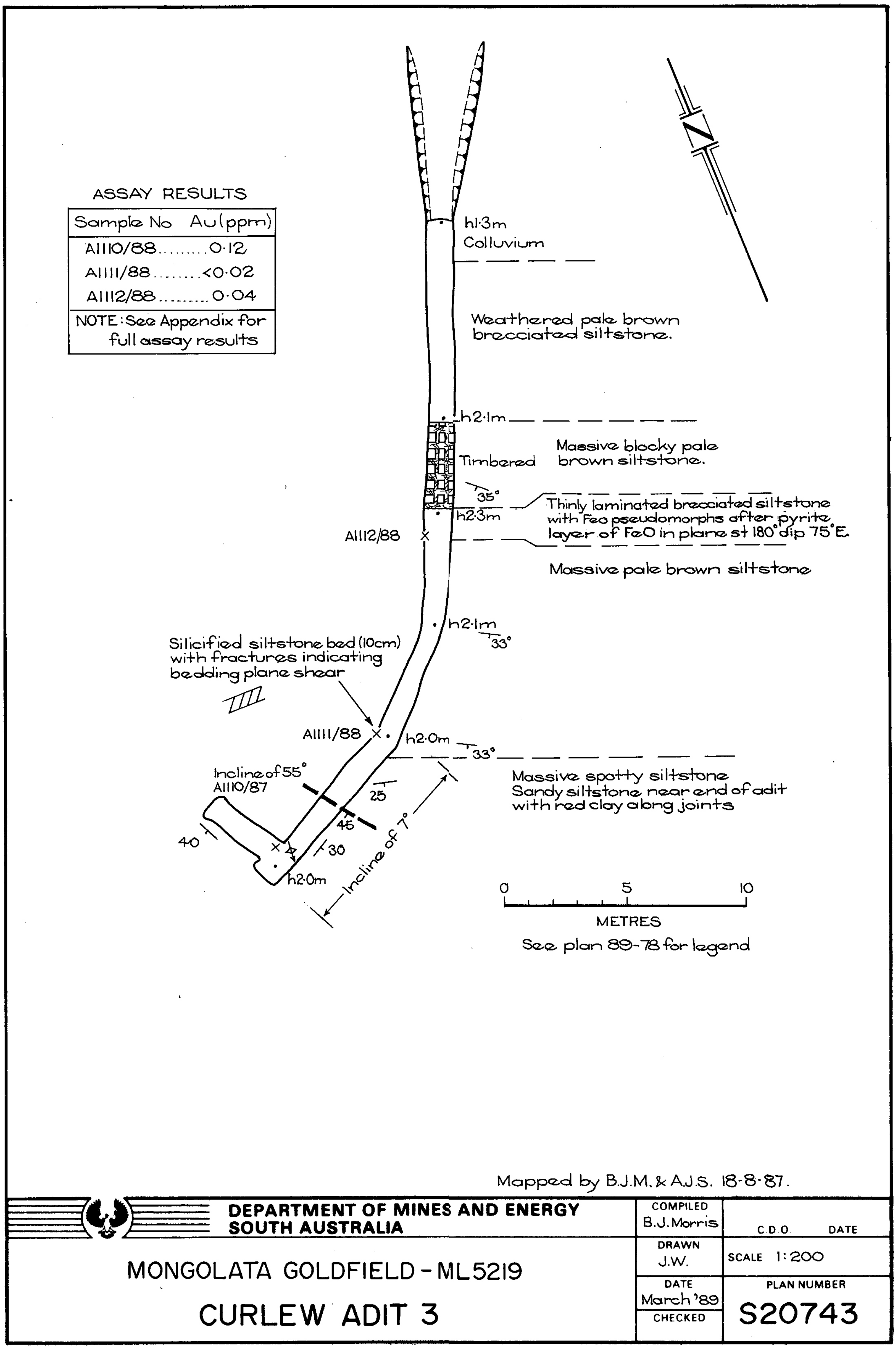
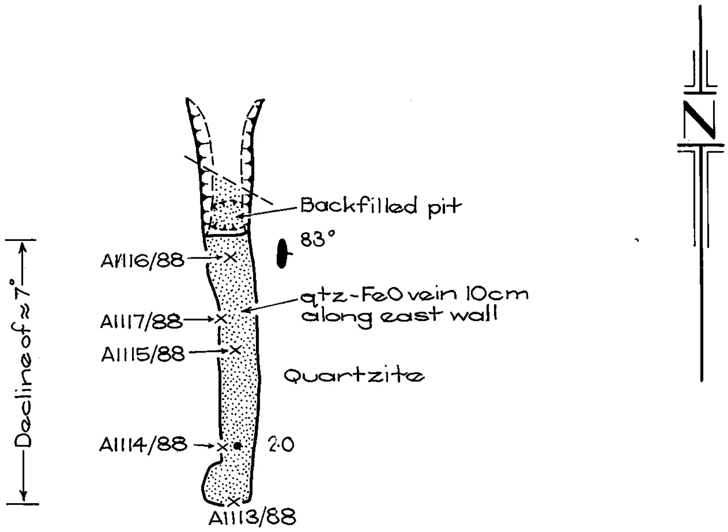


Figure 22. Curlew Adit 3. See Figure 19 for legend.



ASSAY RESULTS	
Sample No.	Au (p.p.m)
A1113/88	0·08
A1114/88	0·36
A1115/88	2·70
A1116/88	1·80
A1117/88	0·88

NOTE : See Appendix for full assay results.

0 5 10
METRES
See plan 89-78 for legend

Mapped by B.J.M. & A.J.S, 17-8-87.

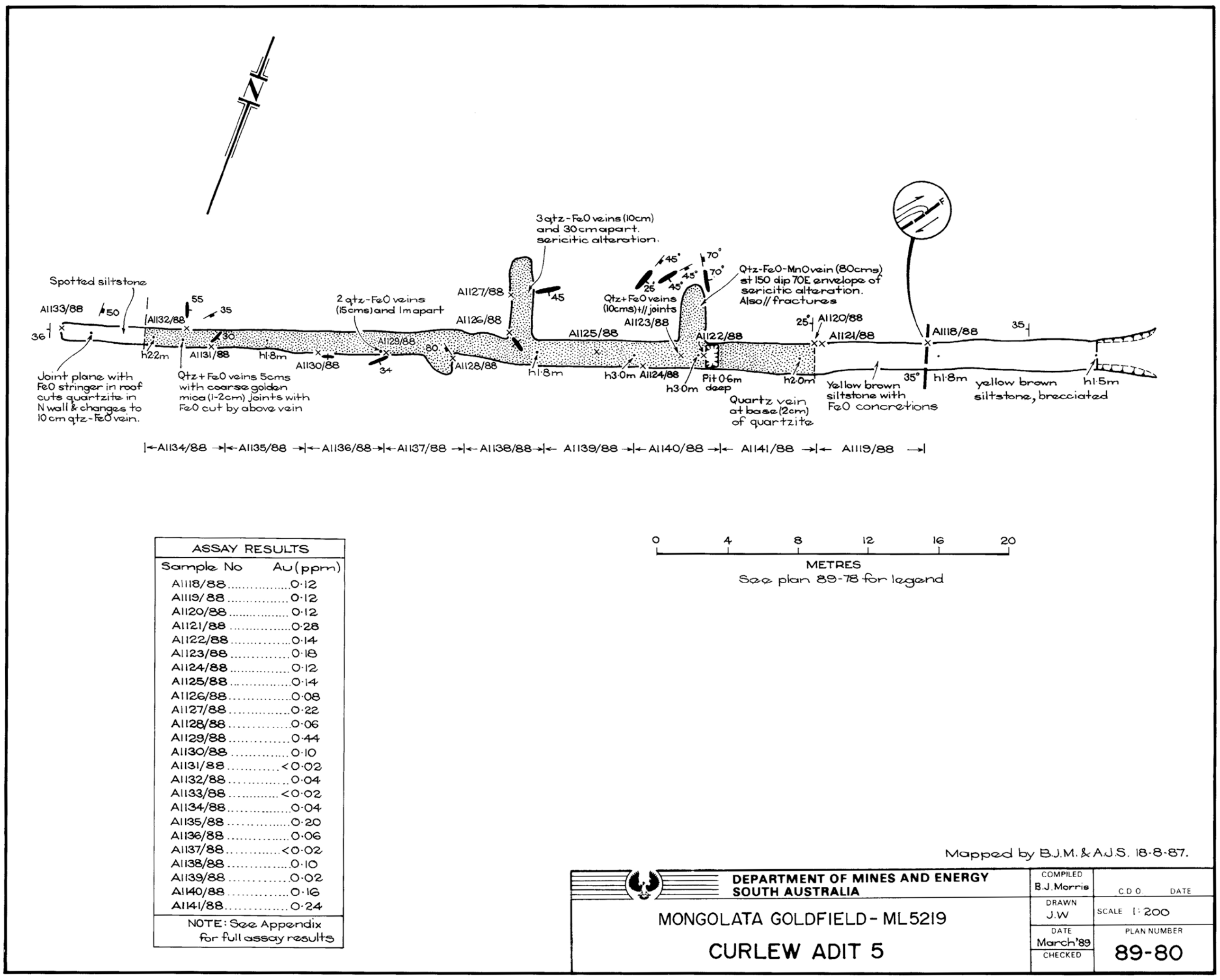
DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA

MONGOLATA GOLDFIELD - ML5219

CURLEW ADIT 4

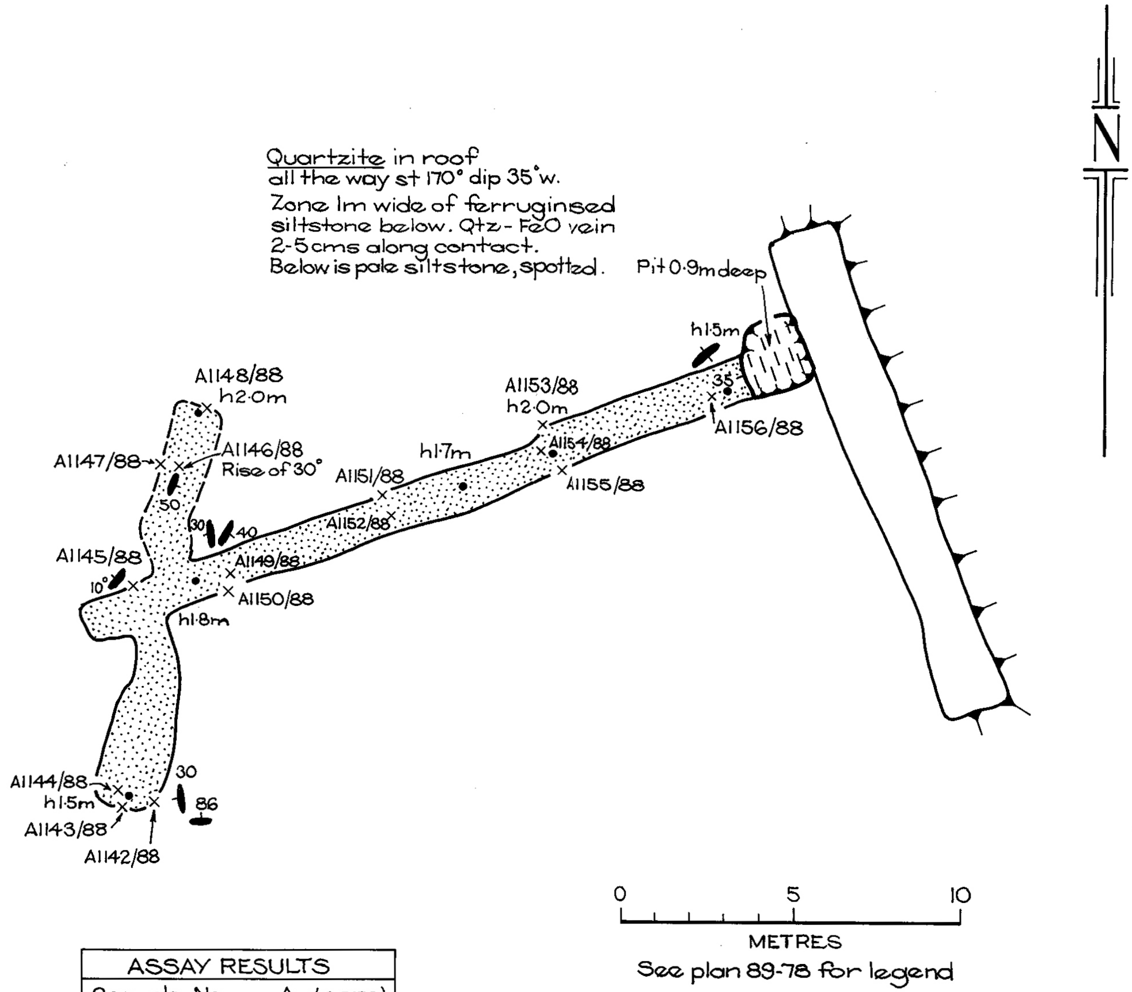
COMPILED B.J.Morris	C D O DATE
DRAWN J.W.	SCALE 1:200
DATE March '89	PLAN NUMBER
CHECKED	S20744

Figure 23. Curlew Adit 4. See Figure 19 for legend.



Sample No	Au (ppm)
A1118/88	0.12
A1119/88	0.12
A1120/88	0.12
A1121/88	0.28
A1122/88	0.14
A1123/88	0.18
A1124/88	0.12
A1125/88	0.14
A1126/88	0.08
A1127/88	0.22
A1128/88	0.06
A1129/88	0.44
A1130/88	0.10
A1131/88	<0.02
A1132/88	0.04
A1133/88	<0.02
A1134/88	0.04
A1135/88	0.20
A1136/88	0.06
A1137/88	<0.02
A1138/88	0.10
A1139/88	0.02
A1140/88	0.16
A1141/88	0.24

Figure 24. Curlew Adit 5. See Figure 19 for legend.



ASSAY RESULTS	
Sample No	Au (ppm)
A1142/88	0·42
A1143/88	0·22
A1144/88	0·44
A1145/88	0·14
A1146/88	15·20
A1147/88	0·26
A1148/88	0·08
A1149/88	19·60
A1150/88	0·36
A1151/88	0·08
A1152/88	1·80
A1153/88	1·34
A1154/88	3·00
A1155/88	0·58
A1156/88	0·44

NOTE: See Appendix for full assay results

Mapped by B.J.M., A.J.S., & W.P.F. August 1988

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA	COMPILED B.J.Morris	C.D.O. DATE
MONGOLATA GOLDFIELD - ML5219	DRAWN J.W.	SCALE 1:200
CURLEW ADIT 6	DATE March '89 / CHECKED	PLAN NUMBER S20745

Figure 25. Curlew Adit 6. See Figure 19 for legend.

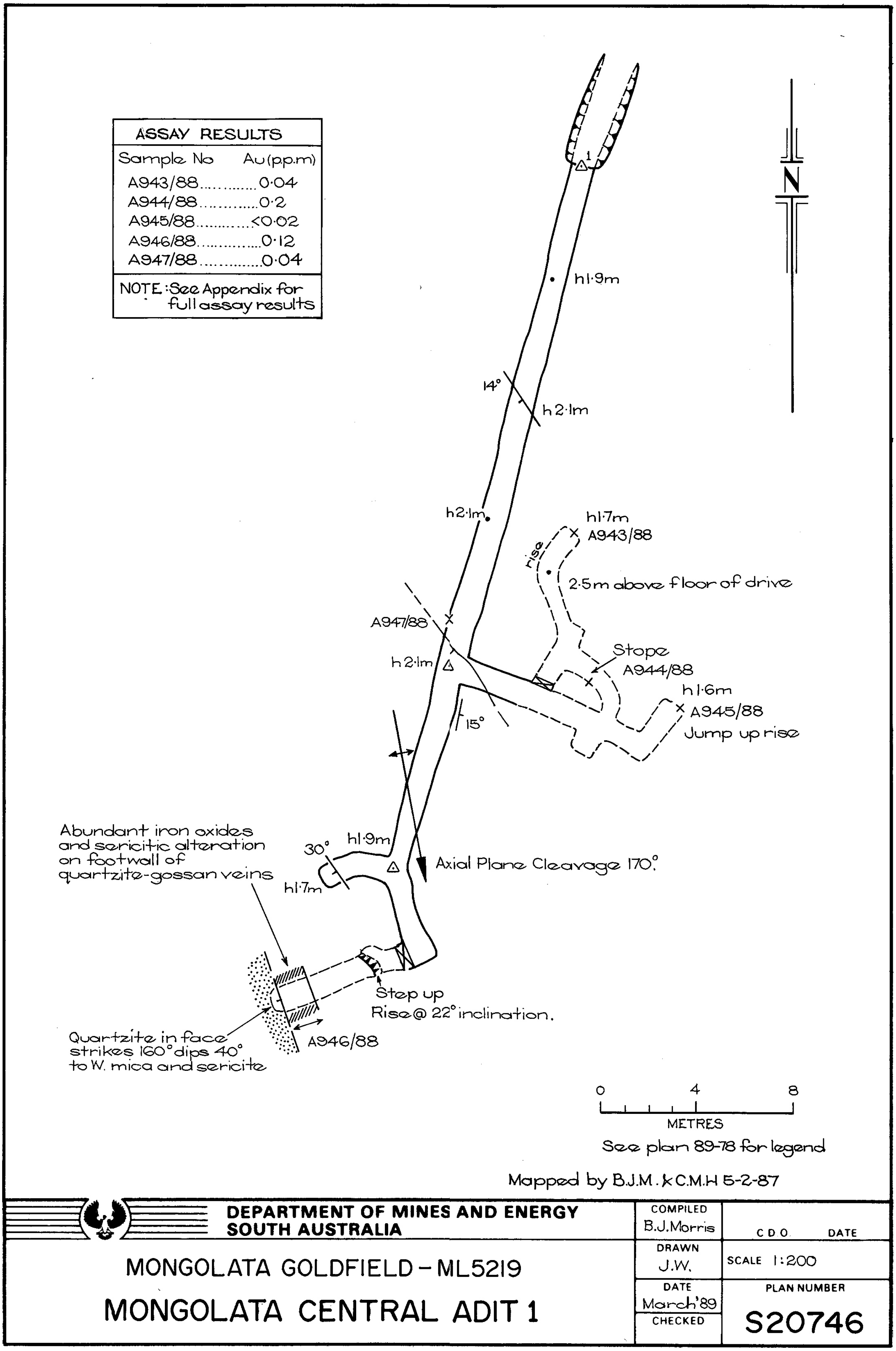


Figure 26. Mongolata Central Adit 1. See Figure 19 for legend.

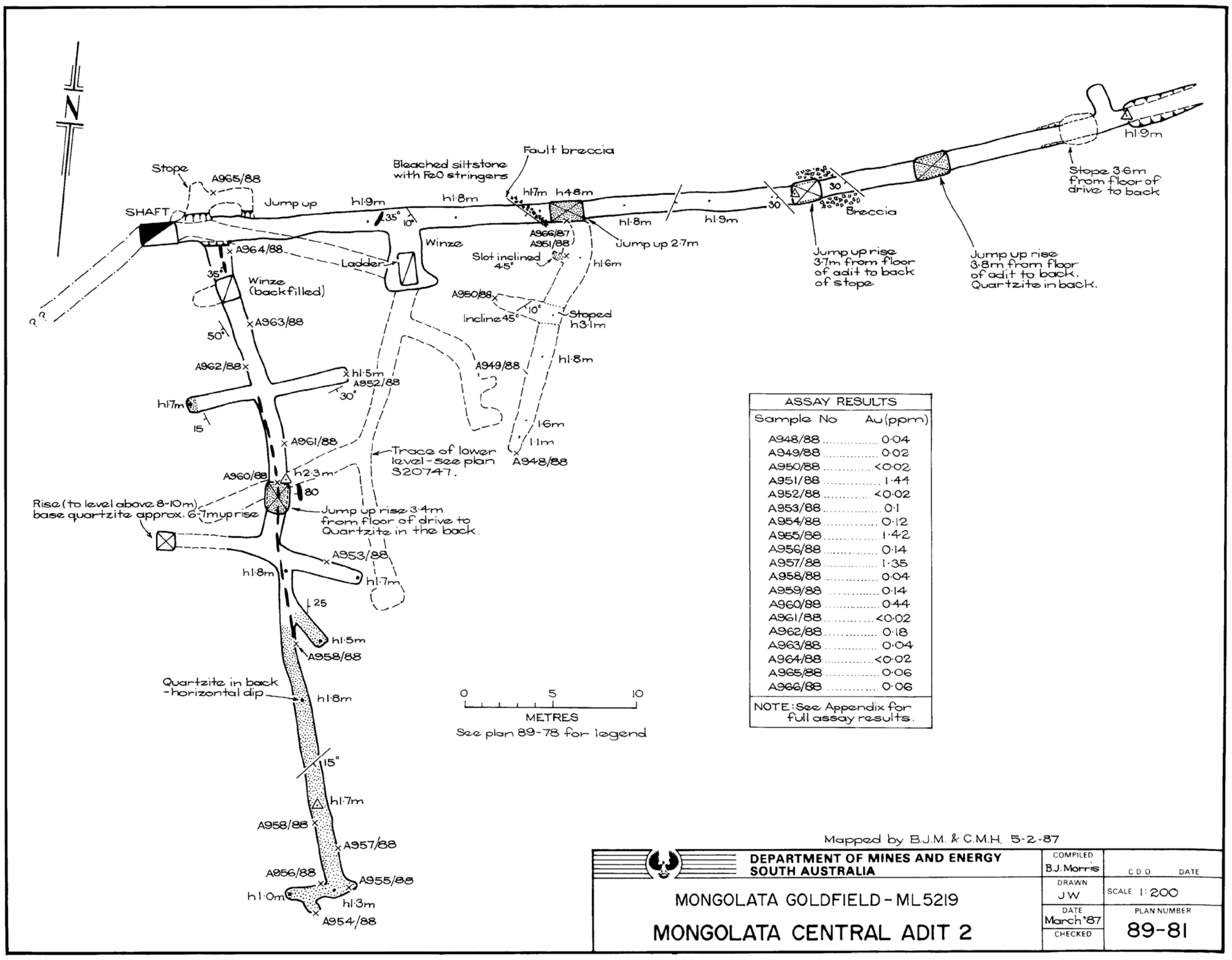


Figure 27. Mongolata Central Adit 2. See Figure 19 for legend.

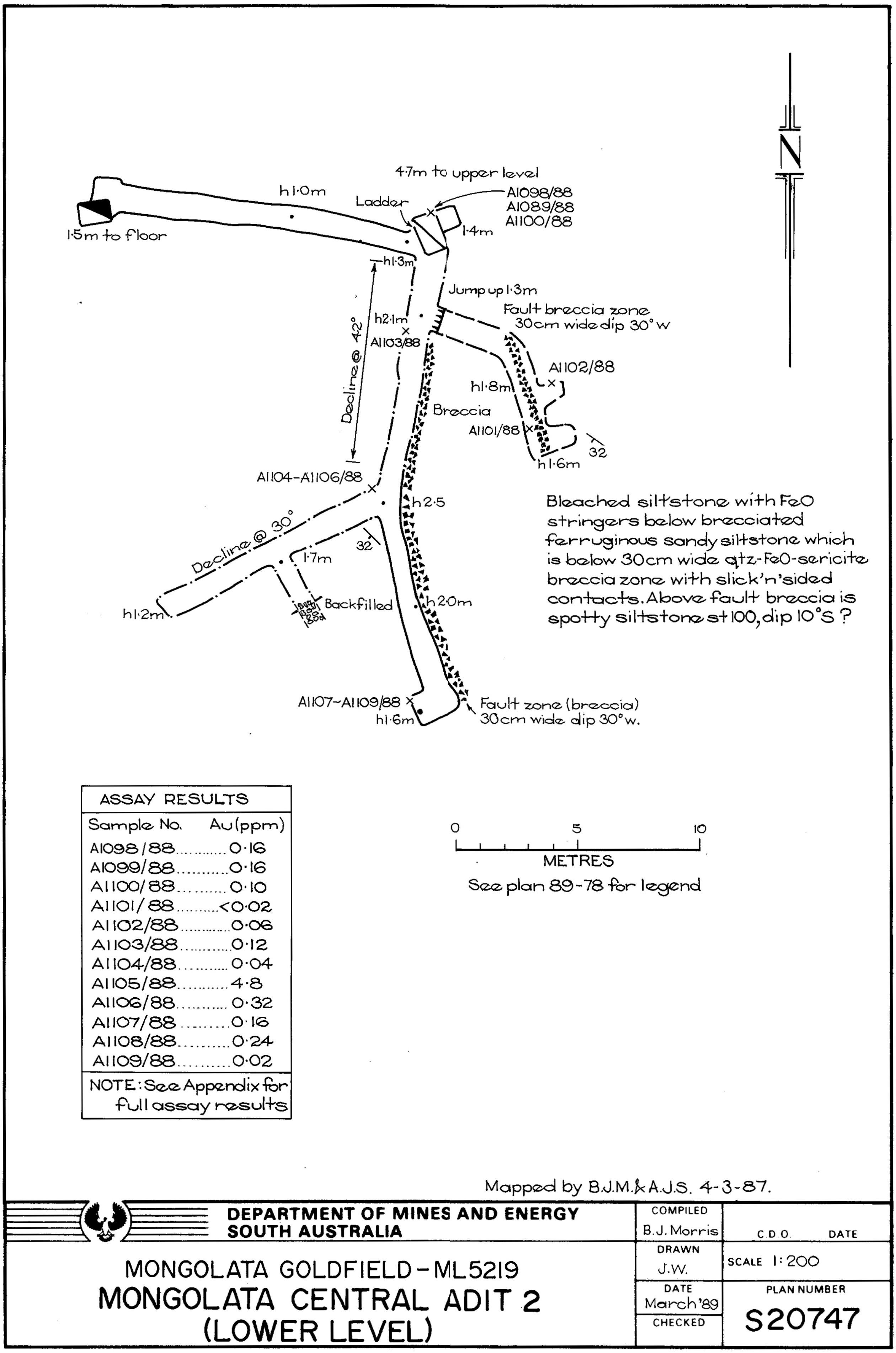
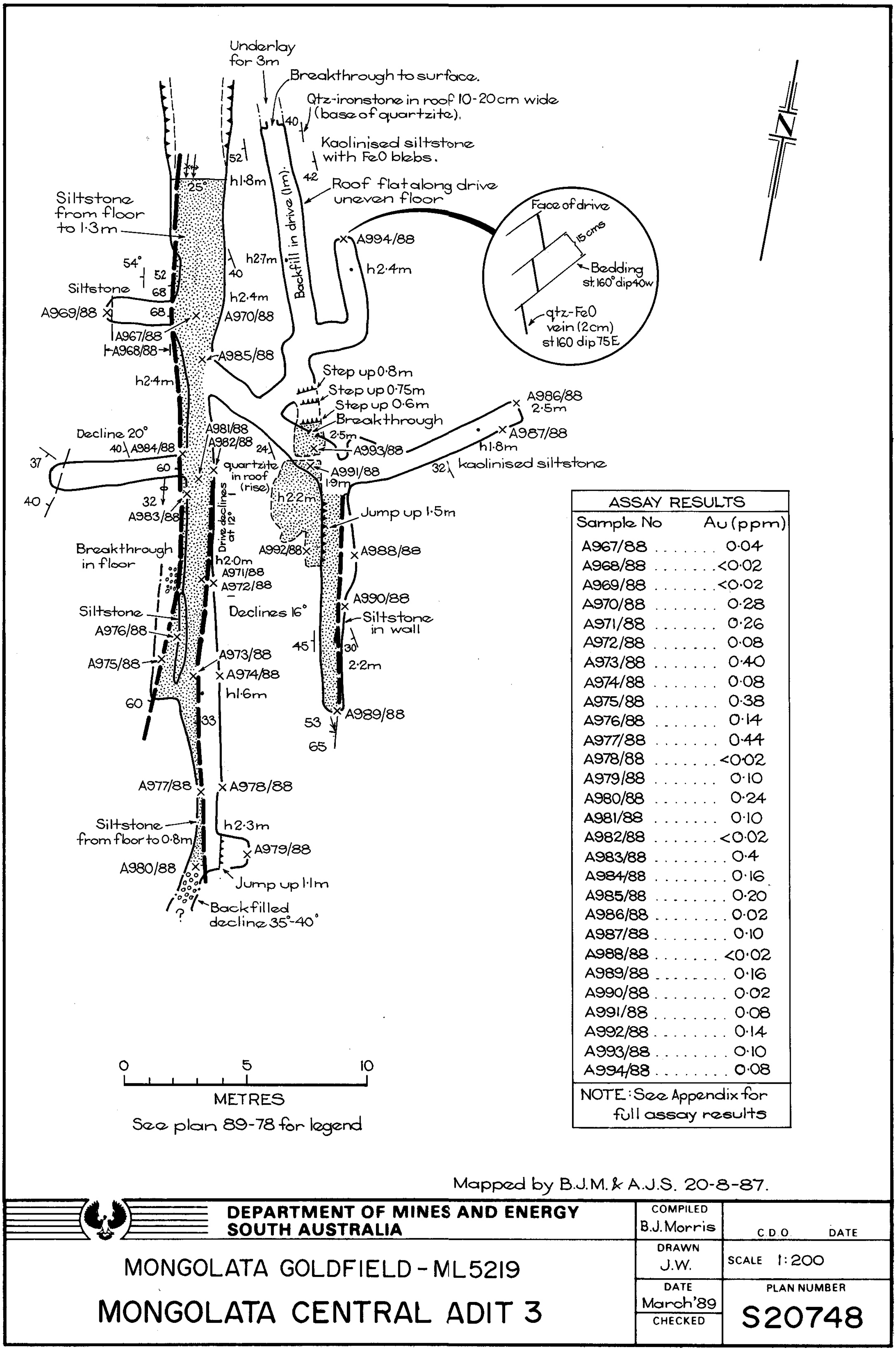


Figure 28. Mongolata Central Adit 2, lower level. See Figure 19 for legend.



ASSAY RESULTS

Sample No	Au (ppm)
A967/88	0·04
A968/88	<0·02
A969/88	<0·02
A970/88	0·28
A971/88	0·26
A972/88	0·08
A973/88	0·40
A974/88	0·08
A975/88	0·38
A976/88	0·14
A977/88	0·44
A978/88	<0·02
A979/88	0·10
A980/88	0·24
A981/88	0·10
A982/88	<0·02
A983/88	0·4
A984/88	0·16
A985/88	0·20
A986/88	0·02
A987/88	0·10
A988/88	<0·02
A989/88	0·16
A990/88	0·02
A991/88	0·08
A992/88	0·14
A993/88	0·10
A994/88	0·08

NOTE: See Appendix for full assay results

Figure 29. Mongolata Central Adit 3. See Figure 19 for legend.

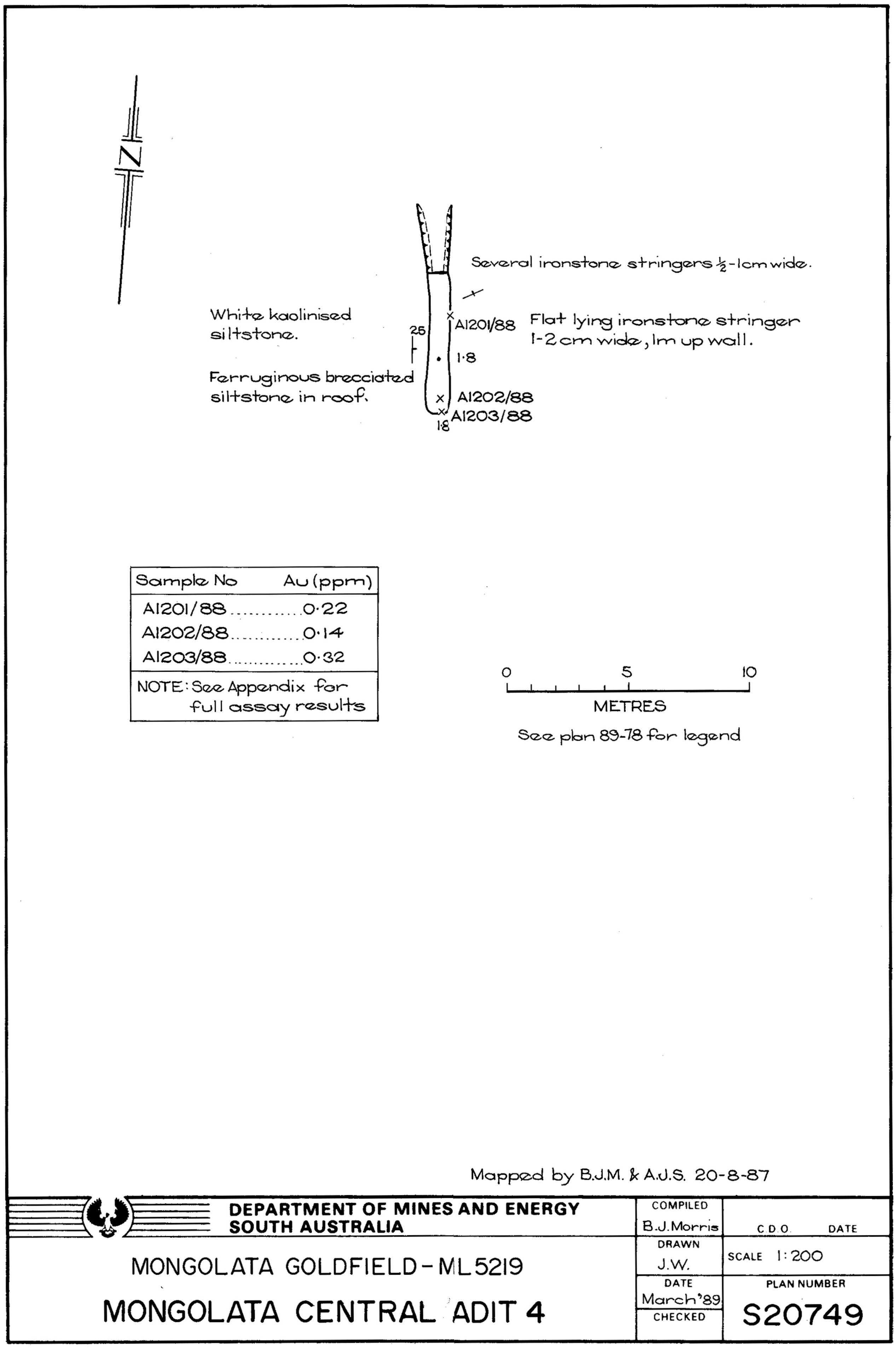


Figure 30. Mongolata Central Adit 4. See Figure 19 for legend.

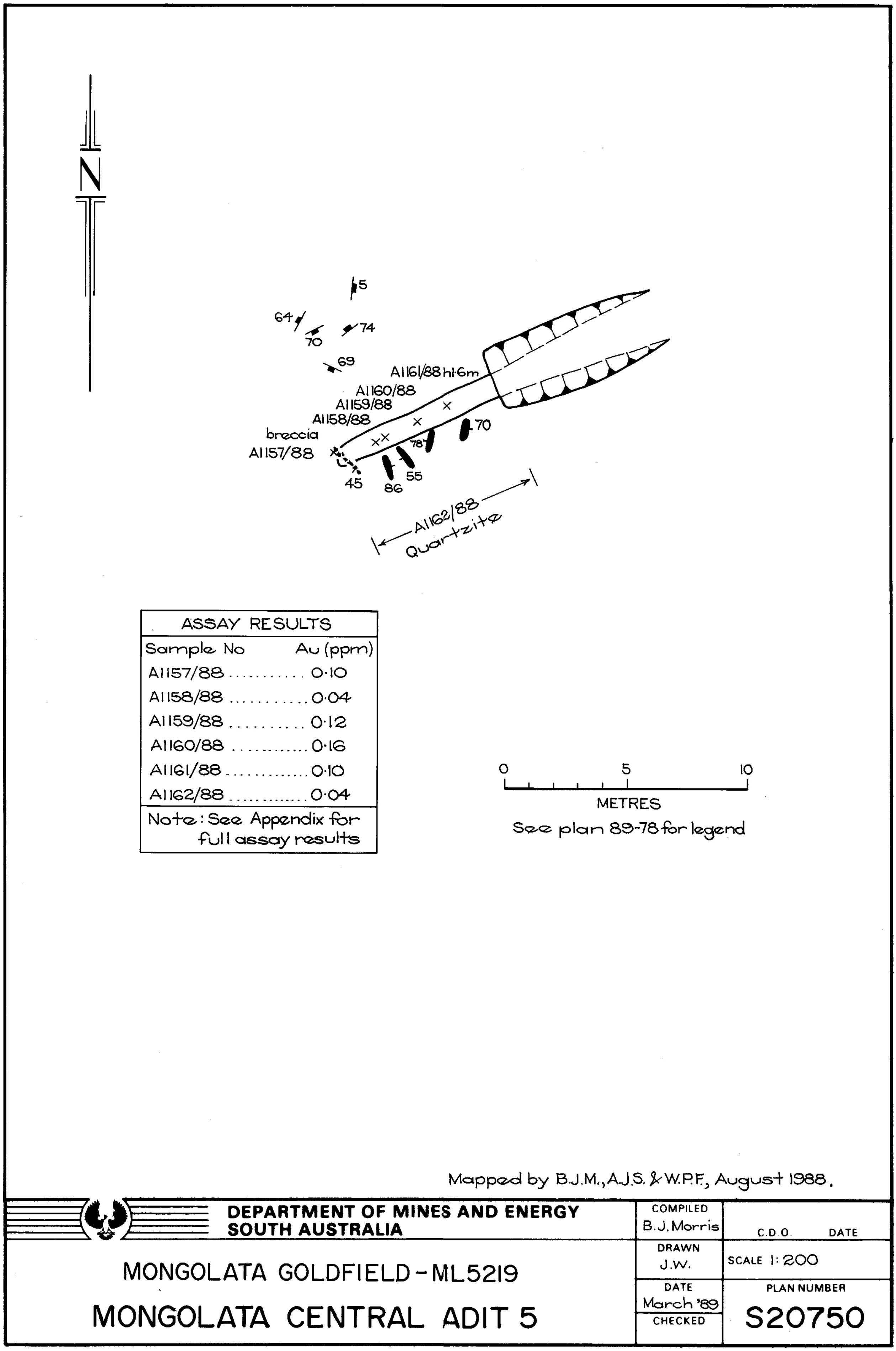
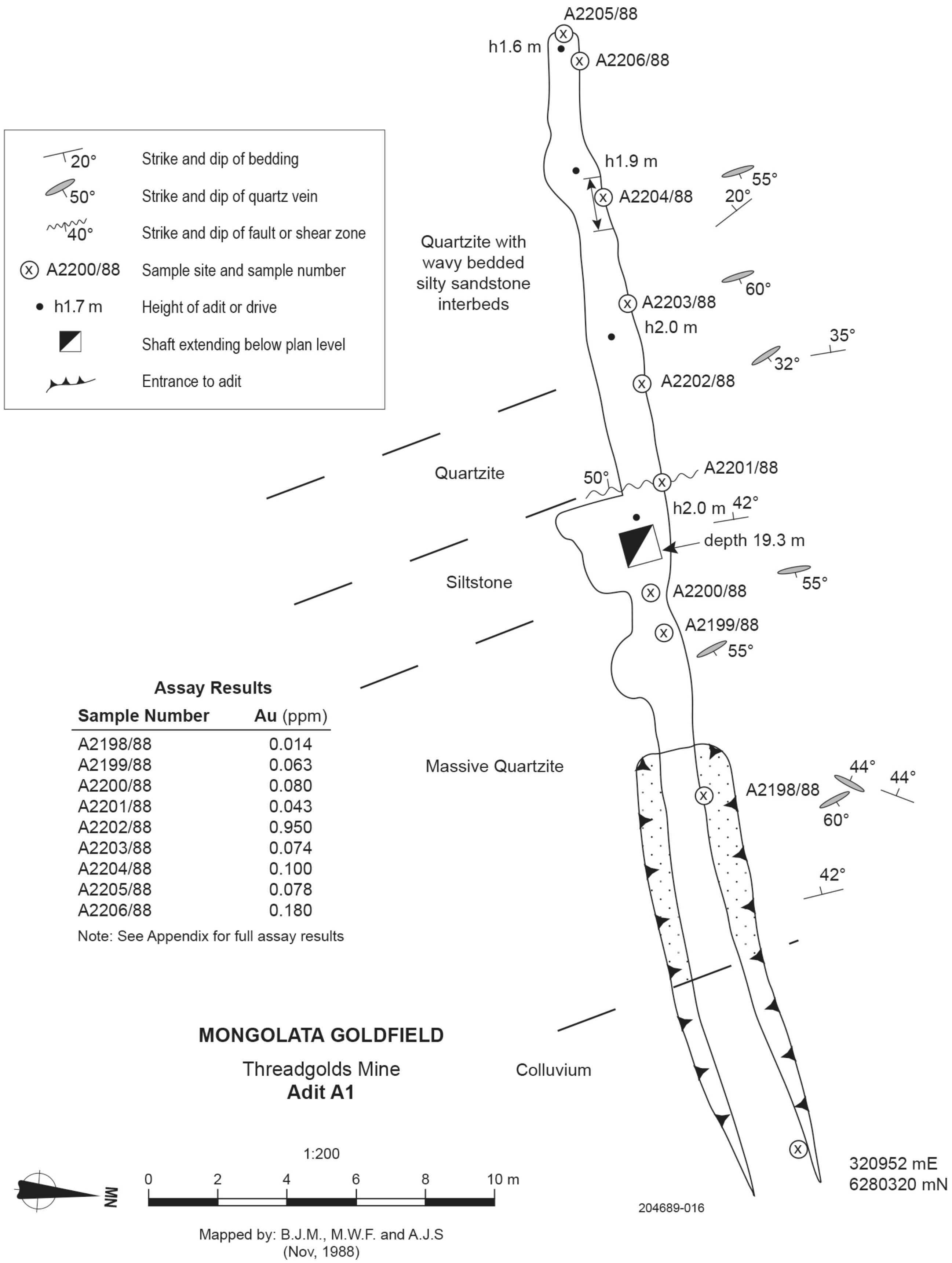


Figure 31. Mongolata Central Adit 5. See Figure 19 for legend.



Assay Results

Sample Number	Au (ppm)
A2198/88	0.014
A2199/88	0.063
A2200/88	0.080
A2201/88	0.043
A2202/88	0.950
A2203/88	0.074
A2204/88	0.100
A2205/88	0.078
A2206/88	0.180

Note: See Appendix for full assay results

Figure 32. Adit A1, Threadgolds Mine.

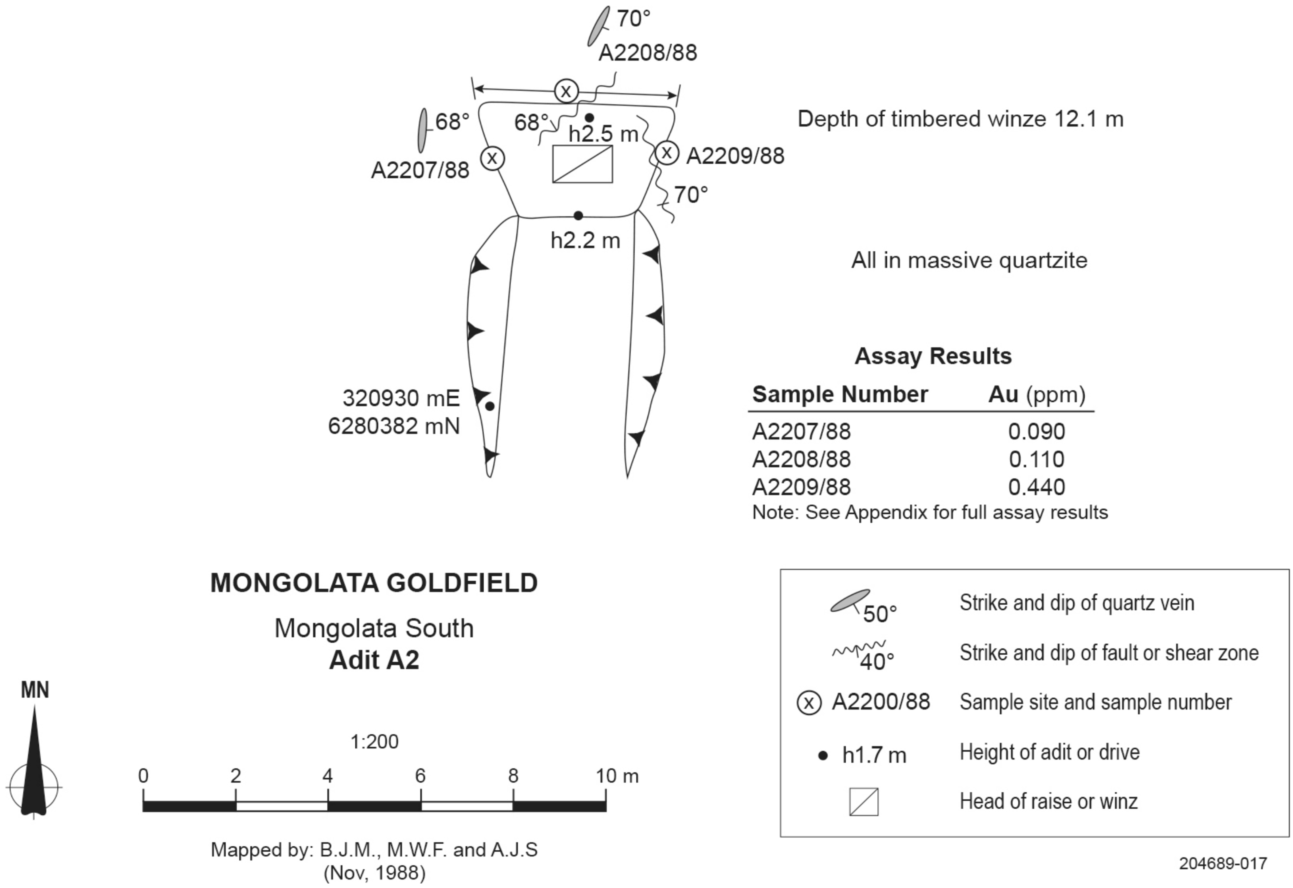
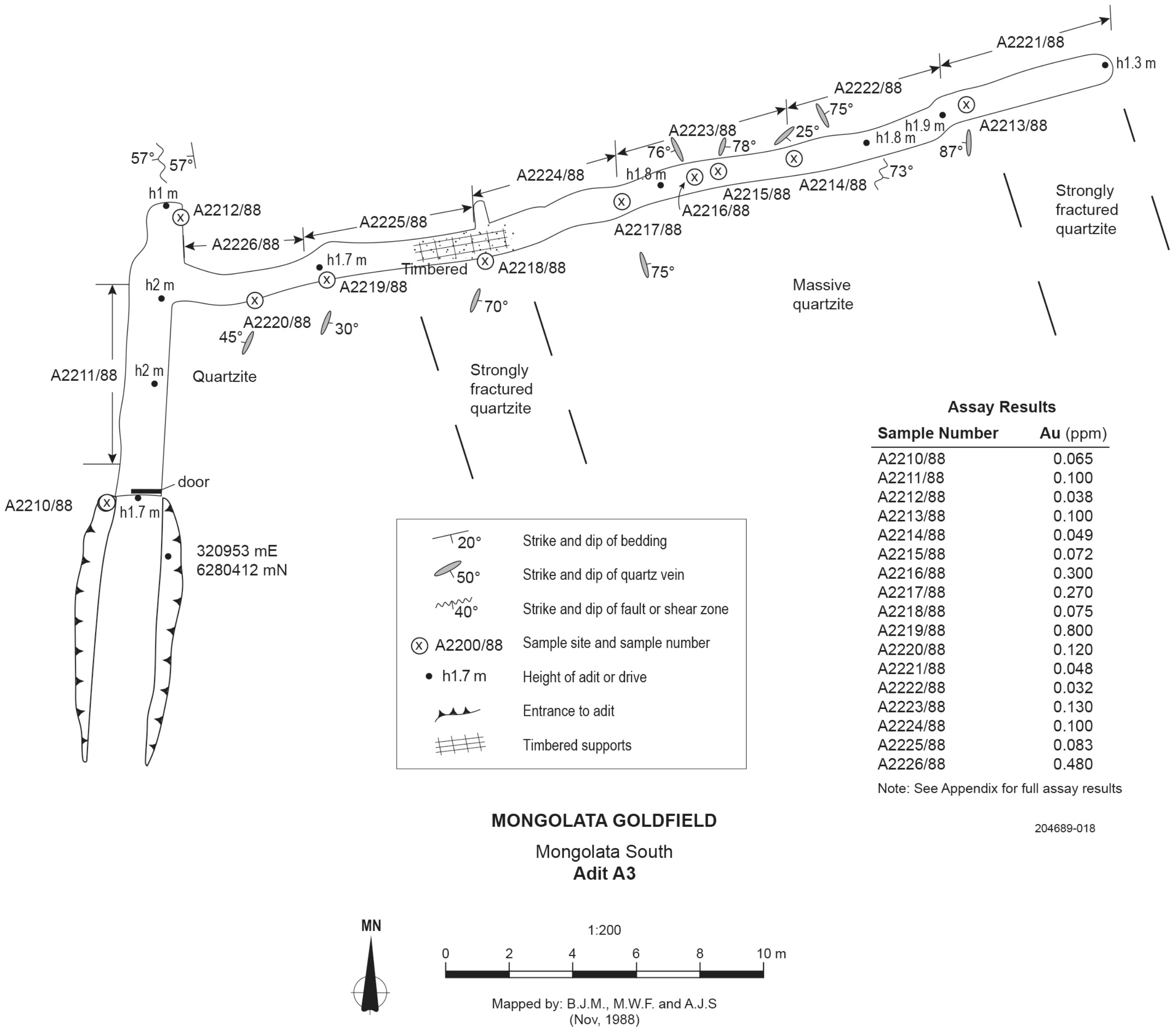


Figure 33. Adit A2, Mongolata South.



Assay Results

Sample Number	Au (ppm)
A2210/88	0.065
A2211/88	0.100
A2212/88	0.038
A2213/88	0.100
A2214/88	0.049
A2215/88	0.072
A2216/88	0.300
A2217/88	0.270
A2218/88	0.075
A2219/88	0.800
A2220/88	0.120
A2221/88	0.048
A2222/88	0.032
A2223/88	0.130
A2224/88	0.100
A2225/88	0.083
A2226/88	0.480

Note: See Appendix for full assay results

Figure 34. Adit A3, Mongolata South.

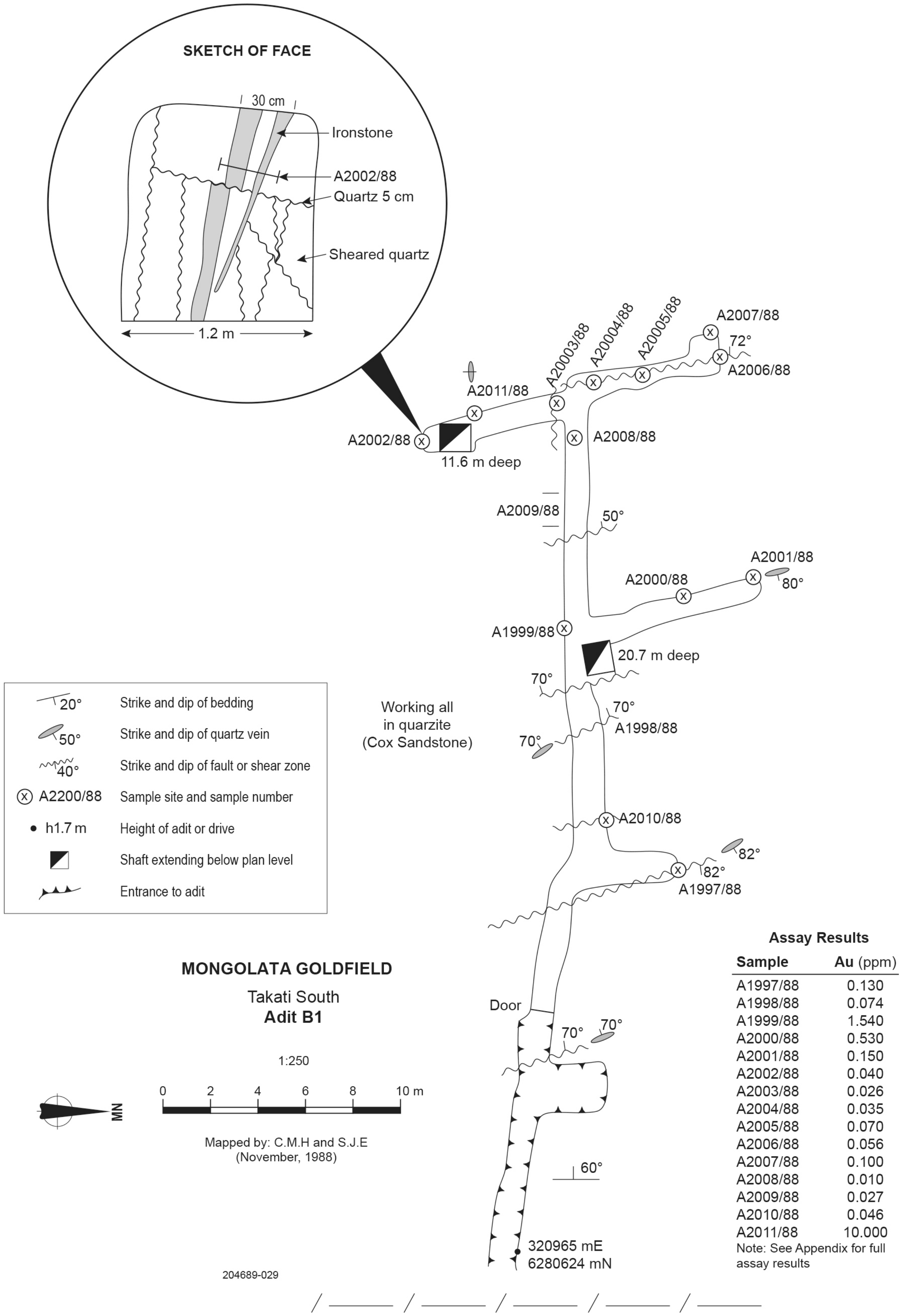
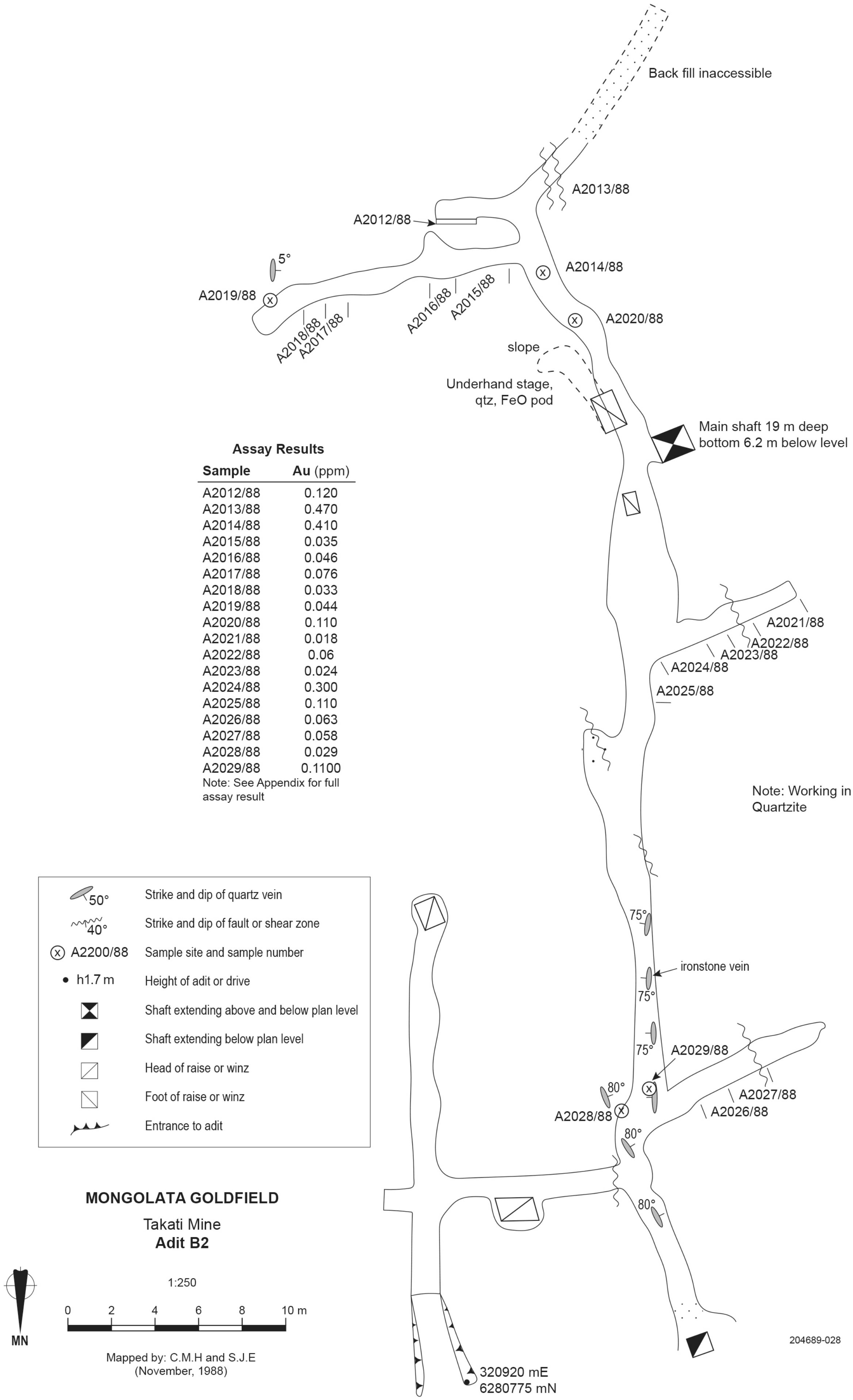


Figure 35. Adit B1, Takati South.

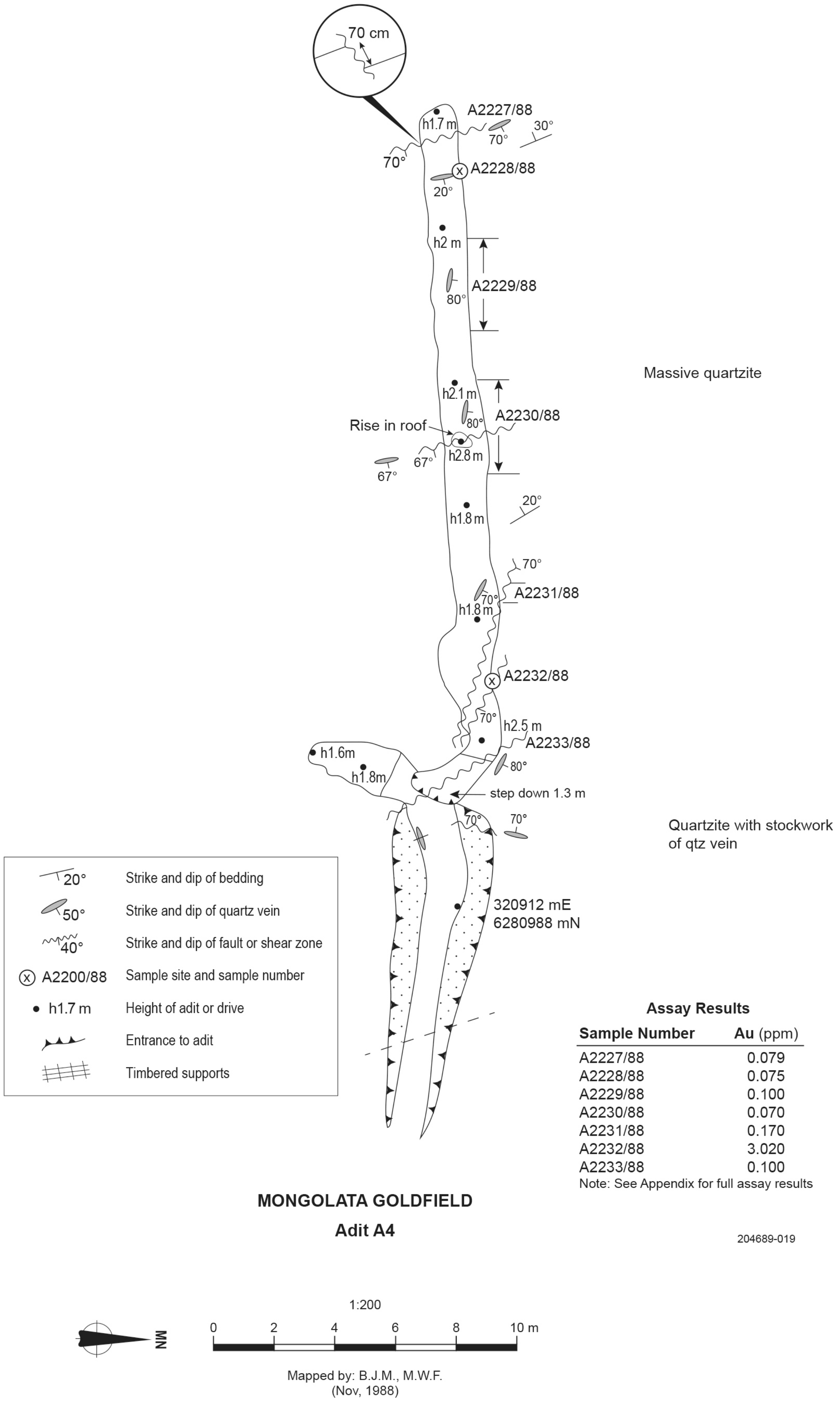


Assay Results

Sample	Au (ppm)
A2012/88	0.120
A2013/88	0.470
A2014/88	0.410
A2015/88	0.035
A2016/88	0.046
A2017/88	0.076
A2018/88	0.033
A2019/88	0.044
A2020/88	0.110
A2021/88	0.018
A2022/88	0.06
A2023/88	0.024
A2024/88	0.300
A2025/88	0.110
A2026/88	0.063
A2027/88	0.058
A2028/88	0.029
A2029/88	0.1100

Note: See Appendix for full assay result

Figure 36. Adit B2, Takati Mine.

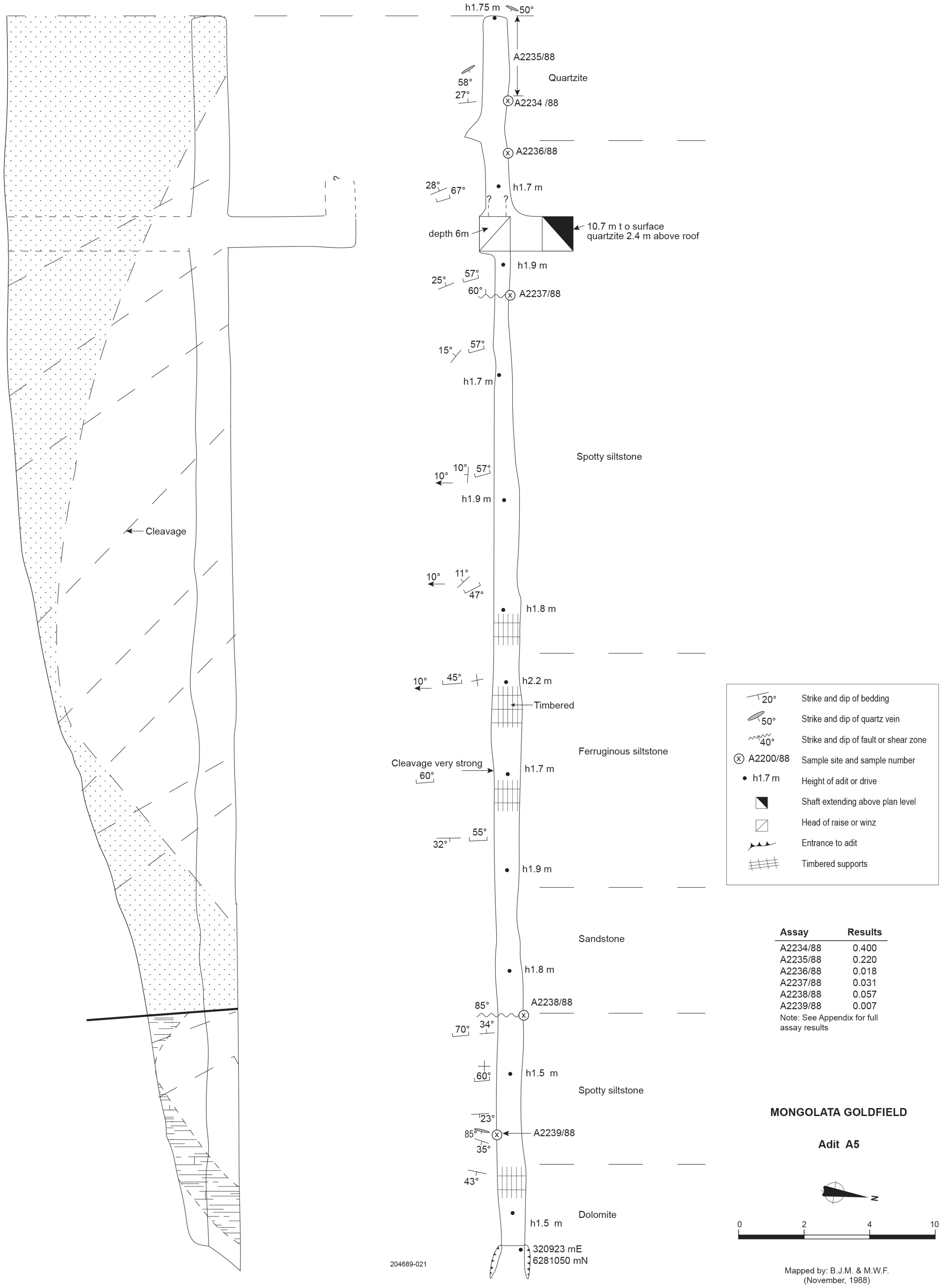


Assay Results

Sample Number	Au (ppm)
A2227/88	0.079
A2228/88	0.075
A2229/88	0.100
A2230/88	0.070
A2231/88	0.170
A2232/88	3.020
A2233/88	0.100

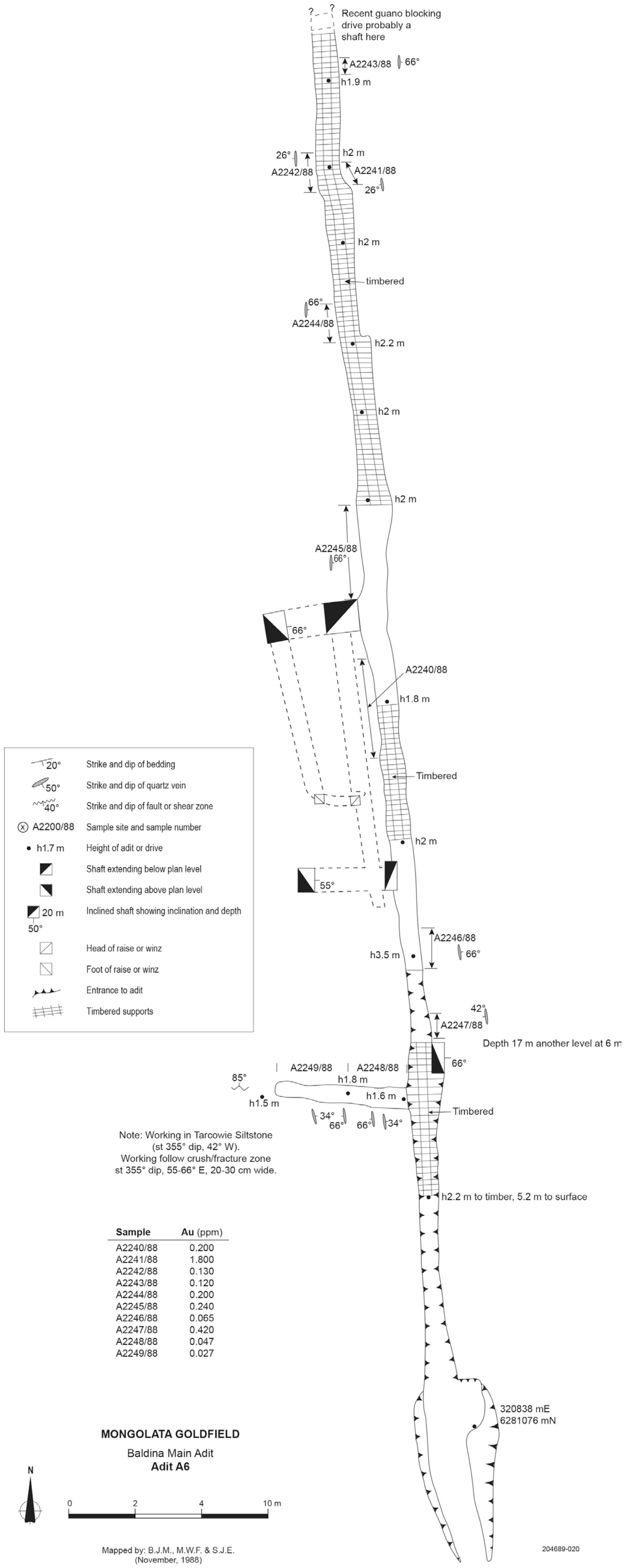
Note: See Appendix for full assay results

Figure 37. Adit A4.



Assay	Results
A2234/88	0.400
A2235/88	0.220
A2236/88	0.018
A2237/88	0.031
A2238/88	0.057
A2239/88	0.007

Figure 38. Adit A5.



Sample	Au (ppm)
A2240/88	0.200
A2241/88	1.800
A2242/88	0.130
A2243/88	0.120
A2244/88	0.200
A2245/88	0.240
A2246/88	0.065
A2247/88	0.420
A2248/88	0.047
A2249/88	0.027

Figure 39. Adit A6, Baldina Main Adit.

20°	Strike and dip of bedding
50°	Strike and dip of quartz vein
40°	Strike and dip of fault or shear zone
(x) A2200/88	Sample site and sample number
• h1.7 m	Height of adit or drive
☐	Head of raise or winz
	Entrance to adit

Assay Results

Sample Number	**Au** (ppm)
A2250/88	1.30
A2251/88	0.032
A2252/88	0.061
A2253/88	0.066

Note: See Appendix for full assay results

MN

MONGOLATA GOLDFIELD

Adit A7

1:200

0 2 4 6 8 10 m

Mapped by: B.J.M, M.W.F and S.J.E.
(November, 1988)

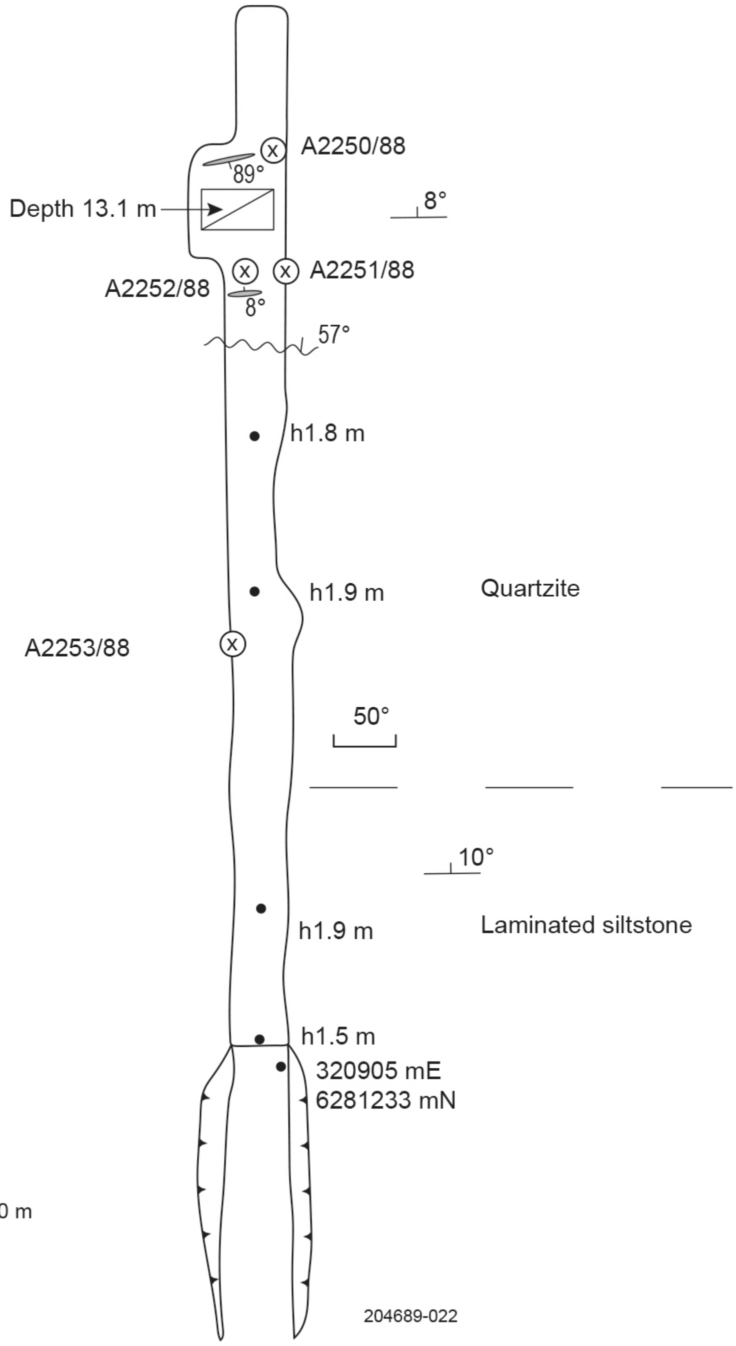
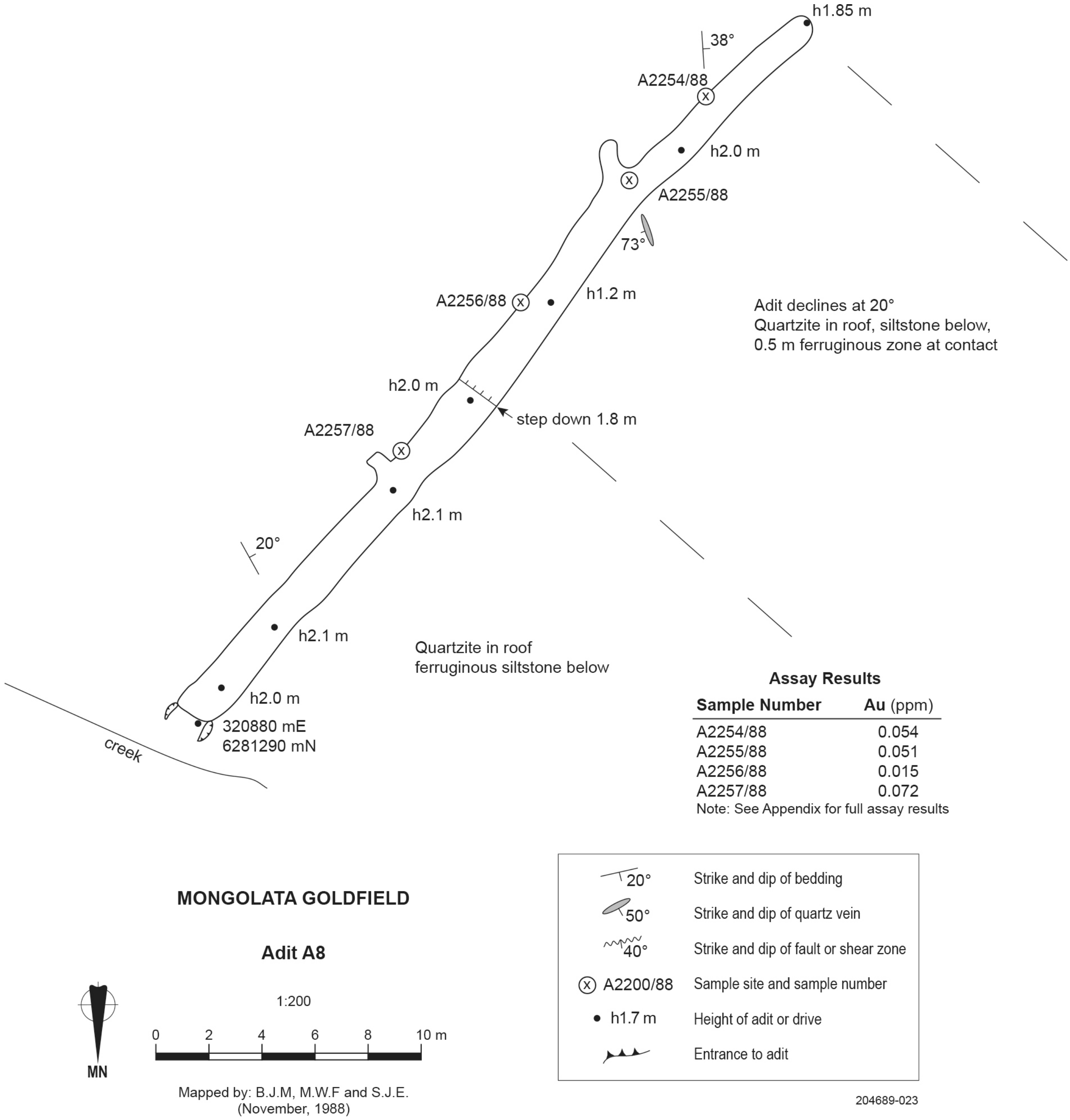


Figure 40. Adit A7.

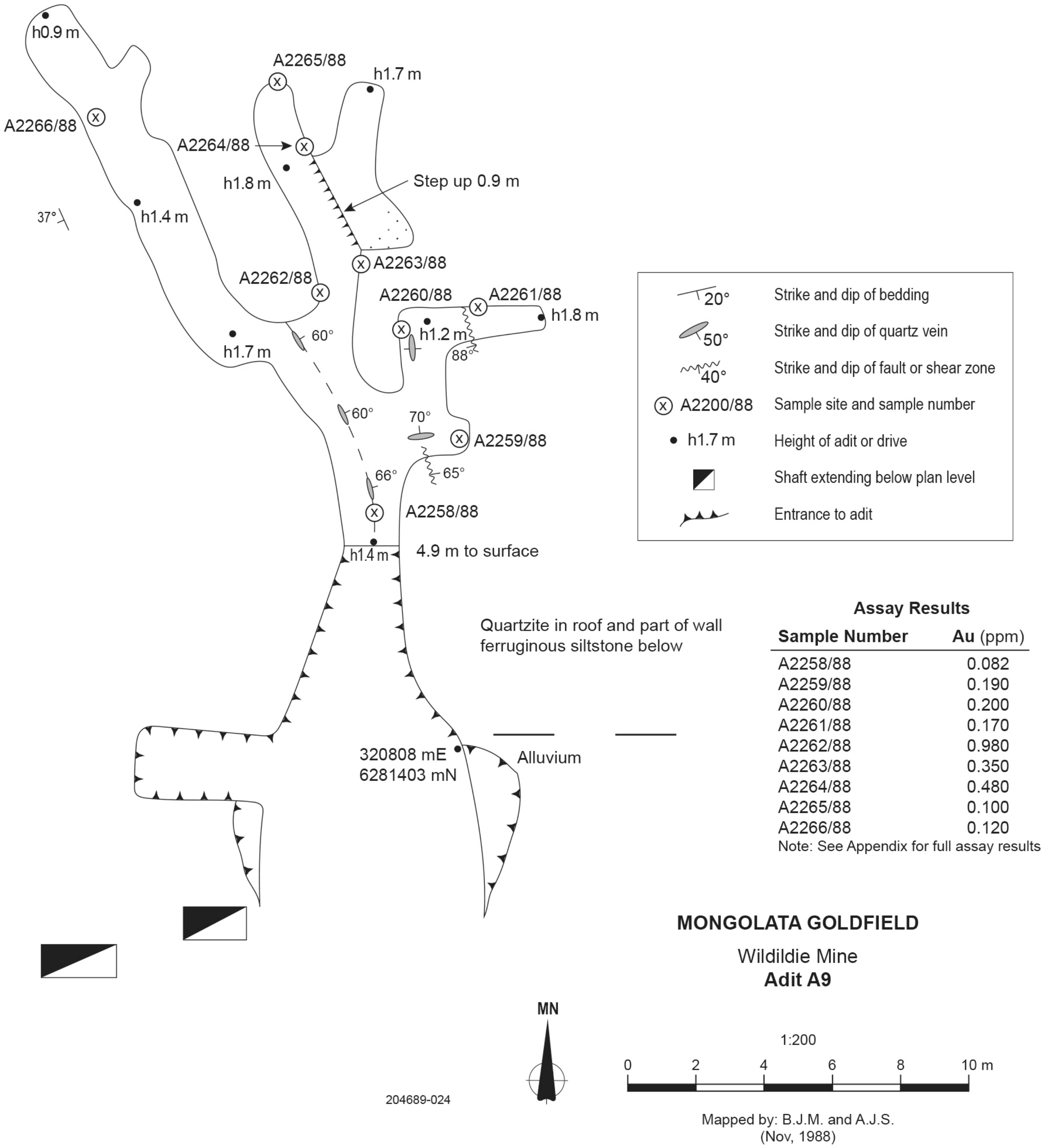


Assay Results

Sample Number	Au (ppm)
A2254/88	0.054
A2255/88	0.051
A2256/88	0.015
A2257/88	0.072

Note: See Appendix for full assay results

Figure 41. Adit A8.

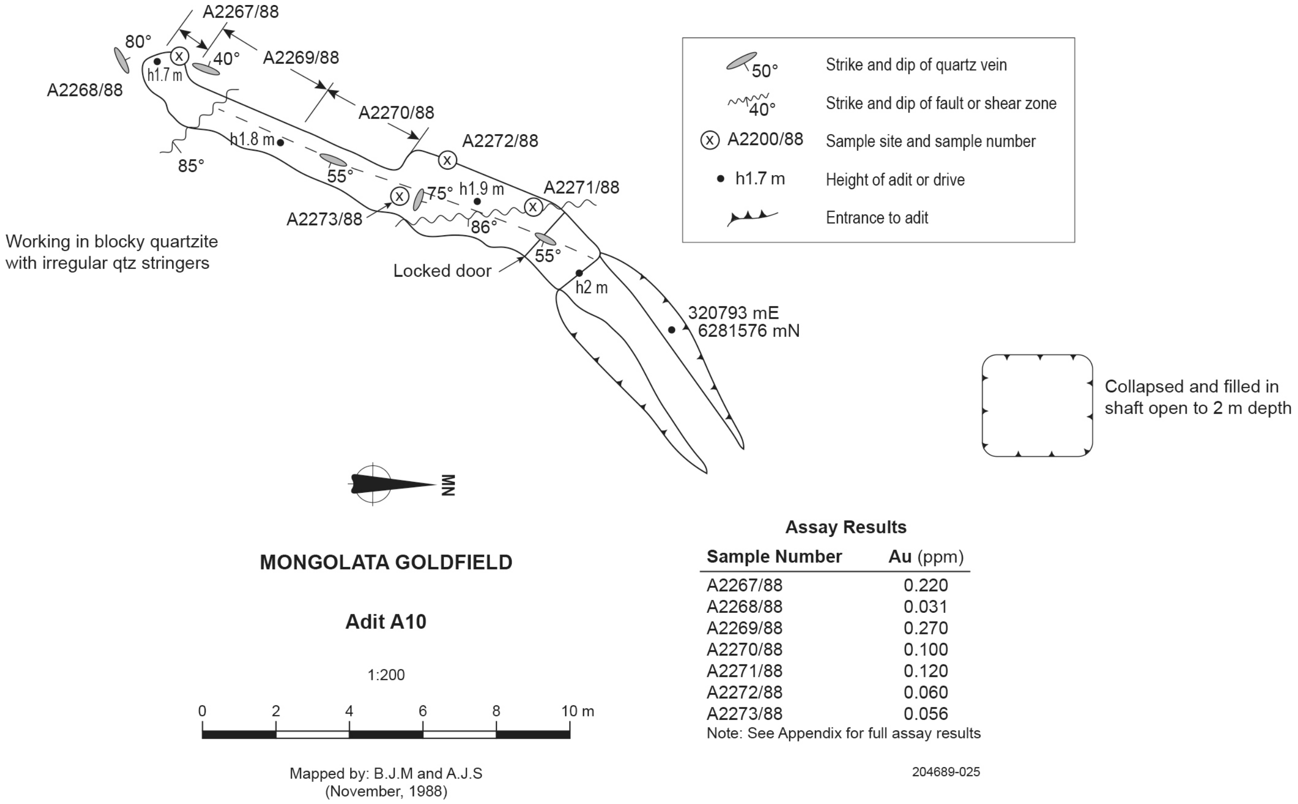


Assay Results

Sample Number	Au (ppm)
A2258/88	0.082
A2259/88	0.190
A2260/88	0.200
A2261/88	0.170
A2262/88	0.980
A2263/88	0.350
A2264/88	0.480
A2265/88	0.100
A2266/88	0.120

Note: See Appendix for full assay results

Figure 42. Adit A9, Wildildie Mine.

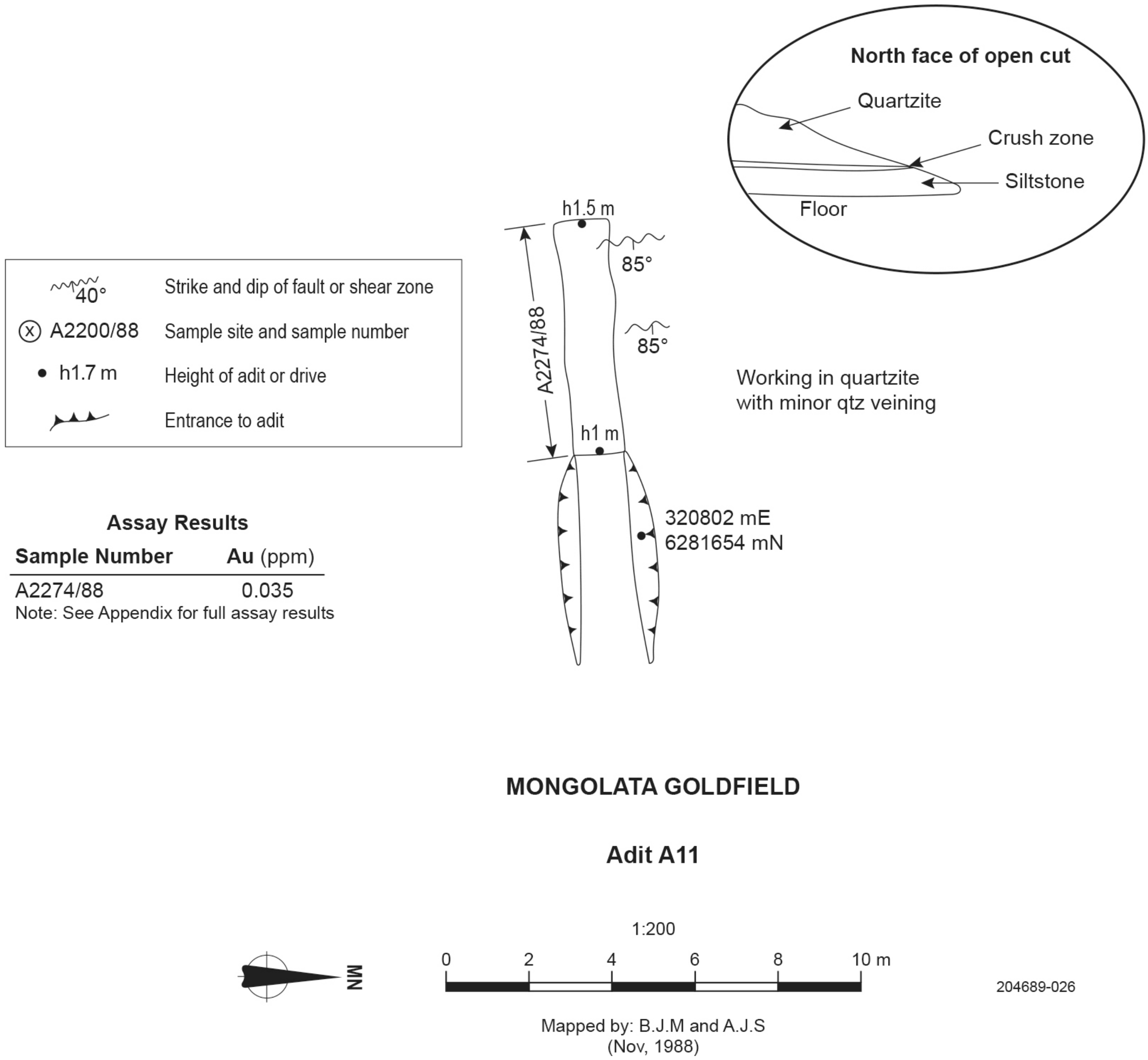


Assay Results

Sample Number	Au (ppm)
A2267/88	0.220
A2268/88	0.031
A2269/88	0.270
A2270/88	0.100
A2271/88	0.120
A2272/88	0.060
A2273/88	0.056

Note: See Appendix for full assay results

Figure 43. Adit A10.

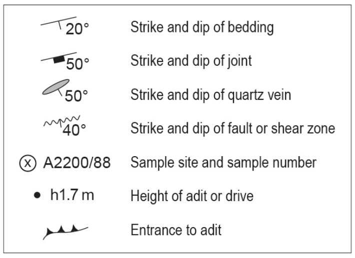


Assay Results

Sample Number	Au (ppm)
A2274/88	0.035

Note: See Appendix for full assay results

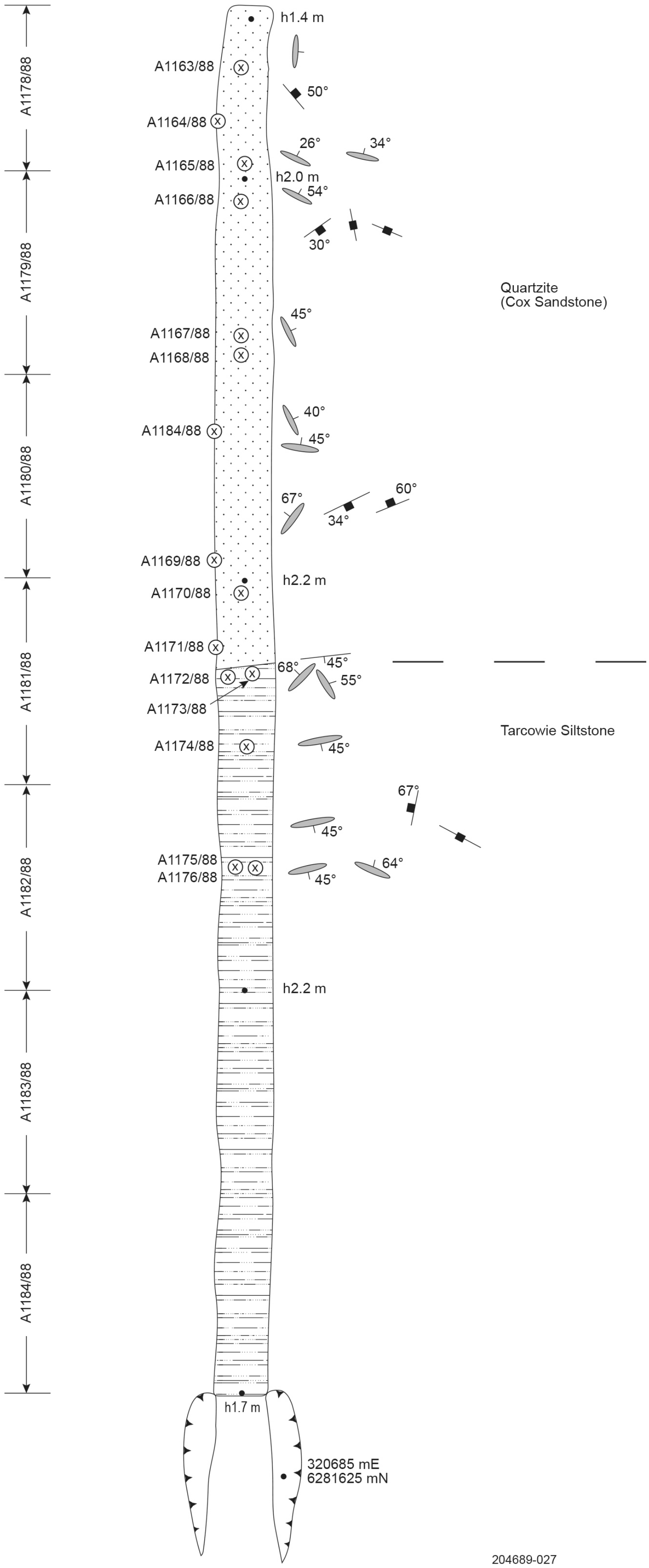
Figure 44. Adit A11.



Assay Results

Sample	Au (ppm)
A1163/88	0.08
A1164/88	0.16
A1165/88	0.04
A1166/88	<0.02
A1167/88	0.04
A1168/88	0.06
A1169/88	0.16
A1170/88	0.20
A1171/88	0.90
A1172/88	0.16
A1173/88	<0.02
A1174/88	<0.02
A1175/88	<0.02
A1176/88	0.18
A1177/88	0.12
A1178/88	<0.02
A1179/88	0.10
A1180/88	0.16
A1181/88	<0.02
A1182/88	0.04
A1183/88	0.06
A1184/88	0.04

Note: See Appendix for full assay results



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MONGOLATA GOLDFIELD

Adit A12

Mapped by: B.J.M., A.J.S and W.P.F.
(August, 1988)

Figure 45. Adit A12.

APPENDIX 2. MONGOLATA GOLDFIELD PLATES

Plate 10. Mongolata Goldfield workings along ridge of Cox Sandstone Member background. Ruins of the Bakery, The Pioneer's Store and Post Office in foreground, 2016.

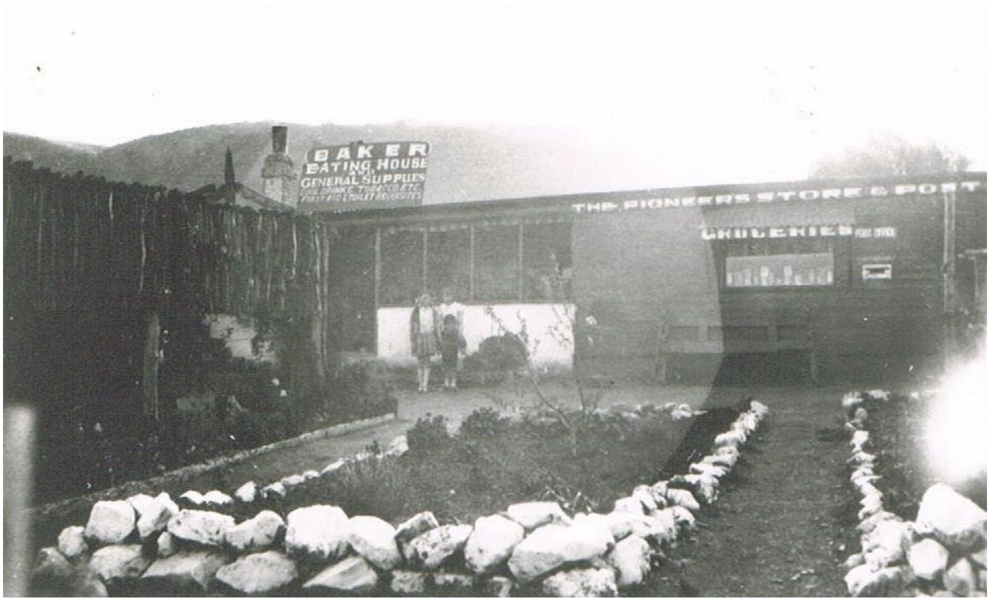

Plate 11. Original Bakery, The Pioneer's Store and Post Office, 1930s.

Plate 12. Easterly view of Mongolata Goldfield, Byles workings (right), Government Battery in distance,1933. (Photo 032172)

Plate 13. Easterly view of Mongolata Goldfield, Byles Mine open cut (right), rebuilt battery shed in distance, 2013.

Plate 14. Adit 1, Hansel & Mundy Mine, adit entrance collapsed.

Plate 15. Adit 2, entrance to Caller Brae Mine.

Plate 16. Adit 3, entrance to Eastview North Mine.

Plate 17. Adit 4, entrance to Eastview South Mine.

Plate 18. Adit 5, entrance to Wally's Hope Mine.

Plate 19. Entrance to Byles Mine main adit, 28 m level.

Plate 20. Byles Mine open cut on western side of workings.

Plate 21. Byles Mine three compartment internal shaft, main adit, 28 m level.

Plate 22. Adit 7, entrance to adit, Byles Mine workings.

Plate 23. Adit 8, entrance to adit, Byles Mine workings.

Plate 24. Adit 9, entrance to adit, Byles Mine workings.

Plate 25. Adit 10, entrance to Golden Harp Mine, north adit.

Plate 26. Adit 11, entrance to Golden Harp Mine, north adit (a).

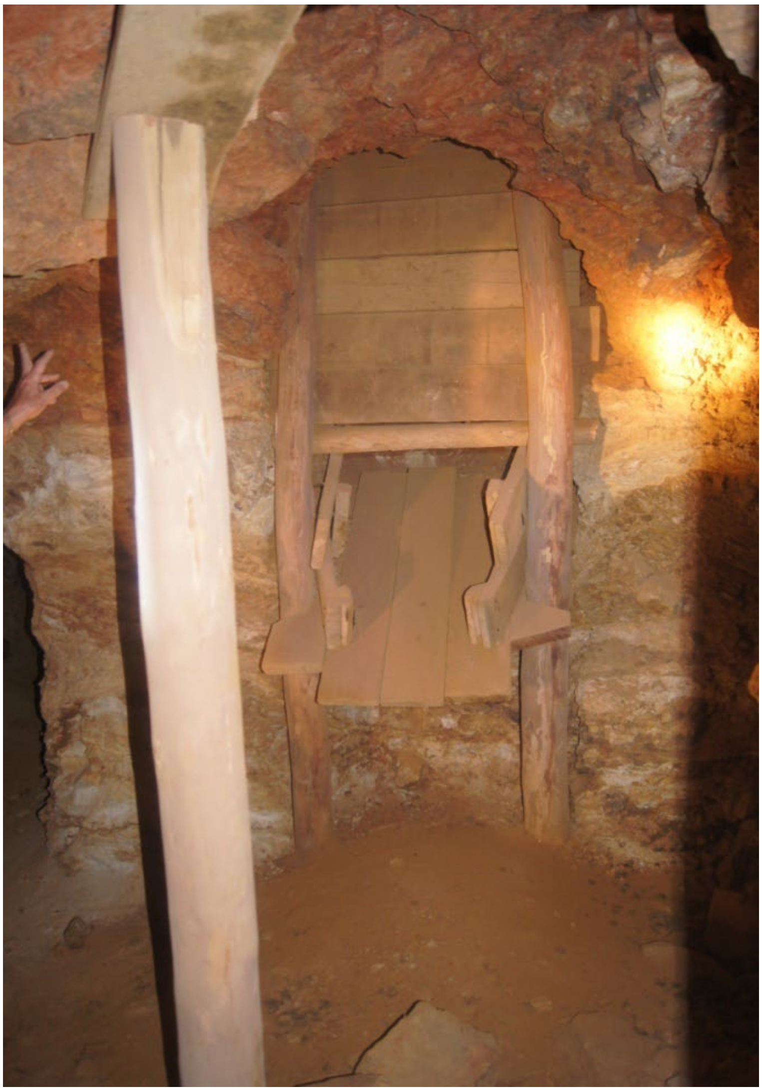

Plate 27. Adit 11, ore chute, Golden Harp Mine.

Plate 28. Adit 12, entrance to Rising Sun Mine.

Plate 29. Adit 13, entrance to Golden Harp Mine, south adit (b).

Plate 30. Entrance to Curlew Mine, Adit 1D at left.

Plate 31. View south from Curlew Mine with Central Mine Adit 1 in centre; Central Adit 3 in cut at right; Central Adit 4 above and to right of Central Adit 1; vertical shaft at top of image connects to Central Adit 2.

Plate 32. Entrance to Central Mine Adit 2 with vertical shaft above.

Plate 33. Adit A1, entrance to Threadgold's Mine.

Plate 34. Adit A2, entrance on Mongolata South Mine.

Plate 35. Adit A3, entrance on Mongolata South Mine.

Plate 36. Adit B1, entrance to Takati South Mine.

Plate 37. Adit B2, entrance to Takati Mine, 2016.

Plate 38. Mr William Pexton with gold pan, and sons (from left) Tom, Ron, Bert and William (Jock) at entrance to Takati Mine adit, 1930. (Photo 032173)

Plate 39. Adit A4, entrance to adit in Cox Sandstone.

Plate 40. Adit A5, entrance to adit, dolomite at top of Tapley Hill Formation.

Plate 41. Adit A6, entrance to Baldina Mine main adit at end of cut.

Plate 42. Adit A7, entrance to adit, Cox Sandstone above.

Plate 43. Adit A8, entrance to adit, Cox Sandstone above.

Plate 44. Adit A9, entrance to Wildildie Mine in Cox Sandstone.

Plate 45. Adit A10, entrance to adit in Cox Sandstone.

Plate 46.	Adit A11, entrance to adit in Cox Sandstone.

Plate 47.	Adit A12, entrance to adit, driven east in Tarcowie Silstone and into Cox.

APPENDIX 3. MONGOLATA GOLDFIELD ASSAY METHODS AND RESULTS

- Location of sample sites can be found on Figure 2.
- Selected rock chip samples from adits.
  Adits B1, B2 and A1-A11 (Analabs Rept. No. 105.0.06.02693; EX 820).
  Adit A12 (Amdel Rept. No. AC 512/89; EX 784).
  Adits 1-9 (Amdel Rept. No. AC 540/85; EX 225).
  Adits 10-13 (Intertek Genalysis Rept No. 704.0/1307874, Client O/N: 3507).
  Curlew and Central Workings (Amdel Rept. Nos. AC 0227/89; EX 778: AC 512/89; EX 784: AC 786/89; EX 794).
- Rock chip sample traverses (Analabs Rept. No. 185.0.06.02693; EX 820).
- Selected surface rock chip samples.
- Stream sediment bank samples (Analabs Rept. No. 185.0.06.02707; EX 819).

Selected rock chip samples from adits

Name	Sample number	Au (ppm)	Cu (ppm)	As (ppm)	Zn (ppm)	Co (ppm)	Ni (ppm)	Mo (ppm)	In (ppm)	Sr (ppm)	Fe (%)	S (ppm)	Mn (ppm)
Method		*Aqua Regia Leach, AAS*	*Perchloric Acid, AAS*	*Perchloric Acid, Hydride AAS*									
Adit B1	A1997/88	0.13	30	80									
	A1998/88	0.074	20	30									
	A1999/88	1.59	60	320									
	A2000/88	0.53	35	390									
	A2001/88	0.15	20	120									
	A2002/88	0.04	40	54									
	A2003/88	0.026	185	62									
	A2004/88	0.035	35	23									
	A2005/88	0.007	60	50									
	A2006/88	0.056	20	31									
	A2007/88	0.1	25	40									
	A2008/88	0.01	30	24									
	A2009/88	0.027	35	49									
	A2010/88	0.046	20	23									
	A2011/88	10	75	420									
Adit B2	A2012/88	0.12	10	28									
	A2013/88	0.54	10	170									
	A2014/88	0.47	20	80									
	A2015/88	0.035	15	21									
	A2016/88	0.046	10	22									
	A2017/88	0.074	20	43									
	A2018/88	0.033	30	45									
	A2019/88	0.044	130	60									
	A2020/88	0.11	20	73									
	A2021/88	0.018	55	67									
	A2022/88	0.06	35	30									
	A2023/88	0.024	10	23									
	A2024/88	0.3	55	66									
	A2025/88	0.11	25	80									
	A2026/88	0.07	55	65									
	A2027/88	0.058	30	110									
	A2028/88	0.029	20	23									
	A2029/88	0.11	30	210									
Adit A1	A2198/88	0.014	15	100									
	A2199/88	0.063	10	120									
	A2200/88	0.08	15	80									

Name	Sample number	Au (ppm)	Cu (ppm)	As (ppm)	Zn (ppm)	Co (ppm)	Ni (ppm)	Mo (ppm)	In (ppm)	Sr (ppm)	Fe (%)	S (ppm)	Mn (ppm)
	A2201/88	0.43	60	78									
	A2202/88	0.95	85	670									
	A2203/88	0.74	30	190									
	A2204/88	0.1	45	70									
	A2205/88	0.078	40	66									
	A2206/88	0.18	75	200									
Adit A2	A2207/88	0.09	140	100									
	A2208/88	0.11	195	110									
	A2209/88	0.44	20	45									
Adit A3	A2210/88	0.65	15	53									
	A2211/88	0.1	25	90									
	A2212/88	0.038	20	50									
	A2213/88	0.1	15	130									
	A2214/88	0.049	25	68									
	A2215/88	0.072	20	110									
	A2216/88	0.3	60	360									
	A2217/88	0.27	615	90									
	A2218/88	0.075	30	75									
	A2219/88	0.8	160	73									
	A2220/88	0.12	50	67									
	A2221/88	0.048	25	44									
	A2222/88	0.032	40	70									
	A2223/88	0.13	205	60									
	A2224/88	0.1	130	70									
	A2225/88	0.083	60	180									
	A2226/88	0.48	30	40									
Adit A4	A2227/88	0.079	40	69									
	A2228/88	0.075	15	110									
	A2229/88	0.1	25	40									
	A2230/88	0.07	70	67									
	A2231/88	0.17	60	140									
	A2232/88	3.02	35	80									
	A2233/88	0.1	25	72									
Adit A5	A2234/88	0.4	35	490									
	A2235/88	0.22	25	60									
	A2236/88	0.018	20	22									
	A2237/88	0.031	30	44									
	A2238/88	0.057	20	16									
	A2239/88	0.007	50	26									
Adit A6	A2240/88	0.2	60	300									
	A2241/88	1.8	75	9000									
	A2242/88	0.13	30	500									
	A2243/88	0.12	10	600									
	A2244/88	0.2	130	100									
	A2245/88	0.24	20	120									
	A2246/88	0.065	20	240									
	A2247/88	0.42	30	5700									
	A2248/88	0.047	30	80									
	A2249/88	0.027	20	80									
Adit A7	A2250/88	1.3	15	75									
	A2251/88	0.032	45	32									
	A2252/88	0.061	15	21									
	A2253/88	0.066	25	18									
Adit A8	A2254/88	0.054	20	78									
	A2255/88	0.051	30	150									
	A2256/88	0.015	30	62									
	A2257/88	0.072	85	50									
Adit A9	A2258/88	0.082	20	480									
	A2259/88	0.19	40	770									
	A2260/88	0.2	25	250									
	A2261/88	0.17	101	780									

Name	Sample number	Au (ppm)	Cu (ppm)	As (ppm)	Zn (ppm)	Co (ppm)	Ni (ppm)	Mo (ppm)	In (ppm)	Sr (ppm)	Fe (%)	S (ppm)	Mn (ppm)
	A2262/88	0.98	25	4000									
	A2263/88	0.35	55	540									
	A2264/88	0.48	85	730									
	A2265/88	0.1	50	210									
	A2266/88	0.12	50	100									
Adit A10	A2267/88	0.22	20	50									
	A2268/88	0.031	10	19									
	A2269/88	0.27	30	53									
	A2270/88	0.1	20	44									
	A2271/88	0.12	25	34									
	A2272/88	0.06	15	47									
	A2273/88	0.056	30	100									
Adit A11	A2274/88	0.035	25	8									
Method		*Aqua Regia, AAS*	*Base Metals, Perchloric Acid, AAS*	*XRF, Pressed Powder TECHNIQUE*							*Base Metals, Perchloric Acid, AAS*		*Base Metals, Perchloric Acid, AAS*
Adit A12	A1163/88	0.08	30	250							9.5		380
	A1164/88	0.16	7	105							44.2		5400
	A1165/88	0.04	9	22							34.1		3350
	A1166/88	0.003	14	58							11.7		1020
	A1167/88	0.04	30	220							25.1		1100
	A1168/88	0.06	16	62							8.8		970
	A1169/88	0.16	22	130							8.5		520
	A1170/88	0.2	90	195							22.4		630
	A1171/88	0.9	24	84							11.8		440
	A1172/88	0.16	52	155							18.7		950
	A1173/88	0.003	19	78							8.5		840
	A1174/88	0.003	300	88							7		610
	A1175/88	0.003	26	68							6.8		820
	A1176/88	0.18	22	64							6.2		380
	A1177/88	0.12	14	48							9.9		740
	A1178/88	0.003	28	84							4.2		330
	A1179/88	0.1	16	50							6.5		310
	A1180/88	0.16	135	26							3.5		240
	A1181/88	0.003	14	44							2.4		200
	A1182/88	0.04	19	38							3		270
	A1183/88	0.06	20	26							2.5		280
	A1184/88	0.04	20	170							51.8		3850
Method		*Unknown*	*Unknown*	*Unknown*	*Unknown*	*Unknown*	*Unknown*						
Adit 1	A1295/84	0.04	115	40	18	x	36						
Adit 2	A1298/84	0.03	15	30	14	20	32						
	A1299/84	0.02	49	40	15	12	22						
	A1300/84	0.02	27	30	21	8	22						
	A1301/84	0.02	38	20	24	8	22						
	A1302/84	0.03	52	20	30	14	30						
Adit 3	A1303/84	0.01	56	20	18	6	26						
	A1304/84	0.02	40	20	14	12	24						
	A1305/84	0.1	78	20	12	8	20						
	A1306/84	0.03	39	10	16	10	18						
	A1307/84	0.03	76	30	11	12	24						
	A1308/84	0.12	15	10	17	18	28						
	A1309/84	0.03	10	10	16	14	16						
Adit 4	A1311/84	0.18	13	40	20	24	34						
	A1312/84	0.21	28	40	31	10	36						
	A1312/84	0.48	11	60	23	34	24						
Adit 5	A1314/84	0.13	6	20	40	12	20						

Name	Sample number	Au (ppm)	Cu (ppm)	As (ppm)	Zn (ppm)	Co (ppm)	Ni (ppm)	Mo (ppm)	In (ppm)	Sr (ppm)	Fe (%)	S (ppm)	Mn (ppm)
	A1315/84	0.19	9	10	12	8	12						
	A1316/84	1.54	35	110	16	x	14						
	A1317/84	2.34	15	340	16	x	18						
	A1318/84	0.08	18	50	21	96	96						
	A1319/84	0.04	72	95	23	52	60						
	A1320/84	0.04	16	10	26	6	20						
	A1321/84	34.8	26	100	49	10	34						
	A1322/84	16.4	34	160	36	6	20						
	A1323/84	0.52	54	420	26	8	40						
Adit 6	A1324/84	0.1	7	20	22	18	24						
	A1325/84	0.25	3	40	92	12	32						
	A1326/84	0.14	10	30	45	10	30						
	A1327/84	0.23	80	190	21	60	30						
	A1328/84	0.31	350	360	13	18	30						
	A1329/84	0.03	10	30	8	x	8						
	A1330/84	0.07	19	80	17	10	22						
	A1331/84	0.02	42	40	16	10	34						
Adit 7	A1332/84	0.03	45	140	26	14	26						
	A1333/84	0.14	18	110	20	40	34						
	A1334/84	0.74	19	250	35	64	32						
	A1335/84	0.16	8	280	40	20	24						
Adit 8	A1336/84	0.03	140	150	18	x	22						
	A1337/84	0.02	160	120	17	x	18						
	A1338/84	0.02	165	100	27	x	30						
	A1339/84	0.02	155	100	10	x	24						
	A1340/84	0.05	105	120	18	92	64						
Adit 9	A1341/84	0.03	155	130	23	6	46						
	A1342/84	0.03	150	110	26	6	44						
	A1343/84	0.07	510	270	23	8	46						
	A1344/84	0.02	530	230	26	6	42						
	A1345/84	0.02	275	230	24	6	40						
Method		*Fire assay / ICPMS*	*4 acid / ICPOES*	*4 acid / ICPMS*	*4 acid / ICPOES*	*4 acid / ICPMS*	*4 acid / ICPOES*	*4 acid / ICPMS*	*4 acid / ICPMS*	*4 acid / ICPMS*	*4 acid / ICPOES*	*4 acid / ICPOES*	*4 acid / ICPOES*
Adit 10	2013272	0.032	9	170	27	69.1	45	3.3	0.21	52.4	18.8	234	6928
	2013273	0.649	12	263	41	114.1	71	9.8	1.39	61.2	60	902	4762
	2013274	0.535	13	167	39	41.8	37	5.4	0.062	38.7	39.9	452	2552
	2013275	0.039	14	98	21	49.2	29	3.4	0.76	43.2	25.8	418	9737
	2013276	0.117	9	131	50	38.3	29	4.6	0.95	3	60	588	5232
	2013277	0.162	29	180	78	36.5	56	5.3	0.48	41	60	194	4722
	2013278	1.282	28	169	21	29.8	29	2	0.47	30.6	27.3	308	1989
	2013279	0.162	47	219	24	26.5	50	2.4	0.95	16.6	40.3	704	3594
	2013280	0.578	10	62	27	33.3	23	2.7	0.66	33.3	34.5	316	8586
Adit 11	2013263	0.045	259	184	36	12.4	28	2.2	0.29	22	39.2	241	1166
	2013264	0.004	95	108	14	85.1	34	1.1	0.11	45.6	7.5	105	1272
	2013265	0.026	96	56	8	22	17	0.8	0.12	16.5	6.2	25	439
	2013266	0.003	94	62	46	3.2	18	0.9	0.33	11.2	30.6	114	991
	2013267	0.018	421	172	45	6.4	32	1.9	1.21	14.6	47.7	104	1634
	2013268	0.015	42	104	45	17.2	50	3.3	0.19	91.4	15.9	104	5909
	2013269	0.128	7	149	53	23.2	31	4.2	1.12	83.1	41.6	172	9535
	2013270	0.176	20	860	49	70.2	73	4.2	0.4	93.2	32.5	155	9972
	2013271	0.052	5	195	22	33.3	88	2.2	0.17	42.9	10.4	121	5822
Adit 13	2053296	0.005	442	120	31	23.1	45	1.4	0.19	53.9	16.5	156	851
	2053297	0.003	129	346	17	10.6	33	0.7	0.06	13.9	7.9	71	542
	2053298	0.104	351	844	17	71.1	77	2.2	0.15	18.6	17.4	244	619
	2053299	1.543	811	547	32	80.5	88	9.8	0.87	8.7	34.6	265	929
	2053300	0.074	668	167	10	11.4	17	3.2	0.66	8.3	11.1	0	310
	2053301	0.027	666	94	13	4.5	15	3.5	0.43	4.8	13.3	218	310
	2053302	0.046	26	98	34	18.3	38	3.8	0.09	57.6	6.4	905	1935
	2053303	0.054	12	108	10	36	33	3.9	0.13	29.4	10.7	630	3100

Name	Sample number	Au (ppm)	Cu (ppm)	As (ppm)	Zn (ppm)	Co (ppm)	Ni (ppm)	Mo (ppm)	In (ppm)	Sr (ppm)	Fe (%)	S (ppm)	Mn (ppm)
	2253304	0.003	237	131	24	14.3	35	3.3	0.19	19	14.2	425	310
	2253305	0.004	584	145	19	5.1	31	2.4	0.4	21.6	18.4	110	310
	2253306	0.046	144	91	10	9	23	0.9	0.07	183.9	6.7	6351	2167
Method		Aqua Regia, AAS	Base Metals, Perchloric Acid, AAS	XRF, Pressed Powder TECHNIQUE							Base Metals, Perchloric Acid, AAS		Base Metals, Perchloric Acid, AAS
Curlew Main	A905/88	0.04	42	86							4.1		140
Level Adits	A906/88	0.08	42	155							8.4		110
1A, 1B, 1C,	A907/88	0.08	38	86							9.8		240
1D, 1E.	A908/88	0.08	40	60							4.1		180
	A909/88	0.1	32	46							1.1		40
	A910/88	1.8	22	105							14.1		190
	A911/88	0.02	34	96							3.7		78
	A912/88	0.04	19	58							2.7		52
	A913/88	0.02	330	270							6.6		800
	A914/88	0.16	38	110							605		150
	A915/88	0.18	32	88							5.1		74
	A916/88	0.18	70	105							9.7		190
	A917/88	0.003	15	74							3.9		76
	A918/88	0.28	72	240							28.3		530
	A919/88	0.26	44	145							12.8		400
	A920/88	0.1	30	195							31.4		1380
	A921/88	0.08	18	145							14.3		1580
	A922/88	0.06	46	155							11		740
	A923/88	0.1	44	480							26.1		250
	A924/88	0.42	54	140							29.7		150
	A925/88	0.18	36	105							7		165
	A926/88	0.04	40	135							6.3		180
	A927/88	0.24	72	165							7.2		150
	A928/88	0.32	135	195							11		74
	A929/88	0.06	94	115							4.4		42
	A930/88	0.04	480	310							20.7		72
	A931/88	0.12	310	370							36		120
	A932/88	0.06	180	120							8		610
	A933/88	0.04	250	530							7.7		82
	A934/88	0.003	310	170							5.7		250
	A935/88	0.1	260	135							12.3		150
	A936/88	0.08	120	170							6.6		94
	A937/88	0.7	185	180							20.9		250
	A938/88	0.1	120	96							6.1		155
	A939/88	0.28	195	250							8.4		175
	A940/88	0.96	410	250							28.1		88
	A941/88	2.3	560	430							29.2		94
	A942/88	2.1	380	210							18.5		80
	A1295/88	0.36	410	250							15.9		94
	A1296/88	1.84	640	310							28.4		125
	A1297/88	1.95	600	540							36.7		145
	A1298/88	0.28	48	82							2		42
	A1299/88	0.02	28	58							1.3		32
	A1300/88	0.3	370	300							17.1		120
	A1301/88	0.02	56	100							4		58
	A1302/88	0.08	130	64							7.2		1020
	A1303/88	0.003	24	56							1.3		48
Curlew Main	A996/88	0.003	150	64							2.1		4550
Lower Level	A998/88	0.04	240	82							7.7		1560
Curlew Adit 3	A1110/88	0.12	34	46							3.4		2500
	A1111/88	0.003	7	50							3.1		840
	A1112/88	0.04	58	98							11.5		2050
Curlew Adit 4	A1113/88	0.08	70	140							33.5		1000

Name	Sample number	Au (ppm)	Cu (ppm)	As (ppm)	Zn (ppm)	Co (ppm)	Ni (ppm)	Mo (ppm)	In (ppm)	Sr (ppm)	Fe (%)	S (ppm)	Mn (ppm)
	A1114/88	0.36	16	72							4.9		155
	A1115/88	2.7	34	140							28.7		460
	A1116/88	1.8	19	150							29.4		360
	A1117/88	0.88	125	260							8.9		230
Curlew Adit 5	A1118/88	0.12	10	26							4		240
	A1119/88	0.12	12	48							3		470
	A1120/88	0.12	10	30							1.84		260
	A1121/88	0.28	28	135							14.1		8000
	A1122/88	0.14	36	220							41.9		5600
	A1123/88	0.18	32	135							18.5		1900
	A1124/88	0.12	30	330							33.8		3800
	A1125/88	0.14	18	46							3		210
	A1126/88	0.08	11	26							3		290
	A1127/88	0.22	185	870							15		760
	A1128/88	0.06	24	38							3		3000
	A1129/88	0.44	22	230							16.1		420
	A1130/88	0.1	17	22							20.3		5700
	A1131/88	0.003	17	78							16.3		930
	A1132/88	0.04	6	54							10.5		830
	A1133/88	0.003	115	88							4.8		550
	A1134/88	0.04	10	46							6.3		770
	A1135/88	0.2	14	42							4.5		570
	A1136/88	0.06	11	26							3.9		2100
	A1137/88	0.003	10	19							2		800
	A1138/88	0.1	16	22							2.3		200
	A1139/88	0.02	12	17							1.9		110
	A1140/88	0.16	38	94							6.1		530
	A1141/88	0.24	44	86							8.8		1060
Curlew Adit 6	A1142/88	0.42	140	250							7.1		4750
	A1143/88	0.22	28	310							17.7		9000
	A1144/88	0.44	38	120							8.3		2400
	A1145/88	0.14	98	115							6.5		3600
	A1146/88	15.2	46	370							27.7		4000
	A1147/88	0.26	72	175							13.4		5200
	A1148/88	0.08	13	74							4.2		950
	A1149/88	19.6	650	540							11		2050
	A1150/88	0.36	22	60							3		390
	A1151/88	0.08	30	60							2.9		1900
	A1152/88	1.8	115	340							20.4		1520
	A1153/88	1.34	54	160							17.1		5700
	A1154/88	3	32	160							31.2		1320
	A1155/88	0.58	86	170							24.4		7000
	A1156/88	0.44	750	195							7.5		480
Central Adit 1	A943/88	0.04	250	115							30.4		520
	A944/88	0.2	130	94							11.1		900
	A945/88	0.003	105	84							7.1		660
	A946/88	0.12	120	165							27.9		280
	A947/88	0.04	105	54							7.3		3050
Central Adit 2	A948/88	0.04	220	120							9.5		560
	A949/88	0.02	280	135							8.3		690
	A950/88	0.003	300	185							17.5		1900
	A951/88	1.44	195	370							15.6		1440
	A952/88	0.003	260	135							27.8		920
	A953/88	0.1	145	120							23.6		320
	A954/88	0.12	20	160							30.4		3500
	A955/88	1.42	36	130							13.6		4750
	A956/88	0.14	380	54							14.7		900
	A957/88	1.35	64	220							22.7		710
	A958/88	0.04	750	120							14.5		35000
	A959/88	0.14	570	200							17.9		390
	A960/88	0.44	170	195							34.9		650

Name	Sample number	Au (ppm)	Cu (ppm)	As (ppm)	Zn (ppm)	Co (ppm)	Ni (ppm)	Mo (ppm)	In (ppm)	Sr (ppm)	Fe (%)	S (ppm)	Mn (ppm)
	A961/88	0.003	115	88							15.4		570
	A962/88	0.18	86	92							17.8		360
	A963/88	0.04	125	130							24.1		520
	A964/88	0.003	200	145							22.2		700
	A965/88	0.06	165	155							26.2		610
	A966/88	0.06	290	250							21.2		430
	A1098/88	0.16	125	90							6.8		10200
Lower Level	A1099/88	0.16	68	54							2.4		5700
	A1100/88	0.1	64	46							3.9		1200
	A1101/88	0.003	190	70							8.6		940
	A1102/88	0.06	28	60							3.2		3500
	A1103/88	0.12	135	125							5.2		1700
	A1104/88	0.04	46	62							3.3		220
	A1105/88	4.8	250	195							25.3		1480
	A1106/88	0.32	22	54							2.6		3400
	A1107/88	0.16	20	46							2.8		670
	A1108/88	0.24	62	54							3.8		1100
	A1109/88	0.02	105	92							6.6		910
Central Adit 3	A967/88	0.04	105	76							2.5		430
	A968/88	0.003	56	50							4.8		3250
	A969/88	0.003	30	26							2.7		1140
	A970/88	0.28	80	120							21.7		340
	A971/88	0.26	30	90							8.5		20
	A972/88	0.08	125	125							13.3		350
	A973/88	0.4	64	200							19.7		200
	A974/88	0.08	60	96							8.7		260
	A975/88	0.38	62	98							15.5		320
	A976/88	0.14	80	115							28.5		330
	A977/88	0.44	72	120							9.8		490
	A978/88	0.003	54	100							14.1		470
	A979/88	0.1	60	100							8.6		430
	A980/88	0.24	96	120							13		370
	A981/88	0.1	56	120							11.6		320
	A982/88	0.003	82	110							13.1		850
	A983/88	0.4	54	70							3.7		560
	A984/88	0.16	38	48							4.1		810
	A985/88	0.2	90	130							36.9		350
	A986/88	0.02	135	105							10.8		300
	A987/88	0.1	48	115							7.8		90
	A988/88	0.003	340	210							26		360
	A989/88	0.16	220	150							18.3		370
	A990/88	0.02	260	175							28.1		400
	A991/88	0.08	290	185							24.6		270
	A992/88	0.14	220	250							15.7		260
	A993/88	0.1	165	150							18.3		290
	A994/88	0.08	120	200							10.1		130
Central Adit 4	A1201/88	0.22	42	135							8.4		210
	A1202/88	0.14	68	62							6.8		420
	A1203/88	0.32	11	72							1.3		46
Central Adit 5	A1157/88	0.1	36	52							3		88
	A1158/88	0.04	220	135							11.4		340
	A1159/88	0.12	240	115							27.4		310
	A1160/88	0.16	150	180							14.5		250
	A1161/88	0.1	40	50							4		82
	A1162/88	0.04	22	36							3.4		74

Rock chip sample traverses

Traverse	Sample number	Au (ppm)	Cu (ppm)	As (ppm)
Method		*Aqua Regia Leach, AAS*	*Perchloric Acid, AAS*	*Perchloric Acid, Hydride AAS*
T1	A2038/88	0.009	15	21
	A2039/88	0.018	10	14
	A2040/88	0.009	25	24
	A2041/88	0.001	20	13
T2	A2043/88	0.025	15	30
	A2044/88	0.28	55	74
	A2045/88	0.036	20	72
T3	A2046/88	0.026	25	20
	A2047/88	0.003	20	6
	A2048/88	0.001	15	9
T4	A2050/88	0.068	15	59
	A2051/88	0.058	35	90
	A2052/88	0.15	15	45
	A2053/88	0.023	15	24
	A2054/88	0.053	15	15
T5	A2055/88	0.005	10	8
	A2056/88	0.002	15	8
	A2057/88	0.002	15	7
	A2058/88	0.003	10	6
	A2059/88	0.04	15	68
	A2060/88	0.037	20	32
	A2061/88	0.005	20	27
T6	A2063/88	0.01	10	9
	A2064/88	0.009	10	6
	A2065/88	0.007	10	6
	A2066/88	0.006	20	11
	A2067/88	0.021	10	9
	A2068/88	0.023	30	23
T7	A2069/88	0.016	15	32
	A2070/88	0.037	10	21
	A2071/88	0.008	10	6
	A2072/88	0.048	15	7
	A2073/88	0.036	10	10
	A2074/88	0.003	30	11
T8	A2077/88	0.11	25	26
	A2078/88	0.11	20	54
	A2079/88	0.1	15	31
	A2080/88	0.14	25	66
	A2081/88	0.037	15	21
	A2082/88	0.039	20	50
	A2083/88	0.067	15	25
	A2084/88	0.058	15	62
	A2085/88	0.085	15	43
	A2086/88	0.01	15	15
	A2087/88	0.022	20	14

Traverse	Sample number	Au (ppm)	Cu (ppm)	As (ppm)
T9	A2088/88	0.01	15	9
	A2089/88	0.071	25	200
	A2090/88	0.017	20	8
	A2091/88	0.009	20	14
	A2092/88	0.055	15	27
	A2093/88	0.075	25	18
	A2094/88	0.034	15	30
	A2095/88	0.018	15	31
	A2096/88	0.005	10	9
T10	A2098/88	0.048	20	16
	A2099/88	0.13	25	25
	A2100/88	0.042	25	21
	A2101/88	0.055	30	19
T11	A2103/88	0.42	20	22
	A2104/88	0.03	10	6
	A2105/88	0.065	20	23
	A2106/88	0.082	15	20
T12	A2107/88	0.027	20	30
	A2108/88	0.057	10	80
	A2109/88	0.017	30	58
	A2110/88	0.02	15	31
	A2111/88	0.008	10	11
	A2112/88	0.15	20	51
T13	A2113/88	0.028	15	19
	A2114/88	0.27	10	10
	A2115/88	0.054	15	26
	A2116/88	0.077	15	70
	A2117/88	0.36	20	58
	A2118/88	0.11	20	72
T14	A2127/88	0.07	15	60
	A2128/88	0.1	15	54
	A2129/88	0.018	15	21
T15	A2130/88	0.01	20	14
	A2131/88	0.14	20	73
	A2132/88	0.038	30	35
	A2133/88	0.046	20	20
	A2134/88	0.14	100	130
	A2135/88	0.054	20	31

Selected surface rock chip samples

Field number	Sample number	Au (ppm)	Cu (ppm)	As (ppm)	Pb (ppm)	Zn (ppm)	Co (ppm)	Ni (ppm)
Method		*Unknown*	*Unknown*	*Unknown*	*Unknown*	*Unknown*	*Unknown*	*Unknown*
EM 1	A744/84	0.03	39	/	14	28		
EM 8	A751/84	0.22	48	30	/	56		
EM 9	A752/84	0.09	26	/	/	12		
EM 10	A753/84	0.11	18	50	10	34		
EM 16a	A759/84	0.02	18	/	/	12		
EM 16b	A760/84	0.06	24	70	/	28		
EM 17	A761/84	0.02	36	60	/	8	10	16
EM 18	A762/84	0.01	48	50	6	16		
EM 19	A763/84	0.77	140	410	/	14	30	66
EM 20	A764/84	0.02	20	/	10	29		
EM 21	A765/84	0.05	25	/	/	30		
EM 22	A766/84	0.18	26	50	6	18		
EM 23a	A767/84	0.26	30	50	10	4		
EM23b	A768/84	0.14	26	40	/	6		
B o/c 1	A769/84	0.3	160	200	/	24	6	10
B o/c 2	A770/84	0.16	1300	360	/	22	6	26
B o/c 3	A771/84	0.39	76	/	/	42	66	46

Stream sediment bank samples

Sample number	Au (ppm)	Cu (ppm)	As (ppm)
Method	*Aqua Regia Leach, AAS*	*Perchloric Acid, AAS*	*Perchloric Acid, Hydride AAS*
A2030/88	0.004	25	2
A2031/88	0.002	30	3
A2032/88	0.007	25	2
A2033/88	0.004	30	9
A2034/88	0.003	25	5
A2035/88	0.002	25	9
A2036/88	0.002	25	6
A2037/88	0.026	1030	6
A2042/88	0.003	30	6
A2049/88	0.023	110	5
A2062/88	0.008	25	5
A2075/88	0.031	75	9
A2076/88	0.004	30	8
A2097/88	0.046	70	21
A2102/88	0.016	25	16
A2119/88	0.038	45	16
A2120/88	0.014	30	20
A2121/88	0.01	25	9
A2122/88	0.018	20	13
A2123/88	0.017	25	10
A2124/88	0.005	25	9
A2125/88	0.002	25	12
A2126/88	0.004	35	8