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McIvor Property

Report on Alluvial Sampling and Mineral Testwork

Athabasca Region, Northeast Alberta

prepared for

ATEBA MINES INC.
and
MR. A.C.A. (PETER) HOWE

by

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June 24, 2002

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SUMMARY

The McIvor Property is registered to Mr.A.C.A.Howe and is held in trust for Ateba Mines Inc. It is located in the Birch Mountains, Athabasca Region, northeast Alberta, 145km to the north-northwest of Fort McMurray, in Ranges 13 and 14 of Townships 103 and 104. The Property comprises 36,864ha held under four metallic and industrial mineral permits with commencement dates of June 27, 2000. No work had previously been carried out by Howe nor Ateba at the Property.

The Property is named after the McIvor River which is a 10m-30m relatively fast moving watercourse flowing northeasterly across the Property and thence northward across Wood Buffalo Park to Lake Claire. Over its length of some 30km the River Valley widens eastward from 5m-10m at its head-waters to several hundred meters within a 10km wide flat-bottomed valley with immense and terraced mature braided oxbows. The McIvor Valley is surrounded by zones of active slump providing continual sediment recharge to the River whose main channel is in a state of active flux within several hundred meters of valley bottom.

The Property overlies Cretaceous sediments and straddles the Lower-Upper Cretaceous boundary. Over its length of some 30km, the McIvor Valley travels across some 300m of vertical relief, cutting deep into the underlying flat-lying geology and draining material extending down-stratigraphy from the Second White Specks Formation at its headwaters, through the Shaftesbury and Westgate Formations in its center, to the top of the McMurray Formation at its east end.

The Shaftesbury and the Second White Specks Formations comprise sequences of carbonaceous bentonitic, black shales reporting geochemical enrichments in all metals and can locally carry as much as 25% fine sulfides predominated by FeS species. The Second White Specks Formation is known to carry native gold throughout the central and southern portions of the Birch Mountains.

Alluvial gold was first reported from the McIvor River at the Property by Tintina Mines Limited from work carried out during the mid 1990's, but recovery thereof by means other than hand panning had met with considerable difficulties attributed to the bentonitic clay content of local sediments. No subsequent efforts were made by Tintina to optimize procedures for the recovery of gold nor to continue the search for a bedrock source thereto. The Property, accordingly, lay dormant until its expiry late in 1999. The Property had not been explored prior to work by Tintina.

Given demonstrable clay-busting properties of Ateba's patented deflocculant Reagent A15, the author was commissioned to oversee a small sampling program to collect sufficient alluvial sample material from the area (i) for a series of tests, to be conducted to evaluate applicability of Ateba's deflocculant to the recovery of gold from the material collected; and (ii) to determine gold content of the samples with a view to initiating broader future exploration to evaluate viability of previously reported gold bearing placers within the McIvor River Valley.

The sampling program, was completed under the supervision of the author during November 16-23, 2000. A total of 2,576lb of material were collected, excavated from 16 pits distributed among 6 sites along a 5km section of the McIvor River and the KRC Tributary. The samples were subsequently sized, concentrated and concentrates from various fractions were analyzed during January-March, 2000, to establish heavy mineral yields and gold grades.

Despite the common presence of gold in nearly all concentrates recovered, gold grades reported by analyses of concentrates were low and subeconomic. The mineral and analytical testwork completed corroborates historical findings reported from the Property and confirm the presence of gold in sediments of the McIvor River. The current work provides additional insights into sample matrix and concentrates recoveries, and concludes as follows:

(i) The -12mesh fraction of the sediments is not representative of the sample given that it typically comprises only some 50%-60% of the sample, but often comprises as little as 20% of the overall matrix and is subordinate to the next coarser fractions. In contrast, fine clays consistently represent some 10%-20% of the overall matrix. Given the presence of considerable heavy mineralogy in the next coarser fraction to -12mesh, sizing of samples at a coarser cut-off (apprx 2mm-2.5mm) would be desirable during future tests;

(ii) The persistence of gold and other heavy minerals into the finest clay fraction suggests that these minerals occur as a continuous spectrum of grain sizes from coarse to the finest, and while some of this mineralogy may conceivably behave as non-recoverable suspended particulates reporting to final discharge slimes, deflocculation with A15 appears to successfully capture a portion thereof and to make it available for recovery via gravity concentration;

(iii) While historical work from the Property indicates that recovery of heavy minerals from the finer fractions was not possible via tabling or Nelson concentrator, pre-treatment with A15 successfully segregates this fraction, and concentration via Falcon concentrator can recover heavy minerals therefrom. Gold reported by fines are, however, typically low and may be acceptable;

(iv) Future work should rely on a larger Falcon concentrator than the lab-scaled model utilized during the current tests to maximize mineral collection in a single pass;

(v) Reagent A15 offers efficiencies not offered by other deflocculants currently in conventional use at most mineral testing facilities. The reagent enables achievement of complete sample disaggregation in minutes as compared to other deflocculants which typically require a 24hr-48hr sample soaking to disaggregate matrix in preparation for concentration. In addition, its superior sequestering properties enable quick segregation and recovery of deflocculated fines which are otherwise difficult to separate from disaggregated samples deflocculated with conventional reagents;

Despite the many successes of the current testwork in enabling segregation and evaluation of various fractions of the samples, overall gold grades reported from analytical work are sufficiently low to preclude support for recommendations in respect of additional random isolated sampling at the Property. It is obvious, in that regard, that the sixteen isolated samples collected from small shallow pits offer little, if any, characterization of the vast McIvor sediments as a whole which extend over several tens of kilometers and down to a depth of 3m-6m. It is recommended, therefore, that no additional isolated sampling be carried out at the Property until such time as the McIvor River Valley's geomorphological features are better understood to guide sample site selection. It is further recommended that any future sampling penetrate deeper toward the base of the placers (and related paleo-channels) relying on sampling via drilling or augering.

[redacted]

Shahé F.Sabag, MSc.
June 24, 2002

1. INTRODUCTION

1.1 INTRODUCTION AND TERMS OF REFERENCE

Alluvial gold has previously been reported from the McIvor River and vicinity from work carried out by Tintina Mines Limited during the mid 1990's, but recovery thereof by means other than hand panning has met with considerable difficulties attributed to the bentonitic clay content of sediments in the area. The foregoing exploration work was carried out under the direction of the author, then Vice-President of Tintina.

Given demonstrable clay-busting properties of a deflocculant Reagent A15 patented by Ateba Mines Inc. and related parties, the McIvor Property was acquired by Mr.A.C.A.Howe, President of Ateba, during June, 2000, to secure a source of natural clay-rich mineralized materials to conduct certain research and demonstration tests. The author was subsequently commissioned by Howe and Ateba to oversee a small sampling program to collect sufficient alluvial sample material from the McIvor River and vicinity to:

(i) conduct a series of heavy mineral concentration tests to evaluate applicability of Ateba's deflocculant to preparation of mineral concentrates and recovery of gold from the material collected; and

(ii) determine gold content of the samples with a view to initiating broader future exploration work to assess economic viability of previously reported gold bearing placers within the McIvor River Valley and vicinity.

The sampling was completed under the supervision of the author during November 16-23, 2000. A total of 2,576lb of sample material, excavated from sixteen pits, were collected and retrieved. The samples were subsequently concentrated and analyzed to establish sizing distribution, heavy mineral content and gold grades.

This report outlines details of the above work within the general context of previous work reported by others from the area, salient portions of which have been summarized or excerpted herein from assessment reports on record and other previously published material. This reports supercedes an interim report[1] previously issued by the author detailing sampling work conducted at the Property during November, 2000, and it expands the previous document incorporating also revisions to certain sections related to land use and tenure.

[1] Report Title: *McIvor Property, Report On Alluvial Sampling program*, December 8, 2000, by S.F.Sabag.

2. Property Location, Description, Rights and Land Use

2.1 Location, Description and Ownership

The McIvor Property is located in the Birch Mountains, Athabasca Region, northeast Alberta (Figure 1), 145km to the north-northwest of Fort McMurray, in Ranges 13 and 14 of Townships 103 and 104, West of the 4th Meridian (Figures 2 and 3).

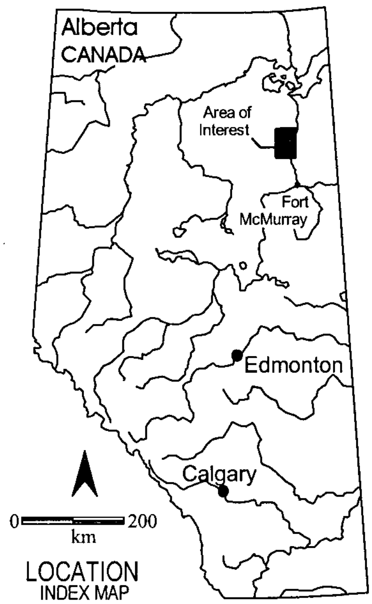

Figure 1. General Area of interest

The Property comprises 36,864ha held under four metallic and industrial mineral permits (Table 1) each covering an entire township. The permits bear commencement dates of June 27, 2000, and are registered to, and beneficially held 100% on behalf of Ateba Mines by, Mr.A.C.A.Howe, its president.

Permit No.	Area (ha)	Description	Commencement Date
9300060002	9216	4-13-103: 1-36	27-Jun-00
9300060003	9216	4-14-103: 1-36	27-Jun-00
9300060004	9216	4-13-104: 1-36	27-Jun-00
9300060005	9216	4-14-104: 1-36	27-Jun-00

Table 1. Property permits description

The four townships comprising the Property were previously held by Tintina Mines Limited, which acquired same during 1994 and actively explored the Property and surrounding subregion during 1994-1995. Tintina allowed its holdings in the area to lapse during late 1999. The bulk of Tintina's work at the Property was carried out during 1994-1995. The Property had not been explored prior thereto.

An aggregate of $101,120 (including a 10% provision for administrative overheads) were spent toward exploration activities at the Property during the period June 27, 2000 to June 24, 2002. Expenditures were incurred toward completion of sampling, mineral concentration testwork and related analyses (Table 2) focusing on Permits #9300060002 and #9300060004 (Permit#9300060002-$39,066; Permit#9300060004-$60,743 - excl ovhds). These expenditures are being filed toward assessment work requirements to renew a portion of the Property.

Cost Category		Total Spent
Supplies & Consumables	$	1,340
Air & General Travel	$	5,635
Freight	$	308
Communications	$	56
Printing & Reproductions	$	1,090
Analytical and Mineral Testwork	$	23,085
Fixed Wing & Helicopter	$	9,215
Professional Fees & Salaries	$	51,198
Subtotal	**$**	**91,927**
10% provision for administrative overheads		9,193
Total Expenditures being filed toward assessment work requirement	**$**	**101,120**

Table 2. Summary of exploration expenditures Jun27/2000-Jun24/2002.

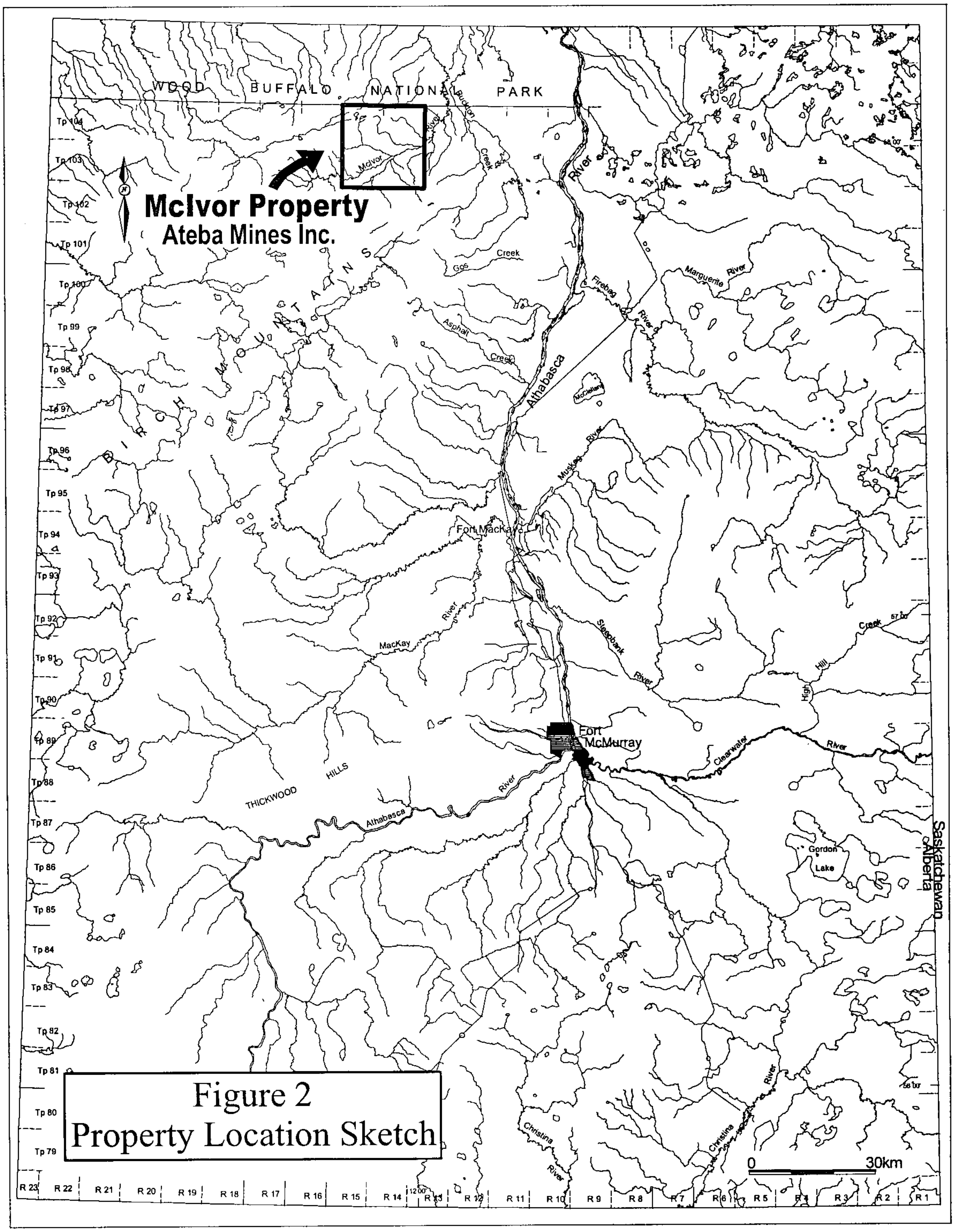

Figure 2
Property Location Sketch

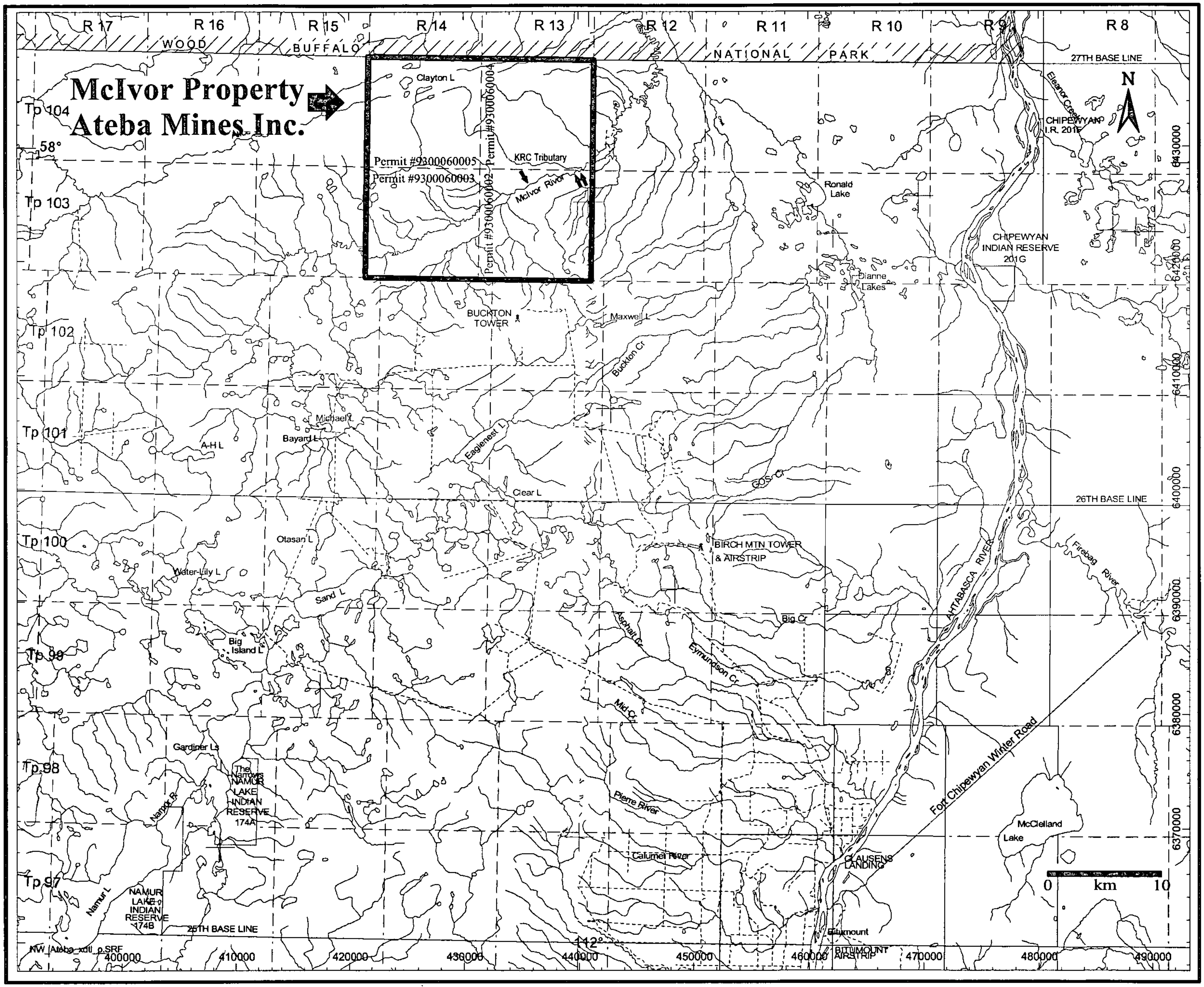

Figure 3. Detailed location sketch showing McIvor Property permits, general location of sampling program 2000 (➘), the Birch Mountain Tower and Airstrip, and Birch Mountains Area drainage.

2.2 Mineral Rights and Work Requirements

The permits confer the exclusive right to explore for metallic and industrial minerals, inclusive of diamonds. They can be maintained in good standing by performance of work for a period ten years consisting of five two year terms. Work requirements are $5/ha for the first term, $10/ha for each of the second and third terms, and $15/ha for each the fourth and fifth terms. Regulations provide for the accumulation of excess work and its filing toward subsequent terms, for the reduction of permit areas during their currency, and also the one-time facility for renewal via a payment in lieu of required work.

The permits comprising the Property are presently in their first term and, accordingly, require work expenditures of $46,080 per permit prior to June 27, 2002, to maintain them in good standing for their subsequent term.

There are no statutory provisions for the renewal of permits beyond their 10 year term, although statutes require conversion of permits to Metallic Minerals Leases which are in good standing for a renewable term of 15 years and confer rights to minerals. Leases are maintained in good standing by annual payments of $3.5/ha but require no work performance.

2.3 Land Use and Environmental Issues

Sensitivities affecting land use and exploration in the region are comparable to elsewhere in Canada. The principal environmentally sensitive area relevant to the Property is Wood Buffalo National Park to its north, and the Birch Mountains Wildland located some 35km to its southwest. The Birch Mountains Wildland was recently designated a protected area under the Special Places 2000 program, and it extends west-southwesterly from the Sands Lake area in Twp108/R15 to Twp97/R23.

There are no aboriginal claims pending in the region.

Moose and caribou calving season sensitivities present by far the most exigent restrictions insofar as exploration activities are concerned as they require the annual cessation of field activity during the period March-June. The southern parts of the Property and the McIvor River valley fall within moose and caribou calving protection zones.

Other practical constraints to mineral exploration in the region include trapping licenses (mostly inactive) and timber rights which, for a considerable portion of the region including the Birch Mountains, are held by various groups under Provincial Forest Management Agreements. Timber rights in the Birch Mountains Area are held mainly by Alberta Pacific, necessitating the remittance to Alpac of timber damage assessment fees (TDA) for all land clearing, regardless of quantity and quality of growth. TDA rates are in the order of some $1,000 per hectare of clearing and are levied on all clearing activities inclusive of clearing of roads and trails. In addition, some roads/trails in the Birch Mountains are privately held and have from time to time required special permission for access or the payment of arbitrary fees.

Accumulations of commercial gas are well known in certain portions of the region and scattered gas pockets are also common necessitating due precautions during drilling. Low pressure (uneconomic) gas has been documented from the Viking Formation which occurs within the upper 100m-200m of stratigraphy in the Birch Mountains area, and higher pressure gas has been documented from the McMurray Formation much deeper in the stratigraphy (current production from the southwestern parts of the Birch Mountains).

3. Access, Physiography and Logistics

3.1 Access and Logistics

Fort McMurray is the principal logistical center nearest to the Property, and serves as the principal support center for the entire region. It is accessible by highway from Edmonton (350km away) and by regular daily commercial flights. It is well supplied and offers all necessary supplies and support services to exploration work in the area, inclusive of expediting, fixed and rotary wing air support, communications, medical and equipment supplies. Radio as well as telephone communications are also excellent throughout the region. Cellular telephones (Telus and ATT-Rogers) provide by far the most flexible communications link with good reception to localities as far away as the Birch Mountains.

Access throughout the region is relatively good, facilitated by a network of highways, secondary roads and old seismic lines which serve well as winter roads and bush roads, and are in some cases also accessible by all-terrain vehicles. The principal throughway to access the northern parts of the region is Highway 63 which is an excellent paved freeway passing northward from Fort McMurray on the west bank of the Athabasca River to a point some 45km north of Fort McMurray where it crosses the River over a large, all-purpose bridge. Highway 63 continues northward along the east bank of the River as a paved freeway for some 20km until it connects to the Fort Chipawan winter road.

The Athabasca River bisects the region and provides relatively good water access across most of the region and also a barge service over its northern portions to localities well to the north of Fort McMurray. Field activities have historically occasionally also relied on ice bridges constructed across the Athabasca River to support timber harvesting activities. Such bridges have traditionally been constructed during December and have been useful until the end of February.

Although the Birch Mountains can be accessed in the summer months by barge/boat via the Athabasca River, preferable mode of access is by helicopter or by fixed wing aircraft landing on the Birch Mountain Airstrip (110km from Fort McMurray) which also houses a seasonally manned Fire Tower and Telus communications relay station. The Airstrip can also be accessed by winter road via the Birch Mountain Winter Road which passes northerly from the village of Fort MacKay and provides a sinuous path along the west shore of the Athabasca River negotiable only after freeze-up as it crosses several streams and over some very wet muskeg. Access throughout the Birch Mountains is best by rotary aircraft, although countless old seismic lines offer adequate, albeit selective, localized access throughout much of the area. There are a number of other unpaved airstips in the region and in the Birch Mountains which are capable, subject to weather conditions, of landing small aircraft and enabling caching of field supplies and fuel.

3.2 Physiography and Vegetation

Physiography throughout the general region is highly variable, but is commonly characterized by low, often swampy, relief punctuated by a handful of physiographic features protruding above the otherwise flat terrain at an elevation of 220m-270m asl. The Birch Mountains represent by far the greatest topographic relief in the region, conspicuously protruding some 600m above the surrounding countryside. Considering the relatively flatlying stratigraphy in the region, the distinct sharp erosional edge of the Birch Mountains and its river valleys provide excellent exposures across relatively large sections of stratigraphy which are otherwise buried or eroded.

Physiography throughout the Birch Mountains Area is characterized by sharp V-shaped river and creek incisions in poorly consolidated stratigraphy susceptible to active landslides and slumps. As river valley incisions throughout the area cut progressively deeper into the underlying stratigraphy as they near the erosional edges of the Mountains, drainage in the area overall defines a radial pattern outward from the center of the Mountains. Localized radial drainages are also present within the Birch Mountains, characterized by creeks flowing outward from 1km-2km diameter circular features (domes).

The McIvor River is a wide (10m-30m) and relatively fast moving watercourse flowing northeasterly across the Property and thence northward across Wood Buffalo Park to Lake Claire, in marked contrast to other rivers and creeks in its general vicinity and in the Birch Mountains area all of which flow east and southeast into the Athabasca River. The McIvor River Valley is by far the most formidable topographic feature in the Birch Mountains, representing an east-northeasterly trending valley with a width of some 10km at its eastern extremity. Over its entire length of some 30km, the Valley has an overall relief of some 300m, and it is a well defined watercourse widening eastward from 5m-10m at the headwaters of the McIvor River (Twp102-R15) to several hundred meters within a 10km wide flat-bottomed near-circular valley (Twp104-R12) characterized by immense and mature braided oxbows.

The McIvor Valley is characterized by a series of tiered terraces over its easternmost one third, the dominant terrace being a 10m high feature standing above several 2m-3m high bar terraces and dry back channels. Unlike other sharply incised valleys in the area, the Valley is a relatively flat-bottomed feature dominated by the McIvor River with its many braided meanders and countless tributaries. The Valley is surrounded by broad zones of active slump providing continual sediment recharge such that the main flow channel of the McIvor River is in a state of active flux within the central section of the valley, shifting back and forth within several hundred meters of valley bottom (Figure 4).

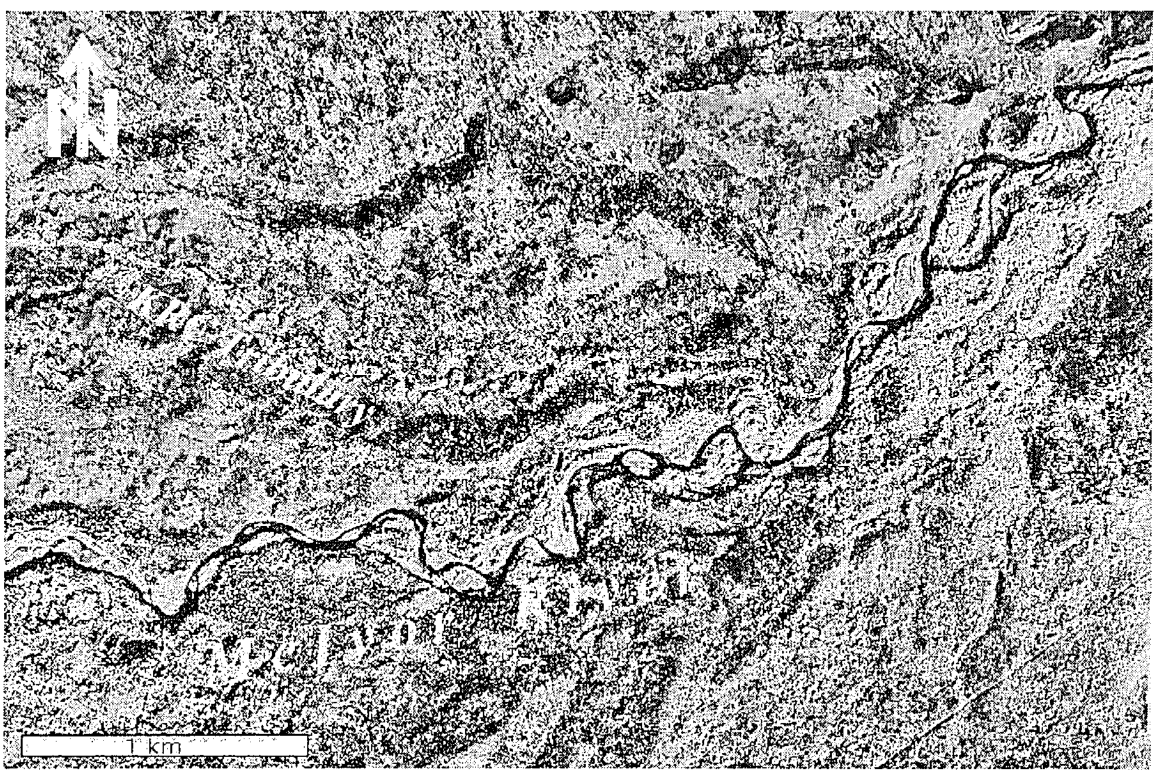

Figure 4. Aerial view of McIvor Valley at confluence of KRC Tributary

The McIvor Valley's physiography is unique within the region and alluvial material therein is the end-product of the concentration of a 10kmx20kmx500m wedge of sediments. The Valley was probably an ice dam and glacial debris therein consists of lag material dominated by well rounded pebbles, cobbles and, to a lesser extent, boulders of Precambrian Shield material.

Water level of the McIvor River is highly variable due to the clay rich valley floor and is entirely dependent upon rainfall run-off. Water quality is also highly variable and is at times very muddy due to being constantly recharged with fresh mud from major zones of slumping clay-rich and often bentonitic shales. Active mudslides and mudflows characterize a significant portion of the valley as they also do much of the Birch Mountains area in general.

Glacial history of the region is complex and poorly understood. Principal ice direction throughout the northeastern portion of the region is southwesterly, although ice flow is believed to have splayed around, and over, the Birch Mountains such that throughout the balance of the region crosscutting composite directions are common, manifested as multiple tills.

4. Geology and Previous Work

4.1 Regional Geological Setting

Northeastern Alberta is underlain by rocks of the Western Canada Sedimentary Basin. General geology is represented in broad terms by a sequence of Devonian and younger sediments unconformably overlying the Precambrian Shield which is sporadically exposed only in the northeasternmost part of the region, near the Saskatchewan border, some 150km to the northeast of Fort McMurray, from whence southwestwards the Precambrian is buried by progressively thicker sedimentary formations (Figure 5). These sediments consist of Devonian sequences (carbonates, evaporite and red beds), which in turn are unconformably overlain by Cretaceous clastic sediments, the lowermost of which are host to the oil sands (Figure6).

4.2 General Geology and Previous Work - Birch Mountains Area

Bedrock exposures throughout the Birch Mountains area are minimal (<2%), and are restricted to creek/river valleys which define incisions confined to the erosional edge of the Birch Mountains, forming a narrow 5km-10km arcuate band. Despite their scarcity, however, the available exposures throughout the area enable observation and sampling of some 1000ft of Cretaceous stratigraphy, extending upward from the top of the Manville to well into the Colorado Group, straddling the Albian-Cenomanian boundary. The area provides exposures of five Formations: the Clearwater/Grand Rapids Formation, the Viking/Pelican Formation, the Westgate Formation, the Fish Scales Formation, and the Second White Specks Formation.

Topography throughout much of the central and southern portions of the Birch Mountains straddle the Albian-Cenomanian boundary and provide exposures of the Fish Scales as well as Second White Specks extinction markers both of which hosted in black shales. Sulfide and native gold occurrences associated with the two markers have to date comprised the focus of all exploration work in the area, although more recent efforts have turned toward suspected existence of yet undiscovered kimberlitic venting throughout the central and southern parts of the Birch Mountains as evidenced by the ubiquity of bentonitic material and favourable indicator mineralogy recovered from certain drainages. Diamondiferous kimberlite pipes were discovered some during the late 1990's by Kennecott/Montello at the Legend Property located in southwestern portion of the Birch Mountains (the Legend Property, and adjacent Properties to its north, its east and southwest are presently under active exploration for diamonds by New Blue Ribbon Resources, Marum Resources, Shear Minerals, Tintina Mines and NSR Resources).

Exposures throughout most of the Birch Mountains, and at the McIvor Property, are dominated by unconsolidated Cretaceous shales and mudstones, all of which are highly susceptible to landslides and slumping. Nearly all bedrock exposures throughout the area are in various stages of active mass wasting, and in many cases slumpage is sufficiently advanced to introduce uncertainties to definitive determination of stratigraphic position of often similar looking exposed units. Previous mapping has, accordingly, necessarily relied on topographic elevation and its correlation with subsurface oil well picks from the stratigraphic databases for the area.

Previous mineral exploration (for non-hydrocarbon minerals) throughout the Birch Mountains consists nearly entirely of work completed by Tintina Mines Limited over its Properties previously held in the area including the McIvor Property which was held by Tintina until its abandonment during late 1999.

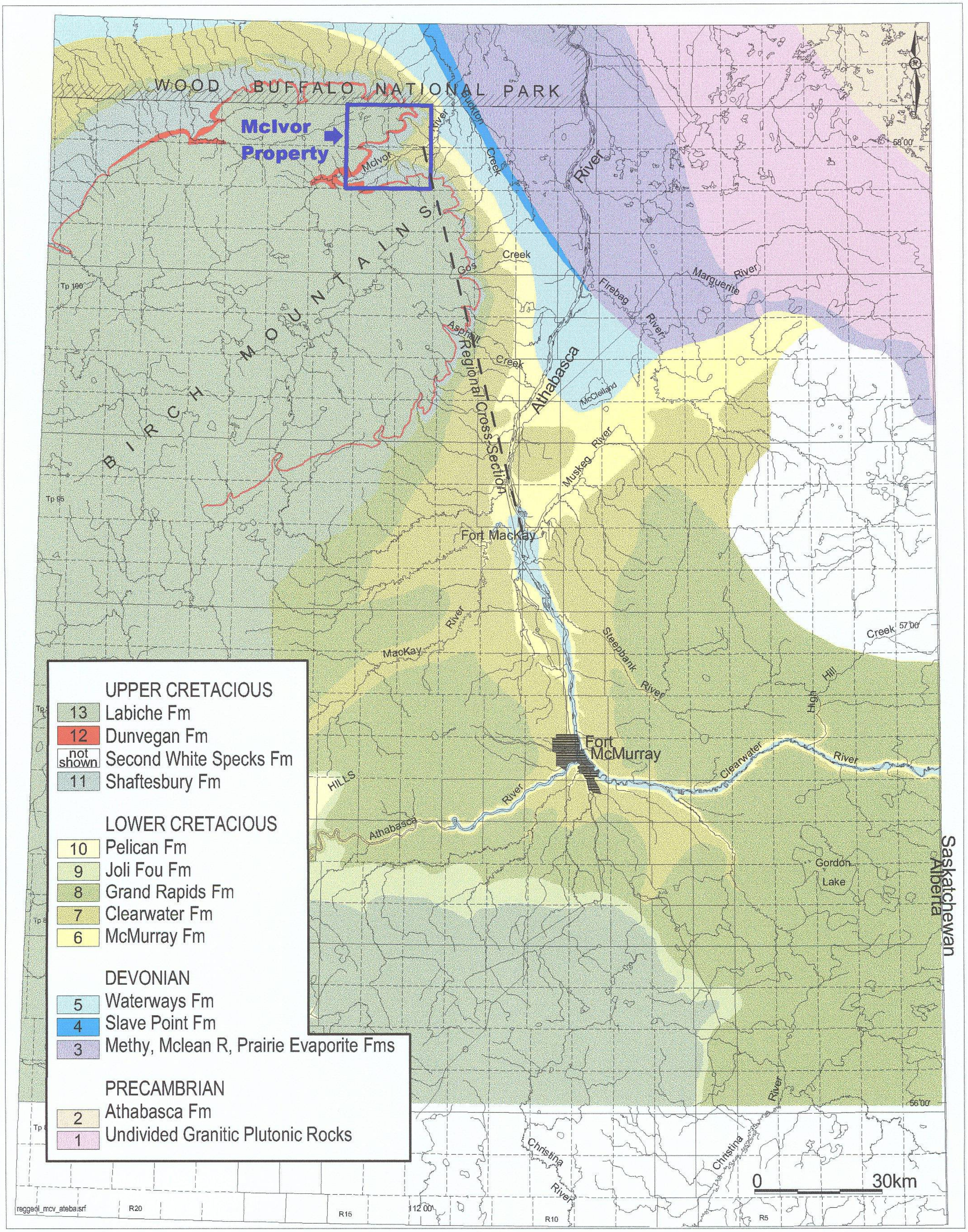

Figure 5. Summary regional geology sketch, northeast Alberta

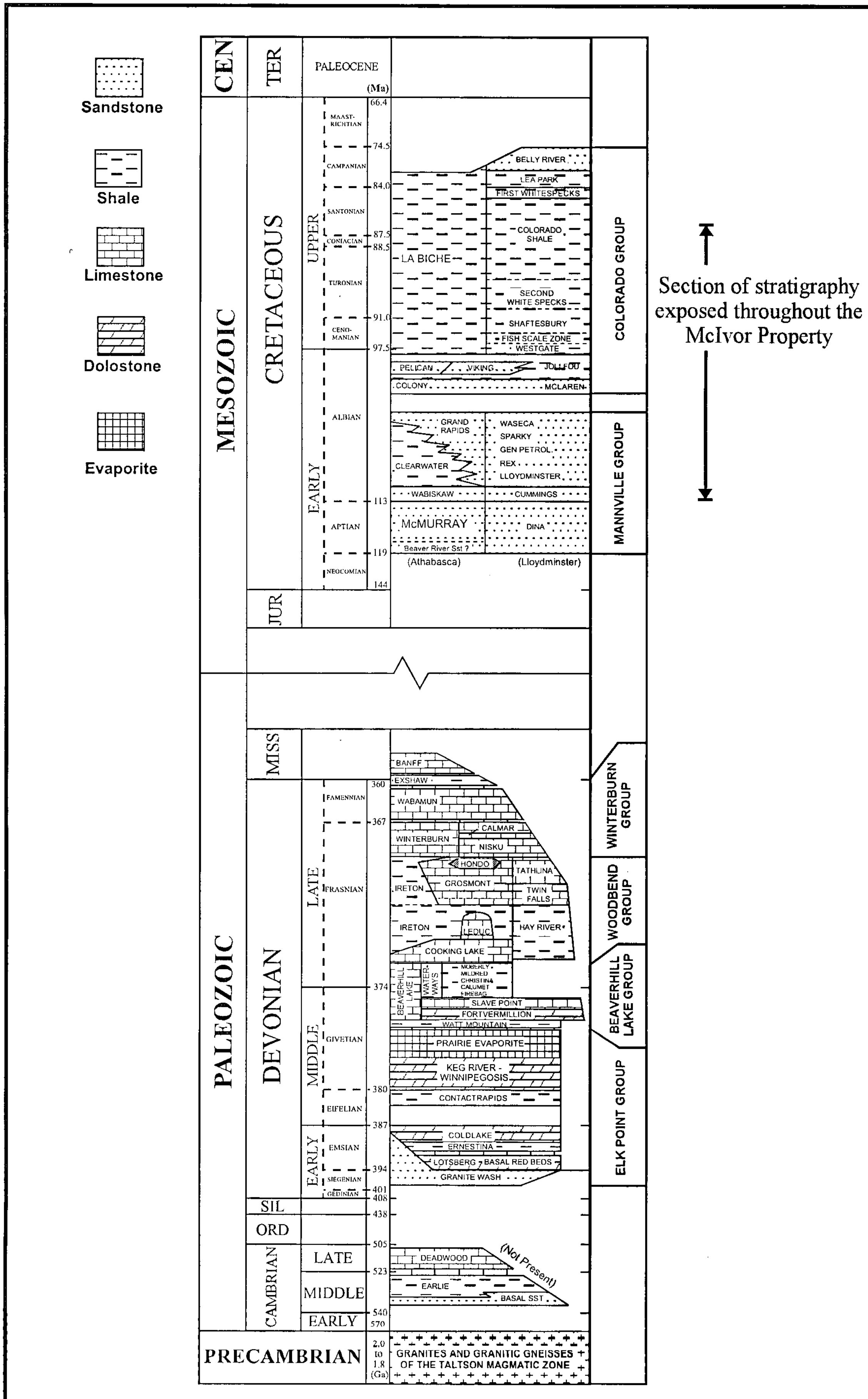

Figure 6. Generalized Stratigraphic column for northeast Alberta showing approximate section of stratigraphy intermittently exposed throughout the McIvor Property

4.3 Previous Work - McIvor Property

Previous mineral exploration (for non-hydrocarbon minerals) at the Property consists entirely of work completed by Tintina Mines Limited, the bulk of which was completed during 1994-1995. This work comprises 1994 reconnaissance work conducted integral to broader regional programs throughout northeastern Alberta, followed by two separate, though related, exploration programs completed in 1995 comprising (i) a placer testing program focusing on evaluation of alluvial gold discovered in the McIvor valley in 1994, and (ii) a lithogeochemical reconnaissance and sampling in search of bedrock source to the alluvial gold focusing also on a number of surface geochemical anomalies identified during 1994. Work completed subsequent to 1995 represents sporadic studies or testwork on samples previously collected from the Property including microanalytical cataloguing of recovered mineralogy[2] and an orientative review of heavy mineral concentrates in search of diamond indicator minerals.

Information available from the above previous work consists of databases and archived samples from the following:

- LANDSAT remote sensing imagery analysis (1994) and Airphoto imagery analysis (1995);
- Lake Sediment/Water and Stream Sediment geochemical sampling (1994);
- Stream Sediment heavy mineral concentrate sampling (1994), and follow-up testwork (1994-1995);
- Stream Sediment infill heavy mineral concentrate sampling[3] (1995);
- Lake Sediment/Water and Stream Sediment geochemical infill sampling (1995);
- Lithogeochemical reconnaissance sampling (1994), follow-up heavy mineral testwork (1994-1995);
- Lithogeochemical reconnaissance sampling (1995);
- Stratigraphic compilation and subsurface modelling (1995);
- Placer Testing Program (1995);
- Orientative review of select concentrates for kimberlite indicator minerals (1999)[4].

The reader is referred to assessment reports filed by Tintina (Sabag 1996[5], Sabag 1999[6]) for details of the above. Relevant portions from these reports are excerpted or summarized herein in sections below. Previous sample locations and summary results are shown in copies of a Tintina Drawing and a sketch, both of which are appended herein (Appendices A2.1 and A2.2).

All heavy mineral concentrates, mineral picks, gold grains recovered, untreated duplicate alluvial pre-sieved samples and lithological specimens collected by Tintina from the Property were donated to the Alberta Geological Survey in 1999 and are currently archived (available for review and testwork) at their MCRF facility, Edmonton. Many of the samples archived are duplicates of samples previously treated by Tintina, or are concentrates or mineral picks awaiting analysis.

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[2] Studies by Scanning Electron Microscope and by Electron Microprobe, S.B.Ballantyne and D.Harris, Geological Survey of Canada, Ottawa (1994-1996).

[3] As at the date hereof, many mineral concentrates recovered from 1995 sampling remain unexamined. These samples are archived at the Alberta Geological Survey MCRF facilities, Edmonton.

[4] Orientative review of some concentrates for indicator minerals was carried out integral to work on two other Tintina Properties. Results were, accordingly, reported in an assessment report related thereto (MIN9928, S.Sabag 1999).

[5] S.Sabag 1996: McIvor Property, Northeast Alberta, Canada, Summary Report, Exploration Programs 1993-1995 and Work In Progress 1996. S.F.Sabag, April 1996. Tintina Mines Limited. Assessment Report MIN9610.

[6] S.Sabag 1999: Asphalt and Buckton Properties, Birch Mountains Area, Athabasca Region, Northeast Alberta, Report on Exploration 1997-1999. S.F.Sabag, October 14, 1999. Tintina Mines Limited. Assessment Report MIN9928.

4.4 Geology and Previous Gold Discoveries - McIvor Property

The McIvor River Valley, passing east-northeasterly across the middle of the Property, is surrounded by high ground drained by a number of smaller creeks which form narrow and deep incisions into the stratigraphy and provide the majority of the exposures on the property. Valley walls of the major creeks (Greystone Creek, KRC Tributary, West Tributary, and South Tributary) provide the majority of the bedrock exposures at the Property throughout which bedrock exposure is less than 2%, and many exposures are covered by a thin layer of mudflow.

Over its length of some 30km, the McIvor Valley travels across some 300m of topographic relief (hence also stratigraphy), providing exposures deep into the underlying flat-lying geology. The McIvor River, accordingly, drains material extending down-stratigraphy from the Second White Specks Formation at its headwaters, through the Shaftesbury and Westgate Formations in its center, to the top of the McMurray Formation at its east end. Tributaries to the River also similarly drain material from the respective Formations.

Bedrock exposures at the Property straddle the Lower-Upper Cretaceous boundary, and typically offer the following units for mapping/sampling at four distinct terraced elevations: the Clearwater Formation (between 350m and 420m asl), the Viking/Pelican Formation (between 450m and 540m asl), the Shaftesbury Formation (between 540m-600m asl), and the Second White Specks Formation (approximately 610m asl). A north-south regional cross-section is summarized in Figure 7 showing the stratigraphic position of the eastern end of the McIvor Valley with respect to the remainder of the region.

The Shaftesbury and the Second White Specks Formations are the only Formations with any geochemical relief. They comprise sequences of carbonaceous, locally very bentonitic, black shales reporting geochemical enrichments in all metals and can locally carry as much as 25% fine sulfides predominated by FeS species (pyrites and marcassite). Similar to elsewhere throughout the Birch Mountains area, exposures of the Second White Specks Formation, almost always found at the headwaters of valleys, host the better lithogeochemical metal anomalies (elevated Ni/Co/Cu/V/Ag) at the Property, although they are not as enriched as samples of the Formation collected from elsewhere in the Birch Mountains area.

The Second White Specks Formation is known to carry native gold throughout the central and southern portions of the Birch Mountains and same has been the target of considerable previous work by Tintina in the Area.

The Shaftesbury and the Second White Specks Formations occupy the Lower-Upper Cretaceous boundary which defines the 85my-90my time horizon manifested as venting in the region some of which in the form of kimberlitic pipes which have attracted considerable exploration interest (e.g. Buffalo Head Hills diamond and kimberlite discoveries by Ashton Mining, Legend Property kimberlites by Kennecott/Montello).

Gold was first discovered in the McIvor River during regional reconnaissance multimedia sampling surveys carried out by Tintina during 1994, in heavy mineral concentrates panned from -18mesh (<1mm) alluvial material from sample site 5062 located near the confluence of the KRC Tributary. The discovery was subsequently confirmed and duplicated in many other samples collected from the area from the McIvor River as well as from sites in the KRC Tributary interspersed over a distance of some 3km upstream from its confluence with the McIvor.

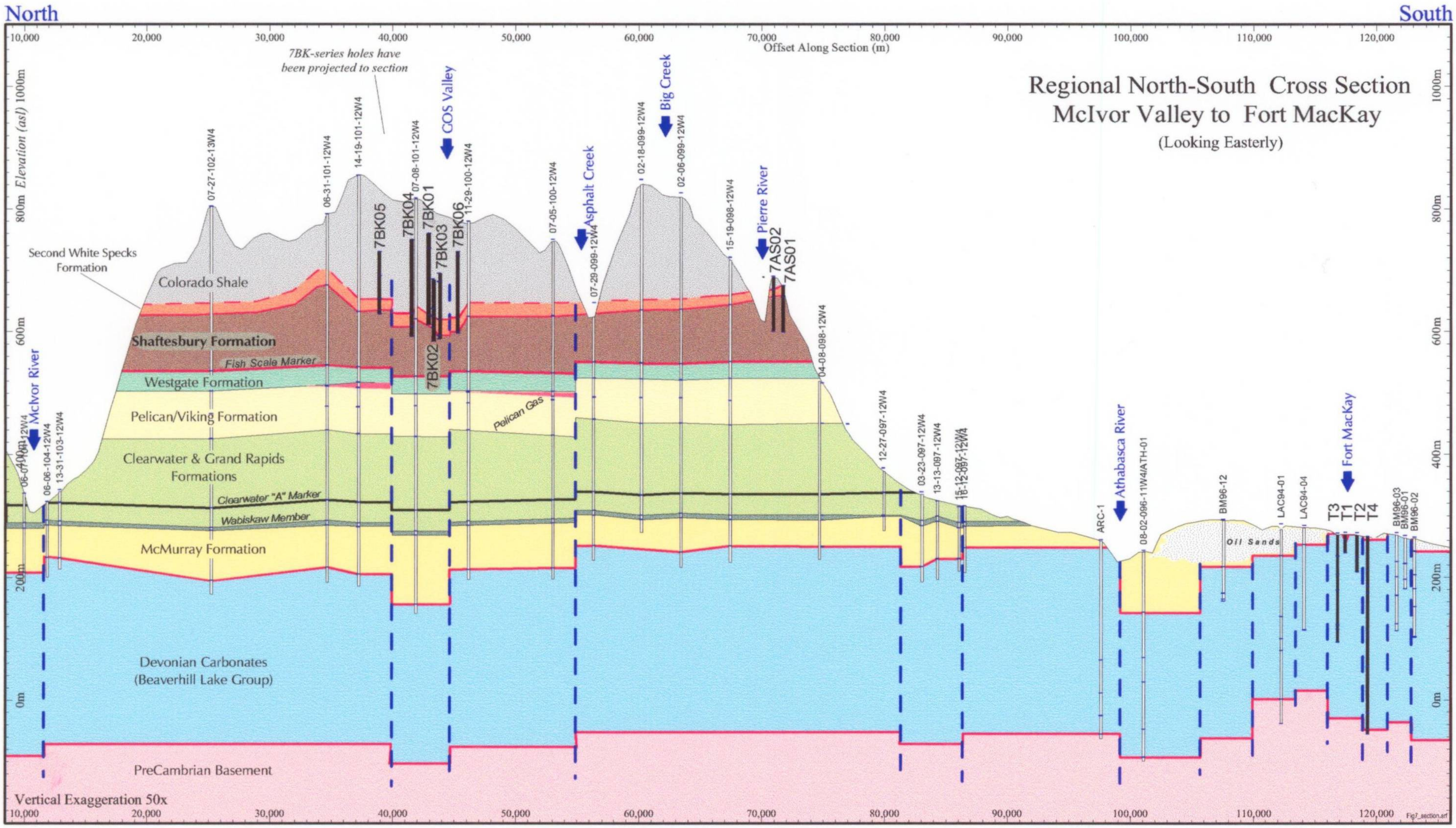


Figure 7. Regional north-south cross section McIvor Valey to Fort MacKay (after Figure 13, Assessment Report MIN9802, Tintina Mines).

Prospecting along the McIvor River downstream from site 5062 failed to encounter gold in samples panned, although prospecting upstream from the site indicated the widespread, though intermittent, presence of gold throughout long sections of the McIvor Valley and for at least some 5km upstream from its junction with the Tributary. Sample site 5088 located some 4km upstream from the confluence of the Tributary, yielded the highest grain count exceeding 1000 gold grains from the sample panned. Unlike the coarser grains recovered from sites downstream, however, gold grains recovered from site 5088 are typically very fine (20μm-150μm) and pristine with delicate appendages (select photographic images are appended in Appendix B1). Previous sampling and gold occurrences are shown in Figure 8 (and in Drawing A2.1 and A2.3, Appendix A2).

Despite successfully mapping distribution of gold occurrences upstream in the KRC Tributary, reconnaissance prospecting of the Tributary and vicinity failed to locate bedrock source of the gold but succeeded in discovering sections of riverbed with abundant sulfides immediately upstream from the portion of the Tributary which had reported gold occurrences. Heavy mineral concentrates panned from these sections typically carry upward to 75% Fe-sulfides by volume, consisting of a broad variety of grain morphologies and nodules all of which in various stages of tarnish. These localities are also often characterized by the presence of large concretions of black carbonate or black calcite (up to 1m diameter).

A number of 20kg-50kg samples were collected during the end of 1994 from select localities for further confirmation and the samples were subsequently tabled and concentrates prepared under laboratory conditions. This work re-confirmed presence of gold, and estimates of gold grade for a variety of samples per volumetric calculations ranged upward to 1600ppb, several of the samples reporting grades ranging 200ppb-800ppb. The suggested figures were sufficiently encouraging to warrant follow-up work which was carried out in 1995 in an attempt to quantify grade.

Work completed during 1995 included (i) heavy minerals sampling over portions of the McIvor River, the KRC and West Tributaries and over Greystone Tributary, and (ii) geochemical stream sediment sampling over nearly entire length of the McIvor River at a 1km sample spacing. Work completed focusing entirely on placer gold potential of the Property was as follows:

1. Heavy mineral concentrates were prepared by tabling of material from two one-yard pits manually excavated near each of sample sites 5062 and 5088. This work concluded that gold losses at the table could be unpredictable and potentially substantive (supported by earlier elutriation tube test results indicating that losses due to hydrophobic properties of the gold grains could be as high as 90%). Cyanidation of the concentrates returned grades lower than those previously estimated in the field, and the testwork indicated considerable vertical inhomogeneity in gold size distribution and grain count in the pits underscoring the need for better resolution of alluvial geomorphology prior to sampling.
2. 15 pits were mechanically excavated over a site (Site-A) located upstream form sample site 5062. The material was treated in-situ through a Knelson concentrator installed at the site. The concentrator proved decidedly problematic, however, due to the high clay content of the gravels tested and especially the high suspended solids content of the source waters from the McIvor River. Although gold was noted in many of the concentrates, the mineral concentrates were found to be unacceptably rough and binocular inspection of a sample of effluent sludge collected from the clean-out of the Knelson bowl housing indicated that it contained considerably more abundant gold grains (ranging 50μm -150μm) than that observed in the concentrates. This portion of the 1995 work was aborted, and field work was terminated part-way through the season due to its many shortfalls.
3. An orientation Ground Penetrating Radar (GPR) survey completed over the abovementioned Site-A indicated depth to valley bottom to be in the range 3m-6m. These figures were not tested by drilling and may vary considerably given that valley bottom consists of muddy shales similar in many respects to the alluvial material.

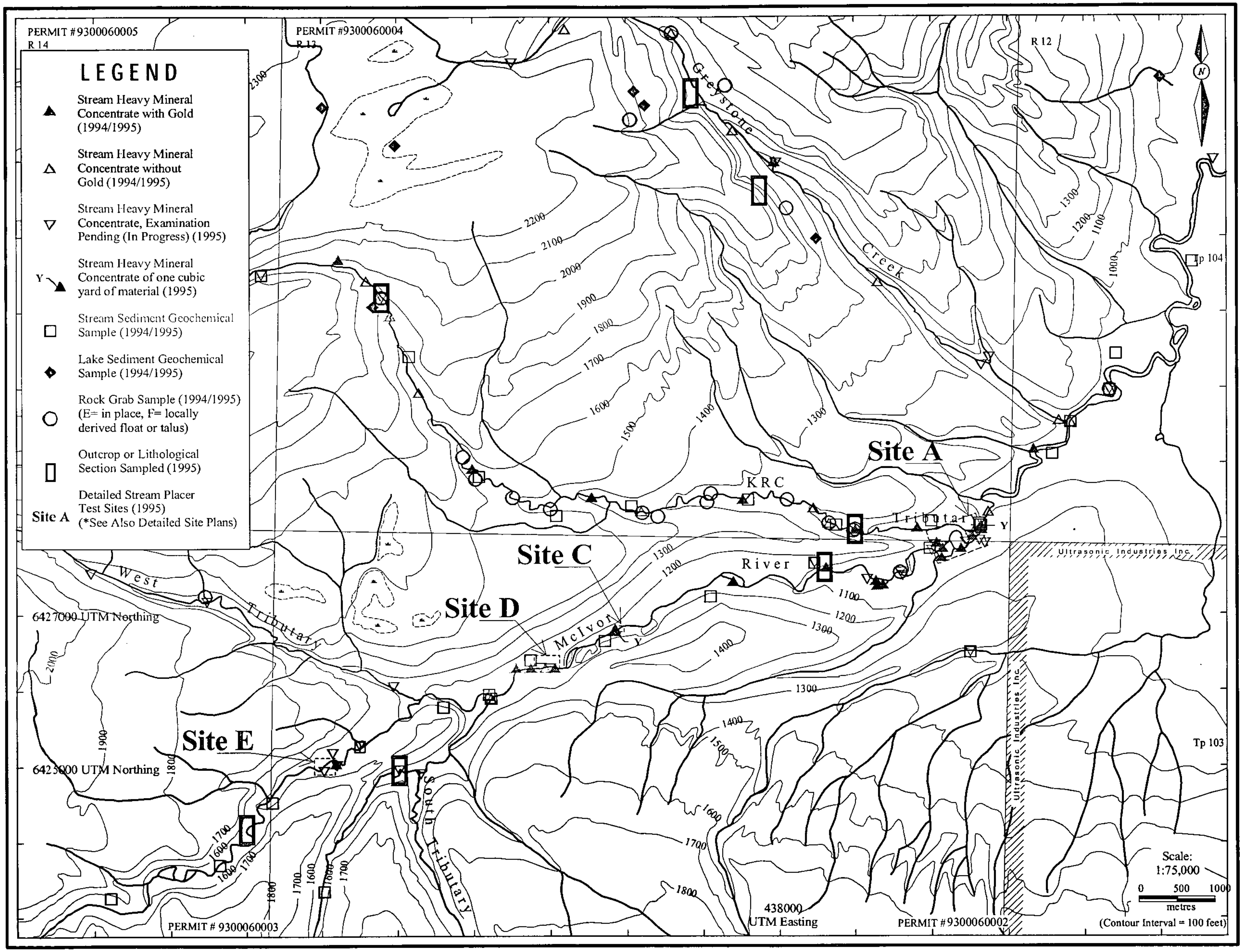


Figure 8. Summary sketch of 1994-1995 Tintina sampling over the McIvor Valley, showing location of stream mineral and geochemical sampling, as well as location of lake sediment/water geochemical and lithogeochemical samples. Ateba Mines McIvor Property permits also shown. (Figure is after Figure 2, Appendix E, Assessment Report MIN9610)

4. Three suites of samples were collected from three ancillary sites (Site-C, Site-D and Site-E) interspersed in the McIvor River upstream from sample site 5062. All concentrates prepared by tabling reported gold, although grain sizes and counts were different (higher or lower) from those documented from previous year's prospecting, underscoring the vagaries of intra-seasonal affects as they pertain to exploration for particulate gold in zones of active sediment recharge.

Laboratory testing of samples included various orientative tests to evaluate efficacy of tabling by comparing gold yields from the first table pass with those from passes of the tails therefrom. The first, second and even third passes were compared and reported overall erratic results indicating unsuitability of traditional tabling to due recovery of gold from the samples. Particular difficulties were encountered in respect of sample wetting and sliming.

Concurrently with the above 1994-1995 field work, most gold grains noted were picked from the concentrates, photographed and analyzed by Scanning Electron Microscope or by Electron Microprobe by Mr.S.B.Ballantyne and Dr.D.Harris, Geological Survey of Canada, Ottawa microanalytical facilities. This work demonstrated that:

1. The finer gold grains (30μm-150μm) recovered are generally characterized by pristine and delicate morphologies, in contrast to larger grains (250μm-800μm) which are typically curled, dented and rounded agglomerations of finer grains. Many of the finer grains also exhibit encrustations, inclusions and overgrowths of Fe±Cu-sulfides in various stages of oxidation.
2. Several gold grains analyzed by electron microprobe analytical traverses reported very high fineness (960-980 fine) lacking also any evidence of silver depletion at the rim.

A crude trend of fining of gold grain size and higher grain counts upstream was suggested by the 1994 sampling, supported also by a higher incidence of delicate pristine grain morphologies in contrast to the coarser grains often consisting of countless finer grains agglomerated by mechanical pounding within the river environment (see for example photomicrographs in B1.3 and B1.4 compared to B1.2). Reconnaissance conducted throughout the valley during 1995, however, indicated that the pattern may only be local to certain sections of the River, and that it may repeat itself several times over the 30km length of the McIvor. The pattern is suggestive of multiple sources to the alluvial gold, being various horizons within the surrounding stratigraphy.

The previous work completed throughout the area concluded that sediments within the McIvor Valley represent a substantive accumulation of gold, being the end-product of the concentration of immense tonnages (estimated 10kmx20kmx500m) of material from gold-bearing lithologies within its peripheries. It also concluded that the valley represents a broad zone of continuous sediment recharge from surrounding slumps, and that its near-surface alluvial mineralogy and geochemistry are thereby susceptible to considerable inter-seasonal and intra-seasonal variations.

The above work also concluded that gold concentration and recovery by traditional shaker table or by Knelson concentrator would continue to be fraught with problems, and recommended that additional sampling and sub-surface probing be deferred until such time as a reliable heavy mineral concentration procedure is identified which is better suited to the recovery of the finer gold grains predominating many of the sites sampled at the Property. Testwork relying on concentration by High-G or Falcon concentrators was suggested as possible options as was concentration by flotation. Thorough geomorphological work-up in advance of future sampling was also recommended to be subsequently augmented by strategically located Ground Penetrating Radar surveying.

Despite the repeated recovery of gold from most of the sampling in the McIvor Valley and vicinity, no subsequent efforts were made by Tintina to refine treatment procedures to optimize recovery of gold nor to continue the search for bedrock source thereto or to resolve geomorphological setting of the valley. The Property lay dormant until its expiry late in 1999.

As at the date hereof, overall conclusions summarized in the Tintina assessment report for the McIvor Valley stand as outlined therein, namely that; should gold grades prove encouraging, favorable characteristics to economic potential of the McIvor Valley would include (i) open physiography and the availability of considerable valley floor to extraction well away from the active channel; (ii) the immense ultimate tonnage of potentially gold bearing material over at least 10km length of the valley being its widest section; (iii) the high purity of the alluvial gold; (iv) accompanying subordinate Pt and Pd; (v) the absence of deleterious minerals in association with the gold; and (vi) the scarcity of boulders in the gravels. Characteristics of the Valley which are unfavorable to its economic potential include (i) locally high clay content of the sediments; (ii) unpredictable water quality of the McIvor River; and (iii) hydrophobic characteristics of some of the alluvial gold and their fine grained nature.

Several years following its field efforts throughout the McIvor River area, a series of analytical tests were completed by Tintina during 1998-1999 comprising an extensive check-assaying program in connection with liberation of native gold hosted in bentonitic black shales at its other Properties in the Birch Mountains Area. Some of the experimental testwork entailed pretreatment of certain samples with Ateba's clay-busting deflocculant Reagent A15 to facilitate and expedite preparation of heavy mineral concentrates. The testwork indicated superb properties of reagent A15 as a deflocculant and a good sequestering agent toward the expeditious production of well segregated sink and float fractions from otherwise difficult to handle test material, in particular toward the preparation of clean mineral concentrates from otherwise slimy and clay-rich muddy matrices. Given its suitability to resolution of problems of sample disaggregation and wettability, the testwork concluded that A15 would have excellent application to treatment of material from the McIvor River area, and recommended that a suite of samples so be tested (Sabag 1999)[7].

[7] S.Sabag 1999: Asphalt and Buckton Properties, Birch Mountains Area, Athabasca Region, Northeast Alberta, Report on Exploration 1997-1999. S.F.Sabag, October 14, 1999. Tintina Mines Limited. Assessment Report MIN9928.

5. Sampling Program 2000

The crew mobilized into Fort McMurray on November 16, 2000, after completion of pre-engineering and data acquisition during November 7-15, 2000. The work was completed during the period November 16-23, 2000, under the supervision of the author assisted by Mr.Daniel Leroux, P.Geo, placer geologist[8] and a casual labourer.

Field sampling was carried out during three field days, ferrying daily by helicopter from Fort McMurray to the Property (45min). Partial field supplies were cached from Fort McMurray to the Birch Mountain Air Strip prior to the fieldwork, and the crew was re-supplied daily thereafter to enable back-hauling of samples collected. Equipment and supplies were ferried from the airstrip to the Property by helicopter (15min). Helicopter support comprised a Jet Ranger supplied by Highland Helicopters and fixed wing support consisted of a Cessna 206 supplied by McMurray Aviation. Casual labour and logistical support were provided by McMurray Serv-U expeditors.

The sampling program was initially slated for September and initial plans were to collect approximately one yard of material from each of six pits augmented by other smaller reconnaissance samples from their vicinity, and to have pre-sized material collected by sieving in the field. The program was, however, unavoidably delayed until November and, accordingly, sampling procedures, sample quantity and coverage were necessarily modified in view of widespread deep frost throughout the region and the Property. A decision was collectively made in the field to collect smaller samples instead, but in favour of better distribution over sections of interest of the McIvor River.

Contrary to expectations, the ground was found to be frozen completely well below its uppermost surface. Excavation of the sampling pits, accordingly, proved time consuming and decidedly challenging, necessitating use of a propane torch to pre-thaw the material,[9] and digging of the pits by scraping of thawed material inch by inch. Given these field conditions, the sample pits typically measure some 1.5ft in diameter, and were excavated down to a depth of 1ft-1.5ft.

The McIvor River was also found to be completely frozen with the exception of the odd isolated narrow flow channel. Unavailability of water did not permit sizing of sample material by sieving in the field. Instead, the excavated material was hand-cobbed on site to exclude cobbles and coarse pebbles. The coarse fraction was discarded after weighing, and only the finer matrix and smaller pebbles were retrieved as sample material.

Sampling sites (Figure 9) were selected to overlap principal localities which had reported gold from previous work carried out by Tintina, namely; the vicinity of the confluence of the McIvor River and the KRC Tributary (Tintina sample 5062) and sections of the McIvor River some 4km-5km upstream therefrom (Tintina sample 5088 and vicinity). The sampling sites, ordered in upstream sequence, are as follows:

MCV-B	across from the point of entry of the KRC Tributary into the McIvor River
MCV-A	a bar some 1km upstream of the confluence of KRC Tributary and McIvor River
KRC-Z	a Z-shaped kink and point bar in the KRC Tributary
MCV-Z	point bar in McIvor across a 30m topographic divide from KRC-Z
MCV-C	a bar some 4km upstream of the confluence of KRC Tributary and McIvor River
MCV-D	an island bar some 5km upstream of the confluence of KRC Tributary and McIvor River

[8] on loan from A.C.A.Howe Intentional Limited.

[9] some minerals in the samples may appear scorched under microscope examination.

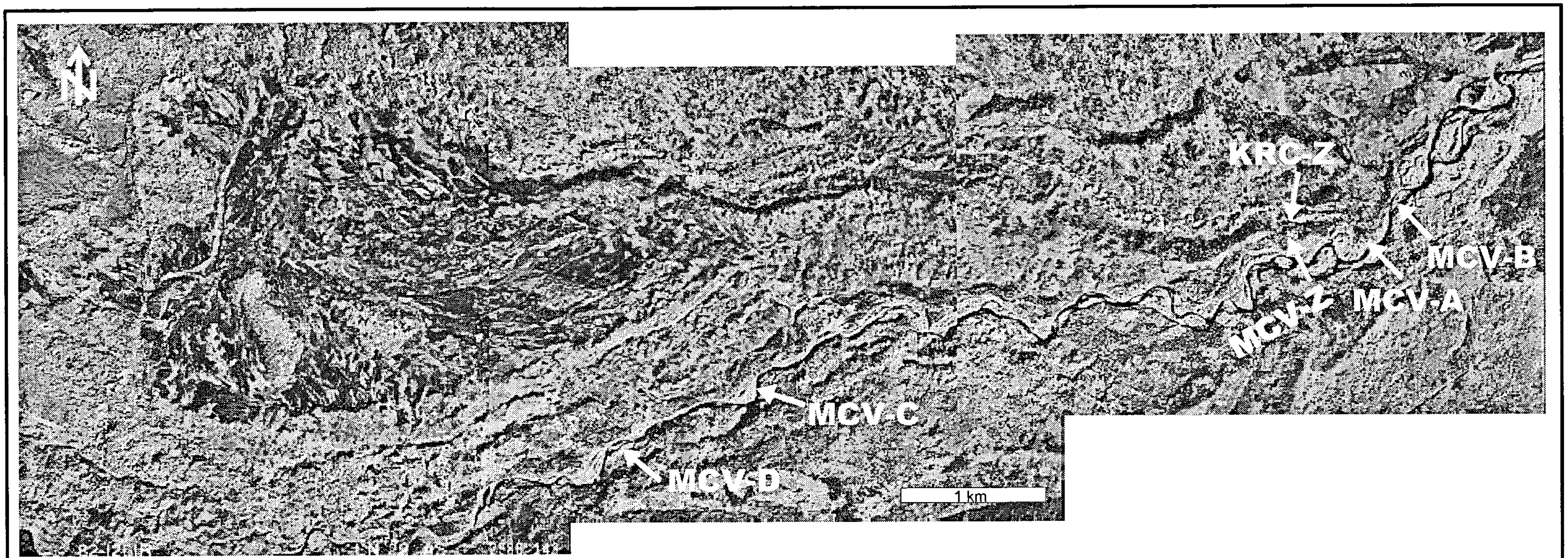


Figure 9. Aereal photocomposite of sampling area, showing sample sites. Sampling Program 2000. (Note: present day active channel is not exactly where river is shown in air photograph. See photographic plate B2.1 Appendix B2 for comparison).

Given the flux of the active channel of the McIvor River ever-shifting within its Valley, the present location of many channels was found to be quite different from those depicted in the air photographs (circa 1982). This can be seen in photographs of the area around the River's confluence with the KRC Tributary (Photoplate B2.1, Appendix B2), especially near sampling sites KRC-Z and MCV-Z wherein the Tributary presently flows a mere 30m to the north of the McIvor (Photoplate B2.4, Appendix B2), compared to the 500m seen in the air photographs.

A total of 3,449lb of material were excavated from 16 pits distributed among 6 sites along a 5km section of the McIvor River and the KRC Tributary. Pits were located near or at shoreline on point bars, and on average two or three pits were excavated at each of the sampling sites. The sample material was collected into plastic 5gal pails and two-to-three pails of material were collected from each pit representing an aggregate of some 100lb-150lb of sample. After discarding of 873lb of handcobbed coarse material, a total of 2,576lb of sample material were collected in this fashion into 40 pails, all of which were weighed on site using a simple mechanical bathroom scale. Small, 250gm-500gm, reference samples of matrix were also collected from each pit[10]. Details of sampling sites, pits and samples collected are summarized in Table 3. Pit locations at each sampling site are shown in a series of photoplates appended herein (B2.2 to B2.8, Appendix B2).

Material excavated from the pits comprises a mixture of poorly sorted sand with variable clay content providing a matrix supporting pebbles and, in some instances, 6in-8in diameter cobbles. Given the high energy environment of the McIvor River, some of its bars are characterized by an uppermost layer of coarse cobbles representing a wide array of very well rounded shield rocks. Photographs of two types of pits are appended (B2.9, Appendix B2). The rapidly changing hydrological regime of the River is evidenced by the often sharp layering which can be seen between coarser and finer material (with the occasional mudseam) within many of the pits.

Field crew demobilized from the field on November 23, 2000. Samples were placed in storage at McMurray Serv-U Expeditors' warehouses, Fort McMurray, over the Christmas recess and subsequently shipped during January 2001 to Process Research Associates Ltd., Vancouver, a mineral processing facility where mineral concentration tests were completed during early February 2001.

[10] currently archived with the author.

Site	Site UTM			Sample Pits *(Note 1)*			Subsamples Collected *(Note 3)*			
Name	Easting	Northing	Site Comments	Pit No.	Archive Sample *(Note 2)*	Cobbles Discarded (lb)	Subsamples	Wt (lb)	TTL Wt (lb) *(Note 4)*	Comments *(Note 5)*
MCV-A	440486	6427961	UTM is at ATB2 *South bank bar in McIvor, immediately upstream from KRC Tributary discharge into McIvor. Near Tintina gold bearing alluvial sample site #5062.*	ATB1	ATB1G	243	ATB1-1 ATB1-2	92 95	187	40%mtx; 40%pbls; 20%cobbles
				ATB2	ATB2G	0	ATB2-1 ATB2-2	72 69	141	95%alluvial sand; 5%cobbles
				ATB3	ATB3G	0	ATB3-1 ATB3-2	64 64	128	95%alluvial sand; 5%cobbles
MCV-B	440642	6428276	UTM is at ATB4 *South bank bar in McIvor across from KRC Tributary discharge into McIvor.*	ATB4	ATB4G	127	ATB4-1 ATB4-2 ATB4-3	60 74 60	194	poorly sorted alluv sand w/clay; <30% coarse
				ATB5	ATB5G	75	ATB5-1 ATB5-2 ATB5-3	49 50 60	159	poorly sorted sand&gravel mtx; 50% cobble
				ATB6	ATB6G	82	ATB6-1 ATB6-2 ATB6-3	45 60 46	151	poorly sorted sand&gravel mtx; 50% cobble
KRC-Z	439920	6428220	UTM is at ATB7 *South bank point bar on a tight Z-kink in KRC Tributary.*	ATB7	ATB7G	27	ATB7-1 ATB7-2 ATB7-3	66 69 58	193	poorly sorted sandy mtx; 10% cobbles
				ATB8	ATB8G	66	ATB8-1 ATB8-2 ATB8-3	58 68 57	183	poorly sorted sandy mtx; 10% cobbles. Mudseam 6in below surface pit
MCV-Z	439939	6428041	UTM is at ATB9 *South bank point bar in McIvor directly across from KRC-Z.*	ATB9	ATB9G	55	ATB9-1 ATB9-2 ATB9-3	52 57 77	186	sandy mtx; 10% pebbles; 10% cobbles
				ATB10	ATB10G	60	ATB10-1 ATB10-2 ATB10-3	67 70 70	207	sandy mtx; 10% pebbles; 10% cobbles
MCV-C	436394	6426939	UTM is at ATB11 *North bank bar in McIvor near Tintina gold bearing alluvial sample site #5088*	ATB11	ATB11G	41	ATB11-1 ATB11-2 ATB11-3	70 70 65	205	poorly sorted pebbly gravel; 60% pebbles
				ATB12	ATB12G	61	ATB12-1 ATB12-2 ATB12-3	65 65 65	195	poorly sorted pebbly gravel; 60% pebbles
				ATB13	ATB13G	36	ATB13-1	66	66	70%cobble; 30% sand mtx
MCV-D	435480	6426566	UTM is at ATB14 *Island bar in McIvor near Tintina gold bearing alluvial sample site #5088.*	ATB14	ATB14G	0	ATB14-1 ATB14-2 ATB14-3	70 65 56	191	sandy gravel mtx; 20% pebbles
				ATB15	ATB15G	0	ATB15-1 ATB15-2	69 63	132	sandy gravel mtx; 20% pebbles
				ATB16	ATB16G	0	ATB16-1	58	58	sorted pink beach sand

Notes: 1.All pits, with the exception of ATB14 and ATB15, measure approximately 1.5ft diameter and 1ft deep. ATB14 and ATB15 are both 3ft diameter and 4in deep excavations; 2.Archive samples comprise some 250gm-500gm of representative matrix material taken from each pit for reference or for future geochemical analysis; 3.All sampling by S.Sabag and D.Laroux; 4.Weights are "in-field" wet weights. Total weight excludes cobbles and coarse pebbles discarded; 5.Percentages are volumetric visual approximations

Table 3. Summary of sample sites, pits and sample specifications. Sampling Program 2000, McIvor Property, Ateba Mines Inc.

6. Mineral and Analytical Testwork 2001

6.1 Testwork Overview

The objective of the testwork was to prepare heavy mineral gravity concentrates from the samples by a Falcon concentrator to (i) evaluate the efficacy of Ateba's deflocculant reagent A15, and to (ii) determine gold grade with a view to launching follow-up exploration to assess economic viability of reported gold bearing placers within the McIvor River Valley and vicinity.

The sixteen samples collected from the Property (total of 2,576lb) were concentrated during early February, 2001, at Process Research Associates Ltd. (PRA), Vancouver, after deflocculation with A15. Two of the samples were split in half and one half was concentrated without deflocculation pre-treatment for comparison with yields from material tested after deflocculation. The testwork commenced on Feb1/2001, and, following a two-day orientation supervised by S.Sabag, was completed by Feb16/2001.

Testwork flowsheet is presented herein in Figure 10 and a description of procedures are appended (Appendix C1.1). Test results as to sample sizing, concentrate yields and sample weights as reported by PRA are appended (Appendix C1.2) and are summarized in Table 4.

Concentrates and other related samples were sent by PRA to Ateba's Copper Cliff facilities on Feb21/2001 wherein they were reviewed by S.Sabag by conventional binocular microscopy during Feb21-23/2001. Observations were shared with Ateba geologists Mr.D.Howe and Mr.R.Burardi. Various sieve fractions were also similarly reviewed during late February and early March by the author. Concentrates were subsequently submitted for analysis to Activation Laboratories Inc., Ancaster, Ontario. Cyanidation tests were also carried out at PRA on the coarser fractions. Analytical results are discussed in a later section of this report.

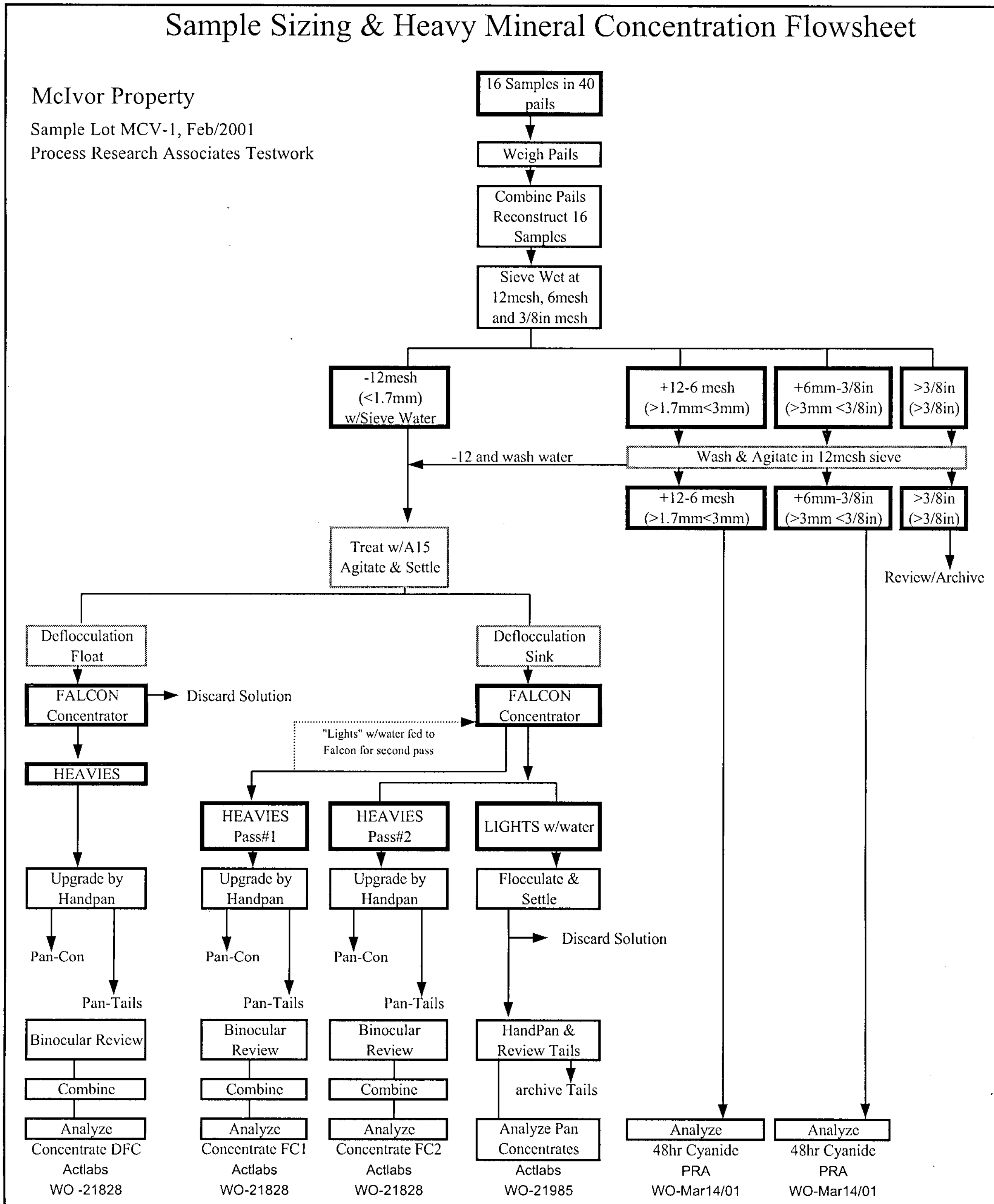
Tails from the concentration testwork were shipped by PRA during late February, 2001, to Ateba's Copper Cliff facilities where they were hand-panned in a conventional flat pan by Mr.D.Howe. Concentrates recovered therefrom were dried, weighed and subsequently reviewed by binocular microscope by D.Howe and the author. These concentrates were also submitted for gold analysis to Actlabs. Analytical results are discussed in a later section of this report.

6.2 Mineral Testwork

6.2.1 Mineral Testwork Procedures

The samples were sized wet in Sweco nested sieves at 12mesh (1.7mm), 6mesh (3.4mm) and 3/8inch. Only the -12mesh fraction was concentrated, and the remaining three fractions were set aside for review or analysis. The +12-6mesh fraction (1.7mm-3.4mm) proved too coarse to pass through the Falcon. All +12mesh fractions were washed and agitated a second time on a -12mesh sieve to wash away clay matter. All wash discharge waters were added to the -12mesh fraction.

The -12mesh fraction from two of the samples (ATB4 and ATB7) were halved, and one half was set aside to be concentrated without deflocculation, whereas the other half was concentrated after deflocculation. The remaining 14 samples were all concentrated after deflocculation, and the deflocculated "float" was concentrated separately from the "sink". While the deflocculation "float" was fed through the Falcon only once, the "sink" was fed through twice to produce two Falcon concentrates to evaluate potential heavy mineral losses during pass#1. An aggregate of three concentrates were, accordingly, produced from each sample. All concentrates were routinely further upgraded by PRA technicians by hand-panning in a standard flat pan, to produce a pan-concentrate and a pan-tail from each Falcon concentrate.



Note: (1) The -12 mesh fractions for Samples ATB-04 and ATB-07 were halved and only one half concncentrated as above. Other half fed to Falcon without deflocculation. Non-deflocculated half sample identified in records by sample numbers bearing the suffix "N"; (2) Final tails from Falcon identified in records by sample numbers bearing the suffix "T"

Figure 10. Sample Sizing and Heavy Mineral Concentration Flowsheet, McIvor Property, Sample Lot-MCV1

Based on the above procedures, each sample yielded a total of six concentrates, in addition to three non-concentrated coarser fractions being the +12-6mesh, the +6mesh-3/8inch and the +3/8inch fractions.

Concentrate yields and overall mass balances for the various size fractions are shown in Table 4 (consolidated from information provided by PRA).The following suite of material were received from PRA for each of the sixteen samples:

- Heavy Mineral Concentrate - Pan Concentrate - Deflocculation Float
- Heavy Mineral Concentrate - Pan Tails - Deflocculation Float
- Heavy Mineral Concentrate - Pan Concentrate - Falcon Pass#1 of -12mesh fraction
- Heavy Mineral Concentrate - Pan Tails - Falcon Pass#1 of -12mesh fraction
- Heavy Mineral Concentrate - Pan Concentrate - Falcon Pass#2 of -12mesh fraction
- Heavy Mineral Concentrate - Pan Tails - Falcon Pass#2 of -12mesh fraction
- Type Sample of +12-6mesh size fraction (in petrie dish)
- Type Sample of +6mesh-3/8inch size fraction (in petrie dish)
- Type Sample of +3/8inch size fraction (in plastic sandwich bag)
- Type Sample of -12mesh final discharge from Falcon (in petrie dish)

The halves of samples ATB4 and ATB7 which were concentrated without deflocculation yielded only two concentrates each, which were routinely upgraded at PRA by hand-panning in a standard flat pan, to produce a pan-concentrate and a pan-tail from each. The following suite of material were received from PRA for the halves of samples ATB4 and ATB7 which were concentrated without deflocculation:

- Heavy Mineral Concentrate - Pan Concentrate - Falcon Pass#1 of -12mesh fraction
- Heavy Mineral Concentrate - Pan Tails - Falcon Pass#1 of -12mesh fraction
- Heavy Mineral Concentrate - Pan Concentrate - Falcon Pass#2 of -12mesh fraction
- Heavy Mineral Concentrate - Pan Tails - Falcon Pass#2 of -12mesh fraction

In addition to all of the above, PRA also shipped all Falcon tails, being the -12mesh final discharge from the Falcon concentrator after Pass#2, to Ateba's Copper Cliff facilities on Feb21/2001. The tails were hand-panned in a conventional flat pan by Mr.D.Howe and subsequently reviewed by binocular microscope by D.Howe and the author.

Following microscope review, the six concentrate fractions from each samples were reconstructed into three principal concentrates by combining pairs of pan-concentrates and pan-tails, to reconstruct (i) a deflocculation "float" concentrate, (ii) a Falcon Pass#1 concentrate, and (ii) a Falcon Pass#2 concentrate. The three reconstructed concentrates were re-designated by sample name suffixes DFC, FC1 and FC2, respectively. A forth concentrate, that recovered by hand-panning of final Falcon discharge tails, was also so designated by sample name suffix T. All four principal concentrates from each sample were submitted to Activation Laboratories, Ancaster, Ontario, for gold analysis by cyanidation.

Petri-dish sized subsamples of the coarser fractions were also examined by the author under conventional microscope, and the +12-6mesh and +6mesh-3/8inch fractions were submitted for gold analysis to PRA.The +3/8inch size fractions were not analyzed.

Concentrate yields and overall mass balances for the various size fractions are summarized in Table 4 as consolidated from information provided by PRA.

Sample	Weights "as received" (kg) (per Lab weights) *Note1*				Screen Fractions (gm) *Note2*				Concentrates (gm) from -12mesh *Note3*						Tails (-12mesh)	
No.	Pail-1	Pail-2	Pail-3	TTL	+3/8 inch >3/8 inch	-3/8in+6 mesh >3.4mm<3/8 inch	-6+12 mesh >1.7mm<3.4mm	-12 mesh <1.7mm	Panned Upgrade	Defloc Float	Falcon Pass#1	Falcon Pass#2	Final Tails PanCon	TTL Cons	Residues	Clays *Note4*
ATB-1	37.0	42.0	-	79.0	27,450	14,940	2,975	20,900	*pan-Con*	*1.77*	*6.11*	*4.83*			20,891	12,553
									pan-Tail	*24.60*	*69.30*	*76.10*				
									Con Stls	26.37	75.41	80.93	8.53	191.24		
ATB-2	26.0	28.0	-	54.0	137	20	12	40,600	*pan-Con*	*1.65*	*5.90*	*5.67*			40,596	13,069
									pan-Tail	*11.20*	*80.80*	*56.85*				
									Con Stls	12.85	86.70	62.52	3.94	166.01		
ATB-3	24.0	23.4	-	47.4	-	-	106	30,800	*pan-Con*	*2.12*	*7.02*	*5.09*			30,794	16,317
									pan-Tail	*35.90*	*66.00*	*60.10*				
									Con Stls	38.02	73.02	65.19	6.06	182.29		
ATB-4	23.8	30.4	26.0	80.2	17,910	6,975	990	16,900	*pan-Con*	*0.63*	*7.22*	*1.34*			16,891	*10,097*
									pan-Tail	*9.53*	*73.70*	*72.90*				
									Con Stls	10.16	80.92	74.24	8.65	173.97		*Note6*
ATB4N Note5								22,400	*pan-Con*		*3.31*	*3.16*	*Not Tested*		22,400	*4,603*
									pan-Tail		*75.20*	*77.90*				
									Con Stls		78.51	81.06		159.57		
ATB-5	20.3	21.5	25.0	66.8	8,946	4,500	1,418	41,700	*pan-Con*	*2.64*	*7.69*	*6.92*			41,691	9,992
									pan-Tail	*78.30*	*72.60*	*76.00*				
									Con Stls	80.94	80.29	82.92	9.21	253.36		
ATB-6	18.5	25.0	18.5	62.0	10,976	4,928	1,715	37,000	*pan-Con*	*2.51*	*8.45*	*7.92*			36,989	7,153
									pan-Tail	*44.00*	*82.15*	*84.40*				
									Con Stls	46.51	90.60	92.32	10.58	240.01		
ATB-7	27.0	28.0	23.5	78.5	11,691	10,643	6,836	18,600	*pan-Con*	*0.54*	*6.22*	*6.12*			18,583	*5,887*
									pan-Tail	*19.80*	*75.60*	*70.00*				
									Con Stls	20.34	81.82	76.12	17.29	195.57		*Note6*
ATB7N Note5								21,700	*pan-Con*		*2.65*	*5.61*	*Not Tested*		21,700	*2,797*
									pan-Tail		*79.60*	*81.10*				
									Con Stls		82.25	86.71		168.96		
ATB-8	23.0	28.5	23.7	75.2	12,011	11,588	8,159	30,100	*pan-Con*	*1.54*	*4.16*	*3.48*			30,092	13,150
									pan-Tail	*9.51*	*86.00*	*89.10*				
									Con Stls	11.05	90.16	92.58	7.91	201.70		
ATB-9	21.7	23.5	32.0	77.2	16,718	3,632	1,175	43,900	*pan-Con*	*2.44*	*4.01*	*5.58*			43,890	11,502
									pan-Tail	*67.30*	*116.50*	*78.60*				
									Con Stls	69.74	120.51	84.18	10.22	284.65		
ATB-10	28.0	29.0	28.2	85.2	32,940	4,581	1,449	33,300	*pan-Con*	*3.09*	*5.87*	*6.67*			33,278	12,710
									pan-Tail	*31.90*	*93.70*	*78.70*				
									Con Stls	34.99	99.57	85.37	21.62	241.55		
ATB-11	28.7	29.2	27.2	85.1	28,170	13,523	1,881	21,800	*pan-Con*	*2.91*	*5.79*	*4.23*			21,794	19,515
									pan-Tail	*36.20*	*90.70*	*71.60*				
									Con Stls	39.11	96.49	75.83	6.04	217.47		
ATB-12	27.0	28.0	27.2	82.2	39,690	11,147	1,661	18,200	*pan-Con*	*2.34*	*4.71*	*5.31*			18,189	11,299
									pan-Tail	*17.80*	*87.00*	*87.00*				
									Con Stls	20.14	91.71	92.31	10.96	215.12		
ATB-13	28.8	-	-	28.8	13,194	2,376	1,845	6,800	*pan-Con*	*1.33*	*5.17*	*4.49*			6,795	4,407
									pan-Tail	*3.31*	*83.20*	*80.70*				
									Con Stls	4.64	88.37	85.19	5.41	183.61		
ATB-14	29.4	28.0	23.7	81.1	36,630	10,458	2,304	19,900	*pan-Con*	*2.23*	*6.99*	*5.54*			19,881	11,533
									pan-Tail	*83.00*	*94.80*	*82.20*				
									Con Stls	85.23	101.79	87.74	18.68	293.44		
ATB-15	31.0	19.0	-	50.0	23,670	9,288	1,953	13,800	*pan-Con*	*2.51*	*8.65*	*5.59*			13,789	1,035
									pan-Tail	*56.90*	*94.50*	*85.90*				
									Con Stls	59.41	103.15	91.49	11.40	265.45		
ATB-16	23.5	-	-	23.5	-	-	-	19,000	*pan-Con*	*3.19*	*4.86*	*3.18*			18,994	4,284
									pan-Tail	*65.00*	*75.40*	*64.00*				
									Con Stls	68.19	80.26	67.18	6.17	221.80		

Notes: (1) Sample pails weighed upon receipt at Process Research Associates. Weight of cobbles handcobbed in the field excluded see Table 3 for details; (2) Weights for all size fractions other than the -12mesh are actual weights. Weight shown for -12mesh fraction is that of the final sediment discharged from Falcon after Pass#2; (3) Pan-concentrate and Pan-Tail were combined for assaying. Concentrate ID numbers correspond to sample numbers suffixed as follows: by FC1 for concentrates from first Falcon pass, by FC2 for concentrates from second Falcon pass, and by DFC for concentrates recovered from the deflocculation float; (4) Weight of clays deflocculated into discarded slurry calculated by difference; (5) The -12mesh fraction from samples ATB4 and ATB7 were halved after sizing and one half of the -12mesh fraction, renamed ATB4N and ATB7N respectively, was concentrated without deflocculation; (6) Clay weights shown were calculated based on an allocated partioning of the coarser fractions; (7) Testwork by Process Research Associates Ltd.

Table 4. Sample weights, Sizing and Concentrates Summary, Mineral Testwork, McIvor Property

6.2.3 Sample Sizing

Grain size distribution profiles for the samples are presented in Figure 11 showing relative percentages of each size fraction excluding cobbles. Cobbles are excluded from the profiles given the overall small size of samples and large subjective biases inherent to sample location selection.

The samples are arranged in upstream order with ATB-5 located furthest downstream in the drainage. The profiles are self-explanatory indicating that while 50%-60% of many samples comprises -12mesh material (<1.7mm), this fraction is not always representative of the bulk of the matrix and is often subordinated by the next coarser fractions. The -12mesh fraction in many samples represents no more than 20% of the overall matrix.

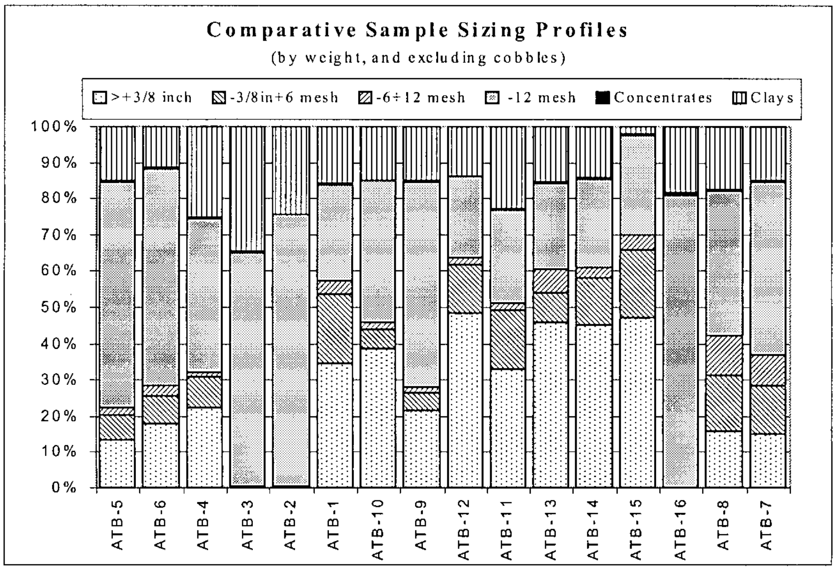


Figure 11. Comparative sample sizing profiles, Mineral Testwork, McIvor Property

Unlike other size fractions, fine clays consistently represent 10%-20% of the matrix. A crude trend is also apparent toward a higher proportion of the coarser fractions upstream although given the sparse sampling it is impossible to rule out variations due to local hydrology.

It is impossible to compare the above size profiles with those from previous work documented by Tintina Mines from the Property, given that their samples were sized at different sieve increments.

6.2.4 Heavy Mineral Concentrates and Yields

Heavy mineral yields from the various gravity fractions are summarized in Table 4. It is of note the all concentrates represent material recovered from the -12mesh size fraction only, and hence exclude heavy minerals present in the coarser fractions.

Typically, 150gm-200gm of total heavy mineral concentrate was recovered from each sample, and yields from the first pass through the Falcon concentrator were similar in weight to those from the second pass. It is likely that larger concentrates might have been recovered in a single pass in a concentrator larger than the lab-scale bench-test model available at PRA (the small Falcon concentrate collection bowl was found to be completely full at the end each pass during the testwork).

Overall concentrate yields range 0.4%-2.6% of the -12mesh fraction but are typically nearer 1%. These recoveries represent a range of 0.1%-0.8% of the total sample and are typically nearer 0.3%. Given the absence of garnets in the concentrates recovered via the Falcon concentrator in the current work and their abundance in most Tintina concentrates prepared by Nelson concentrator, by tabling or panning, these yields cannot be reasonably compared with those documented previously from the Property (see mineral review notes, next section).

Comparative heavy mineral yields are presented in Figure 12 showing relative weights of various concentrates as a percentage of overall heavy minerals recovered from the -12mesh fraction. The figure clearly shows that two passes through the Falcon concentrator are sufficient to capture 65%-85% of heavy mineralogy from the matrix, that losses to final discharge tails are minimal (<5%), and that the deflocculated "float", consisting entirely of very fine clays, carries substantial percentages of heavy minerals representing 10%-30% of the total heavies in the -12mesh fraction.

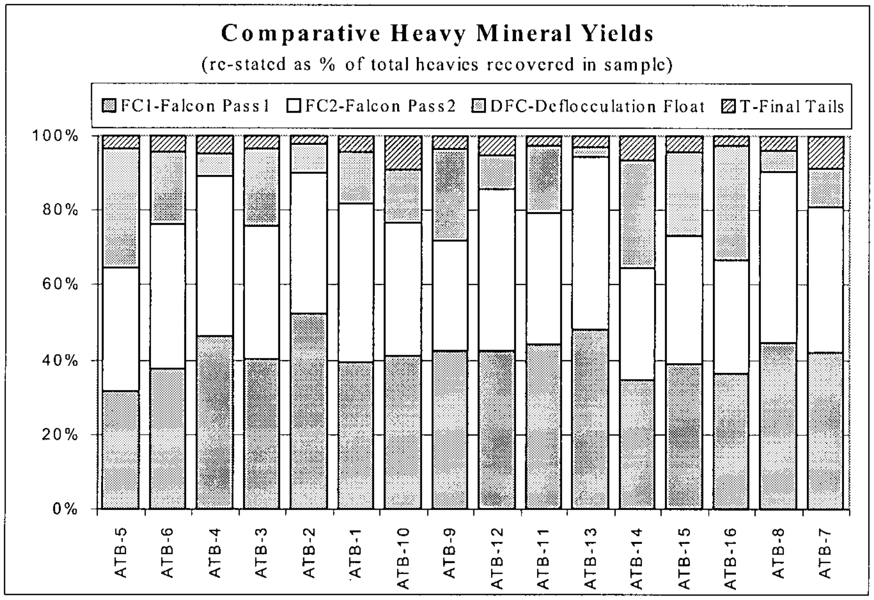


Figure 12. Comparative Heavy Mineral Yields, Mineral Testwork, McIvor Property

Persistence of heavies well into fines reinforces suggestions that heavy minerals in the McIvor clay-rich matrix are not confined to any particular size fraction but rather occupy a very wide spectrum of grain sizes ranging into very fine clays as suspended minerals. It is likely, in this regard, that a portion of heavies so suspended are refractory to gravity concentration due to inherent hydrophobic properties of many mineral species (e.g.gold).

The above is supported by similarity of heavy mineral yields from deflocculated and non-deflocculated halves of two samples (ATB-4 and ATB-7). Concentrates recovered without deflocculation (ATB-4N and ATB-7N) are comparable in weight to those recovered after treatment with reagent A15 (conATB-4:174gm; conATB-7:196gm, compared with conATB-4N:160gm and conATB-7N:169gm). These comparatives are by no means definitive given that they are generalizations based on only two samples, but hey do nonetheless suggest that deflocculation may be unnecessary from the perspective of optimizing total recoveries.

6.3 Mineral Concentrates Binocular Review

Concentrates obtained from eight of the sixteen samples were reviewed by the author conventional binocular microscopy during Feb21-23/2001 (total of 44 concentrates reviewed). A number of non-concentrated size fractions were also reviewed as were select -12mesh subsamples of final Falcon discharge tails. With the exception of comparative reviews of split samples ATB4 and ATB7, the remaining six samples reviewed were selected to afford characterization of material excavated from five of the six localities sampled on the McIvor River.

Concentrates for samples ATB4, ATB7, ATB16, ATB12, ATB8 and ATB1 were reviewed, all of which were recovered after deflocculation of the samples. In addition, concentrates from the split half samples of ATB4 and ATB7 (designated ATB4N and ATB7N), recovered without deflocculation, were also reviewed for comparison. Concentrates were inspected for general quality, constitution, presence of gold and presence of clay "balls". Concentrates from deflocculated material (split samples ATB4 and ATB7) were compared with those produced without deflocculation. Falcon discharge tails were inspected for persistent heavy minerals.

Most of the microscopy was conducted at relatively low magnifications ranging 40x to 60x. Given time constraints and the large number of available concentrates (104 in total), only some 3min-5min were spent reviewing each of the 44 concentrates and fractions thereof. Despite the general review, a rough assessment was made of the ease with which gold could be identified/located in any given concentrate in the time available.

Observations and comments from binocular microscopy are as follows:

1. Gold was noted in all of the samples reviewed except ATB16, in one concentrate fraction or another, including both halves of samples ATB4 and ATB7. Gold grain sizes range from very fine <20µm gold flakes (e.g.ATB12, ATB1), through 100µm-300µm long elongate narrow foils (e.gATB12, ATB4), to coarse grains measuring as large as 3mmx1.5mm (e.g.ATB7, ATB4).

   Considering that only the <1.7mm size fraction was concentrated in the Falcon, the presence of the occasional large gold grain suggested possibility of presence of similar gold also in the next coarser size fraction being the 1.7mm-3.4mm size fraction (+12-6mesh). Decision was, accordingly, taken to analyze coarse size fractions by bulk cyanidation;

2. Estimates of gold grade could not be made in the absence of grain counts given the broad range of grain sizes from coarse to very fine flakes. A minimum grade is, however, suggested by the coarse grains observed in samples ATB4 and ATB7 as follows:

   (i) ATB7N (half of sample ATB7 concentrated without deflocculation): two coarse gold grains noted in the Falcon Pass#1 concentrate measuring 3x1.5x0.25mm and 1.5x1.5x0.25mm represent an approximate grade of 300g/t for the concentrate and 0.6g/t when amortized to the half-sample;

   (ii) ATB4N (half of sample ATB4 concentrated without deflocculation): one coarse gold grain noted in the Falcon Pass#1 concentrate measuring 2x1x0.2mm represents an approximate grade of 130g/t for the concentrate and 0.3g/t when amortized to the half-sample.

3. Gold was noted in concentrates from the first pass as well as the second pass through the Falcon, without any discernible preferential affinity of the finer or coarser grains for either concentrate. Similarly, gold was observed in concentrates from deflocculated as well as non-deflocculated samples;

4. Petri-dish sub-samples of the coarser fractions are relatively clean confirming that these fractions were indeed adequately washed of clay. Heavy mineralogy of the coarser fractions is, furthermore, similar to that observed in the finer fractions and concentrates. No gold was noted in any of the coarser fractions;

5. Several final Falcon discharge tails reviewed (-12mesh) indicated the persistence of clay "disks" which comprise some 5%-10% of the overall matrix. The disks are typically well compacted clay agglomerations of variable sizes with very smooth surface and which resemble flat pebbles. The disks

are speckled with metallic minerals and can be broken by tweezers, but will otherwise behave much like distinct minerals (similar clay disks noted also in some concentrates). The disks do not disaggregate upon repeated handling by tweezers under the microscope and require repeated stabbing to ultimately break up. Tails from material which was deflocculated are marginally cleaner than those from non-deflocculated material. Persistence of the disks suggests incomplete deflocculation or, more likely, the need for more vigorous agitation/mixing during deflocculation;

6. Several final Falcon discharge tails reviewed (-12mesh) also contain some 2%-5% opaque/metallic minerals. Persistence of the heavy minerals in the tails suggests possibility of incomplete concentration, hence the possibility of indeterminate heavy mineral losses to tails (supported also by similarity of concentrates from Falcon Pass#1 and Pass#2, and presence of gold in both);

7. Concentrates obtained from the deflocculation "float" are far too fine grained (<<10μm) to be characterized by simple microscopy, and are better suited for review by SEM. Pan concentrated fractions of same are characterized predominantly by sulfides (mostly FeS), whereas the pan tails consist mostly of non-opaque and light coloured minerals which in all probability mimic the coarser heavy mineralogy of the balance of the sample (e.g. zircons, garnets, barite, gypsum, apatite, monazite). These concentrates suggest that the deflocculated "float" is not devoid of non-clay minerals or, alternatively, that deflocculated samples require settlement for longer than the 1 hour allotted during the tests;

8. Concentrates from the samples are, on the whole, similar to one another in mineralogy. Their metallic fraction is predominated by variable amounts of magnetite, ilmenite, chromite, pyrite and lesser garnets. The non-metallic portion is predominated by euhedral as well as detrital zircons, garnets, barite, micas and monazite, with lesser rarer minerals such as appatite and tourmaline. Pyrite typically occurs in half dozen different habits including dodecahedral, bipyramidal, botryoidial, framboidal and spherical (disaggregated framboids). The mineralogy is consistent with that previously reported by others from the Property and vicinity, and variations between samples comprise nothing more than subtle variations in proportion of the various mineral species;

9. The Falcon concentrates are of considerably higher quality than those previously prepared by Tintina Mines in 1995 utilizing a Knelsson concentrator during its exploration of placer gold at the Property[11]. While overall heavy mineral yields from the current testwork via Falcon concentrator (0.4%-1% of -12mesh by weight) are lower than those previously obtained by Tintina via conventional tabling or panning, the Falcon appears to concentrate at a higher S.G. reflected by overall scarcity of garnets in the Falcon concentrates (<1% garnets) as compared to Tintina concentrates (~10% garnets).

10. Upgrading of the concentrates by panning appears to principally segregate minerals by grain size and shape rather than strictly by specific gravity. Pan concentrates reviewed typically consist of 20μm-50μm metallic minerals, including gold, whereas pan tails are typically coarser grained and dominated by no-metallic minerals and <<20μm metallics, including gold. There appears to be no discernible pattern to preferential concentration of gold by grain size or habit into the pan concentrate or the pan tail. Upgrading of concentrates by hand panning, while a useful procedure for easy identification of gold in the overall mineral matrix, may be counter-productive and cannot be regarded to definitively segregate gold into the pan concentrate (following review, pan-concentrate and pan-tail were combined for each concentrate for analytical purposes);

11. Concentrates obtained from the two passes through the Falcon appear to be substantially similar in mineralogy and grain size, with only a marginally higher heavy mineral content in the Pass#1 concentrate. Concentrate yields from both passes are also similar and are likely constrained only by the small mineral recovery bowl of the Falcon concentrator.

12. Gold was noted in concentrates recovered from both of the passes through the Falcon, with no discernible preferential grain size distribution despite the range of grain sizes noted (10μm to 3000μm). The persistence of gold into the second Falcon pass is significant and indicates losses which would otherwise have gone undetected given that standard laboratory procedures generally entail a single pass only.

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[11] previously reviewed by the author in 1995-1996

13. Heavy minerals recovered from final Falcon tails by hand-panning have mineral characteristics very similar to those recovered from the first and second pass but contain somewhat more abundant garnets and non-metallic minerals. Analytical profiles of the various gravity fractions further address issues related to losses to tails and are discussed in a later section of this report.
14. Comparison of concentrates produced after deflocculation with those produced without deflocculation indicate subtle differences in quality, mineralogy, grain size and presence/absence of gold. Concentrates produced after deflocculation appear to be cleaner and devoid of mineral "dust" and other fine clays. Concentrate yields are also similar, although final Falcon discharge tails from non-deflocculated material are larger reflecting clay content in residues rather than wash-water.

6.4 ANALYTICAL WORK AND RESULTS

All concentrates were submitted to Activation Laboratories for gold analysis by cyanidation. Residues remaining after cyanide leaching were fire assayed to evaluate insolubles and losses to tails. Concentrates were leached without pulverizing, although leach residues were pulverized prior to fire assaying. Assay certificates are appended herein (Appendix C2.2).

Considering the presence of undesirable levels of organic carbon previously documented from sediments at the Property, the concentrates were analyzed by the Leachwell procedure which is an accelerated catalyzed cyanidation technique commonly used for analysis of gold concentrates. The technique enables rapid gold dissolution in a few hours as compared to the standard 24hr-48hr cyanidation test, and is hence well suited as a safeguard against preg-robbing. Description of the procedure is appended (Appendix C2.1). Gold grades are summarized in Table 5.

Total gold recovered from the samples and concentrate fractions are shown in Figure 13. Overall grades are typically sub-ppm for the concentrates, and represent no better than low ppb levels when amortized to total sample weight. These grades are comparable to those previously reported by Tintina Mines from its work, and compatible in most part with observations from binocular microscopy of the concentrates with the exception of samples ATB-4N and ATB-7N both of which contained coarse gold grains whose anticipated contributions to overall grades is not reflected in the analytical data. This disparity remains unresolved despite several discussions with the analytical facility. Erroneous mineral identification is ruled out given corroboration by several professionals including mineral processing staff at PRA.

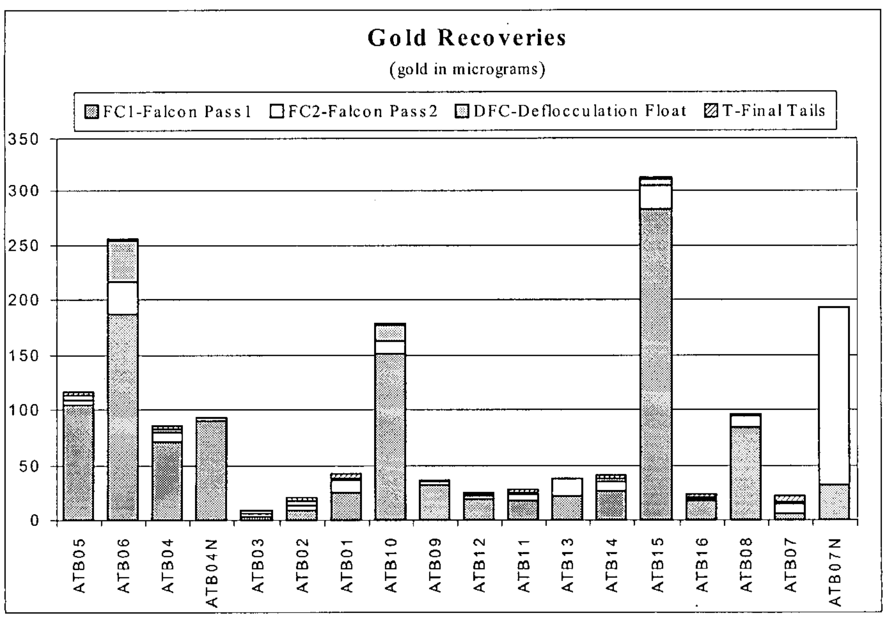


Figure 13. Gold Recoveries Summary, Mineral Testwork, McIvor Property

		+3/8in	+6mesh-3/8in	+12mesh-6mesh	-12mesh concentrates *Note 2*				-12mesh Tails *Note 3*		Totals
			Note 1	*Note 1*	DFC	FC1	FC2	T	Residues	ClayDiscard	*Note 4*
ATB01	Wt (gm)	27,450	14,940	2,975	26.37	75.41	80.93	8.53	20,891	12,553	79,000
	Au (ppb)	*na*	5	<5	80	320	150	360	*na*	*na*	
	Au (µgm)				2	24	12	3			41
ATB02	Wt (gm)	137	0	0	12.85	86.70	62.52	3.94	40,596	13,069	53,968
	Au (ppb)	*na*			340	100	60	760	*na*	*na*	
	Au (µgm)				4	9	4	3			20
ATB03	Wt (gm)	ns	0	0	38.02	73.02	65.19	6.06	30,794	16,317	47,294
	Au (ppb)	ns			50	40	50	170	*na*	*na*	
	Au (µgm)				2	3	3	1			9
ATB04	Wt (gm)	17,910	6,975	990	10.16	80.92	74.24	8.65	16900	10,097	53,046
	Au (ppb)	*na*	10	<5	310	880	120	230	*na*	*na*	
	Au (µgm)				3	71	9	2			85
ATB04N	Wt (gm)	this sample is a split of -12 mesh portion on			No Float Con	78.51	81.06	Not Tested	22400	4,603	27,163
	Au (ppb)					1140	50		*na*	*na*	
	Au (µgm)					90	4				94
ATB05	Wt (gm)	8,946	4,500	1,418	80.94	80.29	82.92	9.21	41,691	9,992	66,800
	Au (ppb)	*na*	10	<5	50	1300	60	330	*na*	*na*	
	Au (µgm)				4	104	5	3			116
ATB06	Wt (gm)	10,976	4,928	1,715	46.51	90.60	92.32	10.58	36,989	7,153	62,000
	Au (ppb)	*na*	<5	10	800	2060	330	100	*na*	*na*	
	Au (µgm)				37	187	30	1			255
ATB07	Wt (gm)	11,691	10,643	6,836	20.34	81.82	76.12	17.29	18600	5,887	53,852
	Au (ppb)	*na*	<5	6	100	70	110	350	*na*	*na*	
	Au (µgm)				2	6	8	6			22
ATB07N	Wt (gm)	this sample is a split of -12 mesh portion on			No Float Con	82.25	86.71	Not Tested	21700	2,797	24,666
	Au (ppb)					380	1860		*na*	*na*	
	Au (µgm)					31	161				193
ATB08	Wt (gm)	12,011	11,588	8,159	11.05	90.16	92.58	7.91	30,092	13,150	75,200
	Au (ppb)	*na*	<5	<5	90	940	100	130	*na*	*na*	
	Au (µgm)				1	85	9	1			96
ATB09	Wt (gm)	16,718	3,632	1,175	69.74	120.51	84.18	10.22	43,890	11,502	77,200
	Au (ppb)	*na*	<5	10	10	260	40	100	*na*	*na*	
	Au (µgm)				1	31	3	1			36
ATB10	Wt (gm)	32,940	4,581	1,449	34.99	99.57	85.37	21.62	33,278	12,710	85,200
	Au (ppb)	*na*	<5	10	430	1520	130	50	*na*	*na*	
	Au (µgm)				15	151	11	1			179
ATB11	Wt (gm)	28,170	13,523	1,881	39.11	96.49	75.83	6.04	21,794	19,515	85,100
	Au (ppb)	*na*	8	<5	50	180	80	330	*na*	*na*	
	Au (µgm)				2	17	6	2			27
ATB12	Wt (gm)	39,690	11,147	1,661	20.14	91.71	92.31	10.96	18,189	11,299	82,200
	Au (ppb)	*na*	10	<5	50	210	30	180	*na*	*na*	
	Au (µgm)				1	19	3	2			25
ATB13	Wt (gm)	13,194	2,376	1,845	4.64	88.37	85.19	5.41	6,795	4,407	28,800
	Au (ppb)	*na*	<5	13	5	240	200	5	*na*	*na*	
	Au (µgm)				0	21	17	0			38
ATB14	Wt (gm)	36,630	10,458	2,304	85.23	101.79	87.74	18.68	19,881	11,533	81,100
	Au (ppb)	*na*	15	10	50	250	100	110	*na*	*na*	
	Au (µgm)				4	25	9	2			41
ATB15	Wt (gm)	23,670	9,288	1,953	59.41	103.15	91.49	11.4	13,789	1,035	50,000
	Au (ppb)	*na*	10	<5	100	2740	250	90	*na*	*na*	
	Au (µgm)				6	283	23	1			312
ATB16	Wt (gm)	ns	ns	ns	68.19	80.26	67.18	6.17	18,994	4,284	23,500
	Au (ppb)	ns	ns	ns	30	220	10	490	*na*	*na*	
	Au (µgm)				2	18	1	3			23

Notes: (1) Assays by Process Research Associates Ltd by cyanidation; (2) Assays by Activation Laboratories by Leachwell cyanidation WO-21985 and WO-21828; Concentrates designations as follows: DFC=Deflocculation Float concentrate, FC1=Falcon Pass1 concentrate, FC2=Falcon Pass2 concentrate, T=Final Discharge Tails hand-panned concentrate; (3) Clay fraction in final Tails is in a slurry and was hence discarded; (4) excludes cobbles

na = not assayed, ns = no sample

Table 5. Gold Grades Summary, Mineral Testwork, McIvor Property

No definitive trend is suggested by comparison of total gold recovered from halves of two samples which were concentrated without deflocculation. Concentrates recovered without deflocculation, ATB-4N and ATB-7N, yielded 94μgm and 192μgm of gold, respectively, compared to 85μgm and 22μgm of gold recovered, respectively, from the half-samples concentrated following deflocculation.

Comparative recoveries for all concentrates relative to total gold recovered from each sample are presented in Figure 14. It is evident from the Figure that the aggregate gold recovered in the two passes of the Falcon concentrator accounts for the bulk of gold recovered from many of the samples. For a handful of samples, however, fines account upward to 20% of the gold yield as do concentrates from final discharge tails.

The above yields from fines and to tails collectively account for upward to 40% of the total gold recovered from the samples, and can be attributed to the small mineral collection bowl of the lab-scaled Falcon concentrator utilized during the tests. These yields might be regarded as losses which might be mitigated by using a larger unit offering greater mineral collection capacity.

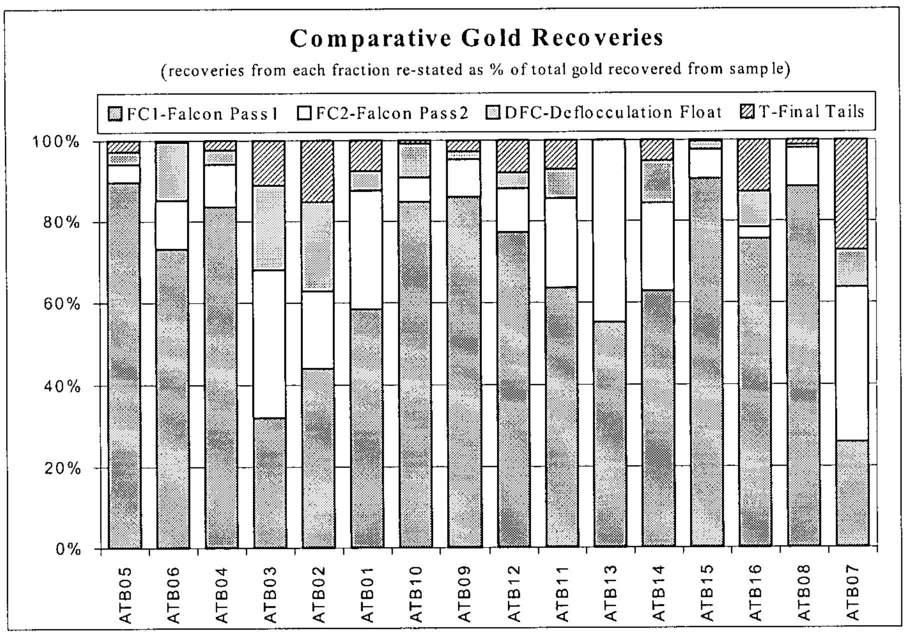


Figure 14. Comparative Gold Recoveries, Mineral Testwork, McIvor Property

Given the above, it is likely that a third pass through the Falcon concentrator might mitigate persistence of gold into final discharge tails and into fines, and would in all likelihood be sufficient to recover the bulk of the gold content from the matrix, or at least and acceptable portion thereof, into a concentrate. Should this indeed prove successful, future work could avoid the complexities of concentrating and monitoring too many fractions separately and instead rely on multiple passes through the Falcon concentrator for recovery of gold from samples.

Leach residues from cyanidation tests were fire assayed to evaluate any losses or insolubles. The assays indicate very low such losses typically equivalent to 10% of the reported cyanidation grade (see analytical certificates, Appendix C2.2).

All but the >3/8in coarse fraction (-6+12mesh and -3/8+6mesh fractions) were analyzed for gold at PRA facilities by conventional 48hr bulk cyanidation. No gold was reported from any of the samples (see PRA cyanidation results, Appendix C1.2).

7. Conclusions and Recommendations

The mineral and analytical testwork completed corroborate historical findings reported from the Property and confirm the presence of gold in sediments of the McIvor River. The current work provides additional insights into sample matrix and concentrates recoveries, and concludes as follows:

1. The -12mesh fraction of the sediments is not representative of the matrix given that it typically comprises only some 50%-60% of the sample, but often comprises as little as 20% of the overall sample and is subordinate to the next coarser fractions. In contrast, fine clays consistently represent some 10%-20% of the overall matrix;
2. Given the presence of considerable heavy mineralogy in the next coarser fraction to -12mesh, sizing of the samples at a coarser cut-off (apprx 2mm-2.5mm) would be desirable, and would capture considerably greater proportion of overall heavy minerals from the samples;
3. The persistence of gold and other heavy minerals into the finest clay fraction of the matrix suggest that these minerals occupy a continuous spectrum of grain sizes from coarse to the finest, and that the finest fractions have tendency toward partitioning into the deflocculation "float" rather than the "sink". While some of this mineralogy may conceivably behave as a non-recoverable suspended particulate reporting to final discharge slimes, deflocculation with A15 appears to successfully capture a portion thereof and to make it available for recovery via gravity concentration;
4. Historical work from the Property indicates that concentration of minerals from the above finer fractions was not possible via tabling or Nelson concentrator and that the fines nearly always reported to final discharge slimes and were necessarily discarded in their entirety. Pre-treatment with A15 appears to successfully segregate this fraction and its concentration via Falcon concentrator appears to recover yet uncertain portion of heavy minerals therefrom. It is note, however, losses to fines are typically low and may ultimately prove acceptable;
5. While two passes through the Falcon concentrator are sufficient to capture some 65%-85% of heavy mineralogy and gold from the matrix, a third pass would likely mitigate losses to final discharge tails documented from the current work. Losses to tails documented are attributed to the limited capacity of the small mineral collection bowl of the lab-scaled Falcon concentrator utilized. A larger scale equipment will undoubtedly resolve this matter;
6. As a deflocculant, A15 offers efficiencies not offered by other deflocculants currently in conventional use at most mineral testing facilities[12]. The mineral testwork completed reiterates that complete sample disaggregation is achieved via A15 in minutes as compared to other deflocculants which typically require a 24hr-48hr sample soaking to disaggregate matrix in preparation for concentration. An additional advantage afforded by A15 pre-treatment is the ability to as quickly segregate and recover (decant) deflocculated fines which are otherwise difficult to separate from disaggregated samples deflocculated with other (conventional) reagents;
7. Given the overall low grades of gold in the samples, it is difficult to be definitive about the benefits of A15 deflocculation as a pretreatment for recovery of heavy minerals and gold from the McIvor River sediments. It is clear, nonetheless, that the reagent affords mineral testwork considerable efficiencies, cost savings and faster sample processing turn-around.

[12] e.g. SRC-Calgon, Lakefield-SodiumHexametaPhosphate.

Despite the many successes of the current testwork in enabling segregation and evaluation of various fractions of the samples, overall gold grades reported from analytical work are sufficiently low to preclude support for recommendations in respect of additional isolated sampling at the Property.

It is obvious, in the above regard, that the sixteen isolated samples collected from small shallow pits offer little, if any, characterization of the vast McIvor sediments as a whole which extend over several tens of kilometers and down to a depth of 3m-6m. It is recommended, therefore, that no additional isolated sampling be carried out at the Property until such time as the McIvor River Valley's geomorphology and sedimentation features are better understood to guide sample site selection. It is further recommended that any future sampling penetrate deeper toward the base of the placers (and related paleo-channels) relying on sampling via drilling or augering.

References & Bibliography

S.Sabag 1996: McIvor Property, Northeast Alberta, Canada, Summary Report, Exploration Programs 1993-1995 and Work In Progress 1996. S.F.Sabag, April 1996. Tintina Mines Limited. Assessment Report MIN9610.

S.Sabag 1999: Asphalt and Buckton Properties, Birch Mountains Area, Athabasca Region, Northeast Alberta, Report on Exploration 1997-1999. S.F.Sabag, October 14, 1999. Tintina Mines Limited. Assessment Report MIN9928.

STATEMENT OF QUALIFICATIONS

Re: Report On Alluvial Sampling and Mineral Testwork, McIvor Property, Athabasca Region, Northeast Alberta. Dated June 24, 2002

I, Shahé F.Sabag, of [redacted] Toronto, Ontario, Canada, M4W 3C7, hereby certify that:

- I am a graduate of the University of Toronto with Honours Geology B.Sc degree (1974) and Specialist Geology M.Sc. degree (1979), and that I have actively practiced my profession since 1974;
- I am a member of the Association of Geoscientists of Ontario, the Canadian Institute of Mining and Metallurgy, the Prospectors and Developers Association and the Alberta Chamber of Resources;
- I have visited the McIvor Property on numerous occasions and that the information summarized herein from previous work at the Property was collected under my direction and supervision while Vice President of Tintina Mines Limited (until 1999);
- The sampling program and related testwork reported upon herein were conducted under my direct supervision;
- I do not hold, directly or indirectly, any securities of Ateba Mines Inc., and that I expect to receive no remuneration from Ateba in connection with this report other than payment of fees and disbursements for services rendered for its preparation;
- I consent to reproduction of this report in its entirety.

Executed this 24th day of June, 2002, in the City of Toronto, Ontario, Canada.

[redacted]

Shahé F.Sabag, MSc

A1 Permits Descriptions

Alberta
RESOURCE DEVELOPMENT

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. **9300060002**

Term Commencement Date: **JUNE 27, 2000**

Permit Holder: **ARTHUR CRESWELL ASPINWALL HOWE**

WHEREAS Her Majesty is the owner of the minerals in respect of which rights are granted under this Permit;

THEREFORE, subject to the terms and conditions of this Permit, Her Majesty hereby grants to the Permit Holder, insofar as Her Majesty has the right to grant the same, the exclusive right to explore for Permitted Substances within the Location for the purposes set forth in the *Mines and Minerals Act* for the term of ten (10) years, computed from the Term Commencement Date;

1(1) In this Permit, a reference to the *Mines and Minerals Act* or to any other Act of the Legislature of Alberta referred to in section 2(1)(b) of this Permit shall be construed as a reference to

(a) that Act, as amended from time to time,

(b) any replacement of all or part of that Act from time to time enacted by the Legislature, as amended from time to time, and

(c) any regulations, orders, directives or other subordinate legislation from time to time made under any enactment referred to in clause (a) or (b), as amended from time to time.

(2) In this Permit,

(a) "Her Majesty" means Her Majesty in right of Alberta, as represented by the Minister of Resource Development of the Province of Alberta;

(b) "Location" means the subsurface area or areas underlying the surface area of the Tract and described in the Appendix to this Permit under the heading "Description of Location and Permitted Substances";

(c) "Permitted Substances" means the metallic and industrial minerals described under the heading "Description of Location and Permitted Substances" in the Appendix to this Permit;

(d) "Term Commencement Date" means the date shown on the first page of this Permit as the Term Commencement Date;

(e) "Tract" means the tract or tracts of land described under the heading "Description of Location and Permitted Substances" in the Appendix to this Permit.

2. This Permit is granted upon the following conditions:

(1) The Permit Holder shall comply with the provisions of

(a) the *Mines and Minerals Act*, and

(b) any other Acts of the Legislature of Alberta that prescribe, apply to or affect the rights and obligations of holders of metallic and industrial minerals rights that are the property of Her Majesty, or that relate to, apply to or affect the Permit Holder in the conduct of its operations or activities under this Permit.

(2) The provisions of the Acts referred to in subsection (1) of this section are deemed to be incorporated into and to form part of this Permit.

(3) In the event of conflict between a provision of this Permit and a provision referred to in subsection (1) of this section, the latter provision prevails.

(4) The Permit Holder shall not claim or purport to exercise any rights, prerogatives, privileges or immunities that would otherwise exempt the Permit Holder from compliance with any of the provisions of the *Mines and Minerals Act* or of any other Act of the Legislature of Alberta referred to in subsection (1)(b) of this section.

(5) The Permit Holder shall take all reasonable steps to prevent and control the escape or release of any oil, gas, water or any other substance that may cause an adverse impact upon the environment which may be encountered during the conduct of any of its operations or activities under this Permit.

(6) The Permit Holder shall keep Her Majesty indemnified against

(a) all actions, claims and demands brought or made against Her Majesty by reason of anything done or omitted to be done, whether negligently or otherwise, by the Permit Holder or any other person in the exercise or purported exercise of the rights granted and duties imposed under this Permit, and

(b) all losses, damages, costs, charges and expenses that Her Majesty sustains or incurs in connection with any action, claim or demand referred to in clause (a).

(7) This Permit is also subject to the special provisions, if any, contained in the Appendix to this Permit.

EXECUTED on behalf of the Minister of Resource Development of the Province of Alberta at Edmonton, Alberta.

Karen Lukasewitz

For Minister of Resource Development
on behalf of Her Majesty

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9300060002

TERM COMMENCEMENT DATE:

2000 JUNE 27

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION AND PERMITTED SUBSTANCES:

4-13-103: 1-36

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

Alberta
RESOURCE DEVELOPMENT

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. **9300060003**

Term Commencement Date: **JUNE 27, 2000**

Permit Holder: **ARTHUR CRESWELL ASPINWALL HOWE**

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9300060003

TERM COMMENCEMENT DATE:

2000 JUNE 27

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION AND PERMITTED SUBSTANCES:

4-14-103: 1-36

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

gB

Alberta
RESOURCE DEVELOPMENT

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. **9300060004**

Term Commencement Date: **JUNE 27, 2000**

Permit Holder: **ARTHUR CRESWELL ASPINWALL HOWE**

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9300060004

TERM COMMENCEMENT DATE:

2000 JUNE 27

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION AND PERMITTED SUBSTANCES:

4-13-104: 1-36

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

Alberta
RESOURCE DEVELOPMENT

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9300060005

Term Commencement Date: **JUNE 27, 2000**

Permit Holder: **ARTHUR CRESWELL ASPINWALL HOWE**

APPENDIX

TO

METALLIC AND INDUSTRIAL MINERALS PERMIT NO. 9300060005

TERM COMMENCEMENT DATE:

2000 JUNE 27

AGGREGATE AREA:

9 216 HECTARES

DESCRIPTION OF LOCATION AND PERMITTED SUBSTANCES:

4-14-104: 1-36

METALLIC AND INDUSTRIAL MINERALS

SPECIAL PROVISIONS:

NIL

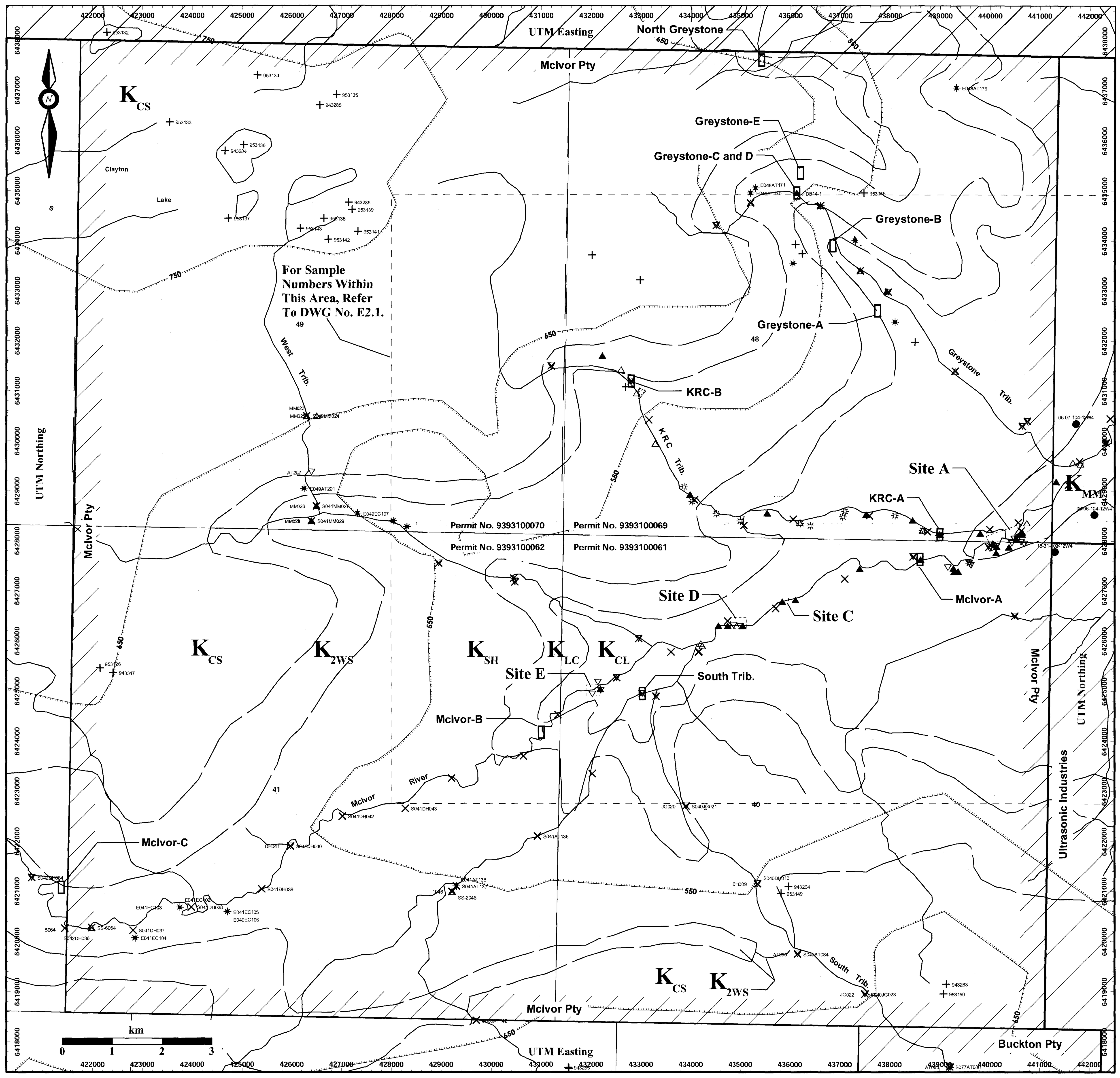
A2 Property Compilation Drawings and Background Information

A2.1 General Property compilation Drawing showing previous work, scale 1:50,000 (copy of Drawing A3.4, Assessment Report MIN9610, Tintina Mines Limited)

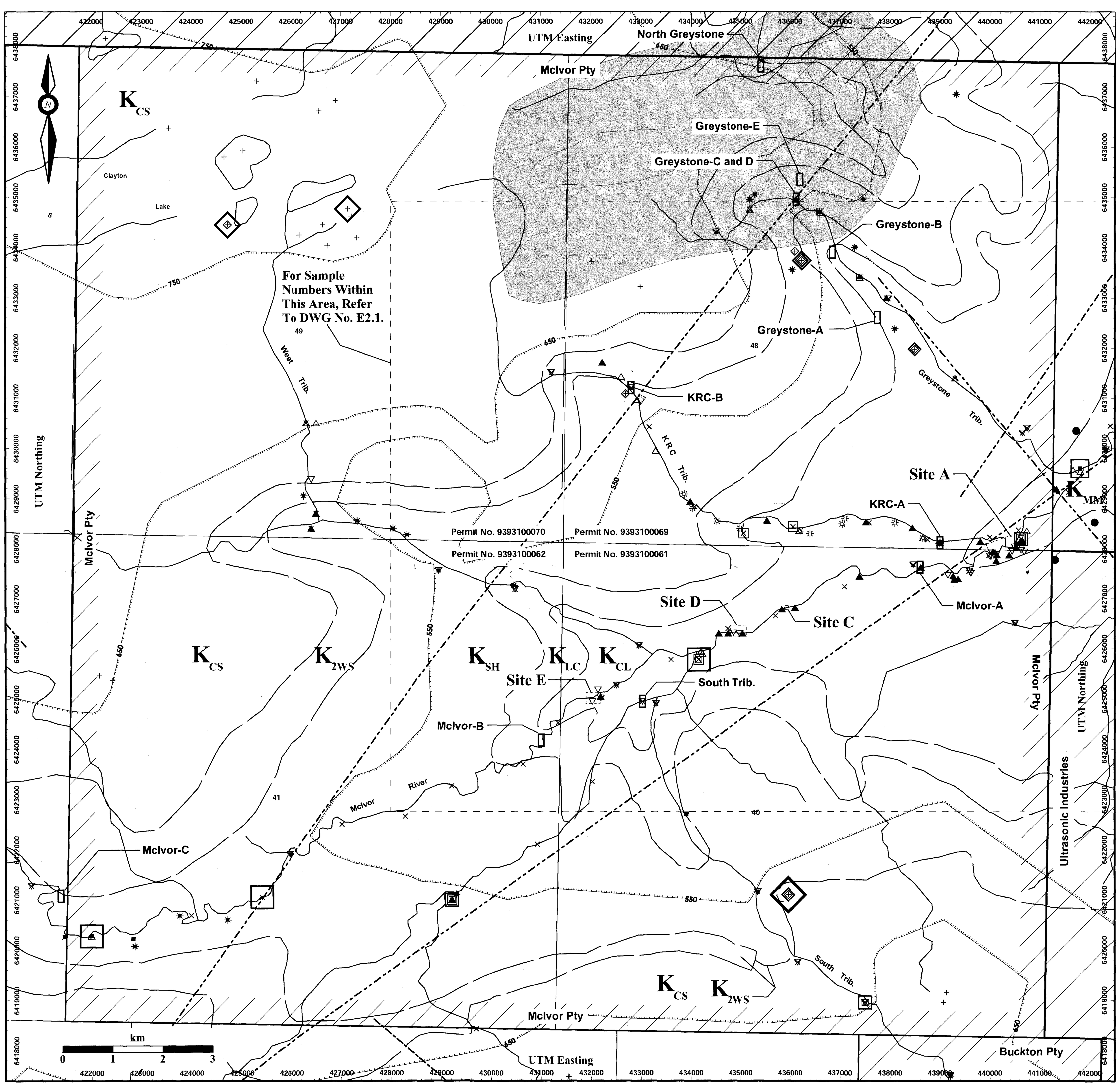
A2.2 Sample location sketch of concentrates reviewed for indicator minerals (copy of Figure 21, Assessment Report MIN9928, Tintina Mines Limited)

A2.3 Detailed compilation Drawing of sampling program 2000, showing also historical previous work, scale 1:20,000

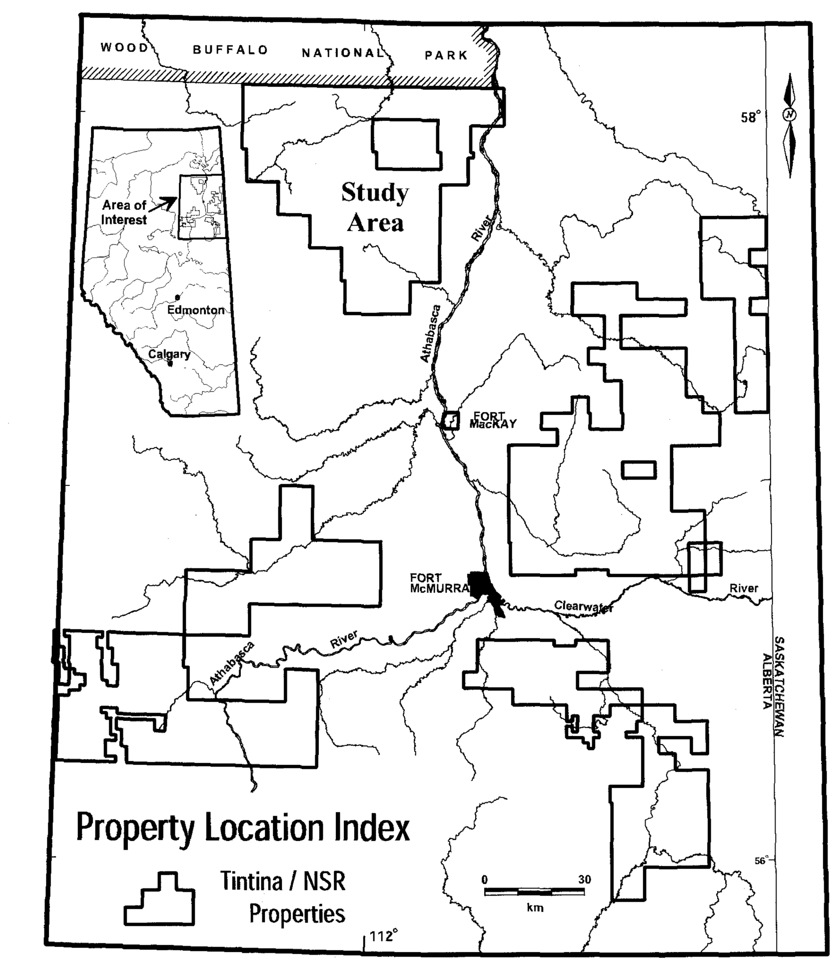
A2.1 General Property compilation Drawing showing previous work, scale 1:50,000 (copy of Drawing A3.4, Assessment Report MIN9610, Tintina Mines Limited)

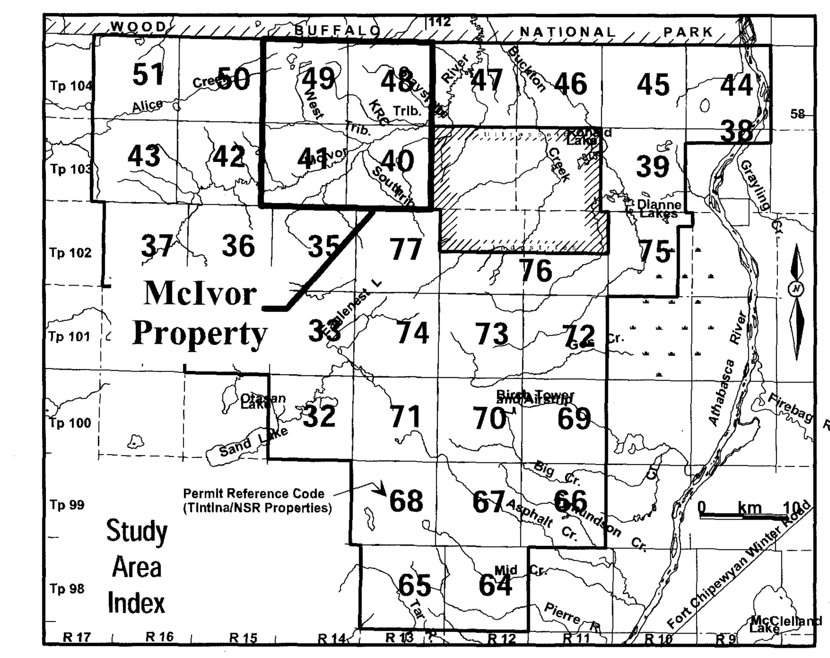


Sample Location Summary



Results Summary





LEGEND

K_{CS} UNDIFFERENTIATED COLORADO SHALE (LA BICHE FORMATION ?): undifferentiated grey shales with minor concretionary ironstones and bentonites.

K_{2WS} SECOND WHITE SPECKS FORMATION: Carbonate cemented, chert and quartz sandstones with associated thin limey concretionary layers, black organic-rich shales and numerous thin bentonites; abundant sulfides throughout.

K_{SH} SHAFTESBURY FORMATION (FISH SCALE and BELLE FORCHE FORMATIONS): Fish scale-bearing shales, black organic-rich shales, and silty shales; with large (.2-2m), rounded calcareous concretions, and abundant sulfides.

K_{LC} LOWER COLORADO GROUP (WESTGATE, PELICAN, and JOLI FOU FORMATIONS): Intended to illustrate the extents of the 40 to 80m thick Pelican Fm.; unconsolidated, coarse grained, cross-bedded, quartzitic sandstones; which is surrounded by thin (~20m), non-fish scale-bearing shales and silty shales of the Joli Fou and Westgate Formations.

K_{CL} CLEARWATER FORMATION: poorly consolidated, fine to medium grained, dark green to greenish-grey glauconitic sandstones, interbedded with siltstones, mudstones and shales; may be a thin interval of GRAND RAPIDS FORMATION sandstone at the top.

K_{MM} MCMURRAY FORMATION: (not exposed) cross-bedded, coarse grained, quartzitic sandstones, with minor interbedded siltstone and shale; normally bituminous.

- Topographic Contour (metres above sea level)
- Approximate Geological Boundary
- Lineament or Fault Interpreted from Base of Second White Specks to Base of Sub-Cretaceous Unconformity Isopach
- Lineament or Fault Interpreted from Aeromagnetic Survey
- Aeromagnetic "High"
- Site A — Detailed Stream Placer Test Sites (See McIvor Report Drawings for more detail)

- Ag >90th Percentile (0.4 ppm, 1994; 0.2 ppm, 1995) in Lake Sediments
- Au >95th Percentile (5 ppb, 1994; 5 ppb, 1995) in Lake Sediments
- Zn >90th Percentile (226 ppm, 1994; 229 ppm, 1995) in Lake Sediments
- Ni >90th Percentile (33 ppm, 1994; 41 ppm, 1995) in Lake Sediments
- Cu >90th Percentile (20 ppm, 1994; 23 ppm, 1995) in Lake Sediments
- Hg >90th Percentile (110 ppb, 1994; 140 ppb, 1995) in Lake Sediments
- Lake Sediment/Water Geochemical Sample Location

- Ag >90th Percentile (0.2 ppm) in Stream Sediments
- Au >95th Percentile (6 ppb) in Stream Sediments
- Zn >90th Percentile (101 ppm) in Stream Sediments
- Ni >90th Percentile (26 ppm) in Stream Sediments
- Cu >90th Percentile (27 ppm) in Stream Sediments
- Hg >90th Percentile (111 ppb) in Stream Sediments
- Stream Sediment Sample Location

- KRC-A Rock Section Geochemical Sampling Location and Name 1995
- Rock Grab Geochemical Sample Location 1995
- Rock Grab Geochemical Sample Location 1994
- Stream Heavy Mineral Concentrate with Visable Gold Grains 1994 and 1995
- Stream Heavy Mineral Concentrate without Visable Gold Grains 1994 and 1995
- Stream Heavy Mineral Concentrate, Examination Pending (In Progress) 1995
- Well Location

Note: 1. Samples are plotted per GPS UTM coordinates which have an accuracy of +/- 150m.
2. The full sample numbers from 1995 stream heavy mineral concentrates have been shortened for convenience by removing the "P" or "C" prefix and the permit reference code, e.g. sample P070JG008 is shown as JG008.

McIvor Property

COPY

General Compilation

1994 and 1995 Exploration Programs

Approved by:	SFS/JAC
Date:	Apr 8, 1996
Scale:	1:50,000
Revision:	
Dwg. No.:	A3.4

Tintina Mines Limited — Northeast Alberta Joint Venture

A2.2 Sample location sketch of concentrates reviewed for indicator minerals (copy of Figure 21, Assessment Report MIN9928, Tintina Mines Limited)

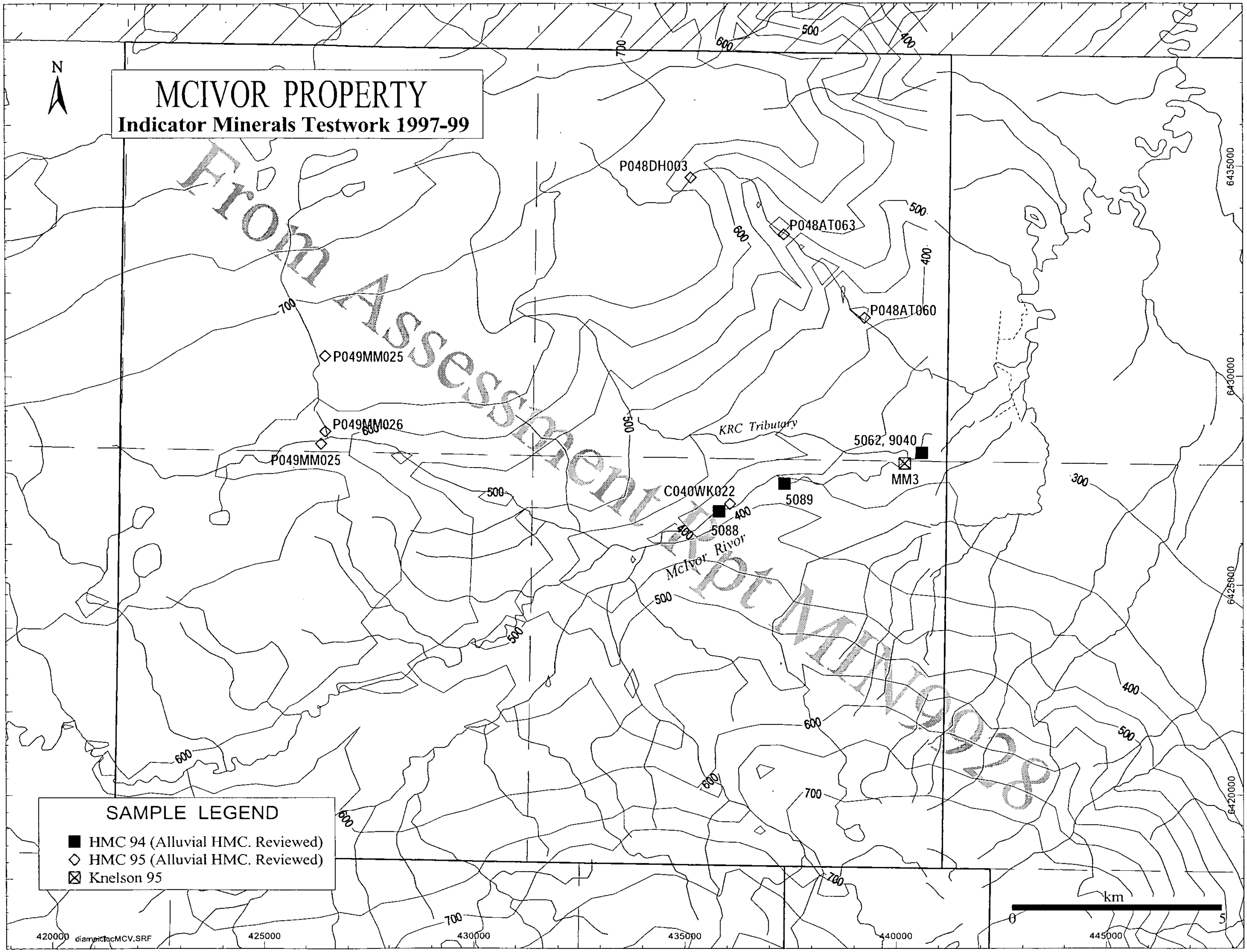
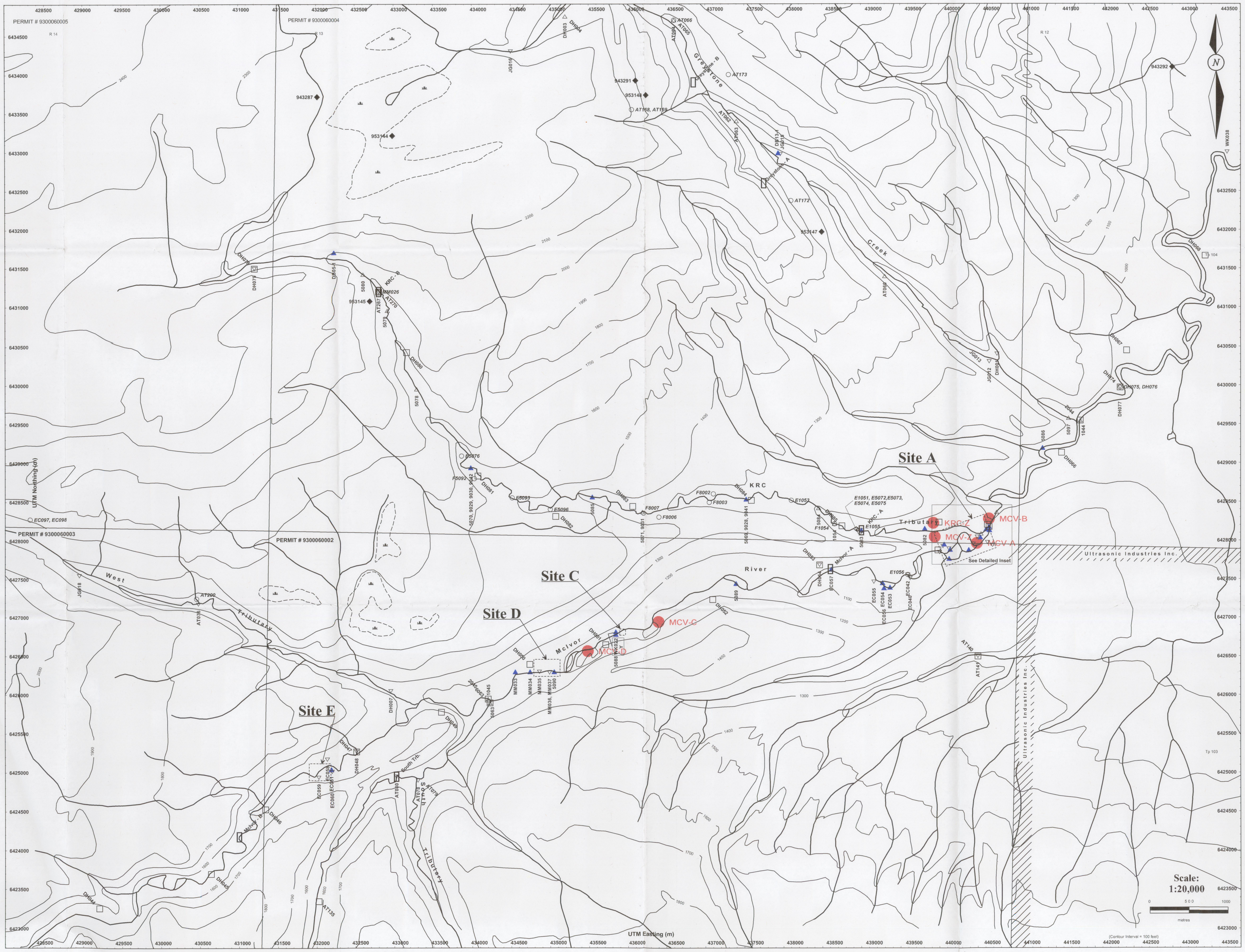
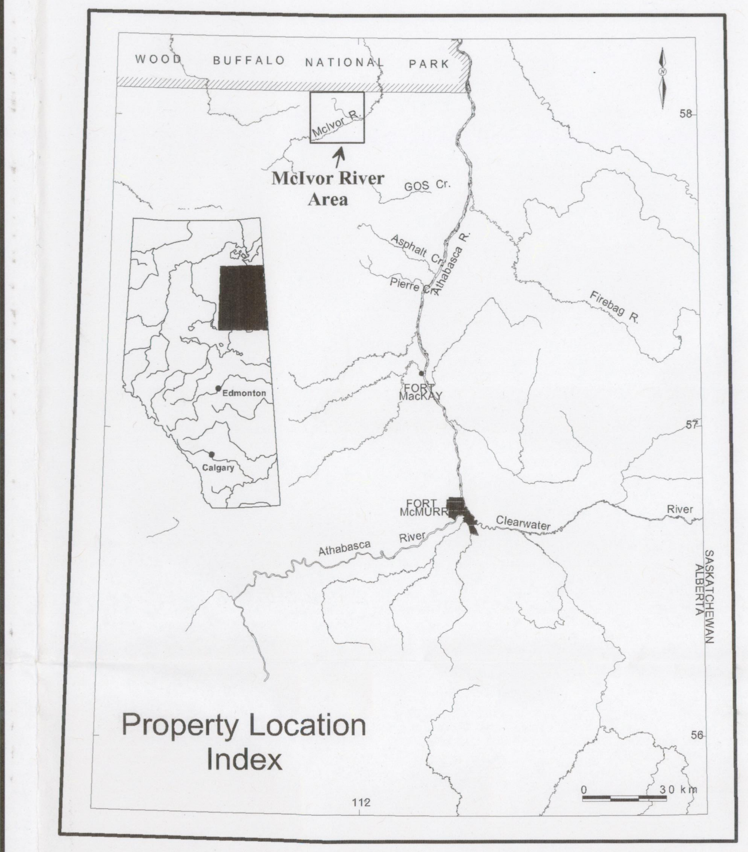
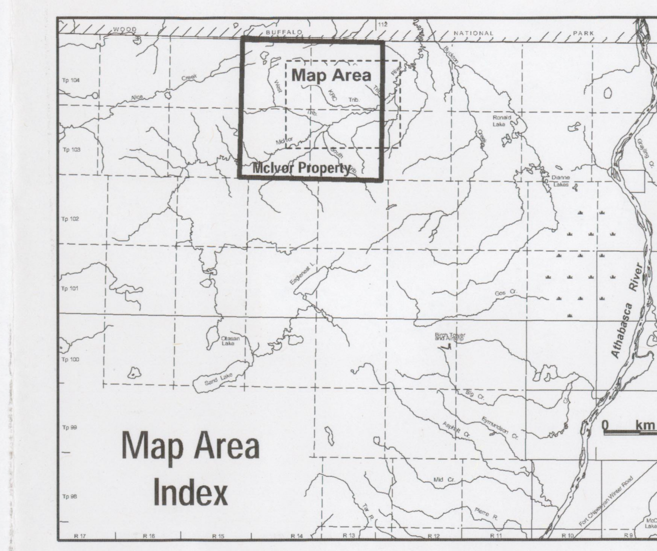

N
MCIVOR PROPERTY
Indicator Minerals Testwork 1997-99
From Assessment Rpt MIN9928
P048DH003
P048AT063
P048AT060
P049MM025
P049MM026
P049MM025
KRC Tributary
5062, 9040
MM3
C040WK022
5089
5088
McIvor River
SAMPLE LEGEND
HMC 94 (Alluvial HMC. Reviewed)
HMC 95 (Alluvial HMC. Reviewed)
Knelson 95
km
0
5
420000
diamclacMCV.SRF
425000
430000
435000
440000
445000
6435000
6430000
6425000
6420000

Figure 21

A2.3 Detailed compilation Drawing of sampling program 2000, showing also historical previous work, scale 1:20,000







LEGEND
Sampling Program 2000

MCV-A Sampling Site (Nov/2000)

Site	Sample Pits
MCV-A	ATB1, ATB2, ATB3
MCV-B	ATB4, ATB5, ATB6
KRC-Z	ATB7, ATB8
MCV-Z	ATB9, ATB10
MCV-C	ATB11, ATB12, ATB13
MCV-D	ATB14, ATB15, ATB16

Stream Heavy Mineral Concentrates

Abbreviated Sample No.	Sample No.	Abbreviated Sample No.	Sample No.	Abbreviated Sample No.	Sample No.	Abbreviated Sample No.	Sample No.
1044	1044	5084	5084 -10+18	AT076	P041AT076	EC051	P040EC051
1045	1045	5085	5085	AT078	P040AT078	EC052	P040EC052
1054	1054	5086	5086	AT080	P040AT080	EC053	P040EC053
5061	5061	5087	5087	AT141	P040AT141	EC054	C040EC054
5061	5061-repan	5088	5088	AT267	P048AT267	EC055	C040EC055
5061	5061-S	5089	5089	DB05-1	95DB05-001	EC056	C040EC056
5062	5062	5090	5090	DB13-1	95DB13-001	EC057	C040EC057
5062	5062-S	5097	5097 +20	DH001	P048DH001	EC058	C040EC058
5063	5063	5097	5097-GF	DH003	P048DH003	EC059	C040EC059
5066	5066	5097	5097-GF +20	DH007	P040DH007	EC060	C040EC060
5067	5067	5097	5097	DH048	P040DH048	EC061	C040EC061
5068	5068	9026	9026	DH054	P040DH054	JG012	P048JG012
5069	5069	9027	9027	DH077	P047DH077	JG015	P048JG015
5069	5069-S	9028	9028	DH079	P048DH079	JG016	P048JG016
5070	5070	9029	9029	EC039	P040EC039	JG018	P041JG018
5070	5070-GF	9030	9030	EC040	P040EC040	MM033	P040MM033
5071	5071	9031	9031	EC042	P040EC042	MM034	P040MM034
5078	5078	9032	9032	EC043	P040EC043	MM035	P040MM035
5079	5079	9033	9033	EC044	P040EC044	MM036	P040MM036
5080	5080	9040	9040x	EC045	P040EC045	MM037	P040MM037
5082	5082 -18	9041	9041x	EC046	P040EC046	WK020	P040WK020
5082	5082 -10+18	9042	9042x	EC047	P040EC047	WK021	P040WK021
5083	5083 -18	AT060	P048AT060	EC048	P040EC048	WK022	C040WK022
5083	5083 -10+18	AT063	P048AT063	EC049	P040EC049	WK038	C047WK038
5084	5084 -18	AT064	P048AT064	EC050	P040EC050		

Stream Sediment Geochemical Samples

Abbreviated Sample No.	Sample No.	Abbreviated Sample No.	Sample No.
2044	2044	DH051	S040DH051
2045	2045	DH052	S040DH052
6062	6062	DH053	S040DH053
6063	6063	DH055	S040DH055
AT061	S048AT061	DH065	S048DH065
AT062	S048AT062	DH066	S047DH066
AT065	S048AT065	DH067	S047DH067
AT075	S041AT075	DH068	S047DH068
AT077	S041AT077	DH074	S047DH074
AT079	S040AT079	DH078	S048DH078
AT081	S040AT081	DH080	S048DH080
AT135	S040AT135	DH081	S048DH081
AT140	S040AT140	DH082	S048DH082
AT270	S048AT270	DH083	S048DH083
DH002	S048DH002	DH084	S048DH084
DH004	S048DH004	DH085	S048DH085
DH008	S040DH008	DH086	S048DH086
DH044	S041DH044	JG013	S048JG013
DH045	S041DH045	JG014	S048JG014
DH046	S040DH046	JG017	S048JG017
DH047	S040DH047	JG019	S041JG019
DH049	S040DH049	WK039	S047WK039
DH050	S040DH050		

Rock Grab Samples

Abbreviated Sample No.	Sample No.	Abbreviated Sample No.	Sample No.
AT066	E048AT066	E1056	E1056
AT168	E048AT168	E5072	E5072
AT169	E048AT169	E5073	E5073
AT172	E048AT172	E5076	E5076
AT173	E048AT173	E5096	E5096
AT200	E041AT200	F1051	F1051
DH075	E074DH075	F1054	F1054
DH076	E074DH076	F5074	F5074
EC097	E049EC097	F5075	F5075
EC098	E049EC098	F5092	F5092
MM026	C041MM026	F5093	F5093
E1051	E1051	F8002	F8002
E1053	E1053	F8003	F8003
E1055	E1055	F8006	F8006
		F8007	F8007

Outcrop or Lithological Section Samples

Site Name	Sample No.	Site Name	Sample No.	Site Name	Sample No.	Site Name	Sample No.
Greystone - A	95RE04-008	Greystone - B	95DL06-017	Greystone - B	E048DB058	KRC - A	E048AT070
"	95RE04-007	"	E048AT278	"	95DL06-006	"	E048AT005
"	95RE04-006	"	95DL06-018	"	E048AT265	"	E048AT069
"	95RE04-005	"	E048AT279	"	E048DB057	"	E048AT068
"	95RE04-004	"	95DL06-019	"	95DL06-005	"	F048AT067
"	95RE04-003	"	E048AT280	"	E048DB056		
"	95RE04-002	"	95DL06-016	"	95DL06-004	KRC - B	E048AT274
"	95RE04-009	"	95DL06-015	"	E048AT264	"	F048AT287
"	95RE04-010	"	E048AT281	"	E048DB055	"	F048AT286
"	95RE04-001	"	E048DB061	"	E048AT263	"	F048AT285
"	95DL05-015	"	95DL06-020	"	E048AT262	"	F048AT284
"	95DL05-014	"	95DL06-014	"	E048AT166	"	F048AT232(S)
"	95DL05-013	"	95DL06-013	"	95DL06-003	"	F048AT232
"	95DL05-012	"	95DL06-012	"	E048AT261	"	E048AT273
"	95DL05-011	"	95DL06-021	"	E048DB054	"	E048AT272
"	E048AT230	"	E048AT282	"	95DL06-002	"	E048AT266
"	95DL05-010	"	95DL06-011	"	E048DB053		
"	E048AT231	"	95DL06-010	"	95DL06-001	McIvor - B	E041AT199
"	95DL05-009	"	95DL06-009	"	E048DB052	"	E041AT198
"	95DL05-008	"	E048DB060	"	E048AT260		
"	95DL05-007	"	95DL06-008	"	E048DB051	McIvor - A	E040AT159
"	95DL05-006	"	E048DB059	"	E048AT165	"	E040AT162
"	95DL05-004	"	95DL06-022	"	E048AT164	"	E040AT161
"	95DL05-003	"	E048AT283	"	E048AT163	"	E040AT160
"	95DL05-002	"	95DL06-007	"	E048AT259		
				"	E048AT167	South Trb.	E040AT082

Detailed Stream Placer Sampling Sites*

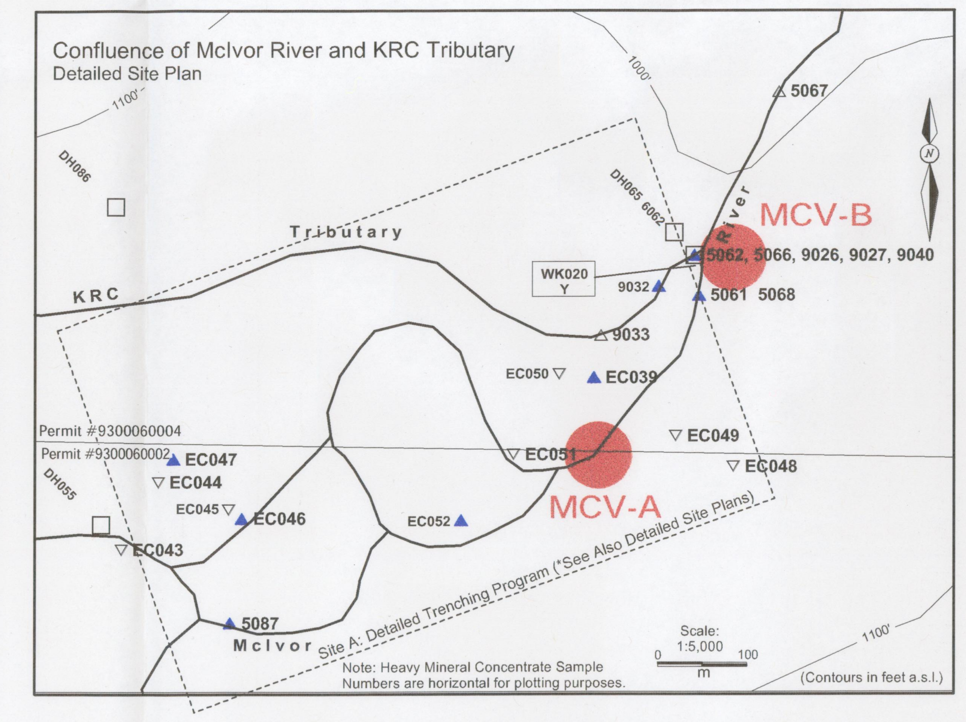
Site Name	Sample No.	Site Name	Sample No.	Site Name	Sample No.	Site Name	Sample No.	Site Name	Sample No.
Site-A	MM-1	Site-A	A-4	Site-A	A-15	Site-D	P040EC126	Site-E	P040EC133
"	MM-2	"	A-6	Site-C	P040EC120	"	P040EC127	"	P040EC134
"	MM-3	"	A-8	"	P040EC121	"	P040EC128	Site-E	P040EC135
"	MM-4	"	A-9	"	P040EC122	"	P040EC129	"	P040EC136
"	MM-5	"	A-10	Site-D	P040EC123	"	P040EC130		
"	A-1	"	A-11	"	P040EC124	Site-E	P040EC131		
"	A-2	"	A-13	"	P040EC125	"	P040EC132		

LEGEND
(Tintina Previous Sampling Work)

- 5090 ▲ Stream Heavy Mineral Concentrate with Gold (1994/1995)
- 1045 △ Stream Heavy Mineral Concentrate without Gold (1994/1995)
- JG015 ▽ Stream Heavy Mineral Concentrate, Examination Pending
- WK022 Y ▲ Stream Heavy Mineral Concentrate of one cubic yard of material (1995)
- AT061 □ Stream Sediment Geochemical Sample (1994/1995)
- 953147 ◆ Lake Sediment Geochemical Sample (1994/1995)
- ○ E5093 Rock Grab Sample (1994/1995) (E= in place, F= locally derived float or talus)
- ▯ KRC-A Outcrop or Lithological Section Sampled (1995)
- **Site-A** Detailed Stream Placer Test Sites (1995) (*See Also Detailed Site Plans)

Note: Due to the constantly shifting active channel of the McIvor River within its valley floor, river trace on basemap may not accurately reflect its present day location. No attempt is, therefore, made to "best-fit" alluvial sample locations to river trace as it appears on basemaps. Tintina samples are plotted per GPS UTM coordinates which have an accuracy of +/-150m.

Confluence of McIvor River and KRC Tributary
Detailed Site Plan



McIvor Property

ATEBA MINES INC.

Sample Location Plan
Sampling Program 2000

(Showing also previous sampling by Tintina, after Dwg E1.1, Assessment Report MIN9610)

Approved by: S.Sabag
Date: Feb20/2002
Scale: Various
NTS 84H16
Dwg. No.: A2.3

File:Ateba_A23.srf

prepared by: Demin Management Corporation

B1 Typical gold grains previously recovered and reported by Tintina Mines

Plate B1.1 Typical coarse gold grains recovered from the confluence of the KRC Tributary and McIvor River

Plate B1.2 Fine pristine gold grains recovered from sample 5088, McIvor River

Plate B1.3 Typical gold grains from samples 9027and 5062, McIvor River

Plate B1.4 Typical gold grains from sample 9041, McIvor River.

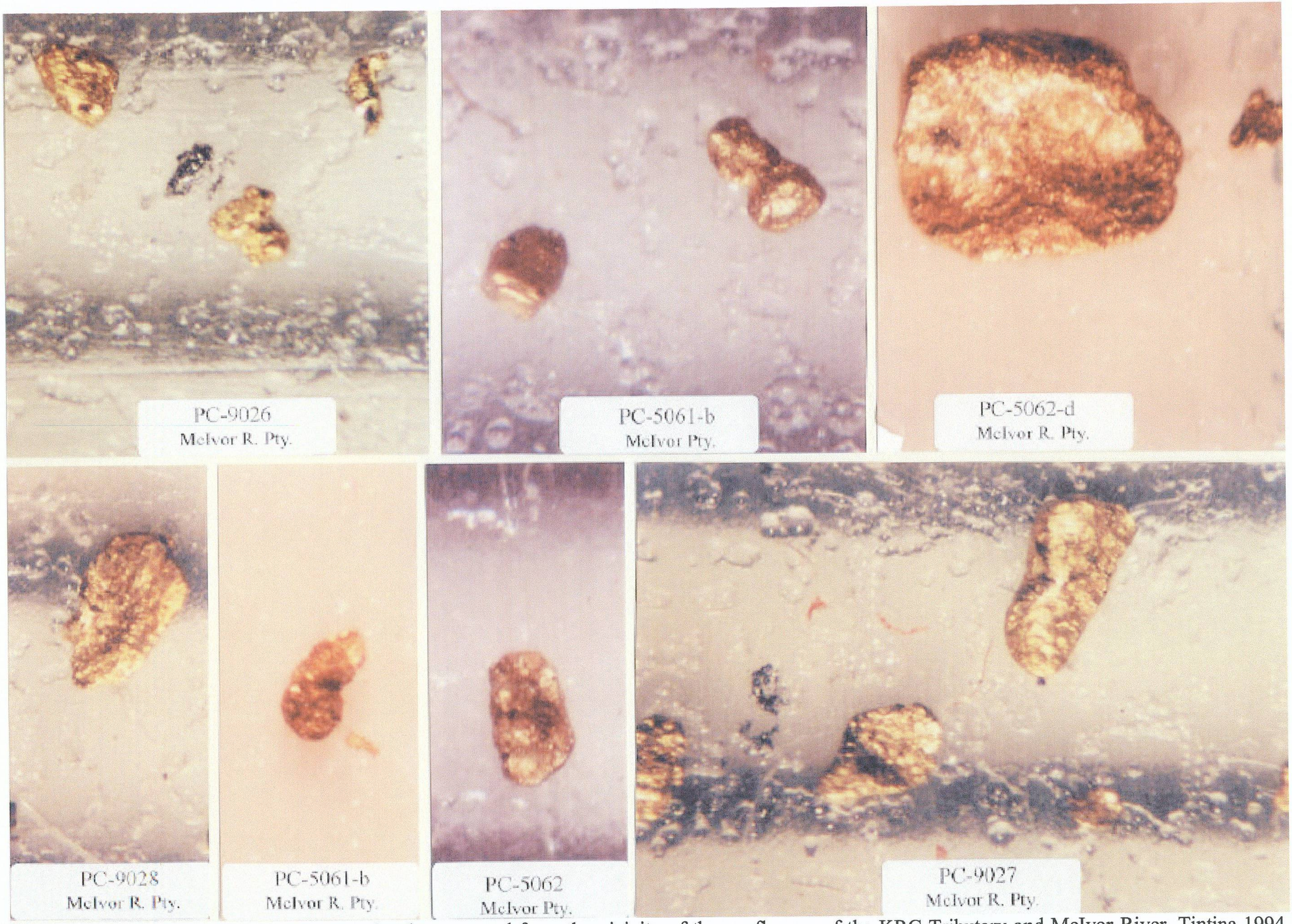


Plate B1.1 Typical coarse gold grains previously recovered from the vicinity of the confluence of the KRC Tributary and McIvor River, Tintina 1994. Distance between dark lines across images is 1mm (where said lines are not visible, longer dimension of photograph equals approximately 1mm).

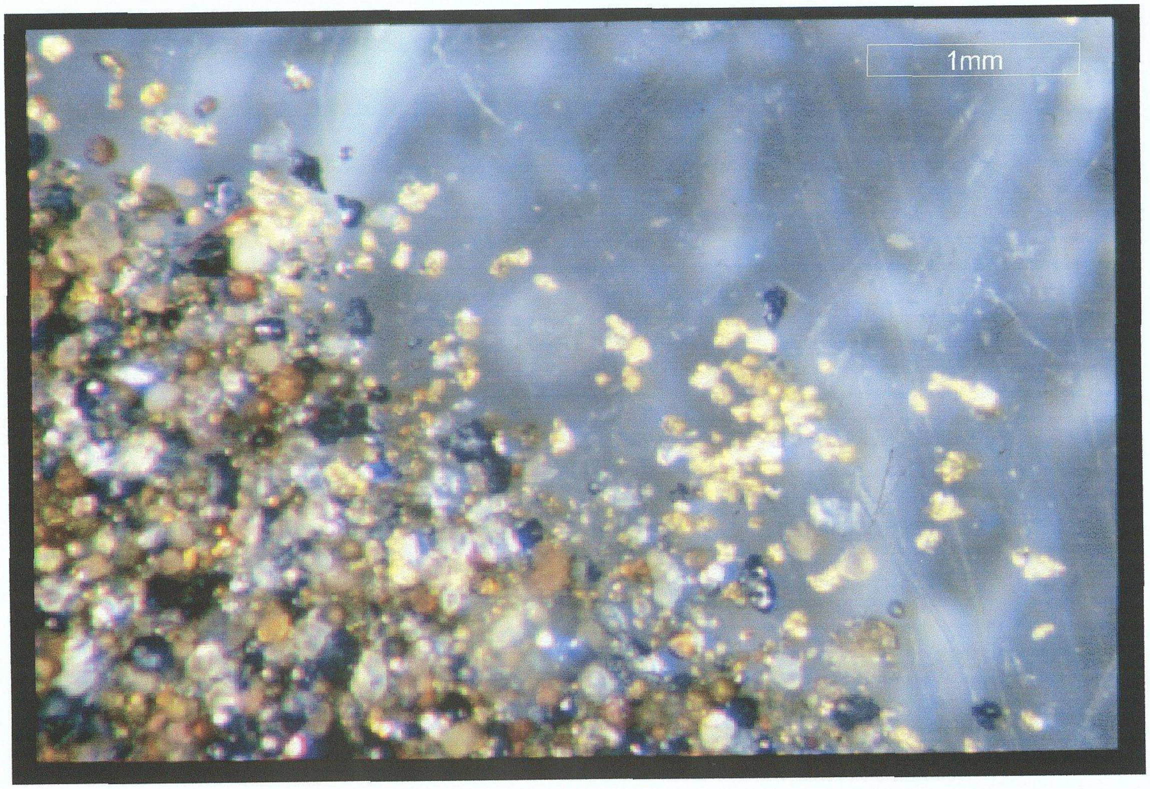


Plate B1.2 *[above]* Fine gold grains in heavy mineral concentrate from Tintina sample site 5088, McIvor River. Scale is approximate. *[below]* A typical pristine delicate gold grain from sample 5088. (Photomicrography by S.B.Balantyne, GSC, 1994-1995).

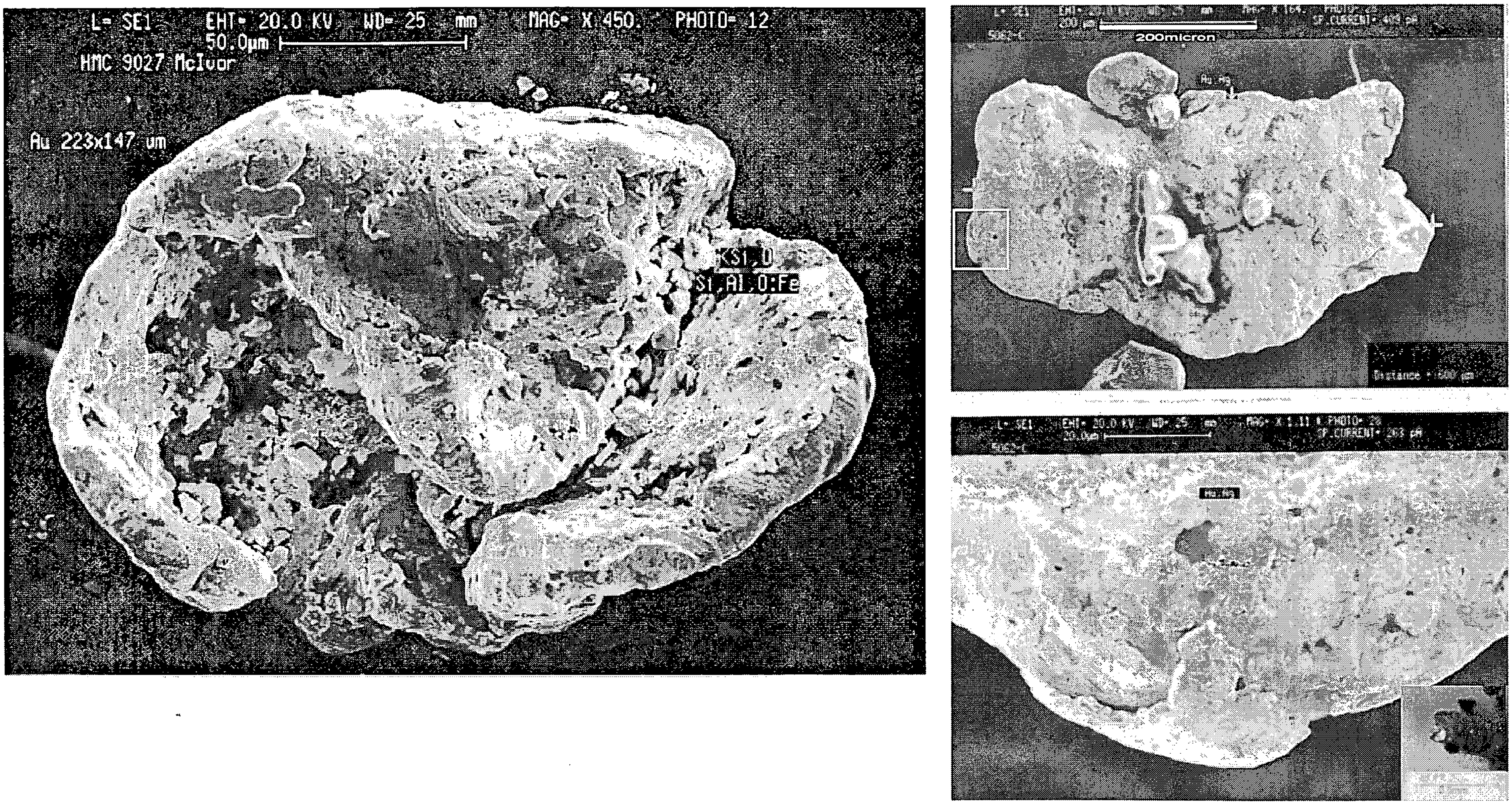


Plate B1.3 Typical gold grains from Tintina samples 9027 *[left]* and 5062 *[right]*, McIvor River. [bottom right] close up of left extremety of 5062 grain. (Photomicrography by S.B.Balantyne, GSC, 1994).

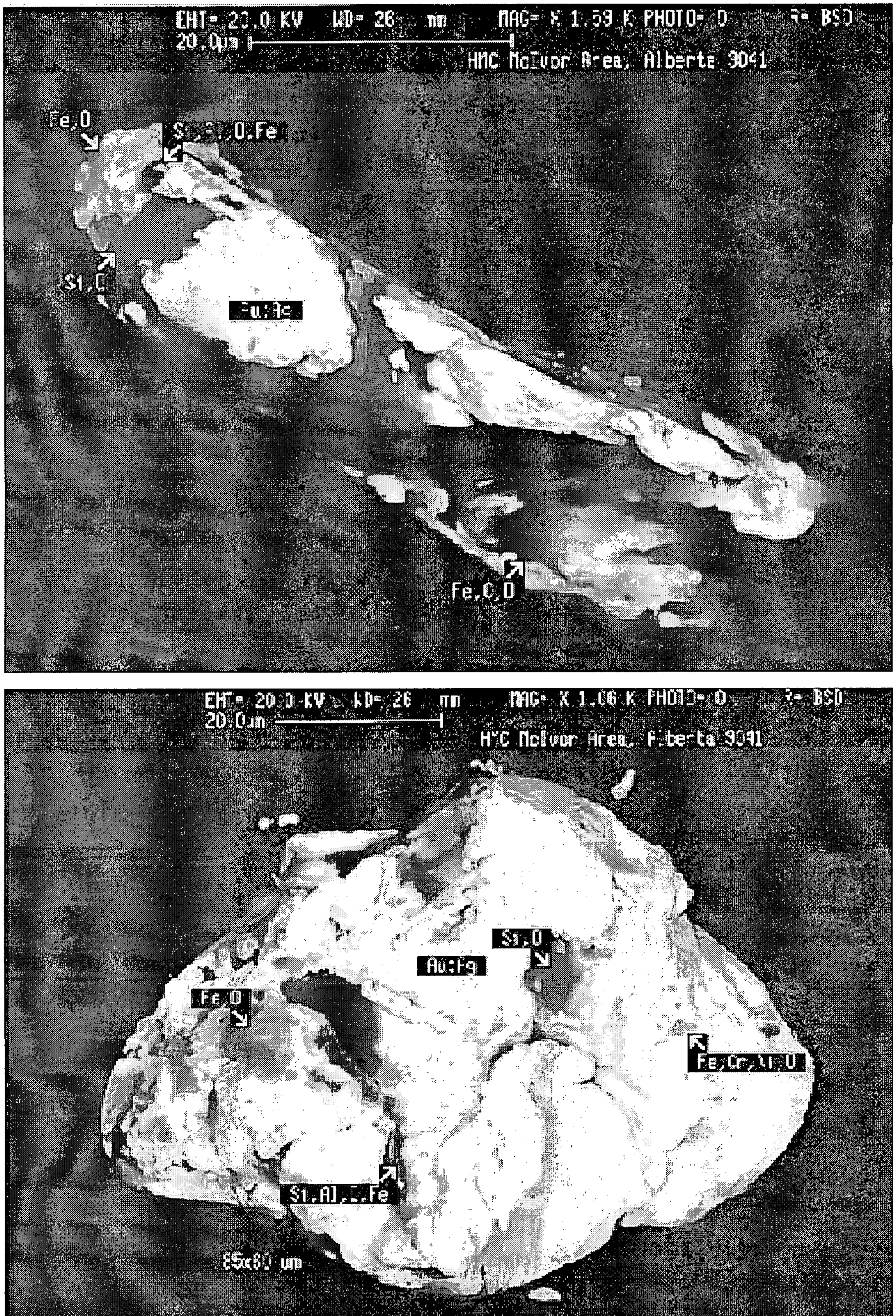


Plate B1.4 Typical gold grains from Tintina samples 9041, McIvor River. (Photomicrography by S.B.Balantyne,GSC,1994).

B2 Sampling Program 2000 - Sampling Sites aerial views & Sample Pits

Plate B2.1 Photocomposite of the McIvor River Valley showing sampling sites MCV-A, MCV-B, KRC-Z and MCV-Z

Plate B2.2 Aerial view of sampling site MCV-A showing sample pits ATB-1. ATB-2 and ATB-3

Plate B2.3 Aerial view of sampling site MCV-B (winter and summer images) showing sample pits ATB-4, ATB-5 and ATB-6

Plate B2.4 Aerial view of KRC-Z and MCV-Z sampling sites

Plate B2.5 Aerial view of sampling site KRC-Z showing sample pits ATB-7 and ATB-8

Plate B2.6 Aerial view of sampling site MCV-Z showing sample pits ATB-9 and ATB-10

Plate B2.7 Aerial view of sampling site MCV-C showing sample pits ATB-11, ATB-12 and ATB-13

Plate B2.8 Aerial view of sampling site MCV-D showing sample pits ATB-14, ATB-15 and ATB-16

Plate B2.9 Typical sample pits, Sampling Nov/2000

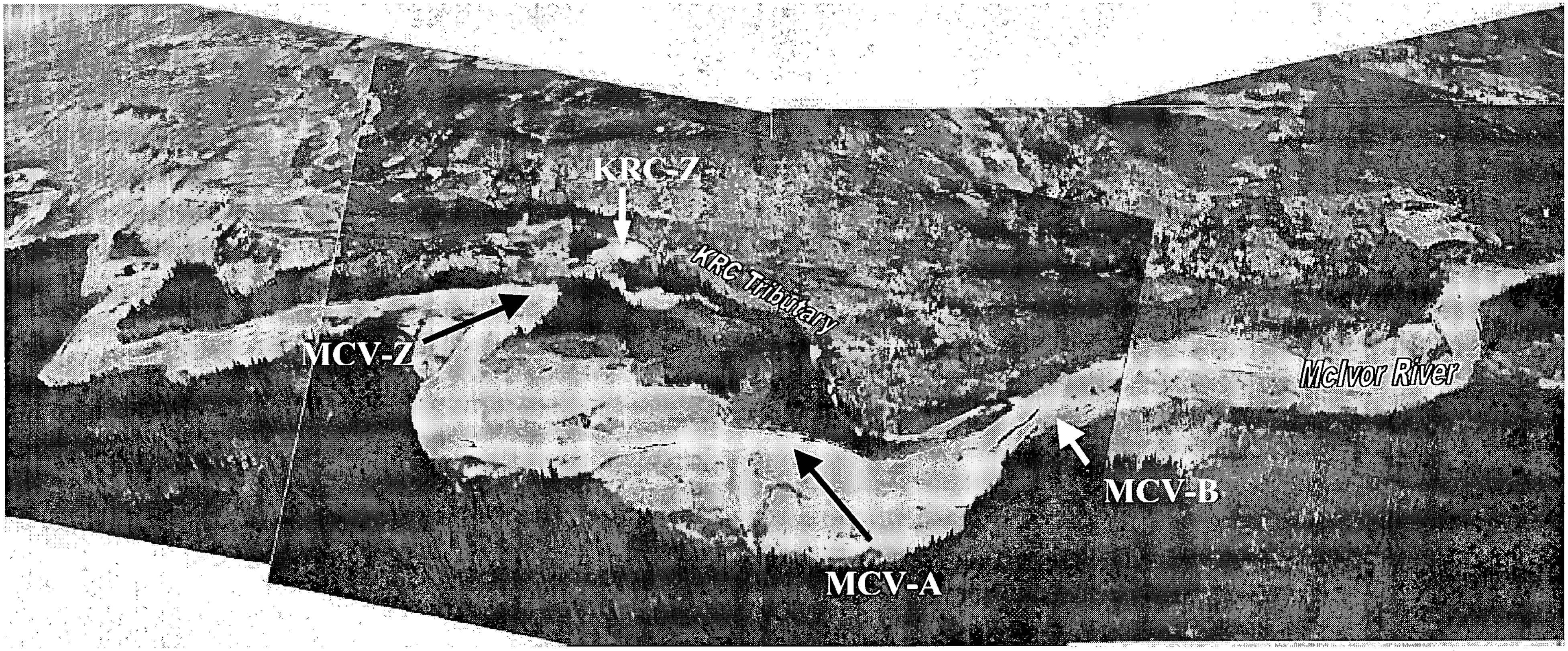


Plate B2.1 Photocomposite of the McIvor River Valley showing McIvor River, KRC Tributary and sampling sites MCV-A, MCV-B, KRC-Z and MCV-Z (looking northwesterly).

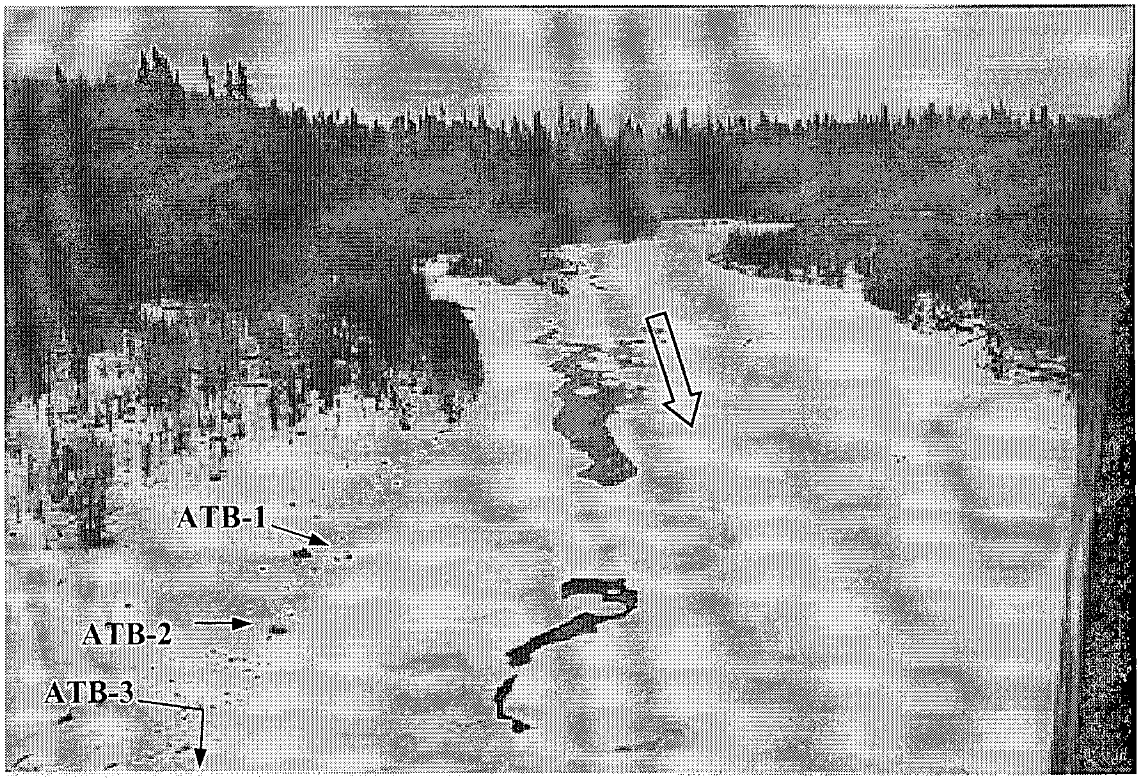


Plate B2.2 Aerial view of sampling site MCV-A showing sample pits ATB-1, ATB-2 and ATB-3 (looking southwesterly). ATB-3 is at edge of image. Distance between pits is ~25ft.

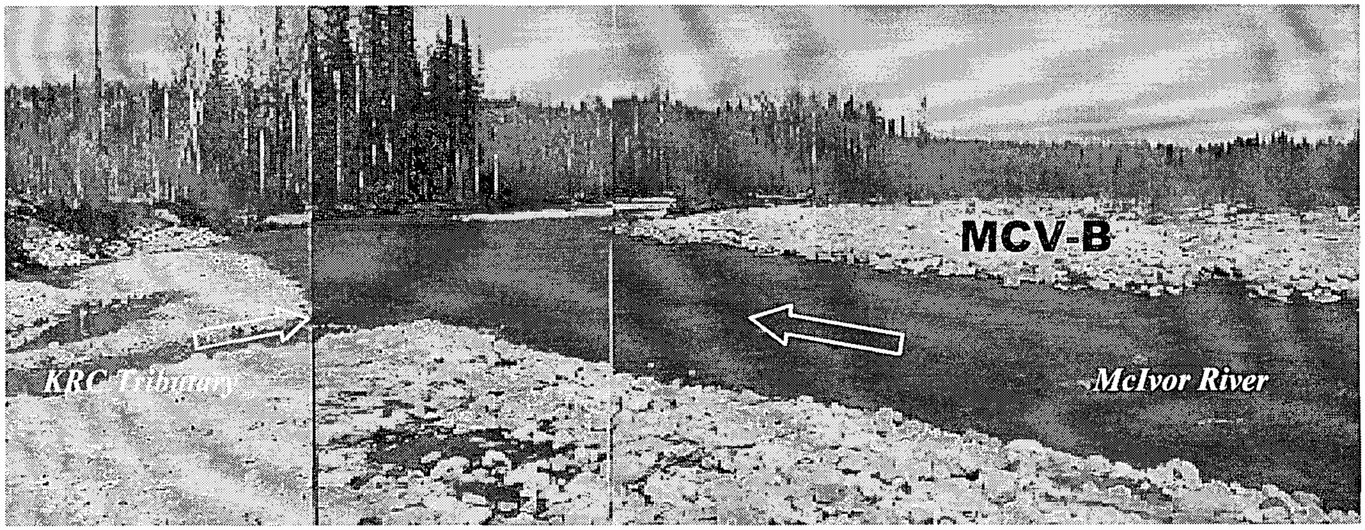
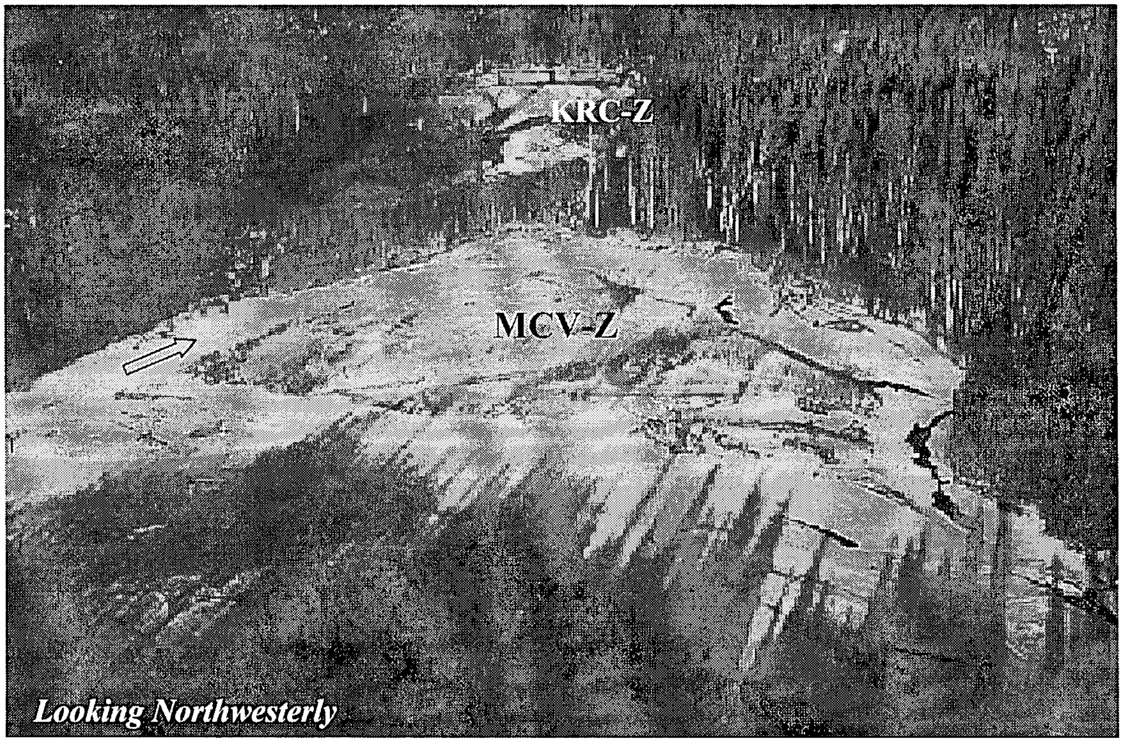


Plate B2.3 *[below]* Aereal view of sampling site MCV-B, across river from confluence of KRC Tributary and McIvor River, showing sample pits ATB-4, ATB-5 and ATB-6 (looking northeasterly). KRC Tributary enters the McIvor River directly across from pit ATB-6. Distance between pits is ~65ft. *[above]* Summer view of same site looking southeasterly while standing on west bank of the KRC Tributary (photograph from author's image archives from 1995).



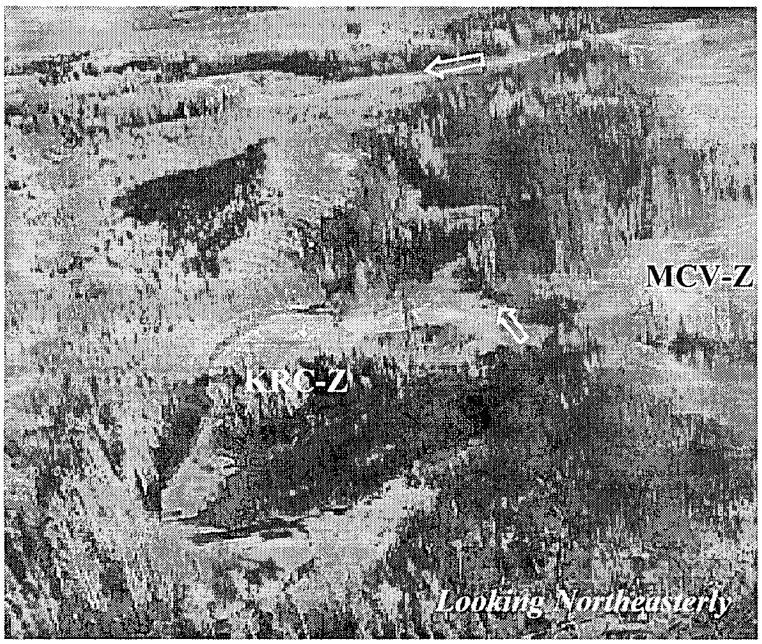


Plate B2.4 Aerial view of sampling sites KRC-Z and MCV-Z.

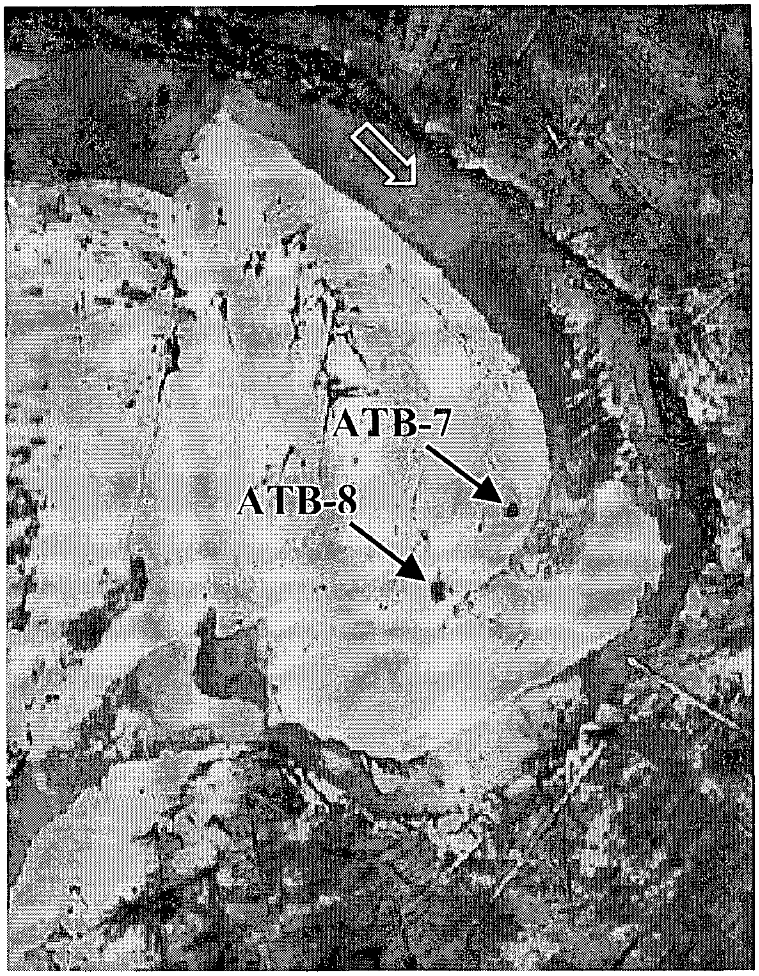


Plate B2.5 Aerial view of sampling site KRC-Z showing sample pits ATB-7 and ATB-8 (looking northwesterly). Distance between pits is ~25ft.

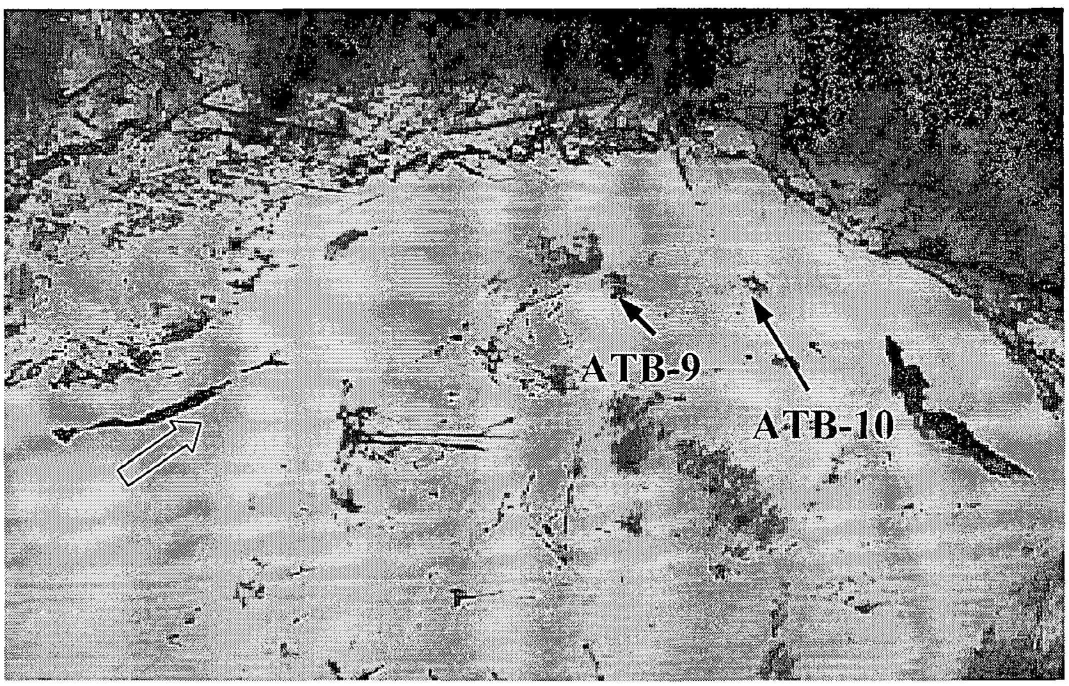


Plate B2.6 Aerial view of sampling site MCV-Z showing sample pits ATB-9 and ATB-10 (looking northwesterly). Distance between pits is ~40ft.

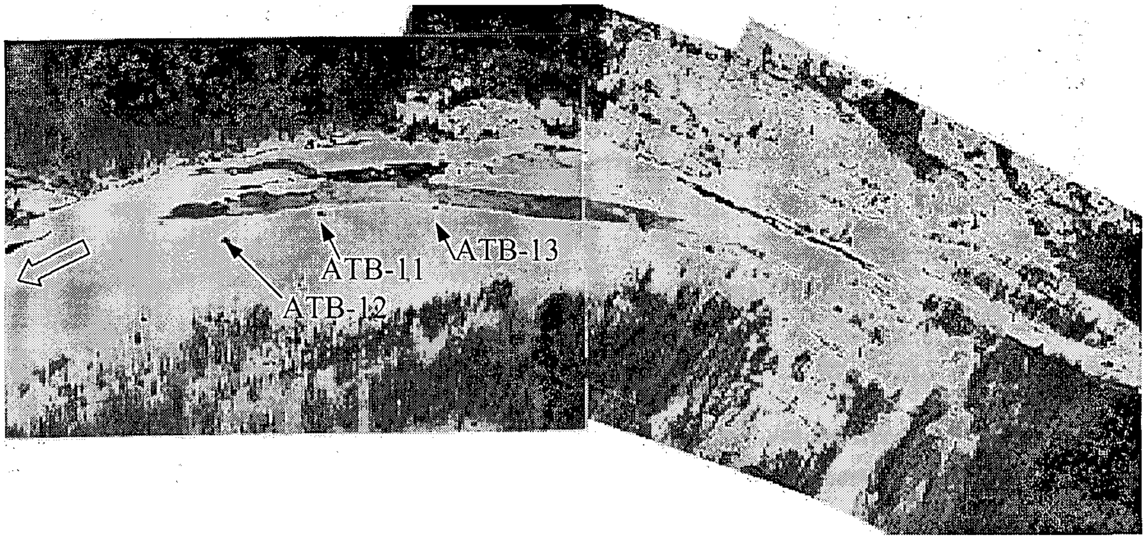


Plate B2.7 Aerial view of sampling site MCV-C showing sample pits ATB-11, ATB-12 and ATB-13. (looking southeasterly). Distance between pits is ~55ft.

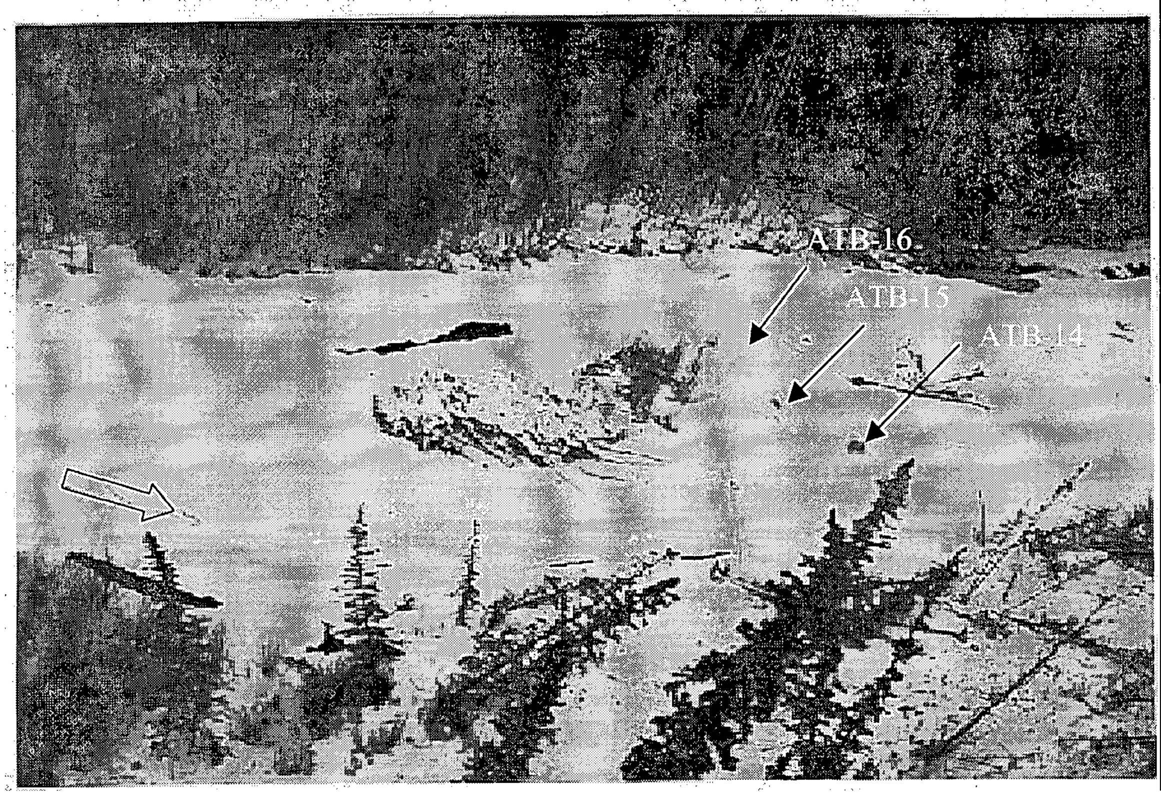


Plate B2.8 Aerial view of sampling site MCV-D showing sample pits ATB-14, ATB-15 and ATB-16 (looking northwesterly). Distance between pits is ~25ft.

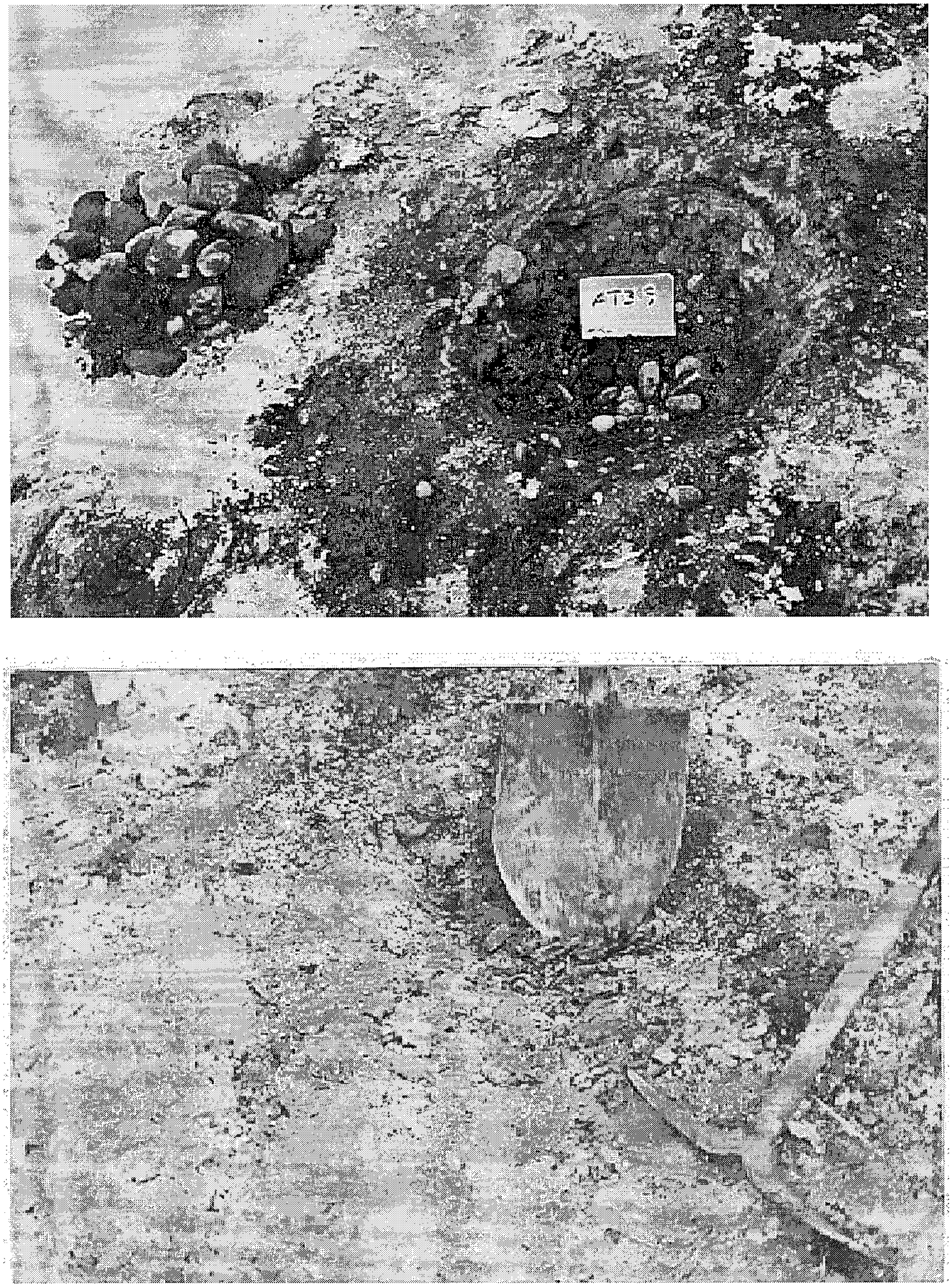


Plate B2.9 Typical pits. Cobble rich pit ATB-9 and cobble free pit ATB-2.

C1 **Mineral Testwork**

C1.1 Heavy Mineral Testwork procedures description

C1.2 Test Results per Process Research Associates Ltd., Project #0100401, Sample Inventory Weights, Jan13/01; Sample Sizing Report, Feb20/01; Sample Concentration Tests Results, Feb20/01; Coarse Fraction Cyanidation Results Mar14/01

C1.1 Heavy Mineral Testwork procedures description

Ateba Mines Testwork: Project #0100401

Summary of test procedures (Feb2/01)

1. The 40 pails of material comprise a total of 16 samples numbered ATB1 through ATB16. Some of the samples consist of a single pail while others consist of as many as three pails of material which should be combined;
2. Sieve the sample through nested Sweco sieves to size at 12mesh, 6mesh, and 3/8inch. This will produce four size fractions as follows: -12, +12-6, +6-3/8 and +3/8. The sieving will also produce considerable muddy wash water which should be captured to treat with the -12mesh fraction;
3. combine the -12mesh size fraction with the sieve wash water. Also decant water from the coarser fractions and combine it to the -12/water mix;
4. wash the three coarser (ie. +12) fractions a second time in a 12mesh sieve to thoroughly clean them of all clay matter. Collect the muddy wash water and add it to the -12/water mixture previously collected (in #3 above);
5. take a type sample from each of the +12-6 and +6-3/8 fractions by filling one petri dish of material from each. Dry, weigh and set aside the remainder of sample for storage and subsequent reference;
6. Depending on sample size, the -12/water mixture will at this point comprise one or two large plastic garbage cans of material, most of which consisting of muddy water. Deflocculate this slurry with Reagent A15 by adding one litre of 5% A15 solution to each garbage pail while vigorously agitating the slurry with a mixer. Continue to mix for some 30min, then let settle for an hour;
7. The liquid and solids portions of the sample are to be concentrated separately as outlined below;
8. Feed the liquid portion of the slurry into the Falcon by itself. Once so fed, clean out Falcon bowl and obtain the concentrate from this fluid. Upgrade the concentrate as normal by hand panning. Dry and weigh the concentrates (to be delivered to Ateba). Please designate these as Defloc-Float concentrates. Discard the Falcon discharge;
9. Feed the solids into the Falcon with fresh water as required, and retain all discharge. Clean out Falcon bowl, collect the concentrate and upgrade by hand panning to produce a pan-con and pan-tail. Dry and weigh the concentrates (to be delivered to Ateba). Please designate these as pass1 concentrates;
10. Feed all discharge from the above (#9) into the Falcon as a second pass. Again, collect the concentrate and upgrade by hand panning into a pan-con and pan-tail. Dry and weigh the concentrates (to be delivered to Ateba). Please designate these as pass2 concentrates.
11. Flocculate the discharge slurry from#10 and let acceptably settle. Decant/discrad the water, dry and weigh the sample and set aside for delivery to Ateba;
12. Please report sizing weight profiles to include: initial sample weights, size fraction weights, clay content (by difference) and concentrate weights;

C1.2 Test Results per Process Research Associates Ltd., Project #0100401, Sample Inventory Weights, Jan13/01; Sample Sizing Report, Feb20/01; Sample Concentration Tests Results, Feb20/01; Coarse Fraction Cyanidation Results Mar14/01

SAMPLE INVENTORY LOG SHEET

Company : Ateba Mine
Project no : 0100401
Received by : JM

Date : 13-Jan-01

Count	Sample		Weight *
	Identification	Description **	(kg)
1	AT-B1-1	Rock and Sand	37.0
2	AT-B1-2		42.0
3	AT-B2-1		26.0
4	AT-B2-1		28.0
5	AT-B3-1		24.0
6	AT-B3-2		23.4
7	AT-B4-1		23.8
8	AT-B4-2		30.4
9	AT-B4-3		26.0
10	AT-B5-1		20.3
11	AT-B5-2		21.5
12	AT-B5-3		25.0
13	AT-B6-1		18.5
14	AT-B6-2		25.0
15	AT-B6-3		18.5
16	AT-B7-1		27.0
17	AT-B7-2		28.0
18	AT-B7-3		23.5
19	AT-B8-1		23.0
20	AT-B8-2		28.5
21	AT-B8-3		23.7
22	AT-B9-1		21.7
23	AT-B9-2		23.5
24	AT-B9-3		32.0
25	AT-B10-1		28.0
26	AT-B10-2		29.0

SAMPLE INVENTORY LOG SHEET

Company : Ateba Mine
Project no : 0100401
Received by : JM

Date : 13-Jan-01

Count	Sample		Weight *
	Identification	Description **	(kg)
27	AT-B10-3	Rock and Sand	28.2
28	AT-B11-1		28.7
29	AT-B11-2		29.2
30	AT-B11-3		27.2
31	AT-B12-1		27.0
32	AT-B12-2		28.0
33	AT-B12-3		27.2
34	AT-B13-1		28.8
35	AT-B14-1		29.4
36	AT-B14-2		28.0
37	AT-B14-3		23.7
38	AT-B15-1		31.0
39	AT-B15-2		19.0
40	AT-B16-1		23.5

* Includes 20L pail plus lid, moisture estimate <10%.

** No free water evident not all pails inspected.

SAMPLE INVENTORY LOG SHEET

Company : Ateba Mines Ltd.
Project : 0100401

Date : 20-Feb-01
page : 1 of 1

Sample ID	Screen Fraction Weight, g		
	+3/8	**-3/8+6**	**-6+12**
ATB-1	27450	14940	2975
ATB-2	137	20.4	11.6
ATB-3	none	none	106
ATB-4	17910	6975	990
ATB-5	8946	4500	1418
ATB-6	10976	4928	1715
ATB-7	11691	10643	6836
ATB-8	12011	11588	8159
ATB-9	16718	3632	1175
ATB-10	32940	4581	1449
ATB-11	28170	13523	1881
ATB-12	39690	11147	1661
ATB-13	13194	2376	1845
ATB-14	36630	10458	2304
ATB-15	23670	9288	1953
ATB-16	none	none	none

SAMPLE INVENTORY LOG SHEET

Company : Ateba Mines Ltd.
Project : 0100401

Date: 20-Feb-01

Sample ID	Description	Weight, g			
		Slime Pan	1st Pass Pan	2nd Pass Pan	Falcon SB40
ATB-1	Conc	1.77	6.11	4.83	
	Tail	24.6	69.3	76.1	20900
ATB-2	Conc	1.65	80.8	5.67	
	Tail	11.2	5.90	56.9	40600
ATB-3	Conc	2.12	7.02	5.09	
	Tail	35.9	66.0	60.1	30800
ATB-4-1	Conc	n/a	3.31	3.16	
	Tail	n/a	75.2	77.9	22400
ATB-4-2	Conc	0.63	7.22	1.34	
	Tail	9.53	73.7	72.9	16900
ATB-5	Conc	2.64	7.69	6.92	
	Tail	78.3	72.6	76.0	41700
ATB-6	Conc	2.51	8.45	7.92	
	Tail	44.0	82.2	84.4	37000
ATB-7-1	Conc	n/a	2.65	5.61	
	Tail	n/a	79.6	81.1	21700
ATB-7-2	Conc	0.54	6.22	6.12	
	Tail	19.8	75.6	70.0	18600
ATB-8	Conc	1.54	4.16	3.48	
	Tail	9.51	86.0	89.1	30100
ATB-9	Conc	2.44	4.01	5.58	
	Tail	67.3	117	78.6	43900
ATB-10	Conc	3.09	5.87	6.67	
	Tail	31.9	93.7	78.7	33300
ATB-11	Conc	2.91	5.79	4.23	
	Tail	36.2	90.7	71.6	21800
ATB-12	Conc	2.34	4.71	5.31	
	Tail	17.8	87.0	87.0	18200
ATB-13	Conc	1.33	5.17	4.49	
	Tail	3.31	83.2	80.7	6800
ATB-14	Conc	2.23	6.99	5.54	
	Tail	83.0	94.8	82.2	19900
ATB-15	Conc	2.51	8.65	5.59	
	Tail	56.9	94.5	85.9	13800
ATB-16	Conc	3.19	4.86	3.18	
	Tail	65.0	75.4	64.0	19000

Subj:
Date: 15-Mar-01 12:21:54 PM Central Standard Time
From: pra1@istar.ca (Peter Tse)
To: deminco@aol.com (Shahe Saga)

File: CN results.xls (33280 bytes)
DL Time (44000 bps): < 1 minute

Dear Shahe:

Attached are the cyanide leach results on the -3/8+6 and -6+12 screen fraction. Total of 26 samples.

Please call me if you have any questions.

Regards,

Peter

---------------------- Headers --------------------------------
Return-Path: <pra1@istar.ca>
Received: from rly-xc02.mx.aol.com (rly-xc02.mail.aol.com [172.20.105.135]) by air-xc02.mail.aol.com (v77_r1.21) with ESMTP; Thu, 15 Mar 2001 13:21:54 -0500
Received: from mail4.toronto.istar.net ([209.89.75.35]) by rly-xc02.mx.aol.com (v77_r1.35) with ESMTP; Thu, 15 Mar 2001 13:21:40 -0500
Received: from [154.5.157.253] (helo=peter)
by mail4.toronto.istar.net with smtp (Exim 1.92 #2)
for deminco@aol.com
id 14dcNM-0005qh-00; Thu, 15 Mar 2001 13:21:28 -0500
Message-ID: <011f01c0ad81$91b7c460$a19c059a@peter>
From: "Peter Tse" <pra1@istar.ca>
To: "Shahe Saga" <deminco@aol.com>
Subject:
Date: Thu, 15 Mar 2001 10:55:15 -0800
MIME-Version: 1.0
Content-Type: multipart/mixed;
boundary="----=_NextPart_000_011D_01C0AD3E.6ABB20C0"
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X-MSMail-Priority: Normal
X-Mailer: Microsoft Outlook Express 5.00.2615.200
X-MimeOLE: Produced By Microsoft MimeOLE V5.00.2615.200

CYANIDE LEACH TEST REPORT

Company : Ateba Mines Ltd.
Project : 0100401

Date : 14-Mar-01

Procedure : Repulp entire screen fraction to 50% solids. Adjusted pH to 11-12. Added 3g/L NaCN.
Monitor pH and NaCN concentrate at 24 hours. Adjusted as require to original parameters.
Ended test at 48 hours. Filtered 200 mL solution for Au assay. Washed solids, dried and stored.

Screen Fraction : -6+12 mesh

Sample ID	Solids Wt, g	Solution Vol, L	Solution Assay Au, mg/L	Solution Assay Au, mg	Calculated Head Au, g/t
ATB-1	2975	2.97	<0.005		
ATB-2	no sample				
ATB-3	no sample				
ATB-4	990	0.99	<0.005		
ATB-5	1418	1.42	<0.005		
ATB-6	1715	1.71	0.010	0.017	0.01
ATB-7	6836	6.84	0.006	0.041	0.01
ATB-8	8159	8.16	<0.005		
ATB-9	1175	1.17	0.010	0.012	0.01
ATB-10	1449	1.45	0.010	0.014	0.01
ATB-11	1881	1.88	<0.005		
ATB-12	1661	1.66	<0.005		
ATB-13	1845	1.85	0.013	0.024	0.01
ATB-14	2304	2.30	0.010	0.023	0.01
ATB-15	1953	1.95	<0.005		
ATB-16	no sample				

CYANIDE LEACH TEST REPORT

Company : Ateba Mines Ltd.
Project : 0100401

Date : 14-Mar-01

Procedure : Repulped entire screen fraction to 50% solids. Adjusted pH to 11-12. Added 3g/L NaCN.
Monitor pH and NaCN concentrate at 24 hours. Adjusted as require to original parameters.
Ended test at 48 hours. Filtered 200 mL solution for Au assay. Washed solids, dried and stored.

Screen Fraction : -3/8"+6 mesh

Sample ID	Solids Wt, g	Solution Vol, L	Solution Assay Au, mg/L	Solution Assay Au, mg	Calculated Head Au, g/t
ATB-1	14940	14.9	0.005	0.075	0.01
ATB-2	no sample				
ATB-3	no sample				
ATB-4	6975	6.98	0.010	0.070	0.01
ATB-5	4500	4.50	0.010	0.045	0.01
ATB-6	4928	4.93	<0.005		
ATB-7	10643	10.6	<0.005		
ATB-8	11588	11.6	<0.005		
ATB-9	3632	3.63	<0.005		
ATB-10	4581	4.58	<0.005		
ATB-11	13523	13.5	0.008	0.108	0.01
ATB-12	11147	11.1	0.010	0.111	0.01
ATB-13	2376	2.38	<0.005		
ATB-14	10458	10.5	0.015	0.157	0.02
ATB-15	9288	9.29	0.010	0.093	0.01
ATB-16	no sample				

C2 Analytical Work

C2.1 Leachwell Cyanidation: Procedure Description

C2.2 Analytical certificates: Activation Laboratories Ltd. Assay Reports WO-21985 and WO-21828

C2.1 Leachwell Cyanidation: Procedure Description

MPC

MINERAL PROCESS CONTROL

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LeachWELL GC
PAL 1000
DTOX

LeachWELL™ GC

LeachWELL™GC is a technical grade catalyst that has been formulated for intensive cyanidation of Knelson and other gold concentrates.

Recoveries above 99.9% within a few hours are common when using LeachWELL™GC. Residues can therefore be safely discarded.

ADVANTAGES

Intensive cyanidation of concentrates offers far greater security.

Both solids and pregnant liquors can be handled in fully enclosed systems at all times. Electrowinning of the smeltable product can be carried out in the gold room.

Very high recoveries can allow the residues to be discarded.

Recoveries of 99.9% have been achieved. The removal of tramp iron from the circuit is beneficial to the concentrator and to cyanide consumption.

Batch and fully automated systems already exist or can be easily adopted.

Batch treatment of concentrates (using the Acacia Reactor for example) is very simple and efficient. A continuous treatment system has been developed in Australia by Gekko Systems.

TREATMENT

The rate of reaction is dependent mainly on reagent concentration and temperature. Reagent costs are between AUS$20 to AUS$60 per kilogram of gold recovered. Six-hour residence time seems to be sufficient in most cases. Solids with 2% gold should be leached at 20% solids (or less) to prevent saturation of the liquor.

TESTWORK

Add one kilogram of concentrate to a jar suitable for rolling and add to this: -

10g Sodium Hydroxide;

5L water;

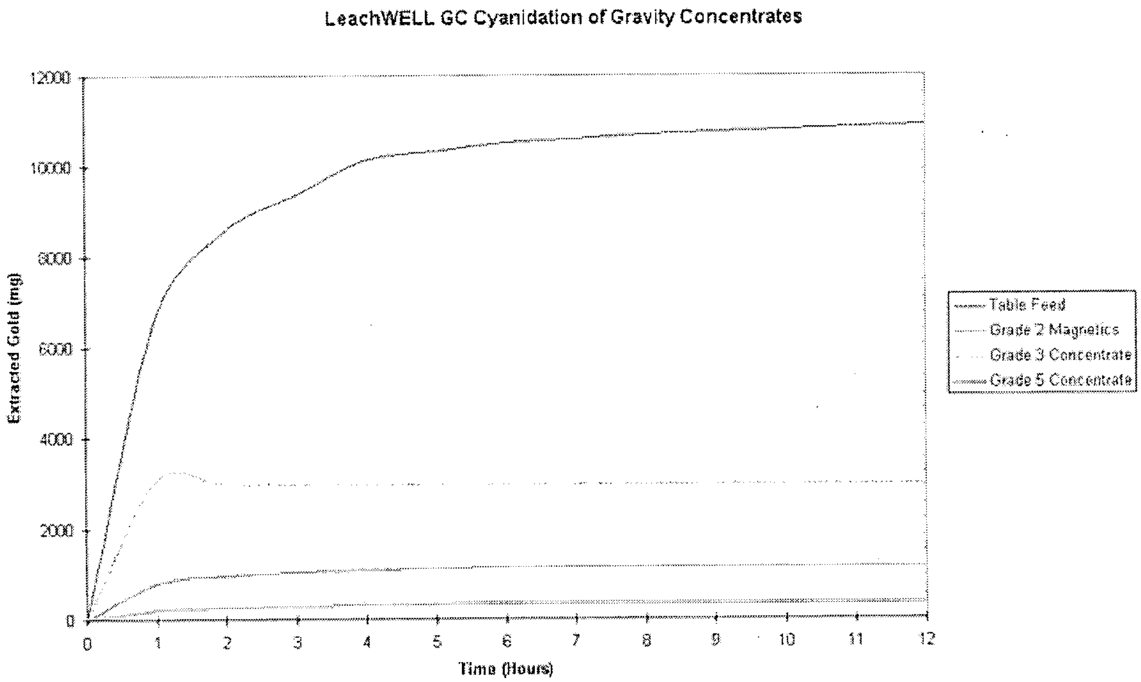
65g Sodium Cyanide;

25g LeachWELL™GC.

Agitate by rolling and sample and assay the liquor hourly until the gold concentration stabilises. Wash the residue thoroughly with warm salty water and repeat the procedure. If significant gold is recovered from the second bottle roll then it is likely that insufficient cyanide was available on the first bottle roll or the liquor became saturated with sodium aurocyanide.

EXAMPLES

LeachWELL™GC is currently being successfully employed at mine-sites including Union Reefs (NT), Sunrise Dam (WA), Penjom (Malaysia), Ravenswood (QLD) and the Gwendolyn mine in WA.



Material Safety Data Sheet (MSDS)

Click here to download our current MATERIAL SAFETY DATA SHEETS (.zip file)

Please call MPC for more information.

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LeachWELL 6OX For faster, less expensive assays.

Introduction
LeachWELL 6OX is a reagent grade catalyst formulated for fast cyanide assaying. When used with 5% cyanide the dissolution rate of gold, copper and silver is increased more than sixty fold. The leach rate for gold for example is approximately one micron per minute! Large samples can now be assayed accurately and very quickly (same time frame as Aqua Regia). Poor assay reproducibility (scatter) when coarse gold is present is minimised - meaningful results can be consistently produced.

Implementation
Laboratories already doing 24 hour bottle rolls need only purchase some LeachWELL 6OX, Small laboratories doing mill assays in CIP/CU- plants usually have an AA machine and some glassware, A bottle roll or orbital tumbler is also required. Large on-site laboratories or commercial laboratories intending to do hundreds of assays per day would benefit from using specially designed orbital tumblers and solution dispensing equipment.

Benefits
Large samples can be assayed quickly. Gold, silver, and copper can be read from the same sample. Preg-Robbing by organics or clays is practically eliminated. The procedure is simple and requires no special skills. Coarse gold is dissolved quickly. LeachWELL 6OX has built in oxidising agents so that sealed jars can be used when leaching.

Procedure
Samples are dried, pulverised and weighed into jars or bottles in the normal way. An equal, or greater known weight of solution containing cyanide (5%) , LeachWELL (2%) and caustic (0.7%) is then added to the jar or bottle. The bottle or jar is rolled or tumbled for at least one hour then allowed to stand for approximately ten minutes until a layer of clear solution is available for sampling and reading on the AA machine. The grade of the original solid is calculated from the solid/solution ratio.

Costs
The cost of implementing LeachWELL assaying into existing or new labs is very low. LeachWELL 6OX powder costs $65 per kg or 6.5 cents per gram. The cost per assay sample depends on its size. For example a 1OOg sample at 50% solids would have a reagent cost of 13 cents.

Material Safety Data Sheet (MSDS)

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FIRE ASSAY, AQUA REGIA OR LEACHWELL?

Using Cyanide leach with LeachWELL offers some important benefits over the other Gold Analysis techniques.

- Sampling errors are reduced significantly by assaying larger samples - not just preparing them. Sample masses of 200g – 1kg are routinely used for grade control and exploration samples.

- Larger samples are particularly valuable for the analysis of samples containing (or suspected of containing) coarse or particulate Gold.

- Assay costs are very low and around that of Aqua Regia.

- Short analytical time allowing rapid turnaround (<24 hour) of results is now available. "Preg robbing" is reduced due to the short analytical time.

- Waste disposal on mine sites is simple. CN waste can either be pumped into the plant circuit or into the tailings dam. Alternatively, the waste can be cheaply and conveniently neutralised with DTOX? prior to disposal.

- CN extractable Gold is determined. This procedure replicates the commercial extraction process and is therefore often more appropriate than other digestion techniques.

- The procedure is safe and convenient – even more so now with the addition of Assay Tabs? to our product range. No special skills are required.

- Other elements such as Silver and Copper may readily be determined from the same solution if required.

- Fire assay for Gold does have its limitations. Highly skilled and experienced assayers are necessary to achieve high quality results. Aqua Regia digest is a leach procedure and susceptible to matrix effects, like fire assay does not always report "Total Gold". Although Neutron Activation Analysis is commonly referred to as the ultimate umpire analytical procedure it too, has its shortcomings. All analytical methods have strengths and weaknesses and it is important to select the method that is appropriate for the sample type, information required, turnaround time and budget constraints.

For additional information contact: info@mineralprocesscontrol.com.au

or contact MPC in Perth, WA by telephone on (08) 9284 9331 or by fax on (08) 9284 9332

C2.2 Analytical certificates: Activation Laboratories Ltd. Assay Reports WO-21985 and WO-21828

Quality Analysis... Actlabs *Innovative Technologies*

Invoice No.: 21702
Work Order: 21828
Invoice Date: 05-APR-01
Date Submitted: 02-MAR-01
Your Reference: LOT#MCV-1
Account Number: 2775

ATEBA MINES INC.
13 CREIGHTON ROAD
BOX 814
COPPER CLIFF, ONTARIO
P0M 1N0
ATTN: R. BERARDI

CERTIFICATE OF ANALYSIS

52 HEAVY MINERAL CONCENTRATES were submitted for analysis.

The following analytical packages were requested. Please see our current fee schedule for elements and detection limits.

REPORT 21702 AU FIRE ASSAY/LEACHWELL AU

NOTE: 6HR LEACH PERFORMED ON ENTIRE SAMPLE FOR THE LEACHWELL PROCESS.
30GRAM SPLIT OF RESIDUE AFTER LEACHWELL WAS FIRE ASSAYED IF AVAILABLE.

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CERTIFIED BY :

[redacted]

DR E.HOFFMAN/GENERAL MANAGER

Scheme	LWELL1	FIRE	Weight
Element	Au	Au	Grams
Units	ppm	ppb	
Sample No.			
ATB01FC1	0.32	30	75.7
ATB01FC2	0.15	20	80.6
ATB01DFC	0.08	<5	26.0
ATB02FC1	0.10	20	86.7
ATB02FC2	0.06	15	62.0
ATB02DFC	0.34	45	11.9
ATB03FC1	0.04	10	72.6
ATB03FC2	0.05	10	64.6
ATB03DFC	0.05	5	37.8
ATB04FC1	0.88	110	80.7
ATB04FC2	0.12	20	77.9
ATB04DFC	0.31	40	9.6
ATB05FC1	1.30	125	79.8
ATB05FC2	0.06	10	82.4
ATB05DFC	0.05	5	80.8
ATB06FC1	2.06	275	90.8
ATB06FC2	0.33	45	91.9
ATB06DFC	0.80	155	46.1
ATB07FC1	0.07	25	75.7
ATB07FC2	0.11	15	81.4
ATB07DFC	0.10	20	20.9
ATB08FC1	0.94	75	88.2
ATB08FC2	0.10	15	92.0
ATB08DFC	0.09	80	10.6
ATB09FC1	0.26	40	120.3
ATB09FC2	0.04	20	84.4
ATB09DFC	0.01	10	69.2
ATB10FC1	1.52	150	99.6
ATB10FC2	0.13	20	85.4
ATB10DFC	0.43	110	34.5
ATB11FC1	0.18	25	96.1
ATB11FC2	0.08	15	76.5
ATB11DFC	0.05	15	39.1
ATB12FC1	0.21	25	90.9
ATB12FC2	0.03	10	91.5
ATB12DFC	0.05	40	19.4
ATB13FC1	0.24	35	87.9
ATB13FC2	0.20	25	84.7
ATB13DFC	<0.01	I.S.	4.3
ATB14FC1	0.25	25	101.4
ATB14FC2	0.10	20	87.9
ATB14DFC	0.05	15	84.4
ATB15FC1	2.74	230	102.7
ATB15FC2	0.25	30	90.8
ATB15DFC	0.10	20	59.1
ATB16FC1	0.22	25	78.9

Scheme	LWELL1	FIRE	Weight
Element	Au	Au	Grams
Units	ppm	ppb	
Sample No.			
ATB16FC2	0.01	5	67.8
ATB16DFC	0.03	10	68.4
ATB04FC1-N	1.14	105	78.2
ATB07FC1-N	0.38	40	81.3
ATB04FC2-N	0.05	15	81.3
ATB07FC2-N	1.86	175	85.7

Invoice No.: 21754-REV
Work Order: 21985
Invoice Date: 16-MAY-01
Date Submitted: 29-MAR-01
Your Reference: LOT MCV-2
Account Number: 2775

ATEBA MINES INC.
43 CREIGHTON ROAD
BOX 814
COPPER CLIFF, ONTARIO
P0M 1N0
ATTN: R. BERARDI

CERTIFICATE OF ANALYSIS

16 HMC SAMPLES were submitted for analysis.

The following analytical packages were requested. Please see our current fee schedule for elements and detection limits.

REVISED REPORT 21754R CODE 1A2-AU-FIRE ASSAY AA
CODE 1A6-AU-BLEG-ICP/MS

NOTE: THE ATTACHED REVISED REPORT SUPERSEDES THE PREVIOUS REPORT SENT. ADDED FIRE-AA TO THE REPORT.

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CERTIFIED BY :

[redacted]

DR E.HOFFMAN/GENERAL MANAGER

Scheme	LWELL1	Fire-AA	Weight
Element	Au_cn	Au	
Units	ppm	ppb	g
Sample No.			
ATB-01-T	0.36	25	8.45
ATB-02-T	0.76	30	3.93
ATB-03-T	0.17	5	6.03
ATB-04-T	0.23	30	8.66
ATB-05-T	0.33	20	9.16
ATB-06-T	0.1	20	10.49
ATB-07-T	0.35	15	17.26
ATB-08-T	0.13	10	7.9
ATB-09-T	0.1	15	10.26
ATB-10-T	0.05	20	21.54
ATB-11-T	0.33	20	6.06
ATB-12-T	0.18	15	10.96
ATB-13-T	<0.01	20	5.42
ATB-14-T	0.11	25	18.7
ATB-15-T	0.09	15	11.42
ATB-16-T	0.49	35	6.15

The residue from the leachwell process was fire assayed.