TECHNICAL REPORT

ON

THE POLYMETALLIC BLACK SHALE SBH PROPERTY

Birch Mountains, Athabasca Region, Alberta, Canada

prepared for

DUMONT NICKEL INC.

by

Shahé F.Sabag MSc PGeo

Signing Date: October 28, 2008

Suite 802, 230 Richmond Street West

Toronto, Ontario, M5V 1V6

Tel (416)924-6862

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1. SUMMARY

Property

Dumont Nickel Inc. holds a 100% interest in the SBH Property (the "Property") consisting of twenty-eight (28) contiguous Alberta Metallic and Industrial Mineral Permits (the "Permits"), representing an aggregate of 2,444 contiguous square kilometers (244,408ha). The Permits extend over a 50kmx60km quadrant defined by Twp97-Twp103/R12-R17/W4, in northeast Alberta. The Property is located over the Birch Mountains, approximately 120 kilometers to the north of Fort McMurray, in the Athabasca oil sands region.

Dumont's 100% interest in the Property is subject only to a traditional royalty retained by the Province of Alberta against metal production revenues therefrom. There are no other overriding royalties encumbering Dumont's interest. The Permits grant Dumont the exclusive right to explore for metallic and industrial minerals for fourteen years subject to traditional assessment work performance biannually, and also grant use of the surface for the purposes of mineral exploration work. Coexisting rights to oil sands, oil and gas over the Property are held by third parties.

Report

Dumont recently concluded acquisition of the Property (July 2008) and has not yet commenced exploration work thereupon. This report is assembled from third-party reports, press releases, documents and mineral assessment reports, which contain historic results gathered by them from areas presently under Dumont's Property, all of which information is in public records. This report was written by Shahé F. Sabag MSc PGeo (the "Author"), currently Dumont's president and its Qualified Person, who is not independent of Dumont. This report conforms to National Instrument 43-101 guidelines and is intended as a public document. This report is further intended as a document which condenses considerable historic work form the Property, to facilitate navigation through the extensive historic databases therefrom.

Exploration Focus

The primary exploration targets on the Property are metal accumulation zones hosted in polymetallic black shales associated also with considerable exhalative volcanogenic debris, bentonite development and extinction markers. The zones are envisaged to extend over vast areas (50-100 sq km each), occurring as flat-lying near-surface "blankets" amenable to extraction by open pit bulk mining methods. Several potential polymetallic zones have been identified by historic work, two of which have been confirmed by historic drilling. The primary targets are hosted in the Cretaceous Second White Speckled Shale Formation which is known to be near the surface over the entire Property, and is exposed throughout its eastern and southern parts. The Property's large size is appropriate to the type and size of metal targets being sought by Dumont.

Of collateral interest, is the suspected presence over the Property, and the surrounding Birch Mountains, of exhalative volcanogenic venting unique to the Birch Mountains, as a source to the volcanic debris, bentonites and metals discovered in the Speckled Shale. The potential of the foregoing to host sedimentary exhalative - SEDEX style - sulfides has never been investigated and comprises the secondary exploration objective over the Property.

Prior Work History

The only prior exploration of the Property for metals is extensive work carried out by Tintina Mines Limited during 1993-1999, augmented by concurrent work conducted by the Alberta Geological Survey and the Geological Survey of Canada, partly in collaboration with Tintina. Some of the foregoing work was carried out by, or under the supervision or direction, of the author of this report, while he was vice president of Tintina in charge of its exploration programs. There has been no metals exploration work on the Property subsequent to the foregoing work programs.

Tintina discovered the polymetallic black shales by accident in 1995 while searching for metal bearing permeability traps in redox fronts across northeast Alberta. The shales were initially explored as prospective redox fronts which could accumulate metals at their base, although 1997 verification drilling intended to probe beneath them discovered metal enrichment hosted in the black shales instead. What started out in 1993 as a search for gold-copper bearing redox systems ultimately led over a four year period to the discovery of previously unrecognized extensive metalliferous black shale assemblages at the Lower-Upper Cretaceous unconformity, associated also with considerable subaerial venting and previously unknown extinction markers.

The databases available from the historic work provide reliable baseline geological information from the Property. They include databases from systematic reconnaissance level and in-fill surface geochemical, lithogeochemical and mineral sampling, in addition to geophysical and, more localized, drilling information, all of which augmented also with subsurface information from prior oil-gas drilling over the Property.

Physiography, Access and Surrounding Oil Sands Mines

The general region is of low, often swampy, relief punctuated by a handful of features protruding above the otherwise flat terrain. The Birch Mountains, located to the west of the Athabasca River, is the most conspicuous topographic feature in the region, protruding 500m-600m above the surrounding areas, with a distinct sharp erosional edge. The Birch Mountains provide excellent vertical exposures, especially in river valleys, across relatively long sections of the flatlying Cretaceous stratigraphy of northeast Alberta, which are otherwise buried to the west and eroded to the south and east. Dumont's exploration targets are nearer the surface of the Birch Mountains and are, accordingly, not exposed elsewhere in the region, except to the west of the Property where they are buried under successively deeper cover westward.

Access throughout the region is in a state of rapid development, providing road access to many pending oil sands projects skirting the Birch Mountains surrounding the Property to the east and south. There is good access to the Property's east and south boundaries by roads along the west shore of the Athabasca River. There is access by barge/boat via the Athabasca River, and also good access by rotary as well as fixed-wing aircraft relying on many private and public airstrips around the Property, one of which is on its eastern part. Access within the Property is best by rotary aircraft, although many old trails and seismic lines offer adequate, albeit selective, access especially during winter months.

The Property is surrounded to its east and south by the adjacent Frontier, Pierre River, Equinox, and Horizon pending oil sands mines which are in various stages of construction or development. The Fort Hills oil sands mine which is also under construction is approximately 10km to the east of the Property, located on the east shores of the Athabasca River. There are active gas pipelines over the southern parts of the Property.

Property Geology

The Property is situated in the sedimentary sequences of the Western Canada Sedimentary Basin dominating Alberta geology. The sequences unconformably overlie a relatively stable Precambrian platform with localized zones of reactivation, and comprise a wedge shaped sedimentary pile bounded by the Rocky Mountains to the west the Canadian Shield to the east.

The Western Canada Sedimentary Basin consists of several smaller sub-basins separated by a network of arches. One of the sub-basins is the Alberta sub-basin which dominates northeast Alberta geology, representing a wedge of sediments, thickening from 200m in the east to over 6,000m in the west. The sedimentary pile unconformably overlies the Precambrian shield which is exposed some 150km to the northeast of Fort McMurray, which is buried by progressively thicker sedimentary formations southward and southwestward. The sedimentary pile is substantially a flat-lying "layer cake" consisting of Devonian sequences at its base (carbonates, evaporite and basal red beds), which are unconformably overlain by Cretaceous clastic sedimentary Formations, the lowermost of which (McMurray Formation) hosts the oil sands deposits. The Lower Cretaceous sequences transition up-stratigraphy through a series of unconformities and disconformities to Upper Cretaceous clastic sequences separated from same by a principal extinction marker (the Fish Scales Marker Bed, Shaftesbury Formation) and a lesser known extinction horizon, the Second White Specks Formation.

A number of "hot-spots" have been recognized in the region, believed to reflect heat generation by the decay of radioactive elements at the top of the Precambrian basement beneath the Western Canada

Sedimentary Basin. The Birch Mountains, and the Property, lie over one of the most significant hot-spots recognized, and Cretaceous Formations therein exhibit unique geological characteristics which are different than exposures of the same Formations elsewhere in northern Alberta away from the Birch Mountains.

Bedrock exposures throughout the Property are scarce (<2%) and, given the flat-lying stratigraphy, they are restricted to valley walls of the many creeks and rivers which define incisions confined to the eastern and southeastern erosional edge of the Birch Mountains, forming a narrow 5-10km arcuate lobe. The available exposures enable intermittent observation and sampling across 300m-350m of Cretaceous stratigraphy, extending upward from the top of the Manville to well into the Colorado Group, straddling the Albian-Cenomanian boundary, providing 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. Many of these Formations are eroded to the east of the Birch Mountains and to its south.

Near surface geology over the Property consists entirely of Lower-Upper Cretaceous sequences, and mostly straddles the Second White Speckled Shale and the Shaftesbury (Belle Fourche) Shale Formations. These shales are typical black shales with average 1.8% and 6.2% organic Carbon, respectively. The Second White Speckled Shale is enriched in Mo-Ni-V-U-Zn-Cu-Co-Ag-Au compared to its enveloping Formations, and is furthermore, a typical metal enriched black shale compatible with the Rift-Volcanic type of metal enrichment style recognized from black shales worldwide.

The Rift-Volcanic type of metal enrichment in black shales is associated with intracontinental rifting and basic volcanism in the oceanic crust. Metal accumulations of this type comprise alternating layers of metalliferous black shale and tuffaceous material, are known to occur around volcanic centers, and are believed to have been controlled by hydrothermal-volcanogenic events (submarine exhalations) in the presence of organic matter. The metal accumulations are further characterized by modest-low grading deposits of immense size (300MM-1,000MM+ tonne range) contained in tabular geometries, with thicknesses ranging 20m-100m extending over tens of square kilometers.

The overall region surrounding the Property is better known for its oil sands operations than for its mineral potential, although co-product metals (V, Ti) in oil sands deposits have attracted intermittent attention. Polymetallic mineral aggregations in the Cretaceous carbonaceous shales being targeted by Dumont were unknown, and not recognized, until their discovery in 1995.

Economic Geology and Metal Zones

Metals enrichment of interest on the Property consists of Mo-Ni-V-U-Zn-Cu-Co-Ag-Au enrichment, hosted in, and confined to the contacts of, the Second White Speckled Shale Formation, which is typically a 20m-40m thick flat-lying “blanket” of poorly consolidated black shale, gently block-faulted in several places. The Formation is 18.4m-26.2m thick at the Buckton Zone as demonstrated by historic drilling, and approximately 11m thick over the portion drilled at the Asphalt Zone.

The Second White Speckled Shale demonstrates good lateral geological and metal grade continuity between widely spaced historic holes drilled across an 8km cross-section over the Buckton Zone and also between the two historic holes drilled 900m apart over he Asphalt Zone. Average metal grades reported by the historic drilling also demonstrate remarkable consistency between averages from the Buckton Zone and those from the Asphalt Zone located 30km away to its south, reinforcing the typically good grade consistencies documented by historic surface sampling of the Shale’s exposures across the entire 50km length of the Property. This is typical of the excellent lateral continuity characterizing black shales worldwide.

Vertical metal grade variations in the Second White Speckled Shale depict zonation for many of the base metals, with (overall) better concentration of Mo-Ni-U-(Zn) nearer the Formation’s upper contact, dominated by intermixture of considerable bentonitic seams into the shale; and overall better concentration of V, Cu throughout its midsection. Metals enrichment within the upper sections of the

Formation is also accompanied by Ba, S, Na and Corg enrichment, and by higher pyritic sulfide contents ranging upward to 20% by volume. Vertical grade zonation, or orderly trends, is typical of metalliferous black shales worldwide.

The Second White Speckled Shale contains fine and coarser sulfides which are dominated by many varieties of Fe-S species. The higher metal grades are contained in the more bentonitic sections of Shale. Cu-sulfides, Ni-sulfides as well as native gold have been documented in mineral concentrates recovered from the Shale, though no systematic mineralogical work exists characterizing its overall mineral make-up. Metals in the Second White Speckled Shale are likely hosted in multiple carrier minerals some of which are inorganic (sulfides, oxides) and others are likely organic (or clay) forms, with a suggested grouping of the various metals into one group (Mo, Ni, Zn, Mo, $\pm$U) characterized by affinity for enrichment predominantly in, or as, inorganic minerals and another group (V, Cu) exhibiting affinities for enrichment in organic (or clay) species, some subpopulation overlaps, notwithstanding.

Based on metal enrichment trends observed in historic drilling over the Buckton Zone, it is proposed that metallic mineralization in the Second White Speckled Shale in the area represents the juxtaposition of two separate trends: one which is predominantly a general basinal trend related to the Shales' anoxic provenance and dominated by V-Cu(Zn), and another trend superimposed upon it which is dominated by Mo-Ni-U-Zn-Co enrichment, accompanied by bentonite development related to localized volcanism and exhalative venting. It is further proposed that the basinal (V-Cu) trend might also characterize the LaBiche and Belle Fourche Formation Shales which envelope the Second White Speckled Shale Formation.

The collective historic work from the Property and vicinity indicate that while none of the metals is present in the Second White Speckled Shale in sufficiently high concentrations to be of economic merit by itself, the "pay" metals Mo, Ni, U, V, Zn, Cu, Co (and to some extent also Ag) collectively represent sufficient in-situ value on a combined basis to place the Shale within reach of economic viability provided the metals can be efficiently recovered on a combined basis.

The historic information addressing metals recovery is fragmented, preliminary and orientative, but it is encouraging. The available historic testwork results suggest that (i) the metals are mostly contained in sulfides rather than organic species; (ii) at least some of the metals can be recovered on a combined basis, (iii) that a metal concentrate might be successfully prepared provided the shale's clay matrix is disaggregated by deflocculation, (iv) that gold can be recovered from the shale by conventional carbon-in-leach cyanidation once the clay matrix is disaggregated by deflocculation; and (v) that gold content of the Shale, which is presently unknown, may be an order of magnitude higher than that documented from routine analysis of small, typically 30gm, samples by fire assay or INA, the discrepancy being attributed to nugget effect.

The collective historic work from the Property and vicinity indicate that the Second White Speckled Shale Formation holds potential for hosting laterally extensive metal enrichment zones with potential for delivering immense volumes of metals from tonnages which are partly exposed at, or are near, surface. The work also suggests that, provided metals can be effectively recovered on a combined basis from the Shale, the most attractive features of metal deposits identified therein would be (i) their potentially immense projected size, hence the potential as a long term source of metals, (ii) their proximity to surface and unconsolidated nature, hence likely amenability to extraction by low cost large scale bulk mining; and (iii) the remarkable uniformity of geology and metal grades as demonstrated by the drilling and other sampling over the large areas over the Property and it vicinity.

Overall conclusions from all historic work over the Birch Mountains Middle-Upper Cretaceous stratigraphic package over the Property, overwhelmingly propose a nearby volcanogenic source(s) to the metals discovered. The work further suggests that metallic mineralization in the area is congregated around volcanic centers characterized by considerable exhalative activity, and supports speculation of the existence in the area of yet undiscovered sedimentary exhalative - SEDEX style - sulfides.

Anomalies, Target Areas, Zones & Potential Mineral Deposits

Dumont's Property contains six large contiguous areas centered over circular, or closed, surface or subsurface features associated with metals enrichment in one form or another either over them or on their flanks. The six areas are designated as six distinct sub-properties which are at different stages of development, ranging from areas with reconnaissance level anomalies which have not previously been explored, through drill-ready target areas with considerable historic work, to two Potential Mineral Deposits at two of the sub-properties both of which are ready to advance toward the resource classification stage, and both hold good potential for considerable expansion.

The six sub-properties range in size 100-300 sq km each and their size is appropriate for the principal type of polymetallic mineralization being sought by Dumont, namely, nominal 5kmx5km or larger zones of polymetallic enrichment in flatlying near-surface "blankets" of polymetallic black shale. The sub-properties share many similar characteristics, and provide two different, apparently related, types of prospective exploration and development targets, namely; (i) metal enriched polymetallic black shales; and (ii) possible source(s) to metals therein, proposed herein to be nearby exhalative vents with untested potential to host sedimentary exhalative - SEDEX style - sulfides.

The six sub-properties merit further work and it is recommended that exploration work be conducted to either investigate physical and geochemical surface anomalies interpreted/identified from reconnaissance field work, or to localize the source of surface metal anomalies, or to confirm suspected buried metal enrichment beneath surface geochemical anomalies identified, or to advance mineralized Zones and Potential Mineral Deposits thereupon to classified resources.

The six sub-properties consist of the following, ordered from the most developed to the least explored:

The Buckton polymetallic Zone and Potential Mineral Deposit represents a near-surface polymetallic enrichment zone in the Second White Speckled Shale which is partly exposed in nearby river valleys and has been confirmed by six widely spaced drill holes. The Zone was discovered by six 3-inch diameter vertical historic holes which were drilled to verify suspected metallic mineralization buried beneath composite surface anomalies over a 5kmx8km area. The drill holes are arranged along an 8km cross section generally paralleling intermittent exposures of the Zone along the adjacent valley walls of Gos Creek approximately 1km-2km to its southeast.

There is good lateral consistency of metal grades among the holes, and a vertical zoned pattern characterized by progressive Mo-Ni-U-(Zn)-(Ag) enrichment up-hole and better concentration of V-Cu-(Zn) in their midsection.

Relying on the historic drilling results, reinforced also by results from exposures of the Second White Speckled Shale Formation in valley walls near the drill-section and near the holes, and further reinforced by surface geochemical data and the remarkable lateral continuity in geology and orderly grades exhibited by the historic drilling, it is proposed that the Buckton Zone contains a Potential Mineral Deposit as understood under NI-43-101. The Buckton Potential Mineral Deposit is proposed to extend over an approximate 3km x 8km area comprising approximately 26 square kilometers, with an estimated thickness varying, on average, 20.5m to 21.9m, representing an aggregate of approximately 1.2-1.3 billion short tons of mineralized material (1.1 to 1.2 billion tonnes) hosted in the Second White Speckled Shale Formation. The polymetallic mineralization consist of Mo-Ni-U-V-Zn-Cu-Co-Ag in addition to gold whose average grade has not yet been definitively established over the Zone and is treated as nil in this report.

The proposed Buckton Potential Mineral Deposit is conceptual in nature, and is intended solely to provide an indication of the overall potential of the Buckton Zone. In addition, there has been insufficient drilling conducted over the Zone to define a mineral resource, and it is uncertain whether further drilling will define a mineral resource over the Zone.

Grade Averages and Gross Metals Content: Potential Mineral Deposit - Buckton Zone				
	Grade Range (ppm)	Grade Range (lb/st)(opt)	Gross Metal/Oxide Content (lb) (oz) Low Estimate	High Estimate
Mo	62ppm-86ppm	0.12lb/st-0.17lb/st	150,000,000	225,000,000
[MoO3]		0.19lb/st-0.26lb/st	225,000,000	338,000,000
Ni	121ppm-160ppm	0.24lb/st-0.32lb/st	293,000,000	419,000,000
U	25ppm-37ppm	0.05lb/st-0.07lb/st	61,000,000	96,000,000
[U3O8]		0.06lb/st-0.09lb/st	72,000,000	113,000,000
V	623ppm-776ppm	1.25lb/st-1.55lb/st	1,511,000,000	2,027,000,000
[V2O5]		2.24lb/st-2.79lb/st	2,719,000,000	3,649,000,000
Zn	282ppm-360ppm	0.56lb/st-0.72lb/st	683,000,000	940,000,000
Cu	70ppm-83ppm	0.14lb/st-0.17lb/st	169,000,000	217,000,000
Co	19ppm-24ppm	0.04lb/st-0.05lb/st	46,000,000	63,000,000
Ag	0.3ppm-0.8ppm	0.01opt-0.026opt	12,000,000	34,000,000
Au	assumed nil	assumed nil	assumed nil	assumed nil

lb/st=lbs per short ton; opt=ounces per ton Gross metal contents are rounded to nearest million units *

The Buckton Potential Mineral Deposit demonstrates good lateral continuity and is vertically zoned, containing generally better grading material over its upper half, and progressively better grades northward in the upper parts of the drill holes accompanied by progressive northward thickening of the better grading sections. Subzones can be blocked out within the Potential Mineral Deposit which are either of better grade than the entire volume (e.g 15%-30% better grades over upper half of the volume being the uppermost 10m), or which are dominated by different groupings of metals, especially over its northern portion where its uppermost sections are progressively better mineralized with Mo-Ni-U-Zn-Co. The upper subsidiary northern subzone, occupies the northern half of the uppermost 10m of the Potential Mineral Deposit and represents approximately 20%-30% of its volume. Mo-Ni-U-Zn-Co within this subsidiary subzone represent sufficient combined value to prioritize exploration of the subzone as a stand-alone mineralized volume.

The Buckton Potential Mineral Deposit is open to the south, the west and the north. Its projected northerly extension holds the best potential for providing considerable additional mineralized volumes over an additional 5km-10km under sufficiently thin overburden cover to have realistic potential for access by open pit. The Potential Mineral Deposit might extend to the south for an additional 6km, although the southerly projected extension may be an altogether separate mineralized Zone, designated herein as the Buckton South Target Area, which has not yet been drill tested.

The northerly trend of better drill grades in the upper portions of the Buckton Zone, the general trend of northward thickening of the better grading drill sections, together with observations of northerly increasing thickness, frequency and distribution of bentonites in the Buckton drill holes, suggest a northerly nearby source to volcanic debris (and metallic mineralization) incorporated into the Second White Speckled Shale at the Buckton Zone. The trends suggest the presence of exhalative venting to the north of the Zone with potential for hosting sedimentary exhalative sulfides. Several possible targets are identified herein for future follow-up including fault junctions in the area and a conspicuous stratigraphic isopach anomaly to the north of the Zone.

The Asphalt polymetallic Zone and Potential Mineral Deposit represents near-surface polymetallic enrichment in the Second White Speckled Shale, which is partly exposed in nearby river valleys and has been confirmed with two historic drilled holes. The Zone was discovered by two 3-inch diameter historic vertical holes, drilled to verify suspected metallic mineralization buried beneath composite surface anomalies which, together with enforcing stream sediment geochemical anomalies in adjacent Pierre River and Mid Creek, and partial exposures of the shale in drainages in their vicinity, collectively represent a 3kmx10km anomalous area.

The Asphalt holes exhibit consistency of averaged metal grades between the two holes and are also consistent with the average grade of the historic drilling completed over the Buckton Zone located approximately 30km to the north of the Asphalt Zone. Lateral consistency is also exhibited in metals grades between the two holes, although metal grades exhibit vertical zoning trends generally similar to those observed at the Buckton Zone, namely, a progressive enrichment of Mo-Ni-U-(Ag) upstratigraphy, consistent with progressively more bentonitic sections seen in the drill core which carry more abundant sulfides. V-Zn-Cu-Co, exhibit less ordered mixed trends.

Relying on the historic drill holes, together with reinforcing surface geochemical results and exposures of the Shale in nearby river valley walls, it is proposed that the Asphalt Zone contains a Potential Mineral Deposit as understood under NI-43-101. The Asphalt Potential Mineral Deposit extends over an approximate 1km x 4.5km area comprising approximately 4.5 square kilometers, with a thickness ranging 7.2m to 11.6m, and represents an aggregate of approximately 109-132 million short tons of mineralized material (99-120 million tonnes).

Grade Averages and Gross Metals Content: Potential Mineral Deposit - Asphalt Zone

	Grade Range (ppm)	Grade Range (lb/st)(opt)	Gross Metal/Oxide Content (lb) (oz) Low Estimate	High Estimate
Mo	63ppm-73ppm	0.13lb/st-0.15lb/st	14,000,000	19,000,000
[MoO3]		0.19lb/st-0.22lb/st	20,000,000	29,000,000
Ni	122ppm-144ppm	0.24lb/st-0.29lb/st	27,000,000	38,000,000
U	31ppm-47ppm	0.06lb/st-0.09lb/st	7,000,000	12,000,000
[U3O8]		0.07lb/st-0.11lb/st	8,000,000	15,000,000
V	664ppm-690ppm	1.33lb/st-1.38lb/st	145,000,000	182,000,000
[V2O5]		2.39lb/st-2.48lb/st	261,000,000	328,000,000
Zn	282ppm-376ppm	0.56lb/st-0.75lb/st	62,000,000	99,000,000
Cu	89ppm-89ppm	0.18lb/st-0.18lb/st	19,000,000	24,000,000
Co	20ppm-20ppm	0.04lb/st-0.04lb/st	4,000,000	5,000,000
Ag	0.3ppm-0.3ppm	0.01opt-0.01opt	1,000,000	1,000,000
Au	assumed nil	assumed nil	assumed nil	assumed nil

lb/st=lbs per short ton; opt=ounces per ton — Gross metal contents are rounded to nearest million units *

The proposed Asphalt Potential Mineral Deposit is conceptual in nature, and is intended to demonstrate the potential of identifying mineralized material at the Asphalt Zone subject to additional future drilling. In addition, there has been insufficient drilling conducted over the Zone to define a mineral resource, and it is uncertain whether further drilling will define a mineral resource over the Zone.

The Asphalt Potential Mineral Deposit is open toward the north and the northwest. It holds potential to deliver additional mineralized material from areas immediately to its northwest over an additional distance of 5km-6km, and similarly also for an additional 6km distance to its northeast.

A nearby source is suggested by the historic work for the volcanogenic debris and bentonites noted in the Asphalt drill holes, suggesting also that the general vicinity of the Asphalt Zone holds potential for hosting exhalative metalliferous venting possibly associated with SEDEX style sulfide mineralization hosted in the Cretaceous stratigraphy. Several potential targets are suggested by the historic work, including geophysical aeromagnetic anomalies, fault junctions and exposures of shale hosted bedded sulfides (FeS), accompanied by Fe-phosphates (±Barite?) exposed along the valley walls of the Asphalt Creek valley.

The Buckton South Target Area and **The Eaglenest Target Area** comprise large 100-300 square kilometer areas each which have undergone considerable prior historic surface work which has identified prospective targets to be tested by future drilling to probe for suspected buried mineralized shale beneath the surface of each Target Area. Portions of both Areas also present reconnaissance level potential for presence of nearby exhalative vents. The Buckton South Target Area has potential for hosting southerly extension of the Buckton polymetallic Potential Mineral Deposit over a 6km distance, or an altogether separate polymetallic zone of similar dimensions.

The McIvor West Anomaly and **The North Lily Anomaly** comprise two 50-100 square kilometer anomalies which have been designated based on broad interpretations of general information, and have not previously been investigated in the field to determine if they hold realistic potential for hosting buried polymetallic mineralization. They are in the reconnaissance stages and present areas which might hold potential for hosting mineralized shale buried beneath their surface.

Recommendations

The Property has considerable exploration and development potential for hosting metals, and contains a number of targets which have excellent potential for hosting immense quantities of metals in near-surface black shale hosted zones. The Property also contains areas with potential for hosting yet undiscovered, though suspected, sediment hosted exhalative sulfides. It is, accordingly, recommended that additional work be carried out to explore and develop the various shale-hosted targets and to advance them toward their ultimate potential, while concurrently also conducting work to evaluate the potential of sediment hosted exhalative sulfides over the Property.

In addition to its demonstrable geological merits, the Property's location in a mature mining district, within a well organized regulatory, jurisdictional and land use permitting framework tailored to the development of laterally extensive deposits, provide considerable logistical and infrastructural advantages. The local availability of sulfur as a waste product of surrounding oil sands operations, is an added benefit to any leaching methods which might ultimately be identified for the recovery of metals from the shale, and would be a welcome sulfur waste mitigation activity in the region.

Exploration work is recommended herein to address the two prospective target types on the Property, namely; (i) exploration and development of known and suspected Shale hosted polymetallic mineralization; and (ii) reconnaissance level exploration for SEDEX style sulfide mineralization as the suspected source to the metals and exhalative debris hosted in the shales.

Although six separate geographically focused programs can be recommended to advance the polymetallic shale potential of the six sub-properties, their ultimate potential is dependant on whether metals can be effectively recovered from the shales. It is, accordingly, recommended that work intended to identify additional volumes of shale hosted polymetallic mineralization over the Property, or intended to expand the two proposed Potential Mineral Deposits, be held in abeyance until such time as encouraging results are in hand from metal recovery testwork on the shale. A two phased program is recommended in the foregoing regard, with an aggregate $4,595,000 budget, to evaluate the polymetallic potential of the Second White Speckled Shale, to consist of **an initial phase**, with a $695,000 budget, comprising substantially only metallurgical testwork to be conducted to determine recoveries of the metals from the shale relying on existing and new samples from the Asphalt and Buckton Zones; **and a second phase**, with a $3,900,000 budget, to proceed only upon obtaining encouraging results from the metallurgical testwork, to consist of additional drilling and related work over the Asphalt and Buckton Potential Mineral Deposits to classify portions thereof to a resource and to expand the two Deposits by testing their projected extensions.

In addition to the above, a **concurrent single phased program is also recommended**, with an aggregate $400,000 budget, to explore for sedimentary exhalative - SEDEX style - sulfides on the Property, initially focusing on locations identified with potential for hosting vents.

The above recommended work comprises two concurrent programs, with an aggregate $5,300,000 budget, which includes $680,000 in contingencies, and $150,000 set aside for work intended to enhance certain databases and general knowledge which would be equally applicable to exploration for both target types on the Property and is "shared" among the programs.

2. INTRODUCTION AND TERMS OF REFERENCE

2.1 INTRODUCTION AND TERMS OF REFERENCE

This report is a Technical Report (the "Report") written to provide a background for, and to summarize exploration status of, the SBH Property (the "Property") which Dumont Nickel Inc. recently acquired to pursue exploration and development of metal enriched polymetallic black shales.

This report was written by Shahé F. Sabag MSc PGeo (the "Author"), currently Dumont's president and its Qualified Person, who is not independent of Dumont as understood under National Instrument 43-101 ("NI-43-101"). This report does, however, conform to NI-43-101 guidelines and is intended as a public document. It is the further intent of this report to provide a document which condenses considerable historic work form the Property, to facilitate navigation through the extensive historic databases therefrom.

To the extent that Dumont only recently acquired the Property and has not yet commenced exploration work thereupon, technical information presented herein is assembled from third-party reports, press releases, documents and mineral assessment reports, which contain historic results gathered by them from areas presently under Dumont's Property. Some of the foregoing third-party work was carried out by, or under the supervision or direction, of the author while he was vice president of Tintina Mines Limited which extensively explored the area during 1993-1999. Tintina summarized its exploration work results in a series of mineral assessment reports prepared by the author of this Report. Conclusions chronicled herein in Historic Work Sections of this Report as conclusions from Tintina, accordingly, reflect in many respects conclusions reached by the author, in collaboration with other geological professionals, during implementation of Tintina's exploration programs. Conclusions and opinions presented by author herein in Sections other than those Historic, are presented acting in his capacity as author of this report.

All of the historic work summarized herein predate enactment of NI-43-101, and although they contain requisite information as prescribed by NI-43-101, they do not conform in format and reporting structure to the formatting prescribed by the Instrument. This report condenses the historic work and re-states it in a format consistent with NI-43-101 as best possible. It is the author's opinion that the historic work is consistent with industry best practices and is to high standards.

2.2 SCOPE, CONDUCT AND RELEVANT EXPERTISE

This technical report was prepared by Mr.Shahé F. Sabag MSc PGeo, who has over 30 years experience in the mining industry as an exploration and development geologist. His background includes extensive work throughout Canada and the USA in exploration for precious metals, base metals, industrial minerals and uranium exploration, in addition to project management, evaluation and valuation experience. Mr.Sabag has conducted extensive work throughout northeastern Alberta during the six years 1993-1999, both independently and in collaboration with other geoscientists, and has published geoscientific material therefrom. Mr.Sabag is a registered Ontario Geoscientist (APGO Registration #250).

The only prior exploration work on the Property for metals is that carried out by Tintina during 1993-1999, augmented by concurrent work conducted by the Alberta Geological Survey and the Geological Survey of Canada, partly in collaboration with Tintina. Some of the foregoing work was carried out by, or under the supervision or direction, of the author while he was vice president of Tintina Mines Limited in charge of its exploration programs. The author has, accordingly, actively extensively explored the Property and has visited all of it, as well as its surrounding areas and region. Mr.Sabag last visited the Property during the winter 2000-2001, subsequent to Tintina's programs, while conducting exploration field work adjacent to the Property on a consulting basis to other third-party clients. In addition, Mr.Sabag held permits over areas currently under the north parts of the Property during 2002-2004, though, other than data consolidation, no additional field work was carried out and the permits have since expired. To the extent that there has been no exploration work on the Property subsequent to Tintina's programs, and Mr.Sabag has been directly involved in one capacity or another in all prior work thereupon, yet an additional field Property visit was not carried out by Mr.Sabag in connection with preparation of this report.

Dumont has accepted that Mr.Sabag's qualifications, expertise, experience, competence and professional reputation are appropriate and relevant for the preparation of this Report. Dumont has also accepted that Mr.Sabag is duly registered as a member of a professional body which is appropriate and relevant for the preparation of this Report.

Dumont is a public mineral exploration company that was incorporated in the province of Quebec in 1954. Dumont's corporate head office is located at 230 Richmond Street West, Suite 802, Toronto, Ontario, Canada. Dumont is currently listed on the TSX Venture Stock Exchange, presently holds various interests in exploration projects in Canada and in the United States. The author acknowledges that Dumont might file this Report as a public document as a NI-43-101 compliant Technical Report for the Property.

2.3 ABBREVIATIONS

Location coordinates in this Report and in all historic work are expressed in Universal Transverse Mercator (UTM) grid coordinates, using the 1927 North American Datum (NAD27), Zone 12.

Measurements in this Report are in metric units.

Permit descriptions in this Report are defined per the Dominion Land Survey system, West of the 4th Meridian, based on Townships, Ranges, Sections and subdivisions thereof.

Formational name Speckled Shale and Second White Specks and Speckled Shale are used interchangeably in the Report to refer to the Second White Speckled Shale Formation. Formational name Belle Fourche and Shaftesbury Formation are also similarly used interchangeably in this report.

Units and abbreviations used in this report are as follows:

$	Canadian Dollars
1AT	1 assay ton
2WS	Second White Speckled Shale Formation
AA	Atomic Absorption Analysis
ac	acres
Ag	Silver
AGS	Alberta Geological Survey
asl	above sea level
Au	Gold
AUS$	Australian Dollars
Ba	Barium
BB	billion
bbl	barrel
Br	Bromine
Cd	Cadmium
Cl	Chlorine
Co	Cobalt
Corg	organic carbon
Cu	Copper
EUR	Euros
FA	Fire Assay
Fm	Formation
FSMB	Fish Scales Marker Bed
ft	foot
g/t	grams per tonne
GPS	Global Geopositioning System
GSC	Geological Survey of Canada
ha	hectares
HMC	heavy mineral concentrate
I	Iodine
ICP	Inductively Coupled Plasma analysis
INA	Neutron Activation analysis
km	kilometer
lb	imperial pound
lb/st	imperial pound per short ton
LoM	life of mine
m	meter
mi	mile
mm	millimeters
MM	million
Mo	Molybdenum
NGR	National Geochemical Reconnaissance Program
Ni	Nickel
opt	ounces per short ton
oz	ounce
Pd	Palladium
PGE	Platinum Group Elements
ppb	parts per billion
ppm	parts per million
Pt	Platinum
REE	Rare Earth Element
Rh	Rhodium
SBB	Siliciclastic Bone Bed
SCO	synthetic crude oil
Se	Selenium
SG	specific gravity
sq km	square kilometers
sq mi	square miles
st	short tons
TDA	Timber Damage Assessment
Te	Tellurium
Ti	Titanium
tpa	tonnes per annun
U	Uranium
USD$	US Dollars
UTM	Universal Transverse Mercator
V	Vanadium
Zn	Zinc

3. RELIANCE ON OTHER EXPERTS

The historical work reported in this technical report is summarized or extracted from numerous third-party reports, although substantive portions of the historic results from work on Dumont's Property summarized herein are from the following sources:

(i) Alberta Mineral Assessment Report relating to extensive exploration work completed over the Dumont Properties, their vicinity, and across northeast Alberta, by Tintina Mines Limited and its affiliate company NSR Resources Inc. during the period 1993-1999. Both companies, jointly hereinafter referred to as "Tintina", were at the time publicly listed for trading on the Toronto Stock Exchange. These exploration campaigns included work on what are currently Dumont's Permits which were then held by Tintina as part of a 3 million acre (134 township) land position across northeast Alberta.

All of the mineral assessment reports related to the above work are publicly available documents, and were written by the author who was at the time vice president of Tintina and NSR, and in charge of all exploration work.

(ii) The above Alberta Mineral Assessment Reports contain many studies, as stand-alone reports, by third-party engineering or geological consultants, or consulting companies, retained by Tintina to address specific facets of its exploration work programs. The third-party stand-alone reports are included as Appendices in the Assessment Reports.

(iii) Geological Reports by the Alberta Geological Survey (AGS) and the Geological Survey of Canada (GSC) relating to mapping and sampling work completed by them during the mid and late 1990's, some of which work was over areas currently under Dumont' Property.

Some of the work completed by the AGS was substantially funded as part of the 1992-1995 Canada-Alberta Agreement on Mineral Development (MDA). Though initially funded and managed as a federal project with provincial participation, results from the work were ultimately published by the AGS by the consent of the Geological Survey of Canada.

Some of the work completed by the GSC was conducted under Industry Partner Program designation in collaboration with, and partly funded by, Tintina.

(iv) Numerous scientific papers and similar publications from geological journals and mainstream media.

To the extent that much of the historic work reported in the assessment reports was carried out by the author, or under his supervision or direction, the author has critically reviewed the data at the time of its formalization into mineral assessment reports submission to the Alberta Department of Energy. The author has reviewed the information again during preparation of this report and, accordingly, confirms that the information has been critically reviewed by him and by others, and that he has no reason to believe that the information is false or intentionally misleading.

The author has relied on the accuracy and integrity of the work performed by the AGS and the GSC, much of which corroborates Tintina's findings, or, conversely, is corroborated by the latter.

The author has also relied on the truth and accuracy of the data presented in the sources listed in the Reference section of this report, and on the stand-alone third-party consulting reports appended in Tintina's Alberta Mineral Assessment Reports.

Information as to title of Dumont's Permits has been collected from the Alberta Department of Energy records and is believed to be accurate. The author has reviewed Dumont's Alberta registration and confirms that Dumont is duly registered to do business in the Province of Alberta and, as such, is entitled to hold mineral Property in Alberta.

4. PROPERTY DESCRIPTIONS AND LOCATIONS

4.1 PROPERTY DESCRIPTION

Dumont's Alberta SBH Property (the "Property") consists of twenty-eight (28) contiguous Alberta Metallic and Industrial Mineral Permits (the "Permits") comprising an aggregate of 2,444 contiguous square kilometers (244,408ha). The Permits extend over a 50kmx60km quadrant defined by R12-R17 and Twp97-Twp103, W4 Meridian.

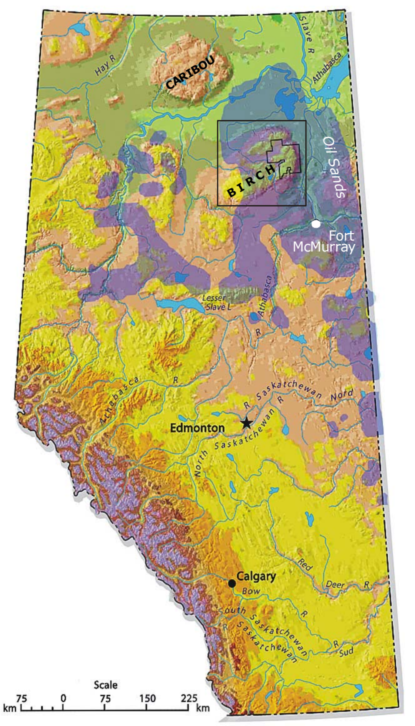

Figure 1: General area of interest showing the Birch Mountains and Property outline.

The Property is located over the Birch Mountains approximately 120 kilometers to the north of Fort McMurray, Alberta, and is held 100% by Dumont.

Alberta Metallic and Industrial Mineral Permits are acquired by application to the Alberta Department of Energy, and the same are granted under the Alberta Mines & Minerals Act Chapter-17, and related Metallic and Industrial Mineral Tenure Regulation. Geographic locations of the Permits are defined per the Dominion Land Survey system based on Townships, Ranges, Sections and subdivisions thereof.

The Permits were acquired in three stages (Sep/2007, Oct/2007, Apr/2008) on behalf of Dumont by S.F.Sabag, the author of this report, and President/CEO and a director of Dumont. The Permits were subsequently transferred to Dumont (Aug19/2008), at no cost, once land assembly was completed and Dumont had secured the necessary corporate registrations in the Province of Alberta. Applications for acquisition of the final tranche of Permits were filed on April 11, 2008, and the respective Permits were issued on July 11, 2008, with an effective date of June 30, 2008.

The general area of interest is shown in Figure 1. A regional Property location sketch is presented as Figure 2, and a detailed Property sketch showing Permits is presented as Figure 3. Permit descriptions and related details are summarized in Table 1.

Alberta Metallic and Industrial Mineral Permits in Alberta can be held by an individual person, or by any organized or corporate entity which is duly registered to do business in the province Alberta. Dumont is duly registered to so do business in Alberta as an extra-provincial corporation.

4.2 PROPERTY RIGHTS & MAINTENANCE

The Permits grant Dumont the exclusive right to explore for metallic and industrial minerals for seven consecutive two-year terms (total fourteen years) subject to traditional assessment work performance biannually. Work requirements for maintenance of the permits in good standing are $5/ha for the first term, $10/ha for each of the second and third terms, and $15/ha for each the fourth, fifth, sixth and seventh terms.

The Alberta Mines & Minerals Act and the Alberta Metallic and Industrial Mineral Tenure Regulations provide for the accumulation of excess work in any term for filing toward subsequent terms, and also enable the reduction of permit areas during their currency. There are no statutory provisions for the renewal of permits beyond their 14 year term. The statutes also provide for conversion of permits to Metallic Minerals Leases once a mineral deposit has been identified. Leases are in good standing for a renewable term of 15 years, and require annual payments of $3.5/ha for their maintenance in good standing. There are no work requirements for the maintenance of leases and they confer rights to minerals.

The Permits are held 100% by Dumont, subject to a traditional royalty retained by the Province of Alberta against production revenues therefrom. The Alberta Metallic Mineral Royalty consists of two parts: (i) upon commencement of Production, a 1% mine mouth royalty is levied on gross revenues, net of costs incurred between the mine mouth and the point of sale or the point at which fair value is determined, as prescribed by Minister; and (ii) an additional 12% royalty levied on that portion of net operating revenues at the mine mouth which exceed costs incurred in the exploration, development, recovering, processing, transportation or disposition, and any other such cost allowances as specified by the Minister. In broad terms, the aggregate royalty is akin to a 1% traditional net smelter return royalty in addition to a 12% net profits royalty. The reader is referred to Alberta Mines & Minerals Act, Metallic And Industrial Minerals Royalty Regulation for details.

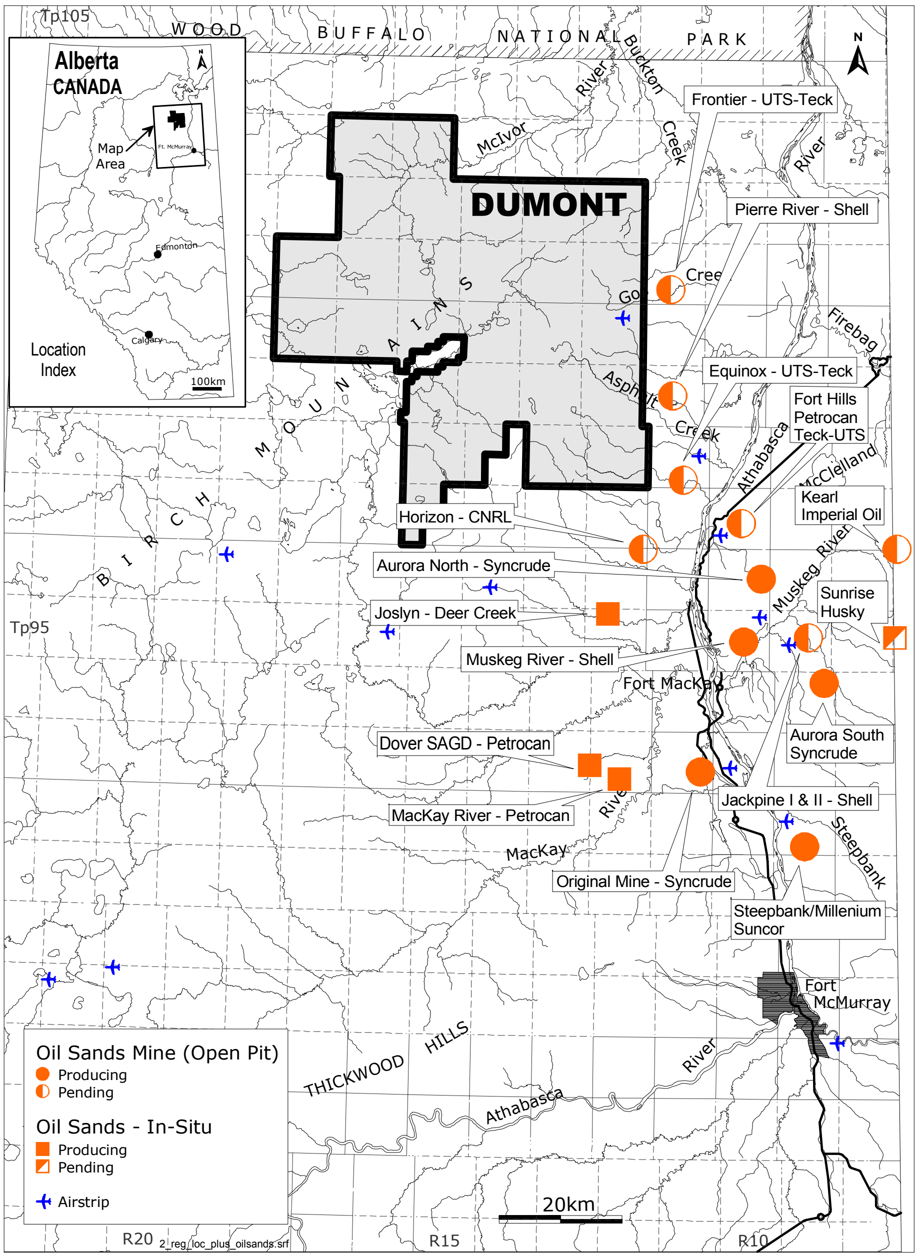

Figure 2: Regional location sketch showing the Property, showing also nearby oil sands operations and airstrips

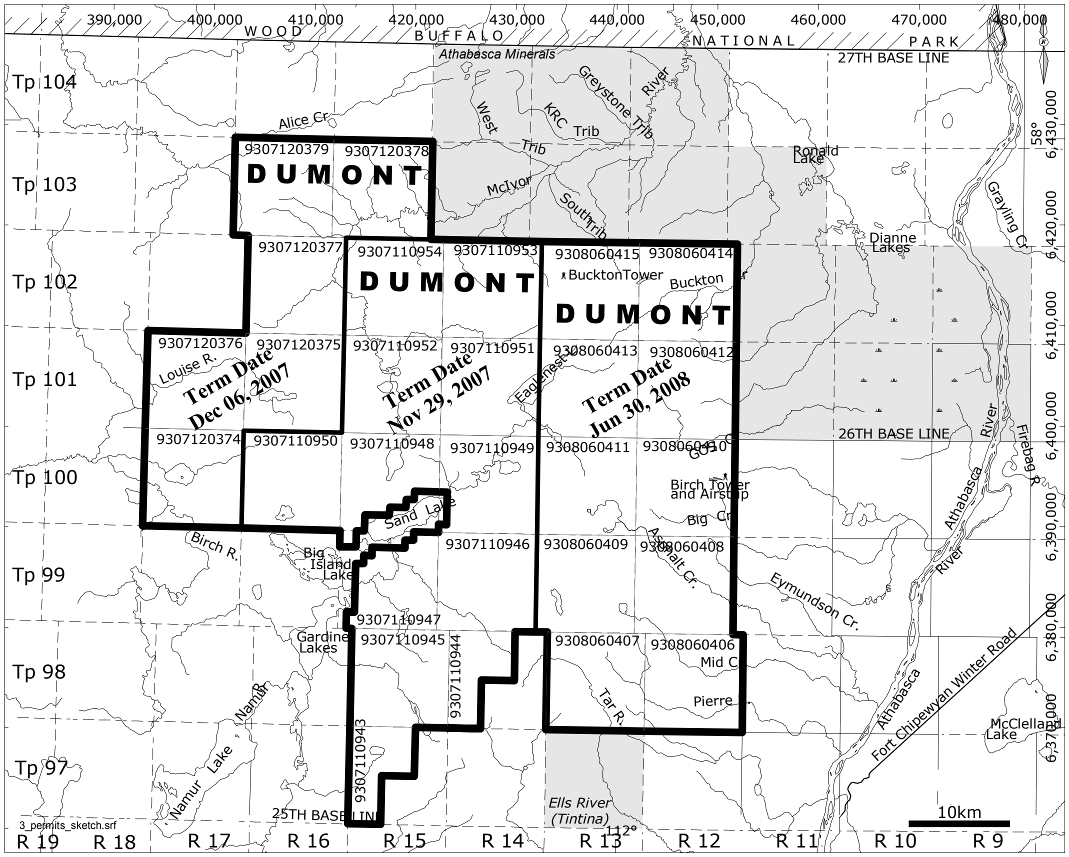

Figure 3: Sketch of Dumont's Metallic and Industrial Mineral Permits, showing also adjacent third-party mineral properties

Permit#	Application Date	Commencement Date	Area (ha)	Land/ Zone Description Metallic & Industrial Minerals Permit	Special Restrictions
9307110943	5-Sep-07	29-Nov-07	4608	4-15-097: 5-8; 17-22; 27-34	none
9307110944	5-Sep-07	29-Nov-07	4608	4-14-098: 5-8; 17-22; 27-34	none
9307110945	5-Sep-07	29-Nov-07	9216	4-15-098: 1-36	none
9307110946	5-Sep-07	29-Nov-07	9216	4-14-099: 1-36	none
9307110947	5-Sep-07	29-Nov-07	6784	4-15-099: 1-5; 6E; 8-17; 20-28; 29SE; 35S, NE; 36	none
9307110948	5-Sep-07	29-Nov-07	7488	4-15-099:31;4-15-100:5W;6-9;10N;13N;14N,SW;15-36	none
9307110949	5-Sep-07	29-Nov-07	8960	4-14-100: 1-5; 6S, NE; 7E ;8-17; 18N, SE; 19-36	none
9307110950	5-Sep-07	29-Nov-07	9216	4-16-100: 1-36	18NW; 19; 20N,SW; 27NW; 28N, SW; 29-34; 35N, SW are in a Caribou range
9307110951	5-Sep-07	29-Nov-07	9208	4-14-101: 1-11; 12N, SW, L1, L2S, L7, L8;13-36	12N, SW, L1, L2S, L7, L8 are in an Historical Resources Management Area
9307110952	5-Sep-07	29-Nov-07	9216	4-15-101: 1-36	6NW; 7; 8N; 16N, SW; 17-21; 22W; 27-34; 35NW are in a Caribou range
9307110953	5-Sep-07	29-Nov-07	9216	4-14-102: 1-36	30N, SW; 31; 32W are in Caribou range
9307110954	5-Sep-07	29-Nov-07	9216	4-15-102: 1-36	2N, SW; 3-11; 12NW; 13N, SW; 14-36 are in a Caribou range
9307120374	2-Oct-07	6-Dec-07	9216	4-17-100: 1-36	2NW; 3-11; 12NW; 13-36 are in a Caribou range
9307120375	2-Oct-07	6-Dec-07	9216	4-16-101: 1-36	1N,SW; 2-36 are in a Caribou range
9307120376	2-Oct-07	6-Dec-07	9216	4-17-101: 1-36	This permit is in a Caribou range
9307120377	2-Oct-07	6-Dec-07	9216	4-16-102: 1-36	This permit is in a Caribou range
9307120378	2-Oct-07	6-Dec-07	9216	4-15-103: 1-36	1S,NW,NEP;2-10;11S,NW,NEP;12SWP,NEP;13NP,SEP;14EP,W;15-36 are in a Caribou range
9307120379	2-Oct-07	6-Dec-07	9216	4-16-103: 1-36	This permit is in a Caribou range
9308060406	11-Apr-08	30-Jun-08	9216	4-12-098: 1-36	none
9308060407	11-Apr-08	30-Jun-08	9216	4-13-098: 1-36	none
9308060408	11-Apr-08	30-Jun-08	9216	4-12-099: 1-36	none
9308060409	11-Apr-08	30-Jun-08	9216	4-13-099: 1-36	none
9308060410	11-Apr-08	30-Jun-08	9216	4-12-100: 1-36	none
9308060411	11-Apr-08	30-Jun-08	9216	4-13-100: 1-36	31; 32 are in an Historical Resources Management Area
9308060412	11-Apr-08	30-Jun-08	9216	4-12-101: 1-36	none
9308060413	11-Apr-08	30-Jun-08	9216	4-13-101: 1-36	5; 6 are in an Historical Resources Management Area
9308060414	11-Apr-08	30-Jun-08	9216	4-12-102: 1-36	none
9308060415	11-Apr-08	30-Jun-08	9216	4-13-102: 1-36	none
Caribou Range = Surface access subject to specific restrictions					
Historical Resources Management Area = Historical resources impact assessment may be required prior to conducting surface disturbance per Sec. 33(2) of the Historical Resources Act					

Table 1: Summary of Metallic and Industrial Minerals Permits comprising Dumont's SBH Property

The Permits grant Dumont use of the surface for the purposes of conducting mineral exploration work, subject to obtaining the necessary land use permits from Alberta Environment. Surface restrictions consist of minor activity restrictions which are discussed in greater detail in Section 4.5.

There are no other surface encumbrances in the area, other than a compensation which may from time to time be payable to compensate holders of timber rights over portions of the area in the event timber is cleared during construction of drill roads and pads.

4.3 COEXISTING OIL-GAS AND OIL SANDS RIGHTS

Rights to metallic and industrial minerals, to bitumen (oil sands), to coal and to oil/gas within the region are regulated under separate statutes, which collectively make it possible for several different "rights" to coexist and be held by different grantees over the same geographic location.

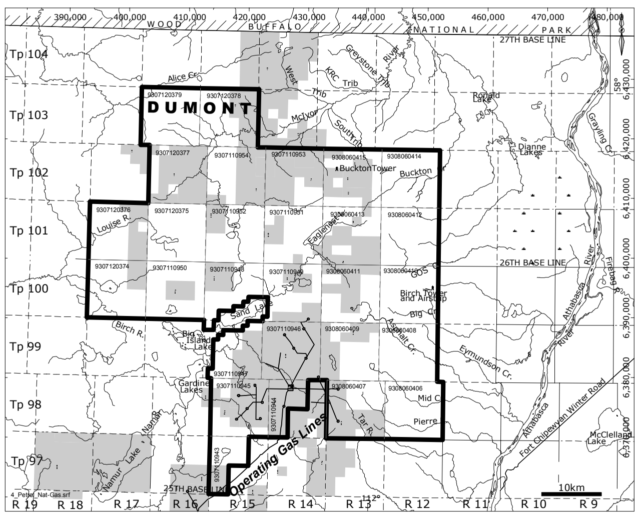

Figure 4: Summary sketch of coexisting third party oil/gas leases (shaded) under the Property, showing also producing gas wells and pipelines. (From Alberta Energy as at May/2008).

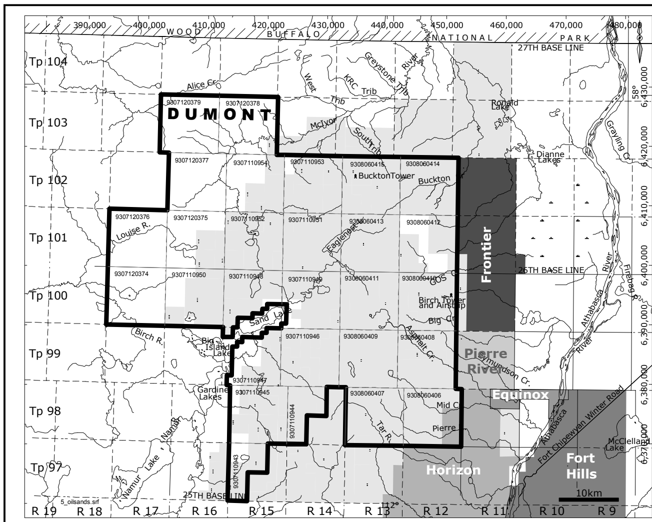

Figure 5: Summary sketch of coexisting third-party oil sands leases (shaded) under the Property. The Fort Hills, Equinox, Pierre River, Horizon and Frontier pending oils sands mines properties are highlighted. (Oil Sands permits from Alberta Energy as at May/2008).

Coexistence of rights in the area is an artifact of the flat-lying configuration of subsurface geological formations within the region, and the potential of different formations for hosting different resources including oil, gas and minerals.

Oil/gas leases, coal leases, oil sands leases and metallic mineral permits coexist in the Birch Mountains in the vicinity of, and under, Dumont’s Property.

Existing oil/gas leases and oil sands permits in the vicinity of, and under, Dumont’s Property, are shown in Figures 4 and 5, respectively, showing also locations of several producing gas wells and distribution pipelines over a small area in the southwestern parts of Dumont’s Property.

Also shown in the Figures are the Fort Hills oil sands mine (construction stage), the Equinox oil sands mine (planning stage), the Pierre River oil sands mine (planning stage), the Frontier oil sands (planning stage) and the Horizon oil sands mine (construction stage). Rights to oil sands in the area are confined to the McMurray Formation (approximately 400m beneath Dumont’s shale targets), and include rights to metals accompanying the oil sands.

Gas leases and oil sands permits over the Birch Mountains, under Dumont’s Property, relate to formations deeper within the stratigraphy well below the metal bearing shale formations targeted by Dumont.

4.4 Prior Ownership

Dumont acquired the Property directly, by application to Albert Energy, and holds a 100% interest therein under metallic and industrial mineral agreements with Alberta Energy.

All prior, historic, activities in the area consist entirely of exploration work. There are no historic mineral mines or similar operations, in the area nor on the Property. Current activities and pending oil sands mines on adjacent and adjoining properties are summarized in a later section of this report in Section 15.2.

Dumont's Property contains several historic properties previously held and explored for minerals by others. Prior historic ownership is presented in Section 6.1 of this report, and historic exploration work and discoveries therefrom are presented in Section 6.2. To maintain continuity with historic work, Dumont has elected to retain historic location names to facilitate referencing of prior year results by referring to the Buckton, Asphalt and Eaglenest historic properties. This convention is retained throughout this report.

4.5 Land Use and Environmental Matters

Land use in the area is regulated by the Alberta Department of Environmental Protection, which regulates issuance of land use permits for surface disturbances, with participation from a structured local consultation process. Dumont will have to obtain the necessary permitting to conduct drilling and other such work of an invasive nature which might disturb the surface (and will have to subsequently reclaim any disturbances made). Dumont may, however, conduct passive field exploration without such permitting. As at the date hereof, Dumont has not made any applications for land use permits.

Despite the coexistence of metallic and hydrocarbon mineral tenure in the region, conflicts in precedence of land use are minimal and are as yet untested due to the scarcity of previous exploration for non-hydrocarbon minerals.

Minor sensitivities exist in the region which affect exploration activities and land use to an extent comparable to elsewhere in Canada. These include due attention to wolf migration, moose and caribou calving seasons, and miscellaneous trapping rights. Wood Buffalo National Park is located 10km to the north of the northernmost boundary of Dumont's Properties. There are no aboriginal claims pending in the region.

Surface restrictions consist of minor activity restrictions over portions of the Property, as follows: (i) the surface over the western one third of Dumont's Property (Figure 6) is subject to seasonal activity restrictions in connection with caribou calving and migration routes requiring the annual recess of field activities during the four month period March 1 through July 1; (ii) a small acreage on Permit# 9307110951 is set aside as a historic site over a portage to the south of Eaglenest Lake; and (iii) a small area on Permits# 9308060411 & 9308060413 is set aside under historic management.

There exist known gas accumulations, especially in the southeast and southwestern portions of the region surrounding Fort McMurray. Low pressure gas has been documented from the Viking Formation known to occur at depths of 100m-200m beneath surface in the Birch Mountains under portions of Dumont's Property. The Viking Formation is lower in the stratigraphy, and is deeper than Dumont's targeted shales and has not been considered a hindrance to exploration. Higher pressure gas has been documented from deeper in the stratigraphy, from the McMurray Formation (host to Oil Sands) approximately 500m-600m below the surface of the Birch Mountains. Scattered gas pockets are common throughout region, hence taking due precaution during drilling is common practice.

Timber rights for a considerable portion of the region, including the Birch Mountains Area, are held by various groups under Provincial Forest Management Agreements. Rights in the Birch Mountains Area are held mainly by Alberta Pacific, necessitating compensation payable by way of timber damage assessment (TDA) in the event any clearing is made during preparation of drill pads and access. TDA rates are applicable to all land clearing, regardless of quantity and quality of growth, and are in the order of approximately $1,000 per hectare of clearing.

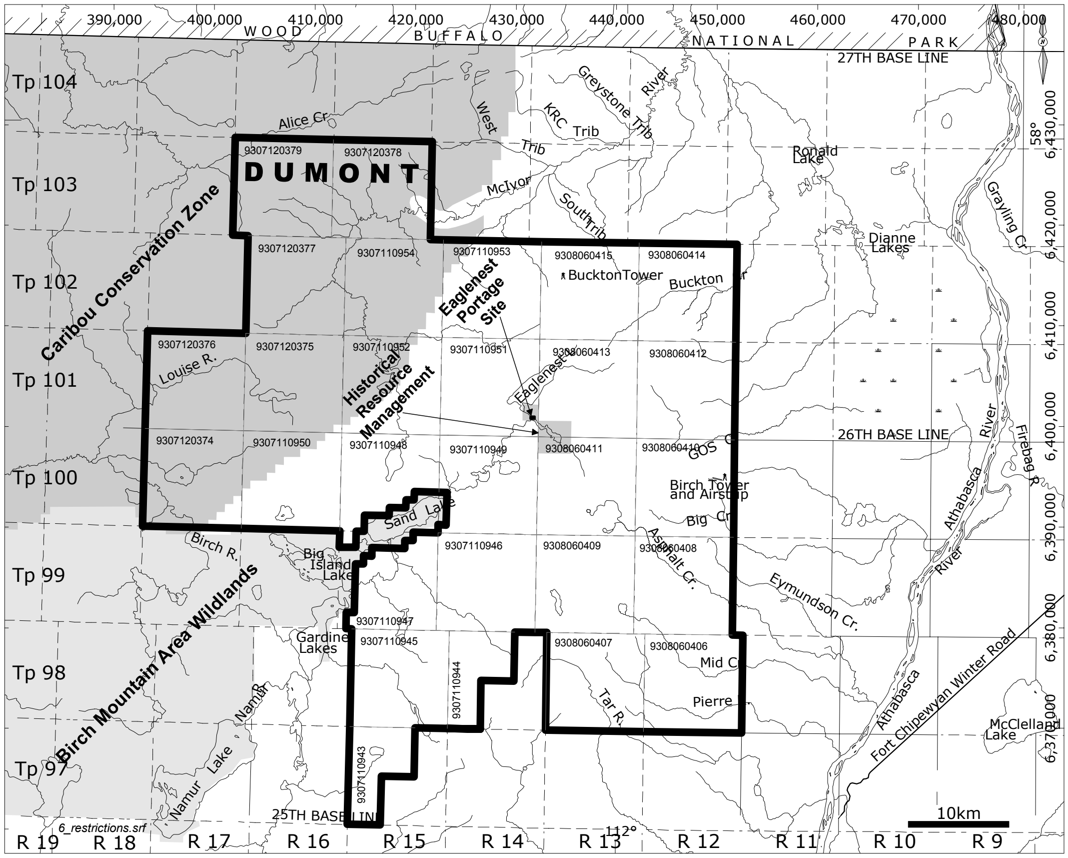

Figure 6: Summary sketch of activity restrictions on the Property.

5. ACCESS, CLIMATE, PHYSIOGRAPHY, LOCAL INFRASTRUCTURE

5.1 ACCESS AND LOGISTICS

Fort McMurray is nearly at the center of the region and is accessible by highway from Edmonton (350km away) and by regular daily commercial flights from Edmonton, Calgary and Toronto. Principal access is by road, though plans are underway by CN Rail to rehabilitate historic rail shipping service to Fort McMurray.

It is well supplied and offers all necessary support services to exploration work in the area, inclusive of expediting, fixed and rotary air support, communications, medical and equipment supplies. Radio as well as telephone communications are also excellent throughout the region. Cellular telephone coverage is good throughout the region, with good reception to localities as far away as the Birch Mountains air strip and fire tower.

The Athabasca and the Clearwater rivers represent the two principle waterways in the region with countless other streams and smaller rivers draining into them, the majority of which are characterized by jagged shapes consisting of many relatively straight water courses, reflecting in most part underlying faults and joint systems. 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 the north of Fort McMurray. The Athabasca River flows north into Lake Athabasca.

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 in some cases are also accessible by all-terrain vehicles. Past exploration activities have occasionally gained access to the west shore of the

Athabasca River by ice-bridge constructed from a locality near Bitumont, as a joint effort between forestry harvesting and mineral exploration. Future programs will, however, benefit from considerable road construction in progress to support several dozen pending oil sand operations which are in various stages of development.

Access throughout the east and west flanks of the Athabasca River are in a state of rapid development, providing road access to several pending oil sand projects skirting the Birch Mountains over localities adjacent to the south and east boundaries of Dumont's Property, to as far north as its northeast corner (the Property is surrounded on its east and south by four oils sands mines under development). Significant pending developments include Shell Canada's planned construction of a bridge across the Athabasca River to access its Pierre River oil sands mine (permitting stage), adjacent to the east boundary of Dumont's Property. This will significantly enhance access to the Property, since the planned Pierre River Mine is, downslope from the Asphalt and Buckton metal bearing Zones (see Section 15.2).

The Birch Mountains have traditionally been accessed in the summer months by barge/boat via the Athabasca River, although the principal mode of access has been by rotary aircraft or by fixed wing aircraft landing on the half mile long Birch Mountain Airstrip which also houses a seasonally manned Fire Tower and telecommunications relay station. There are other private airstrips throughout the region, the nearest being Shall Canada's at its Pierre River Project, and Canadian Natural Resources Horizon oil sands project to the south of the Property. Winter access is via the Birch Mountain Winter Road which passes northerly from the village of Fort MacKay and provides a sinuous path which is better negotiable after freeze-up as it crosses several streams and over wet muskeg.

Access throughout (within) the Birch Mountains is best by rotary aircraft, although countless old seismic lines offer adequate, albeit selective, access throughout much of the area. Past drilling has typically confined itself to the winter months, when old trails and seismic lines could be cleared of snow and graded, with minimal surface disturbance, to gain access to localities within the Birch Mountains Area for the mobilization of crews and equipment.

5.2 Physiography, Vegetation and Climate

Physiography over the general region around Fort McMurray, is variable and is characterized by low, often swampy, relief punctuated by a handful of features protruding above the otherwise flat terrain. The Birch Mountains are the most conspicuous topographic features in the region and are located in the north of the region, to the south of Wood Buffalo National Park. Dumont's Properties cover most of the Birch Mountains.

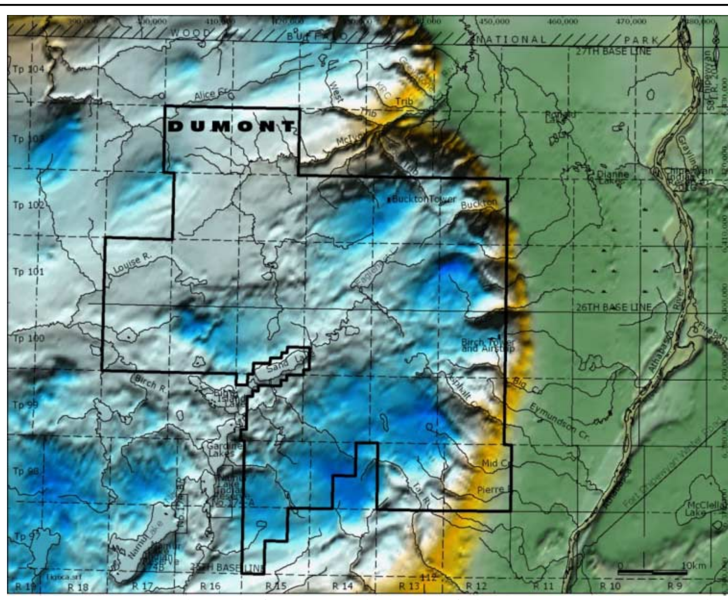

Figure 7: Topographic relief image and sketch of the Property and surrounding Birch Mountains. NAD27-Zone12.

By far the greatest topographic relief in the region are the Birch Mountains (elev 750m-820m asl) which protrude conspicuously some 500m-600m above the surrounding areas (250m asl), with a distinct sharp erosional edge. The Birch Mountains are characterized by many river and creek incisions in poorly consolidated stratigraphy susceptible to active landslides and slumps. River valley incisions in the area are progressively deeper as they near the erosional edges of the Birch Mountains and the drainage in the area defines an approximate radial pattern outward from the Birch Mountains. Localized radial drainages are also present within the Birch Mountains area, characterized by creeks flowing outward from what appear to be 1km-2km diameter circular domes (Figure 7).

Given the relatively flatlying stratigraphy in the region, the Birch Mountains provide excellent vertical exposures, especially in river valleys, across relatively long sections of nearly flatlying stratigraphy which are otherwise buried to the west and eroded to the south and east.

The most formidable topographic feature in the Birch Mountains area is the McIvor River Valley representing a 20km long east-northeasterly trending valley which opens to a width of some 10km at its eastern extremity. Unlike other sharply incised valleys in the Birch Mountains area, it is a relatively flat-bottomed feature dominated by the McIvor River with its many braided meanders and countless tributaries. The valley is surrounded by zones of active slumpage representing broad zones of continual sediment recharge such that the active flow channel of the McIvor River is in a continual state of flux within the central section of the river valley, shifting back and forth within several hundred meters of valley bottom. The McIvor River flows north into Lake Claire. Only the headwaters of this river are on Dumont's Properties, the bulk of it being on permits held by a Athabasca Minerals.

Glacial history of the region is complex and not clearly 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. Considerable work is in progress by the Alberta Geological Survey toward investigation of quaternary geology.

Northeast Alberta weather is somewhat cooler than Canadian central provinces. Winter temperatures are cold, averaging -20 degrees C (min -40 degrees), and summers are warm averaging 17 degrees C (max 30 degrees C), and are typically short (Jun-August) much like northern Canada. Average annual precipitation for Fort McMurray is approximately 460mm. The Birch Mountains, by virtue of elevation, are somewhat cooler than rest of the region, and are susceptible to fog during long periods of wet weather.

6. History

6.1 Prior Ownership History - Historic Properties

Dumont acquired the Property directly, by application to Alberta Energy, and holds a 100% interest therein under metallic and industrial mineral agreements with Alberta Energy. Dumont concluded its land assembly on April 11, 2008, by submitting applications to Alberta Energy for the final tranche of permits, which were granted on July 11, 2008, with a June 30, 2008, commencement (effective) date.

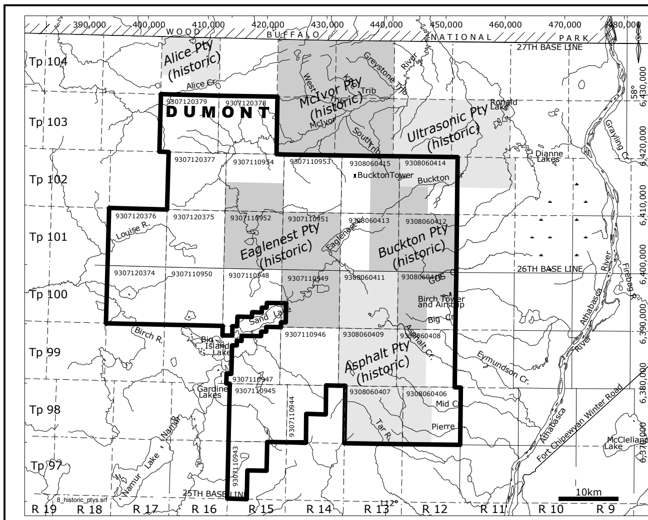

Figure 8: Property location sketch showing historic properties previously held by third parties under Dumont's SBH Property Permits.

Dumont's Property contains the historic Buckton, Asphalt and Eaglenest Properties, which were previously held by Tintina Mines Limited, and extensively explored by Tintina during the 1990's. The Property also contains the southern parts of a smaller, early-stage, property previously held by Ultrasonic Industries. These are shown in Figure 8.

Details of historic properties are as follows:

- The historic Buckton Property, comprising 27,648ha, was held under five permits by Tintina Mines Limited from the mid 1990's until early 2000's, and thereafter by its affiliate NSR Resources Inc. until its expiry in early February, 2008, and were returned to the public pool on April 10, 2008. This location is currently represented by Dumont's permits over the east-central part of its Property.

- The historic Asphalt Property, comprising 36,864ha, was previously held under five permits by Tintina Mines Limited from the mid 1990's until early 2000's, and thereafter by its affiliate NSR Resources Inc. until its expiry in early February, 2008, and were returned to the public pool on April 10, 2008. This location is currently represented by Dumont's permits over the southeastern part of its Property.

- The historic Eaglenest Property, comprising 32,256ha, was previously held under four permits by Tintina Mines Limited during the mid 1990's until its expiry in the early 2000's. This location is currently represented by Dumont's permits over the central part of its Property.

- Ultrasonic Industries previously held approximately 27,648ha during the late 1990's under three permits, adjoining the north boundary of Tintina's Buckton Property. This area was subsequently briefly held by Grizzly Gold Inc. The southwestern half township corner of Ultrasonic's historic property is currently under Dumont's permit at the northeast corner of Dumont's Property.

Geological databases from historic work conducted over the above properties, and their vicinities, together with work conducted by the AGS and GSC, are the only geological information available from the area toward the exploration for metals. They are presented in sections below on historic work. To maintain continuity with historic work, Dumont has elected to retain historic location names to facilitate referencing of prior year results by referring to the Buckton, Asphalt and Eaglenest historic properties. This convention is retained throughout this report.

6.2 Previous Work History – Metal Exploration

6.2.1 Overview

The area under Dumont's Permits and the broader Birch Mountains Area, were aggressively explored during the period 1993-1999 by Tintina Mines Limited as part of its exploration programs over a much larger, 3 million acre, land position it then held across northeast Alberta under 137 permits covering approximately 135 townships. Tintina's exploration programs were active until late 1999, and comprised multi-phased multifaceted campaigns straddling several years. Tintina collected over 4,000 multimedia samples in addition to conducting drilling and consolidating considerable other information from various studies, surveys and other testwork completed on its behalf by various professional geoscientists and consulting groups.

Tintina discovered the metal bearing black shales (Dumont's targets) by accident in 1995 while searching for metal bearing permeability traps in redox fronts across northeast Alberta. Tintina started its regional work in 1993, focusing on the Cretaceous-Devonian unconformity, but discoveries it made in the Birch Mountains in 1995 in extensive carbonaceous shales shifted focus of its subsequent work to exploration of the black shales as prospective redox fronts which could accumulate considerable metals at their base. Intrinsic potential of the shales as hosts to metals was not recognized until after 1997 drilling designed to probe beneath the lower contact of the shales, but which discovered metal enrichment within the black shales instead. What started out in 1993 as a search for carbonate hosted gold-copper bearing redox systems similar to roll-front Uranium deposits, ultimately led over a four year period to the discovery of a formidable metalliferous black shale assemblage at the Lower-Upper Cretaceous unconformity associated with considerable subaerial venting and previously unknown extinction markers.

Tintina spent approximately $2.6 million on work over the Birch Mountains, of which amount an aggregate of approximately $2 million were spent on its Buckton, Asphalt and Eaglenest Properties.

Tintina's work spanned the full spectrum of exploration activities ranging from grass roots reconnaissance and systematic regional sampling (1994-1995), through in-fill sampling, anomaly identification and follow-up (1995-1997), to confirmation drilling (1996-1997) and preliminary metallurgical testwork, leaching and benchtests (1997-1999). Diamond indicator investigations and extensive check assaying work (1997-1999) were also completed. Results from all of these work programs are collated in a series of Alberta Mineral Assessment Reports all of which are publicly available[1].

Concurrently with Tintina's efforts, the Alberta Geological Survey (AGS) and the Geological Survey of Canada (GSC) also completed several sampling and mapping programs over the Birch Mountains, and elsewhere over northeastern Alberta, to characterize bedrock and till. Some of the work by the AGS focused on expanding upon Tintina's discoveries of metal enriched Cretaceous shales as it might apply to Cretaceous shales elsewhere in Alberta. Some of this work was conducted under the 1992-1995 Canada-Alberta Agreement on Mineral Development, initially a federal project with provincial participation, though studies therefrom were completed and results ultimately released in reports by the Alberta Geological Survey.

Many of the samples collected by AGS duplicated samples from exposures also sampled by Tintina and, as such, provide good corroboration for results documented in Tintina databases and reports. The concurrent work included review and sampling of Tintina drill core as well as a joint Tintina-GSC program, partly funded by Tintina as an Industry Partner Program, focusing on characterizing composition and morphology of alluvial gold and related native metals and minerals discovered by Tintina in the Birch Mountains drainages. Results from all of these studies are publicly available as traditional Geological Reports, as geological articles published in technical journals, and as contributions to various geological conferences in the form of poster sessions or abstracts.

Geological databases from historic work conducted by Tintina over its properties and vicinity, together with work conducted by the AGS and GSC, form the substance of the only geological information available from the area toward the exploration for metals. To the extent that Dumont's Property is large and includes several large historic properties, the known prospective metallic targets on the Property span the full spectrum of exploration and development status, ranging from early-stage targets, through drill ready targets, to two drill confirmed metallic Zones at the resources definition stage, two of which Zones are at the grid drilling stage to upgrade Potential Mineral Deposits proposed herein to classified resources. Considerable detailed information has, accordingly, been incorporated into this report to capture all historic exploration results which would be relevant to Dumont's Property, and as such includes considerable early-stage exploration results in addition to results from advanced work which is in metallurgical benchtesting stage.

Information presented in this report is based on, summarized or extracted from the collective of the above efforts.

6.2.2 Historic Work Programs and Databases

Historic exploration work conducted by Tintina over Dumont's Permits, and their vicinity and the broader Birch Mountains, comprise the following: (i) LANDSAT remote sensing imagery analysis (1994); (ii) Airphoto imagery analysis (1995); (iii) Lake sediment/water geochemical sampling (1994); (iv) Stream sediment geochemical sampling (1994); (v) Stream sediment heavy mineral concentrate sampling (1994), and follow-up heavy mineral concentration testwork (1994-1995); (vi) Lake Sediment/Water geochemical infill sampling (1995); (vii) Stream sediment geochemical infill sampling (1995); (viii) Stream sediment infill heavy mineral concentrate sampling (1995); (ix) Lithogeochemical reconnaissance sampling (1994) and follow-up heavy mineral concentration; (x) Lithogeochemical reconnaissance sampling (1995); (xi) Stratigraphic compilation and modeling (1995); (xii) Soil geochemical sampling (1995);

[1] Alberta Mineral Assessment Reports: MIN9611 MIN9612, MIN9613, MIN9802 and MIN9928.

(xiii) Follow-up Soil geochemical sampling (1996); (xiv) Winter drilling (1996-1997); (xv) High resolution aeromagnetic survey (1997); (xvi) Preliminary flotation, leaching, and sequential/selective leaching tests (1997-1998); (xvii) Diamond indicator resampling and analytical work (1998); (xviii) Check assaying program (1998-1999).

Results from the above work form the foundation of future work on the Property. The results are summarized below, and are condensed in logical sections which straddle exploration work programs completed during six years over several properties. All of the results are extracted from Tintina reports unless otherwise indicated.

Dumont has acquired all data from the above work, and has been consolidating relevant portions thereof in preparation for launching its future work programs on its Property. Figure 10 summarizes databases available from the area.

6.2.3 Remote Sensing Imagery Interpretation and Lineament Studies

LANDSAT remote imagery analysis of northeast Alberta, conducted by Demofrac Geo-System International in 1994[2], identified many gross regional structures across the region and over the Property, in addition to more localized structural zones and a variety of circular structural features. Demofrac's findings are outlined in its stand-alone report included as Appendix B in Alberta Mineral Assessment report MIN9611 (Sabag 1996a). Summary interpretations therefrom, over the Property, are excerpted in Figure 9.

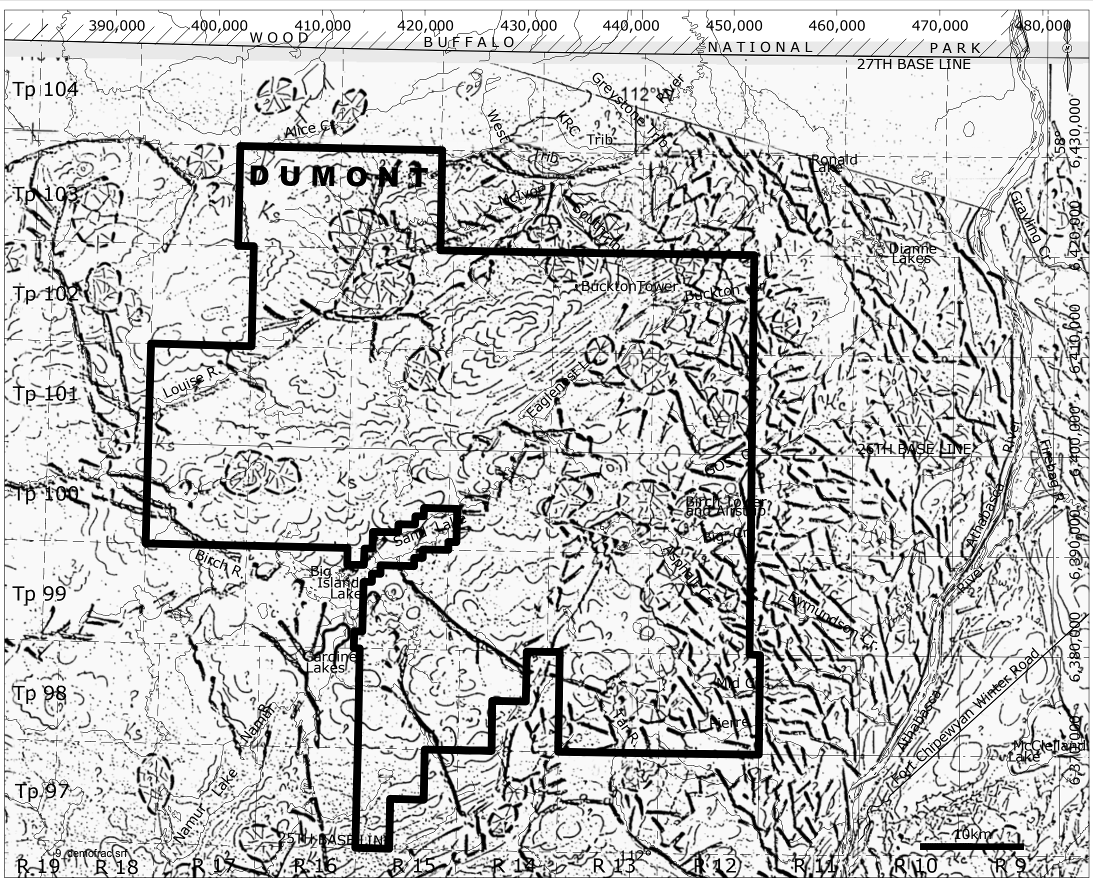

Figure 9: LANDSAT remote imagery analysis, of the Property and surrounding Birch Mountains. After Demofrac 1994, in Alberta Mineral Assessment report MIN9611, Sabag 1996a.

[2] Report: Geologic Structural Interpretation of Satellite Imagery For Mineral Exploring Using Demofrac System, Athabasca Region, Northeast Alberta. Demofrac Geo-System International, 1994. In Appendix B, MIN9611, Sabag 1996a.

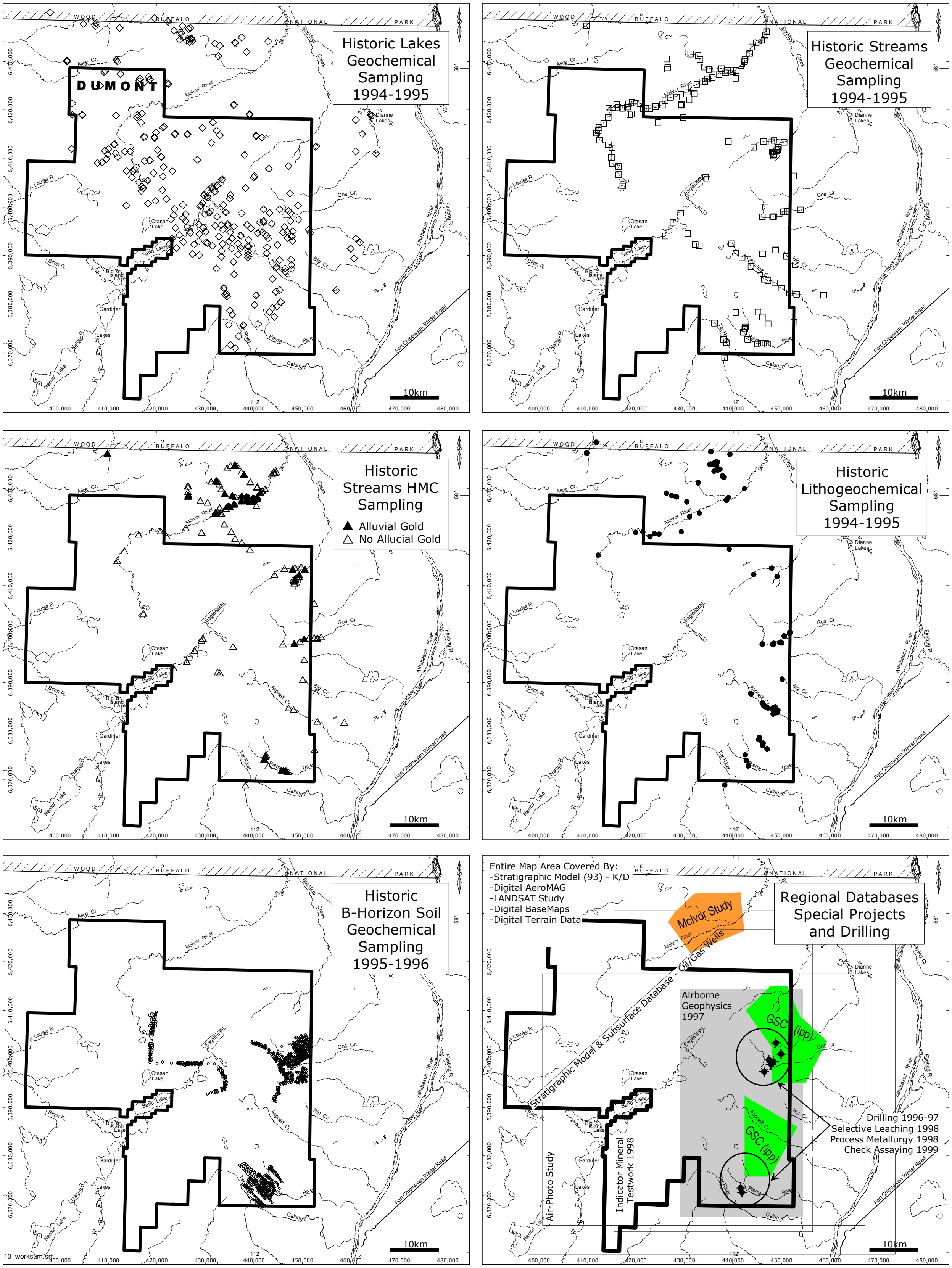

Figure 10: Summary of historic work databases available over the Property. After Alberta Mineral Assessment Reports MIN9611, MIN9613, MIN9612, MIN9610, MIN9609, MIN9802 MIN9928, Sabag 1996a, 1996b, 1996c, 1996d, 1996e, 1998 and 1999, respectively, and AGS 2001.

A follow-up study completed in 1995 by J.D.Mollard and Associates[3] focused on the Birch Mountains, and entailed detailed interpretation of air-photographs for the area integrating also findings of reconnaissance work from the area. This study reinforced structural zones previously identified by Demofrac, and was successful in highlighting certain structures and composite structural corridors for ground follow-up.

The Mollard study was carried out with the benefit of results from concurrent surface geochemical sampling over the Birch Mountains, and a detailed stratigraphic model and subsurface database developed for the area based on a review of drilling records of all oil/gas wells in the area. The study identified a variety of lineaments and other circular features in the area, some of which are spatially associated with stratigraphic and surface geochemical features. The Mollard findings are outlined in its stand-alone report included as Appendix B2.1 in Alberta Mineral Assessment report MIN9611 (Sabag 1996a). Summary is excerpted in Figure 11.

A Digital Elevation Model (NAD27-Zone12[4]) for the eastern parts of the Birch Mountains was constructed by Tintina from digital elevation data for the region. The model was used as a guide to planning of various sampling surveys and in identifying principal topographic anomalies in the area. A relief sketch for the Birch Mountains, centered on Dumont's Property, was presented in a previous Section of this report as Figure 7. Of particular note are a series of 5-10km diameter circular domed features which comprise the principal topographic relief anomalous areas in the Birch Mountains.

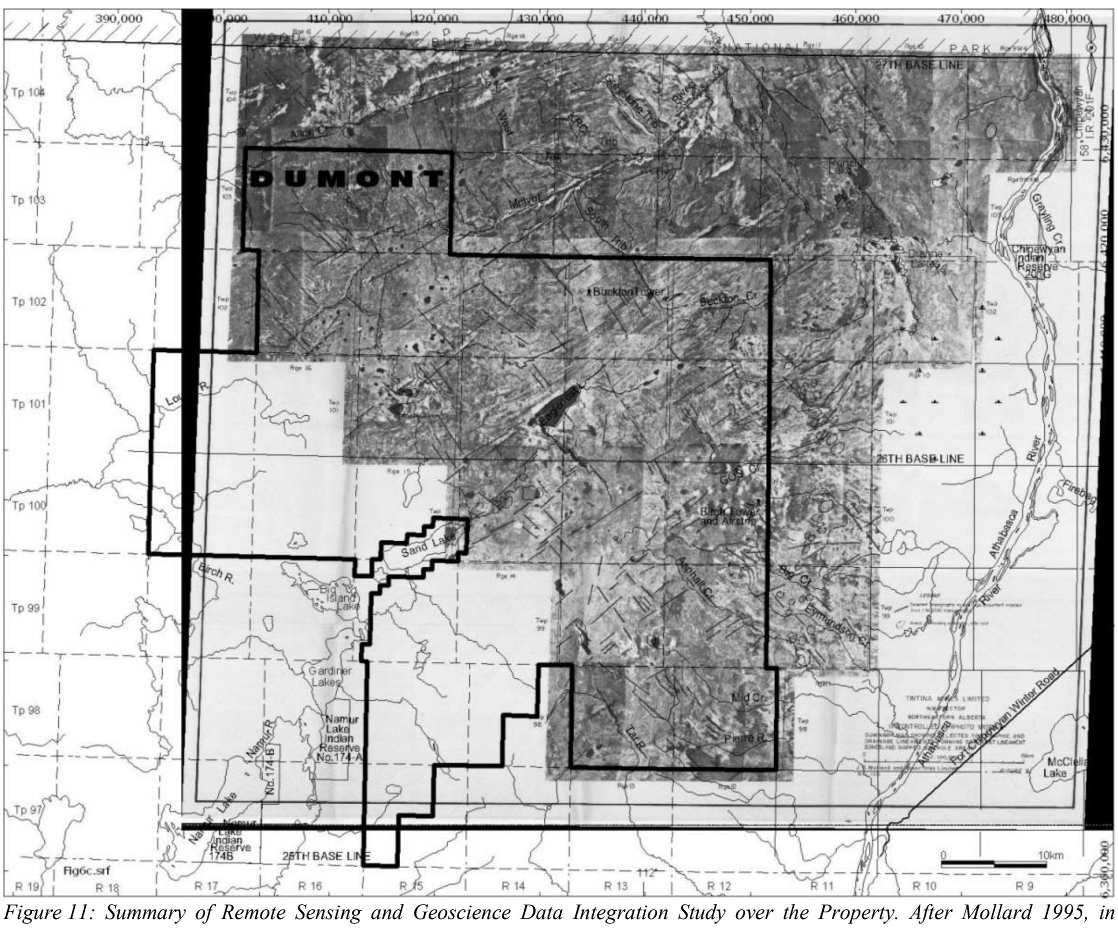

Figure 11: Summary of Remote Sensing and Geoscience Data Integration Study over the Property. After Mollard 1995, in Alberta Mineral Assessment report MIN9611, Sabag 1996a.

[3] Report: Remote Sensing and Geoscience Data Integration Study. J.D.Mollard and Associates Limited, 1995. In Appendix B, MIN9611, Sabag 1996a.

[4] Alberta digital information has since migrated to NAD83.

6.2.4 Regional Stratigraphic Model and Subsurface Database

The Prairie Evaporite (Prairie Lake Formation, Middle Devonian Elk Point Group) dominates the mid-section of the Devonian sequence in northeast Alberta, and it is characterized by salt beds, anhydride and gypsum. The Prairie salt beds are a substantive regional feature, known to extend southward into North Dakota. Parts of the salt beds have been dissolved and are responsible for the creation of collapse breccias up-stratigraphy, and dissolution within the beds defines a northwesterly linear regional band across northeast Alberta and is regarded as a dissolution front, or subterranean scarp, to the east of which salt members of the evaporite have been removed. Fort MacKay is located above the foot of the dissolution scarp, east of which salt removal is nearly complete, and it is believed that some 75m of salt were removed from the Prairie Evaporite by dissolution.

The Prairie Evaporite represents a major basinal hydrogeological feature, acting as a regional aquiclude, below which saline and metal enriched oxidizing basinal fluids flow updip northeasterly into the region until they are discharged along the dissolution scarp representing the main breach in the hydrological system (discussed in Section 7.2). Leakage of fluids along faults crosscutting the Prairie Evaporite also provide localized communication between metal enriched oxidizing basinal fluids with meteoric "shallow" waters. The Prairie Evaporite Salt Dissolution scarp is, accordingly, the most significant redox front in the region as the locus of "first-contact" between ascending metal bearing oxidizing formational waters and descending meteoric or subformational flows, and also the point of contact of oxidizing metalliferous basinal fluids with any overlying organic rich stratigraphy.

Tintina's exploration objectives in northeast Alberta were to search for gold and copper accumulations as a result of redox processes. It, accordingly, targeted its land acquisitions to secure junctures of the Prairie salt scarp with crosscutting features, given the potential of such localities for hosting metal accumulations deposited via redox reactions in stratigraphic and structural traps. Its exploration initially (1993-1995) focused on the Cretaceous-Devonian unconformity in the vicinity of Fort McMurray, but soon thereafter shifted to other prospective locations higher up within the stratigraphy in the Cretaceous black shales - the shales which are the subject of this report. Tintina's work, as a result, relied heavily on stratigraphic modeling to first identify likely localities of fluid discharge, to subsequently rank the localities via surface geochemical sampling, to ultimately identify mineralized areas in the region for ultimate drill testing.

A regional stratigraphic model for northeast Alberta was prepared by Mr.D.A.McPhee on behalf of Tintina in 1993, to guide land assembly across the region (see also McPhee and Wightman 1991). McPhee correlated regional stratigraphy by compiling information from all deep oil wells in the region which penetrate to basement. A series of regional cross sections were prepared in addition to structural contours and isopachs for Devonian as well as overlying strata. The specific focus of the study was to (i) correlate Devonian Prairie Evaporite salt units, (ii) project the surface trend and distribution of the subsurface salt dissolution scarp across the region; and (iii) identify all known structures crosscutting the trend of the salt scarp. Regional structures interpreted and compiled during the study are included in Figure 12.

The Prairie Evaporite Salt Dissolution scarp, as correlated from the well database and projected to surface, defines a surface trend which extends southeasterly across the region, southeast from Wood Buffalo National Park to approximately Township 65 at the Saskatchewan border. A regional, 3 million acre, land position was ultimately assembled by Tintina across the region, securing large areas (sectors) over projected junctions of the Prairie Evaporite salt scarp and crosscutting structures. Tintina's exploration programs concerned themselves with identifying mineralized zones over prospective localities, and as such relied heavily on identification of stratigraphic and structural features which promote "leakage" of basinal metal enriched fluids into the near-surface Formations.

The Birch Mountains, and surrounding areas including the areas currently under Dumont's Property, were acquired to secure a land position overlying junctions of the Prairie Evaporite Salt Dissolution front with northeasterly faulting as interpreted from regional aeromagnetics. The area also generally overlies projected extensions of the Peace River Arch.

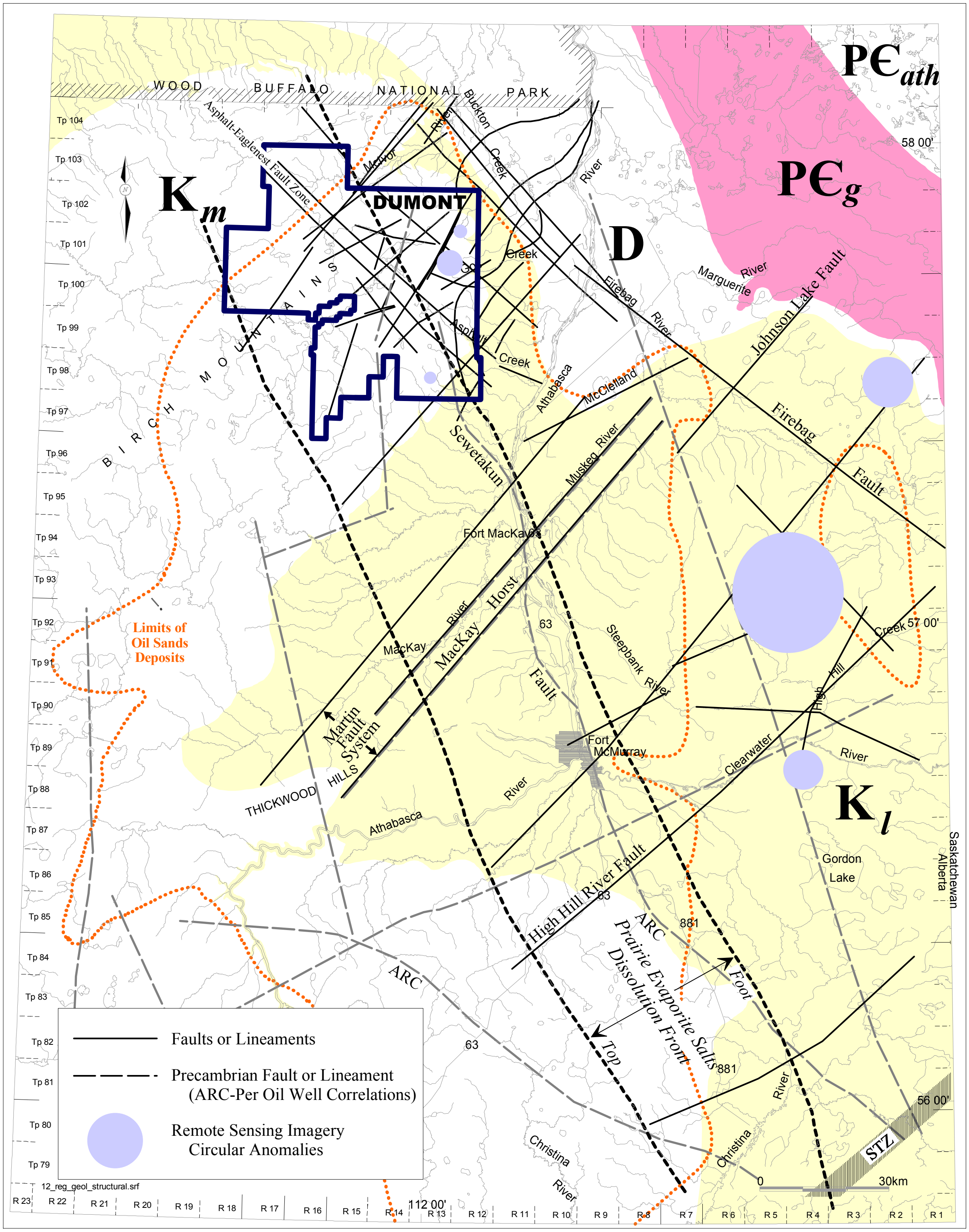

Figure 12: Summary sketch of regional structural trends and the projected trace of the Prairie Evaporite Salt Dissolution front indicating the top and foot of the projected subsurface scarp face, showing also other structural features compiled and interpreted for northeast Alberta by Tintina, including: Athabasca basin sandstone (PCath), Precambrian (PCg), Middle Devonian (D), Lower Cretaceous (Kl), and Middle Cretaceous (Km), the distribution of the oil sands deposits, principal structural elements and the Snowbird Tectonic Zone (STZ). Select circular anomalies also shown from remote sensing imagery studies. After Figure 6, Alberta Mineral Assessment report MIN9802, Sabag 1998.

6.2.5 Stratigraphic Model and Subsurface Database – Birch Mountains

A study of drilling records of all historic oil/gas wells from the Birch Mountains (currently areas under Dumont's Property) was completed by M.Attala, PGeol, Attala Soft Rox[5], in 1995 to build a three dimensional stratigraphic model and database for the area, to aid identification of stratigraphic disturbances toward resolution of faulting and doming patterns identified by remote sensing and air-photo studies. Drilling and downhole logging records of approximately 1850 wells were critically reviewed.

Of the wells reviewed, only 207 were selected to form the basis of the database and model. Wells which were eliminated from the database and model were: (i) wells which lacked sufficient geological subsurface information to be of use, or (ii) wells whose drill records lacked sufficient quality, or (iii) wells which were drilled mainly for oil sands exploration over the flanks of the Birch Mountains and were, accordingly, collared at elevations below the Upper-Middle Cretaceous Formations being investigated.

Lithologic picks, downhole geochemistry and geophysical logs were recorded and compiled by Attalla into an extensive database. Attalla's mandate was to identify principal structural breaks above Prairie Evaporite Salt Scarp, and particular attention was also paid to picking base of the Fishscales (Shaftesbury). The data was also contoured and rendered in a series of structural and isopach maps for the Birch Mountains, for select Formations extending downward from the Upper Cretaceous to the Precambrian basement.

Stratigraphic surface selection was based primarily on delineating major depositional breaks within the stratigraphic column which are identifiable on well logs as follows:

- Base of drift
- Base Second White Specks
- Base Fish Scales Zone
- Top Viking Formation
- Base Viking Formation
- Base Clearwater A Marker
- Top Wabiskaw Member
- Base Regional Marine Shale
- Top Sub-Cretaceous Unconformity
- Top Woodbend Group
- Top Beaverhill Lake Group
- Top Calumet Member
- Top Elk Point Group
- Top Precambrian

Of particular interest to Dumont's work are structural and isopach maps characterizing the Second White Speckled and the Shaftesbury Formations. The study paid special attention to identification of the top and bottom of the Shaftesbury Formation, which was suspected at the time (1995) to be the source of abundant sulfides and alluvial gold identified by Tintina from its sampling programs over the Birch Mountains. The top (upper contact) of the Speckled Shale was not specifically mapped in the study, partly since it was not of central interest and partly since the upper contact is often an impossible feature to pick from oil well downhole logs. Subsequent work completed by Tintina in 1996-1997, however, indicated that the principal source of the metals is in fact the Second White Speckled Shale whose lower contact marks the upper contact of the Shaftesbury Formation.

The subsurface database and subsurface stratigraphic model are outlined in greater detail in Attalla's stand-alone report appended to Alberta Mineral Assessment report MIN9611 (Sabag 1996a). Structural contour maps for the base of the Second White Speckled and the sub-Cretaceous Unconformity are shown in Figure 13. Isopach maps of the Shaftesbury Formation and of the Base of Second White Speckled Shale to the Sub-Cretaceous Unconformity are shown below in Figure 14. An isopach map of depth from surface to the base of the Second White Speckled Shale Formation is shown as Figures 15. Two cross sections across the Birch Mountains are shown in Figures 60 and 61 in Section 7.6 of this Report.

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[5] Report: Stratigraphic Compilation and Modeling, Subsurface Database Report, Northwest Sector. Attalla Soft Rox 1995. In Appendix D, MIN9611, Sabag 1996a.

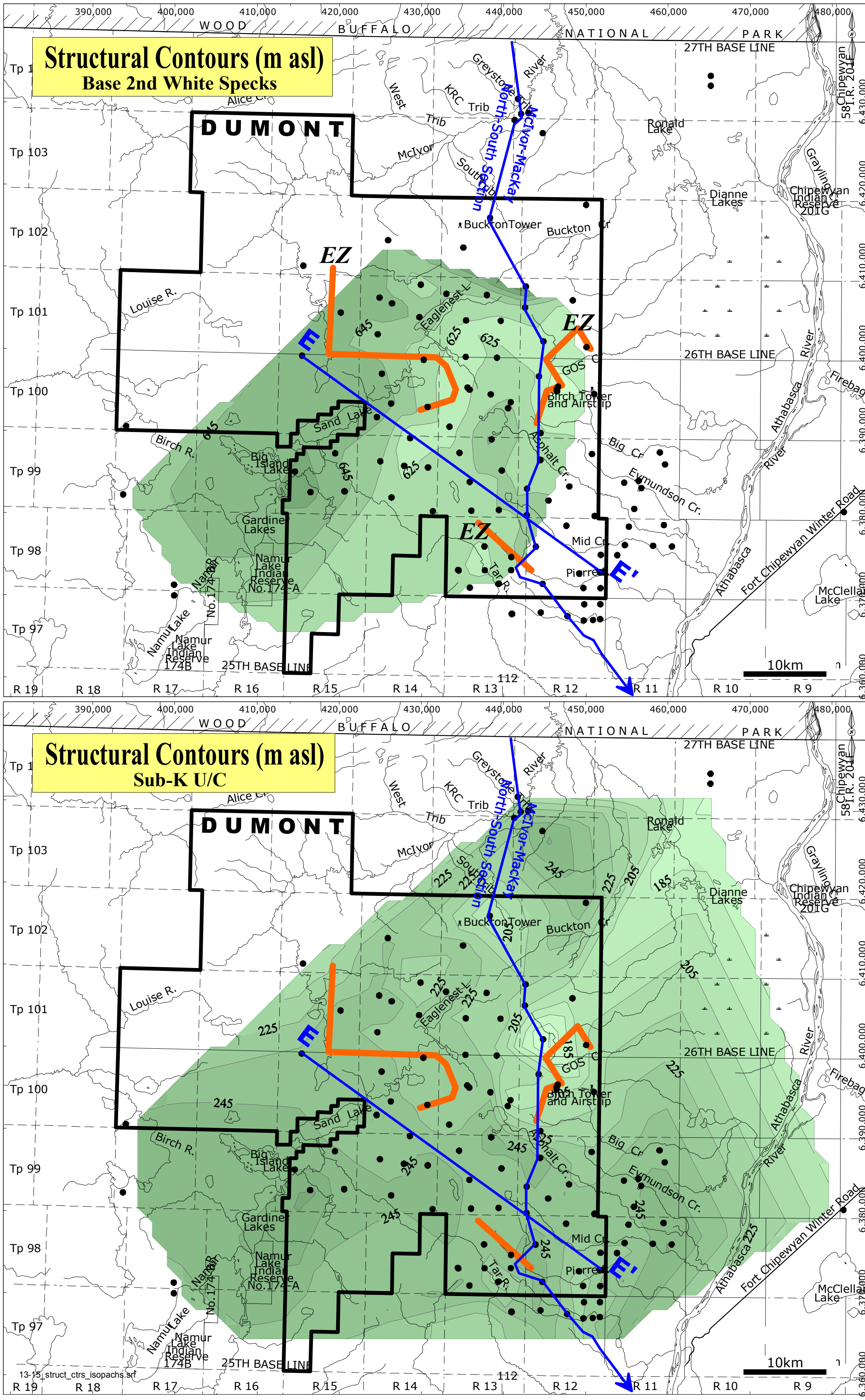


Figure 13: Structural maps of Base of Second White Speckled Shale (above) and the Sub-Cretaceous Unconformity (below), showing also oil-gas well locations, regional cross-sections and soil sampling transects(EZ). After Attala 1995, Alberta Mineral Assessment report MIN9611, Sabag 1996a. Regional cross sections are shown in Figures 60 and 61.

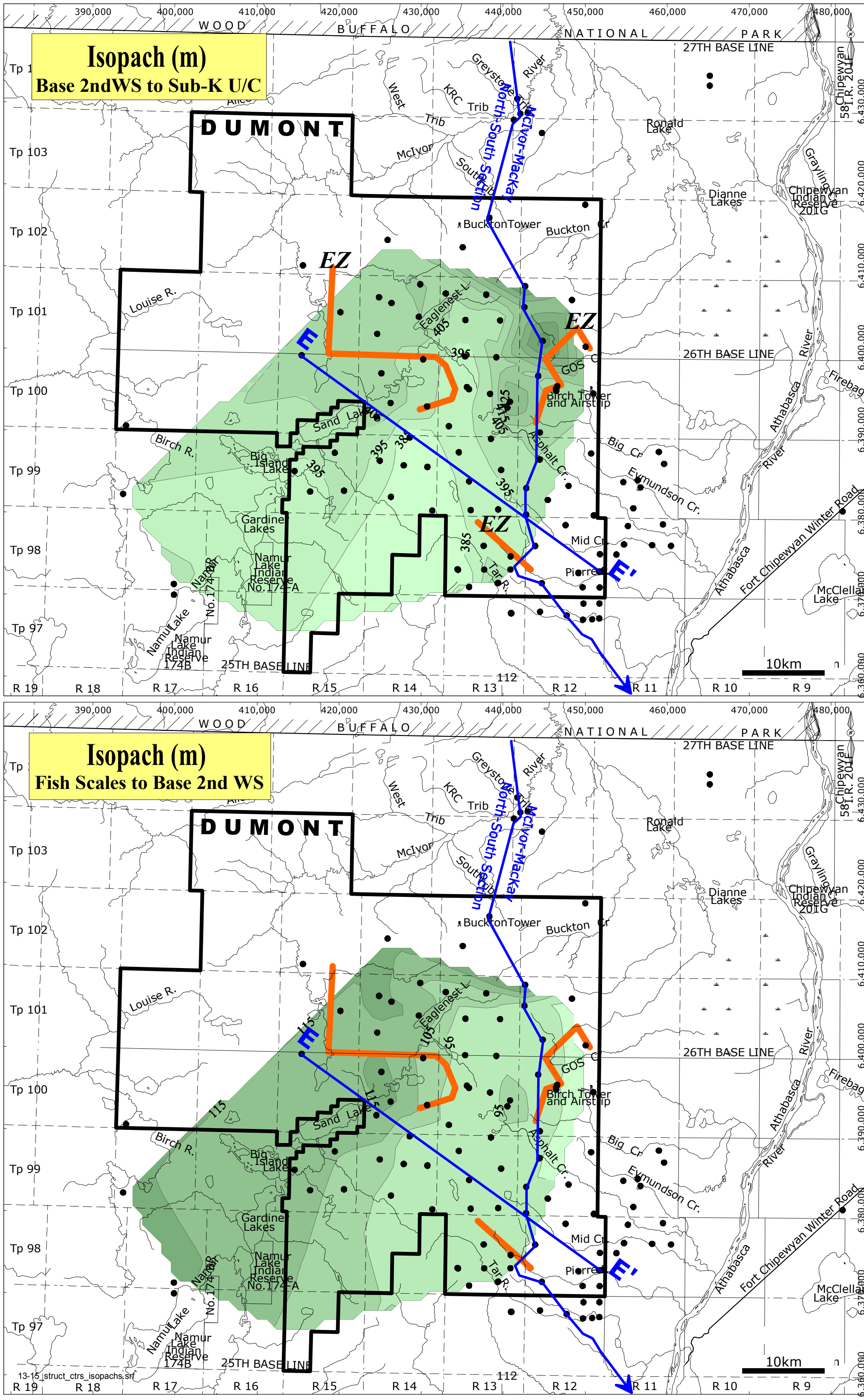


Figure 14: Isopach maps the Shaftesbury Formation (below) and base of the Second White Specks to Sub/K Unconformity Interval, showing also oil-gas well locations, regional cross-sections and soil sampling transects(EZ). After Attala 1995, Alberta Mineral Assessment report MIN9611, Sabag 1996a. Regional cross sections are shown in Figures 60 and 61.

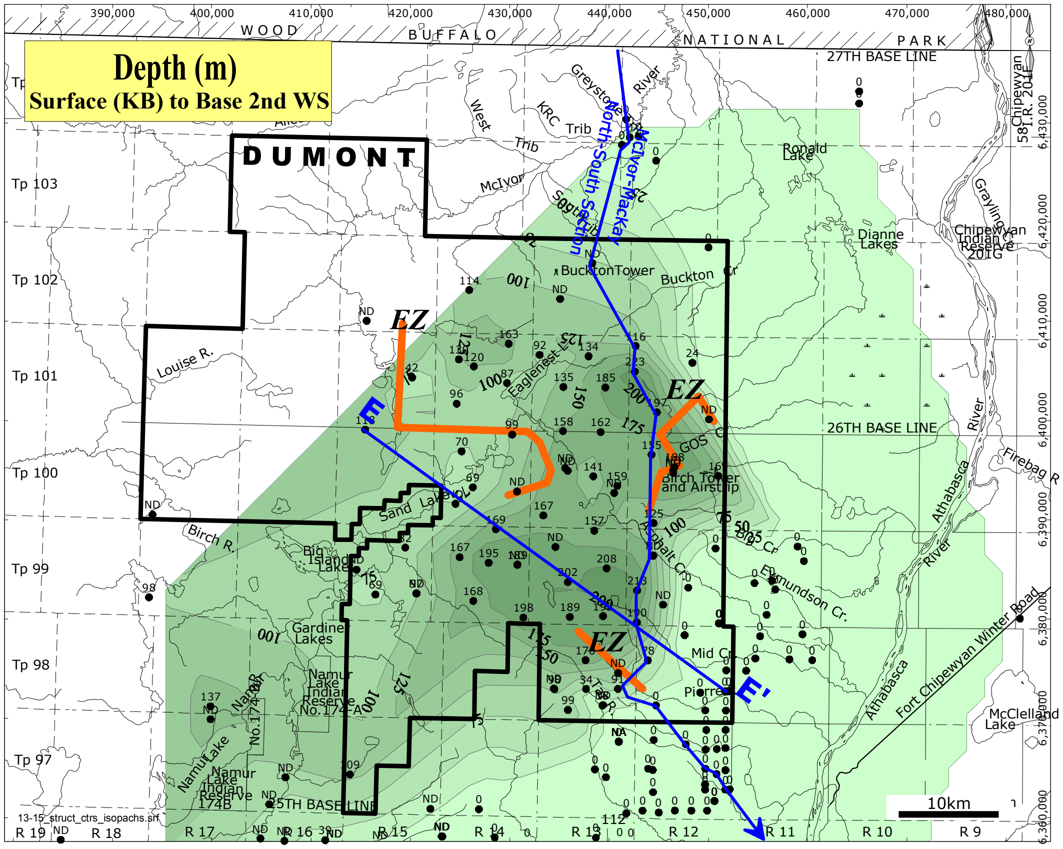


Figure 15: Isopach map of depth to base of Second White Speckled Shale Formation, showing also oil-gas well locations, regional cross-sections, and soil sampling transect locations(EZ). After Attala 1995, Alberta Mineral Assessment report MIN9611, Sabag 1996a. Regional cross sections are shown in Figures 60 and 61.

The Attalla study was successful in identifying a number of structural disturbances in the Birch Mountains, in addition to several large structural corridors portions of which were demonstrated by subsequent surface soils sampling by Tintina to be zones of metal diffusion (Section 6.2.9). The study also identified large areas of abnormal thickening in the Cretaceous sedimentary pile. Several of the isopach anomalies coincide with topographic domed features with radial drainage patterns reporting polymetallic geochemical anomalies in Tintina sampling, accompanied also by native gold and abundant sulfides in stream sediments and in stream sediment heavy mineral concentrates downstream from the domes.

All of the features identified by the Attalla study are, in the opinion of the author, material to metal exploration in the area, since many of them correlate well with metal enrichment zones identified by results of surface geochemical and lithogeochemical sampling conducted by Tintina over the area. Specific anomalies and anomalous areas are presented in Section 6.2.11, and Figure 29, in conjunction with all surface anomalies identified by Tintina in the Birch Mountains under Dumont's Property.

There has been additional drilling for oil/gas in the Birch Mountains since the Attalla study, especially over its eastern lobe and southern portions. Incorporation of results from the subsequent drilling is planned by Dumont to enhance the existing stratigraphic database and model for the area.

6.2.6 Lake Sediment and Water Geochemical Sampling

Regional reconnaissance lake bottom sediment sampling was completed by Tintina in 1994 over its 3 million acres of properties across most of northeast Alberta at an average sample density of 2.6/twp or 1/38km^2, including lakes over the Birch Mountains. Some of the sampling overlapped areas previously sampled by the GSC's 1993 National Geochemical Reconnaissance[6] (NGR) survey, several of which sites were resampled (1993NGR sample density of 5/twp or 1/20km^2). Analytical precision and accuracy were monitored by the insertion of control sample duplicates[7] and lake sediment control standards obtained from the GSC. Analytical work was completed by Cantech Laboratories (AA and FA) and by Becquerel Laboratories (INA), both of which had previously completed the analytical work for the 1993NGR survey, and followed 1993NGR methodology and procedures during sample preparation and analytical work. Intra-site and inter-lab variations were monitored by extensive duplicate sampling and duplicate analyses.

Birch Mountains lakes reported by far the strongest metal anomalies from the 1994 work, and an in-fill sampling survey was completed in 1995 at a sample density of 7/twp or 1/14km^2. Water samples were also collected and pH was recorded. The 1995 sampling, though initially planned as an in-fill survey only, ultimately resampled all sites which were previously sampled in 1994 to avoid mixing of datasets from two different seasons. Samples were analyzed by Activation Labs, Ancaster, Ontario. Sampling and analytical work relied extensively on internal control standards and duplicate sampling, and are, in the opinion of the author, reliable and conform to the highest of standards. In addition, considerable efforts were directed to adhere to GSC National Geochemical Reconnaissance sampling and analytical standards. GSC analytical control standards and blanks were also utilized in sample suites.

The 1995 survey results corroborated 1994 sampling results, reiterating that lakes from the Birch Mountains area report by far the strongest and most consistent anomalies documented from the region, characterized by elevated concentrations in most of the base and precious metals (notably Ni,Co,V,Cr,Cu,Zn,Au,Ag), generally defining trends associated with a number of structures, and locally from lakes with high natural acidity (pH 3-4) attributed to abundant sulfides therein. Contoured results from sampling of Birch Mountains lakes are presented in Figure 16 for select elements.

The Birch Mountains are characterized by major zones of landslides and widespread slumps from poorly consolidated Cretaceous muddy clastic sequences. As a result, interpretation of lake geochemical anomalies is complicated by the intermixing of diffusion and hydromorphic phenomena, to the extent that lake geochemical data (to a lesser extent stream geochemical data) cannot be interpreted in isolation and must be reviewed in conjunction with geochemical and mineral information from sampling of streams, soils and bedrock exposures. In addition, many lakes are likely only poorly drained muddy depressions directly overlying equally muddy bedrock, and there is considerable seasonal compositional variation in stream as well as lake sediments due to the continual recharge of streams in the area by fresh sediments from slumps at all exposures.

Overall, Tintina's lakes sampling surveys defined a principal northwesterly trend of metals diffusion anomalies along the Asphalt-Eaglenest corridor, associated also with Hg. Two lesser crosscutting trends were also identified, one of which extends northeast from the Pierre River headwaters across Asphalt Creek, and another along the Sand-Eaglenest Lakes trend (at the centre of the Property) extending northeast to the vicinity of Buckton Creek. The anomalies are characterized mainly by elevated Zn, Ni, Hg and to a lesser extent by Ag, Au and Cu. There are virtually no outcrops in the vicinity of the anomalies, although several subsurface stratigraphic disturbances (fault swarms) can readily be interpreted from the subsurface stratigraphic model for the area. Association of the anomalies with local structures is also corroborated by results of soil sampling completed in the vicinity of Eaglenest Lake, at Gos Creek and at Pierre River. These are discussed in Section 6.2.9 of this report.

Other anomalies identified include a series of lakes with elevated Ag (upward to 3ppm) to the southwest of Eaglenest Lake, Zn enrichment at the headwaters of the Tar River and numerous multielement anomalies over the area between the Pierre River and Mid Creek.

[6] GSC OFR2856, Friske et al., 1994).
[7] The control sample consisted of duplicate cuts from a homogenized bulk sample collected from 1993NGR site #933025

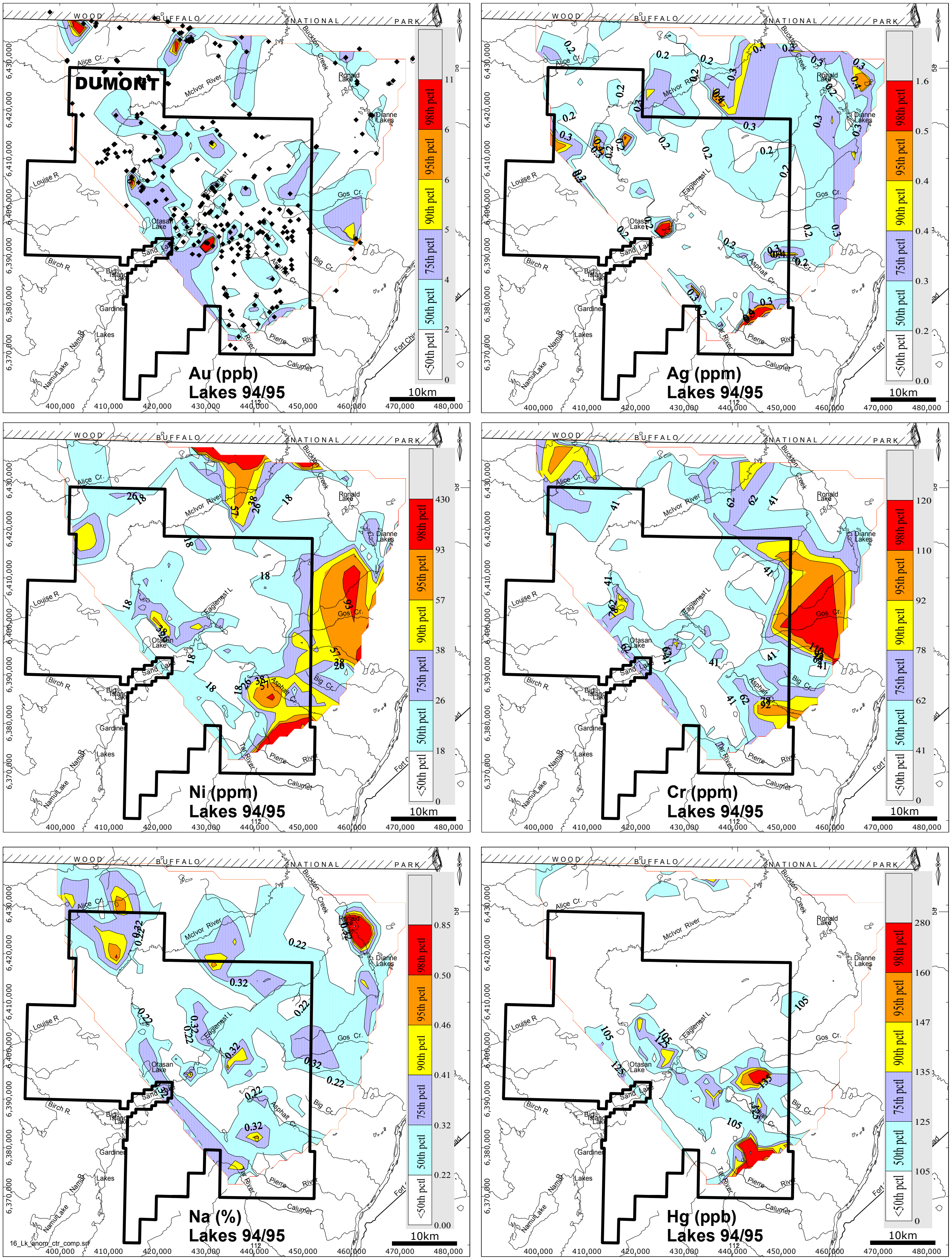


Figure 16: Lake sediment geochemical anomalies for select elements, historic sampling, Birch Mountains, After Alberta Mineral Assessment report MIN9611, Sabag 1996a.

For additional details on the lake geochemical sampling surveys, the reader is referred to a stand alone report on Tintina's sampling programs comprising Appendix C in Alberta Mineral Assessment report MIN9611 (Sabag 1996a). There has been no subsequent lake sediment sampling in the area.

6.2.7 Streams Sediment Geochemical Sampling

Reconnaissance stream sediment geochemical and stream heavy mineral sampling surveys completed by Tintina in 1994 reported the strongest anomalies from Birch Mountains area drainages. Sampling was carried out at an average sample density of 0.8/twp or 1/128km^2, and an overall down-drainage spacing of some 6km between samples. A heavy mineral sample (HMC) was collected from each of the geochemical stream sampling sites.

Analytical work was completed by Cantech Laboratories (AA and FA) and by Becquerel Laboratories (INA), both of which had previously completed the analytical work for the 1993NGR regional geochemical reconnaissance survey, and followed 1993NGR procedures during sample preparation and analytical work. Analytical precision and accuracy were monitored by the insertion of stream sediment controlled standards obtained from the GSC. Efforts were directed to evaluating intra-site and inter-lab variations.

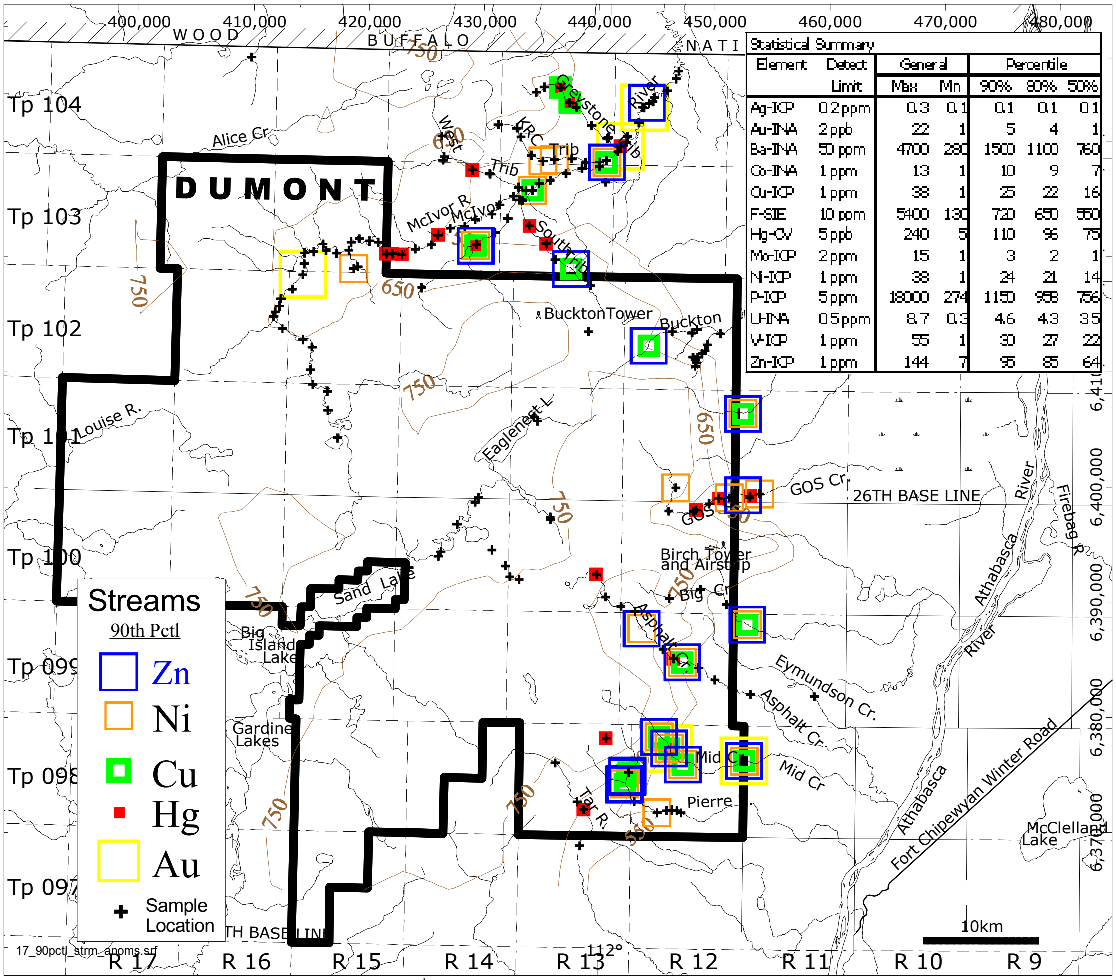
Similarly to the lake sampling survey, in-fill stream sediment sampling was completed by Tintina in 1995 to follow-up certain anomalous areas over the Birch Mountains identified by the 1994 work. Stream sampling focused on Tintina's then Asphalt, Buckton and Eaglenest properties, in addition to the McIvor and Alice properties which are located to the north of Dumont's Property. A total of 162 samples were collected from Birch Mountains area drainages. Concurrently with stream geochemical sampling, heavy mineral stream sediment samples were also collected from nearly all sites geochemically sampled, collectively providing a detailed stream sediment database over the Birch Mountains (over much of Dumont's Property) with an average sample density of 6 per twp or 1 per 16 sq.km. and an overall downdrainage spacing of some 1-2km between sample sites.

Samples were submitted to Activation Laboratories (ActLabs) for analysis, which followed GSC-NGR methodology and procedures. The <80mesh fraction was analyzed. Cuts from the entire 1994 suite of stream sediment samples were also re-analysed at ActLabs to enable incorporation of data from the 1994 work into the 1995 sampling. Duplicate samples were collected from 20 sites and analyzed to assess intra-site variations. In addition, the >80mesh and <80mesh size fractions were also separately analyzed for a suite of samples from the McIvor River to assess variations due to grain size. Samples from the suite were also analyzed for Pt and Pd by conventional lead pre-concentration fire assay.

The Birch Mountains area is characterized by major zones of landslides and widespread slumps from poorly consolidated Cretaceous muddy clastic sequences. Due to the continual recharge of streams in the area by fresh sediments from slumps, stream sediments sampling provides a useful "mapping tool" to quickly characterize entire drainages. Anomalies identified by the surveys are summarized below, extracted from Tintina reports (Sabag 1996a).

Nearly all stream sediment (and mineral) geochemical anomalies identified by Tintina in the Birch Mountains are downstream from exposures of the Second White Speckled Shale and the Shaftesbury Shale Formations which are exposed within a range of elevations varying approximately 520m-650m asl. Nearly all metal geochemical anomalies over the Birch Mountains are congregated over its erosional edges, in sections of the rivers/streams which are at, or below, approximately the 520m-650m elevations, in streams draining the two Formations. As such, stream geochemistry is demonstrably also a good field prospecting technique for identification of exposures of the two Formations.

The most consistently anomalous waterways identified in the area are the Pierre River, Mid Creek and Asphalt Creek, characterized by coincident multimetal anomalies in addition to gold. Pierre River, Tar River and Mid Creek broadly radiate from an area at the headwaters of Pierre River which is also characterized by strong geochemical Zn-Cu-Ni diffusion anomalies in soils (Section 6.2.9). These localities are also mineralogically anomalous even in the context of the Birch Mountains reporting a variety of base metal sulfides, gold and, locally, cinnabar, from heavy mineral concentrates (Section 6.2.8).



Statistical Summary

Element	Detect Limit	General Max	General Min	Percentile 90%	Percentile 80%	Percentile 50%
Ag-ICP	0.2 ppm	0.3	0.1	0.1	0.1	0.1
Au-INA	2 ppb	22	1	5	4	1
Ba-INA	50 ppm	4700	280	1500	1100	760
Co-INA	1 ppm	13	1	10	9	7
Cu-ICP	1 ppm	38	1	25	22	16
F-SIE	10 ppm	5400	130	720	650	550
Hg-CV	5 ppb	240	5	110	96	75
Mo-ICP	2 ppm	15	1	3	2	1
Ni-ICP	1 ppm	38	1	24	21	14
P-ICP	5 ppm	18000	274	1150	958	756
U-INA	0.5 ppm	8.7	0.3	4.6	4.3	3.5
V-ICP	1 ppm	55	1	30	27	22
Zn-ICP	1 ppm	144	7	95	85	64

Figure 17: Streams sediment geochemical >90th percentile anomalies, historic sampling, Birch Mountains. After Figure C34, Alberta Mineral Assessment Report MIN9611, Sabag 1996a. The 650m asl contour demarcates general trace of the Second White Speckled Shale exposures.

While the majority of stream geochemical anomalies in the area are polymetallic, anomalies in Gos Creek, adjacent to the Buckton Zone, are mainly characterized by elevated Ni which can be attributed to Ni-enriched exposures of Cretaceous shales upstream, which also carry native gold. Native gold grains have been also recovered from Gos Creek by Tintina and others (Section 6.2.8).

Inter-elemental variograms included in Tintina reports (Sabag 1996a) show good correlation among most of the metal species in addition to relatively good correlation between Au and other base metals. Au is also correlated with Ba, and good correlation exists between the base metals (especially V) with Al and LOI (attributed to fine clay in stream sediments from muddy exposures predominating the area).

For many of the elements, concentrations within the coarse and fine fractions (>80mesh and <80mesh) are nearly identical within limits of analytical/sample precision normal to stream sediments (±20%). By contrast, Al, Zn, V, Zr and Ni demonstrate affinity for the finer fraction, and were attributed by Tintina to fine clay in stream sediments from muddy exposures predominating the area. The affinity of Zr for the finer fraction is consistent with the presence of abundant very fine Zircon grains in outcrops and river sediment in the general area (Sabag 1996a, AGS 2001).

Au and Cd demonstrate affinity for the coarser fraction, supported by recovery of alluvial gold grains measuring upward to 1mm (well above 80mesh) from heavy mineral concentrates from the area. This general trend is reiterated by the scarcity of Au geochemical anomalies (<80mesh fraction analyzed) from sites throughout the McIvor River, to the north of Dumont's Property, and some of its tributaries, many of which carry abundant alluvial Au grains recovered from heavy mineral samples.

For additional details on the stream sediment geochemical sampling surveys, the reader is referred to a stand alone report on all of Tintina's reconnaissance sampling programs comprising Appendix C in Alberta Mineral Assessment report MIN9611 (Sabag 1996a). There has been no subsequent stream sediment sampling in the area.

6.2.8 Stream Sediment Heavy Mineral Sampling

Tintina completed several reconnaissance Heavy Mineral Concentrate (HMC) sampling surveys across northeast Alberta in 1994 and 1995, during which HMC samples were collected concurrently with the stream sediment geochemical sampling at each site. HMC samples were also collected from certain exposures of muddy shales[8], and from talus material slumped at their base. GSC sample collection and handling methodology and procedures were adopted. Sample coverage over the Birch Mountains, and the Property, is shown in Figure 18.

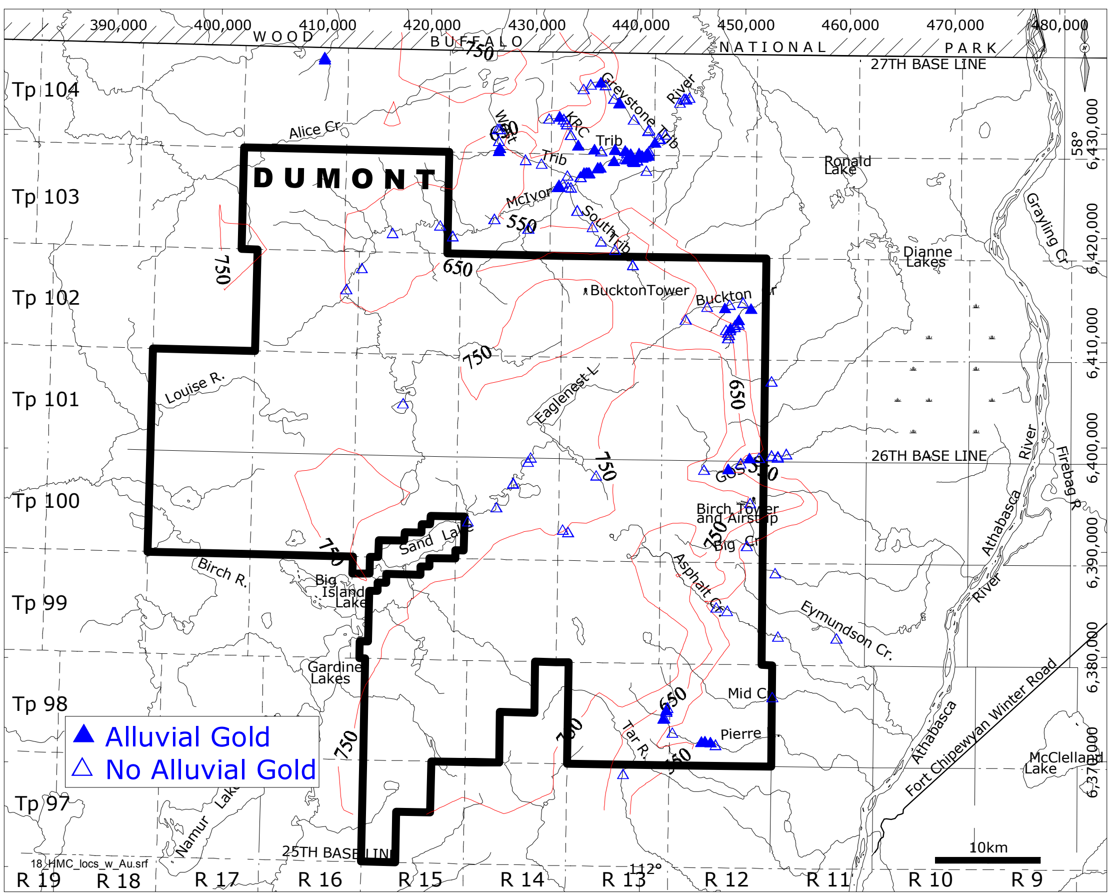


Figure 18: Heavy mineral concentrates sample locations, historic sampling, Birch Mountains, showing also locations reporting alluvial gold. Consolidated from various figures Appendix C, Alberta Mineral Assessment Report MIN9611, Sabag 1996a.

Tintina's HMC surveys were on a reconnaissance scale in 1994, but infill sampling followed in 1995 to investigate mineralogically anomalous drainages which previously had consistently yielded abundant sulfides and native gold from stream sediments, most of which are located in the Birch Mountains on Dumont's Property. Samples were collected at an average down-drainage spacing of 1-2km between

[8] especially the GOS1 gossan over the Buckton Zone. Similar samples collected by the AGS/GSC, see AGS 2001.

sample sites, focusing primarily on streams within the Asphalt Creek and surrounding drainages, Buckton and Gos Creeks, and on the McIvor River and its tributaries.

Heavy mineral concentrates were prepared utilizing conical 19in diameter South American Batea pans equipped with nested sieves. Approximately 2kg-4kg of -18 mesh material (<1mm) was sieved on site at each sample site from approximately 10kg-12kg of alluvial material. In general, "pea gravels" were sampled during the 1994 surveys to maintain inter-sample consistency, although the closer spacing of sites sampled during the 1995 work did not afford sizing selectivity since priority was given to maintenance of close sample spacing. Inter-site variations notwithstanding, a heavy mineral concentrate of approximately 20gm-40gm was generally obtained from each of the samples. Samples were panned in the field during the 1994 sampling, and during the 1995 work they were panned in warehouse facilities in Fort McMurray. Archives of sieved material were collected from some of the samples.

The concentrates were examined wet by binocular microscope in Tintina's Fort McMurray facilities and their mineralogy generally characterized with particular attention to (i) determination of the presence or absence of gold grains; and (ii) speciation of sulfides and their morphologies. Several sites were also sampled independently by Mr.S.B.Ballantyne of the GSC. Some of the gold grains recovered were "picked" to graphite tape coated stubs and submitted to the GSC for characterization by scanning electron microscopy (SEM). A small suite of gold grains were also examined by Electron Microprobe (D.Harris, GSC, Ottawa) to investigate rim-to-core compositional variations. Other mineral grains of interest were also submitted to the GSC for microanalytical characterization by SEM (S.B.Ballantyne, GSC, Ottawa).

In addition to work conducted in the field, or at field facilities, more detailed mineral concentration and examination work was also commissioned by Tintina to be completed by third-party laboratories under more controlled conditions as follows:

(i) Considerable gold was recovered by Tintina from some of the gold bearing HMCs (mostly from McIvor River) during orientation tests by tabling at facilities in Timmins (>>1,000 gold grains). The entire suite of gold bearing HMC samples were subsequently reconstituted, properly sized and re-concentrated in a more controlled environment during early 1995 by Consorminex Inc., Gatineau, Quebec. Details of this work are outlined in a report by Consorminex in Appendix C5 in Alberta Mineral Assessment Report MIN9611 (Sabag 1996a).

(ii) An orientation suite of a dozen HMCs were submitted to Consorminex Inc. in December 1994[9] for detailed mineral characterization. A broader study followed in January 1995, also by Consorminex[10], focusing on a larger suite of HMCs in addition to the tabling of samples of poorly consolidated shales from select outcrops in the vicinity of gold bearing river sections from the Birch Mountains. Results from this work are incorporated in two stand-alone reports by Consorminex appended as Appendix C5 in Alberta Assessment Report MIN9611 (Sabag 1996a).

(iii) All HMCs collected from regional reconnaissance work were further concentrated by Consorminex in early 1995 to "Batea points" and characterized in detail by binocular microscope. Results of this work are outlined in a report by Consorminex in Appendix C5.3 in Alberta Mineral Assessment Report MIN9611 (Sabag 1996a).

(iv) A suite of 34 HMCs were selected to evaluate variations among four principal drainages in the Birch Mountains. Subsamples of panned concentrates were characterized by binocular microscope by J.L.Lourim, of J.L.Lourim Associates, Toronto. Details of this work are outlined in a stand-alone report by Lourim[11] included as Appendix C5 in Alberta Mineral Assessment Report MIN9611 (Sabag 1996a).

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[9] Report: Report on Tabling Testwork, HMC Sampling 1994. Consorminex Inc. March 1995. Appendix C5, Alberta Mineral Assessment Report MIN9611, Sabag 1996a.
[10] Report: Summary Report on reconcentration of 1994 panned HMCs. Consorminex Inc. June 1995. Appendix C5, Alberta Mineral Assessment Report MIN9611, Sabag 1996a.

The Birch Mountains area is characterized by major zones of landslides and widespread slumps from poorly consolidated Cretaceous muddy clastic sequences. Due to the continual recharge of streams in the area by fresh sediments from slumps, HMC sampling provides a useful "mapping tool" to quickly characterize entire drainages.

Results from Tintina's HMC sampling programs mineralogically "mimic" corresponding results from the stream sediment geochemical sampling, and mineral anomalies discovered also corroborate corresponding geochemical anomalies identified by the stream sediment geochemical sampling results.

The most productive sites, reporting high contents of metals from Tintina's stream HMC sampling programs across northeast Alberta, are those from drainages in the Birch Mountains, yielding high proportions of good heavy mineral concentrates often characterized by abundant sulfides (upward to 80% of the HMC by volume) giving way downstream to concentrates with abundant magnetite/Ilmenite often accompanied also by alluvial gold grains.

Nearly all mineral anomalies in the Birch Mountains, especially those with abundant sulfides, are downstream from exposures of the Second White Speckled Shales and the Shaftesbury Formations which are exposed within a range of elevations varying 520m-650m asl. The most consistently anomalous waterways in the Birch Mountains are the Pierre River, Mid Creek and Asphalt Creek, which are also mineralogically anomalous even in the context of the Birch Mountains, returning a broad variety of base metal sulfides from HMCs in addition to cinnabar and gold. (Subsequent soil geochemical sampling surveys indicate that Pierre River, Tar River and Mid Creek broadly radiate from an area at the headwaters of Pierre River which is also characterized by soil geochemical Zn/Cu/Ni diffusion anomalies – see Section 6.2.9).

Sizes of gold grains recovered by Tintina vary widely within the region, and within the Birch Mountains, ranging from 10µm-20µm upwards to nearly 1mm (the maximum passing the -18 mesh sieve size fraction collected and panned). The larger grains recovered were generally from the McIvor River, to the north of Dumont's Property, comprising partly rounded grains some of which with very delicate appendages. By far the highest gold grain counts are reported from samples in the McIvor River drainage, especially at the confluence with its KRC Tributary[12].

Many of the gold grains recovered by Tintina from the Birch Mountains streams examined by SEM indicate the ubiquity of pristine and crystalline morphologies among the grains recovered from streams as well as the widespread intergrowths of sulfides predominated by inclusions and encrustation of Fe±Cu sulfides. In general terms, pristine and delicate morphologies characterize gold grains recovered from the McIvor River typified by high fineness often ranging 940-980, lacking silver depletion in the rims (Electron Microprobe data from D.Harris, GSC, Ottawa). The grains appear "fresh", and are distinctly different from gold grains recovered from elsewhere in the northeast Alberta, many of which are pitted and are of lower fineness.

Tintina concluded (as did the AGS and GSC from their independent work) a local provenance for the gold grains discovered in the Birch Mountains streams, corroborated by gold recovered from tabling concentrates prepared by Consorminex of samples of poorly consolidated muddy shales from two exposures: the GOS1 gossan (Samples E5100 and E5100B, Buckton Zone, on Dumont's Property) and an exposure of shale (Westgate?) exposed along the KRC Tributary to the McIvor River.

Samples of material tabled from the GOS1 gossan reported gold grains which under SEM examination (GSC) were found to be relatively pristine and with intergrowths/encrustations of sulfides. The gold grains

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[11] Report: Binocular Microscope Analysis of Batea HMC NW Sector, Northeastern Alberta. J.Lourim, July 1995. Appendix C5, Alberta Mineral Assessment Report MIN9611, Sabag 1996a.

[12] The frequency of the incidence of gold grains discovered by Tintina in 1994 HMCs from the McIvor River, the number of grains and their sizes were sufficiently compelling that Tintina initiated a stand-alone program in 1995 to evaluate the gold placer potential of the McIvor River Valley. The McIvor River was also subsequently explored by Ateba Mines Limited in 2000-2002 for its placer potential (Sabag 2002). The area is currently held by Athabasca Minerals whose focus is on diamond exploration.

recovered are nearly identical in appearance to many of the grains recovered from sites within the Birch Mountains (Plate 1). Some of the gold grains recovered from GOS1 also revealed intergrowths with Fe+Cu sulfides. Gold grains are also reported from sampling of the GOS1 gossan by the AGS shown in Figure 19. (after AGS 2001)

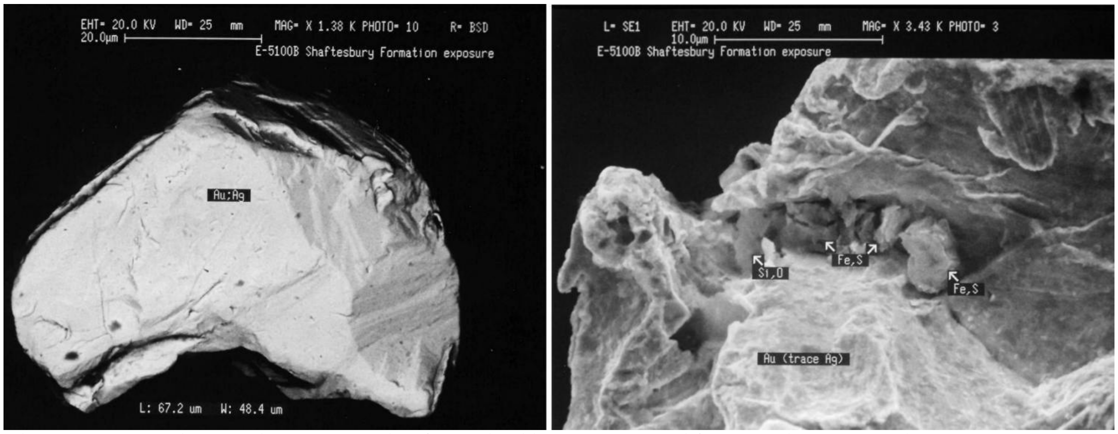


Plate 1: Scanning Electron Photomicrographs of typical gold grains recovered from samples E5100 and E5100B, GOS1 gossan, Buckton Zone. SEM work from S.B.Ballantyne, GSC. Photographs from the author's collection Sabag 1994-1999, and Ballantyne et al 1995, poster sessions.

Elutriation tube tests conducted by Consorminex (sample 1034x, Asphalt Creek) indicated that very fine, flattish, gold grains (<50μm) frequently noted in samples are impossible to recover by tabling as they are prone to "floating". Gold losses at the table were estimated to be as high as 90%. Sample "wetting" and difficulties of clay disaggregation were challenges throughout the testwork, and were not satisfactorily resolved.

The majority of HMCs collected across the region by Tintina and others typically reported upward to 10% sulfide minerals predominated by pyrite(s) and marcassite. By marked contrast, HMCs from rivers draining the Lower-Middle Cretaceous shale Formations across the Birch Mountains typically reported sulfide contents ranging upward to 80% (Plate 2), in addition to sulfidized fossils (e.g. fish bones, small shells). The sulfides are dominated by pyrites and marcasites exhibiting a broad variety of morphologies and colors, including framboids, botryoids, cubes, bipyramids, rods and specular agglomerations, most of which are in various stages of tarnish exhibiting a spectacular range of colors.

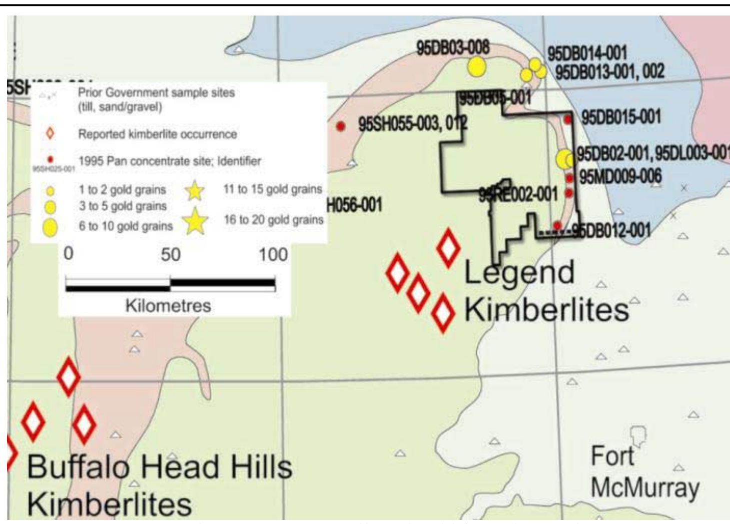


Figure 19: AGS sample sites reporting alluvial gold from the Birch Mountains, showing also known kimberlites in the area. After AGS 2001.

The above has been attributed to the tendency of sulfides from sites draining the Cretaceous shales to oxidize soon after release from their carbonaceous shale matrix, reducing the HMC to a scummy agglomeration of rust and gel (Plate 3). Spherical, framboidal and specular morphologies are most unstable of all, frequently predominating sulfide mineralogy noted in HMCs upstream from occurrences of alluvial gold (e.g. KRC and Greystone Tributaries, McIvor River). In addition, Some of the sulfide mineralogy in Birch Mountains streams are "trapped" in mud-balls (Plate 2) and in the clay fraction of the stream sediments nearer their source. The sulfide mineralogy is released downstream once the clay has completely disaggregated, though the bulk of the sulfidic mineralogy will have disintegrated within a distance of some 3km downstream, leaving behind magnetite, heavy silicates phosphates and, occasionally, gold.

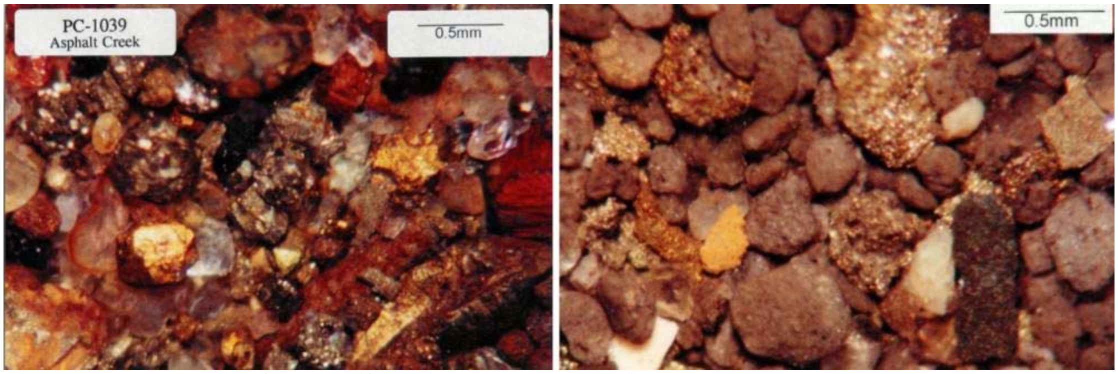


Plate 2: Photomicrographs of typical sulfide rich stream heavy mineral concentrate samples, stream site 1039, Asphalt Creek, Birch Mountains . Images from Sabag 1994-1999, Ballantyne et al 1995 poster sessions.

As a result of the above, the downstream distribution of heavy minerals in many of the Birch Mountains drainages is different in some respects from that normally associated with placers (eg, Yukon or the Canadian Shield). Though the majority of the heaviest mineralogy in Birch Mountains streams is, as expected, nearer the sediment source, alluvial gold is often found further downstream, often further downstream than the sulfide-rich sections of the drainage in sediments which contain little sulfide. The overall pattern provides a good prospecting tool whereby alluvial gold can almost always be traced upstream to sulfide-rich sediments which themselves can be traced immediately (~0.5km) upstream to exposures of the Second White Speckled and Shaftesbury Shale Formations. Tintina attributed this pattern to entrapment of at least the finer gold grains in agglomerations of other fine sulfides within muds. Binocular examination of stream sediment samples (and samples of Cretaceous muds) in mid-disintegration has occasionally noted gold grains included in rusty iron+sulfur compounds, an association which has been frequently mis-interpreted by those unfamiliar with Birch Mountain sediments to be of anthropogenic provenance.

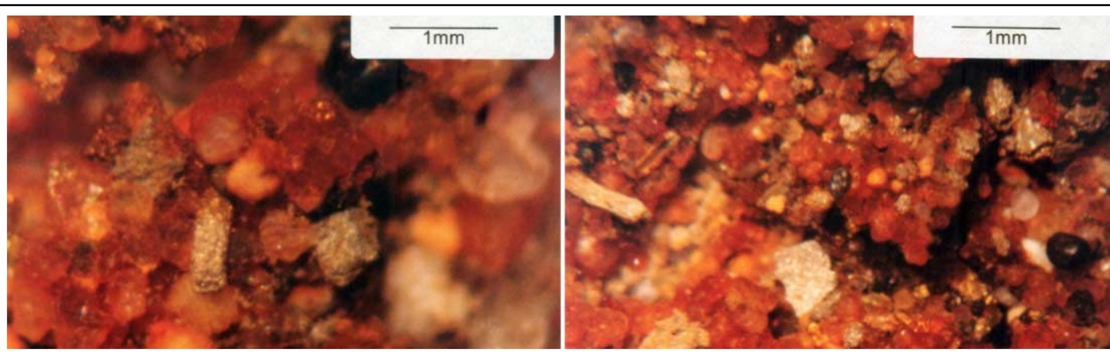


Plate 3: Iron stained "rusting" heavy mineral concentrate, Birch Mountains. Images from Sabag 1994-1999.

Other concurrent work in the region investigating heavy mineralogy is glacial till sampling surveys conducted by the Alberta Geological Survey (M.Fenton) focusing on kimberlite indicator mineralogy with some success (Dufresne et al 1994). Despite the success of the AGS in identifying kimberlite indicator minerals within certain portions of the region, the HMC surveys completed by Tintina addressed same only in passing in deference to maintaining the primary focus of field work on metallic mineralogy (duplicate samples were archived for future study). Kimberlite indicator mineralogy documented from historic work is presented in Section 6.3.3 of this Report.

For considerable additional descriptive documentation of heavy mineralogy from the Birch Mountains and Dumont's Property, the reader is referred to a stand alone report on all of Tintina's reconnaissance sampling programs comprising Appendix C in Alberta Mineral Assessment report MIN9611 (Sabag 1996a). There has been no subsequent stream sediment heavy mineral sampling in the area.

6.2.9 Soil Geochemical Sampling

Several soil sampling surveys were completed by Tintina in 1995 over select areas over its 3 million acres of Properties in northeast Alberta, to evaluate the efficacy of soil geochemical exploration to resolve sources to anomalous trends identified by lake and stream sediment geochemical sampling. The anomalous trends comprise polymetallic geochemical anomalies spatially associated with large structural features as interpreted from the subsurface stratigraphic modeling. Many of the structural features are also reinforced by airphoto and remote imagery analysis and field mapping. B-horizon soil samples were collected along 10km-40km long regional traverses, and over localized grids, over the anomalous trends. Samples were analyzed by Enzyme Leaching at Activation Laboratories, Ancaster, Ontario.

Enzyme Leaching is a selective leaching technique developed by Dr.R.Clark and J.Yaeger, which employs an enzyme reaction to selectively dissolve amorphous Manganese oxides to measure their "scavenged" metallic content. The technique has proven effective for detection of metal diffusion from buried reducing bodies such as sulfide deposits or hydrocarbons. Geochemical anomalies are identified based on geochemical relief (e.g. as multiple of background), and certain diagnostic elemental groups are relied upon to identify faults (Faulting Suite), or a buried reducing body (Oxidation Suite), or to enable interpretations of chemical characteristics of a suspected buried source. Anomalies identified by enzyme leaching are spatially well resolved, tending to immediately overly their source. The technique is well suited to localization of drill holes to test the suspected source of any anomaly identified (Clark, 1992).

Results from Tintina's 1995 soil sampling surveys showed good soil geochemical relief indicating suitability of the technique to exploration within the region for identification of trace element diffusion patterns overlying certain fault zones. Majority of the soil geochemical anomalies identified could be reasonably well correlated with subsurface geology as well as with other anomalous surface geochemical trends, and results were applied to identify those structures (fault zones) which are mineralized among the countless structural features previously interpreted relying on broad regional geological extrapolations and on modeling of subsurface geology from oil well picks.

Follow-up in-fill soil sampling was completed in 1996 over select anomalies identified in the Birch Mountains to better define the anomalies and to localize drill targets. Samples were similarly analyzed by Enzyme Leaching at Activation Laboratories. Tintina selected three anomalous areas for detailed follow-up, located over large structural features suspected to be associated with buried sulfides in the Birch Mountains, on property currently held by Dumont. These are: the GOS Creek area (GOS1 gossan, Buckton Zone), the Eaglenest Lake area, and the Pierre River area (Asphalt Zone). The areas are shown in Figure 20 (Alberta Mineral Assessment Reports MIN9911, MIN9912, MIN9613 and MIN9802, Sabag 1996a, b, c and 1998, respectively. Results from the surveys were interpreted principally by Tintina with input from Dr.R.Clark, especially during the final resolution of anomalies and drill targets selection.

The most conspicuous characteristic of the soil sampling survey results is the overall subdued nature of oxidation anomalies throughout most of the region, in marked contrast to the generally strong diffusion anomalies from areas overlying faults. The diffusion anomalies identified by Tintina are typically characterized by high foreground:background contrasts in Ni±Cu, or Zn±Ni±Cu±V or Zn±V, associated also with equally strong anomaly contrasts for the Fault Indicator Suite consisting of Zr+U+REE±Pd. These were interpreted to reflect diffusion of trace metals through local faults from mineralized source rocks beneath the anomalies.

The strongest soil geochemical anomalies identified by Tintina are located in the Birch Mountains, and are characterized by high foreground:background contrasts in Ni±Cu, or Zn±Ni±Cu±V or Zn±V, associated also with equally strong anomaly contrasts for the Fault Indicator Suite of elements (Zr+U+REE±Pd). Several of the anomalies identified at, and in the vicinity of, the Buckton and Asphalt Zones are also characterized by high enough levels of the principal metals that they can be regarded to be anomalous in absolute terms for B-horizon soils analyzed by enzyme leaching as compared to Enzyme Leaching databases from other areas in North America and elsewhere (e.g. Cu>50ppb, Ni>800ppb, Zn>800ppb). (Personal communications R.Clark, 1995-1996).

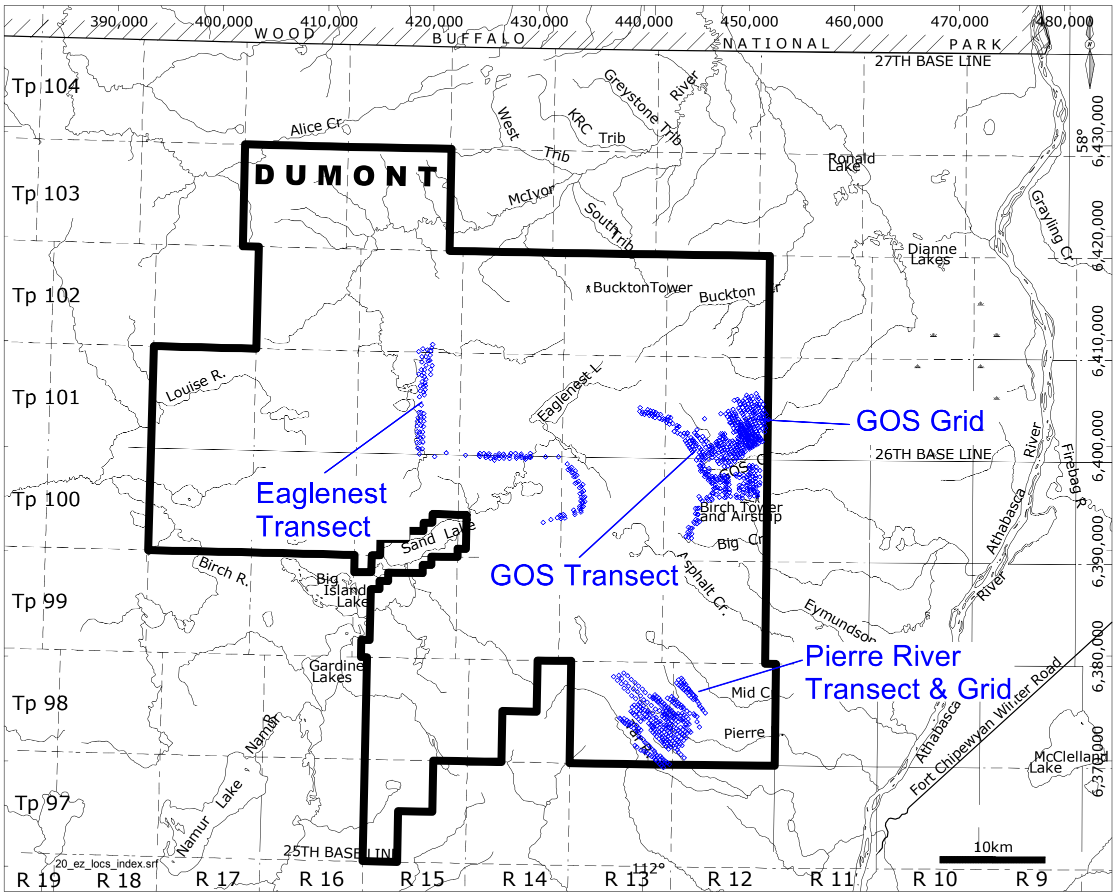


Figure 20: Historic soil sampling survey locations, Birch Mountains. After Figure 7, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Other trends which were regarded by Tintina and Clark to be anomalous in absolute terms when compared to Enzyme Leaching databases from elsewhere in the world are (i) the ubiquity in the region, especially over the Birch Mountains, of Te anomalies associated with base metal diffusion anomalies; (ii) the contrasting Se-Te anomaly vectors (suggestive of non-hydrocarbon source for the Te); and (iii) the commonality of Pd(±Rh) anomalies also locally associated with faulting, regardless of underlying near-surface rocktype.

Sampling completed by Tintina over Dumont's Property in the Birch Mountains, are summarized below, area by area, with interpretations extracted from Tintina reports. The author has reviewed the historic information and concurs with Tintina's conclusions, especially with the benefit of results from subsequent drilling (1997) which confirmed buried metallic mineralization beneath the soil anomalies tested.

GOS Creek Transect and Grids (Buckton Zone and vicinity): Soil sampling was first conducted in 1995 along a 15km long transect, consisting of three parallel traverses 250m apart sampled at a sample density of 500m between samples. The transect is located over, and in the vicinity of, the GOS1 gossan (Buckton Zone) which is oriented to test several fault zones in a general area reporting metal enrichment in rocks and in stream sediments. The transect straddles a major southeasterly fault in the area, as well as several northeasterly fault zones one of which, the GOS1 fault zone, is associated with metal enrichment in carbonaceous shales exposed at the GOS1 gossan.

Sampling was augmented in 1996 by sampling a gridded 9kmx9km area located immediately uphill from the GOS-1 gossan. Samples were collected at 200m-300m intervals along northwesterly oriented lines spaced 250m-400m apart. The grid was positioned to principally straddle Ni+Cu anomalies discovered during the 1995 soil sampling associated with, or over, the GOS1 gossan, and its projected extensions. The GOS1 gossan is an extensive hill-side exposure of metal enriched Second White Specks Formation

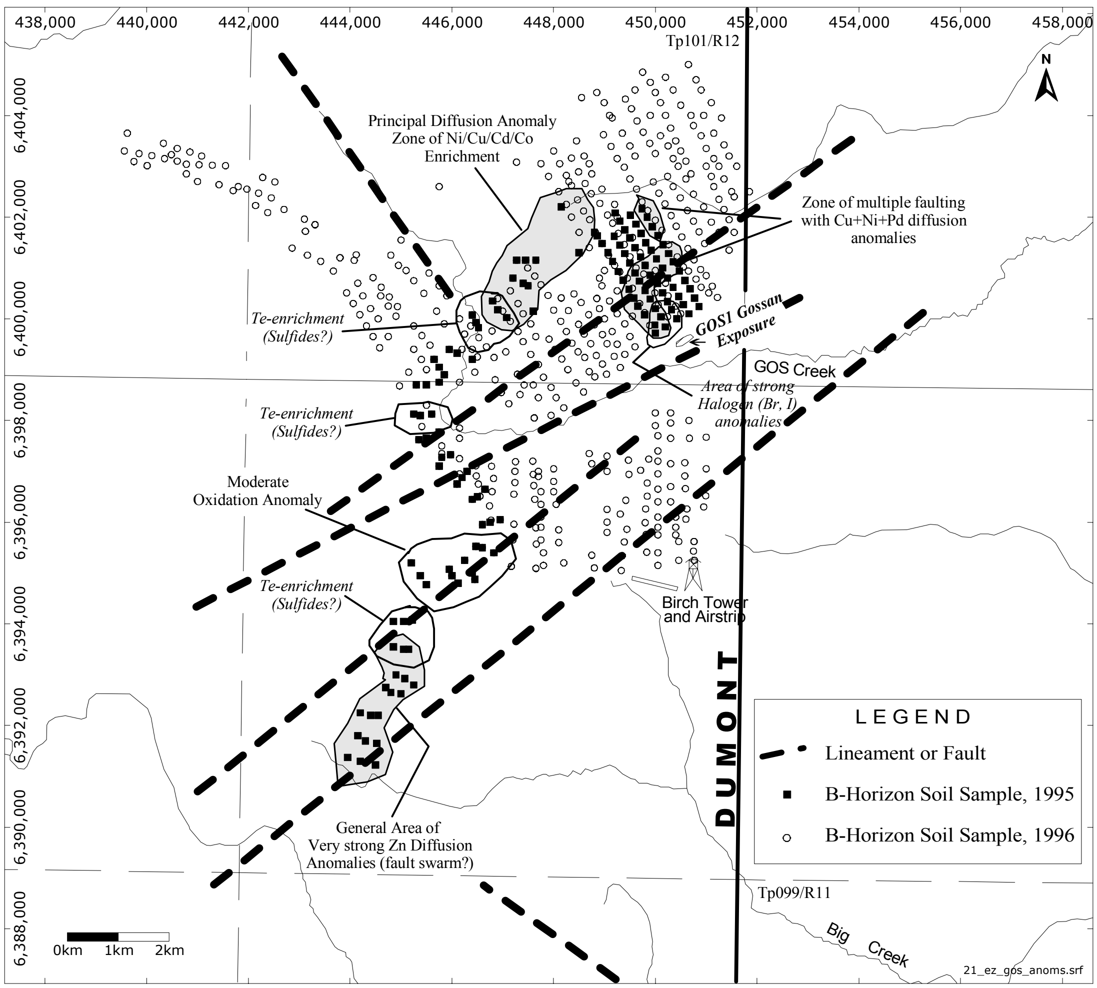


Figure 21: Historic soil sampling locations and general anomalies, GOS Transect and Grid. After Figure 24, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

shales (Ni+Cu+Zn+V+Co±Au). A 5km long northwesterly transect, comprising three lines, was also sampled over suspected faulting to the west of the grid area. The transect and interpreted results therefrom are shown in Figure 21.

The GOS1 area, and vicinity, is characterized by relatively well developed soils with variable, though often minimal, overburden thickness underlain by locally sulfide-bearing Middle Cretaceous shales (predominantly FeS with subordinate Cu-Ni-Zn sulfides ±Au). The stratigraphy is characterized by slumps and mudslides in the area.

The GOS Creek transect and vicinity are characterized by lithogeochemical base metal anomalies over its northern portions (exposed at the GOS1 gossan) and in outcrops exposed in the headwaters of GOS Creek. The southern extremity of the transect is proximal to the headwaters of Asphalt Creek which are characterized by polymetallic stream and lake geochemical anomalies (Figure 17) associated also with abundant sulfides in heavy mineral concentrates of alluvial material from the Asphalt Creek.

Both the northern and southern extremities of the GOS Creek Transect are on the flanks of major stratigraphic disturbances based on interpretations from the subsurface stratigraphic model based on correlation of oil well picks from the area (previously discussed in Section 6.2.5). The stratigraphic disturbances in both areas are associated with fault zones with vertical down-dropping which may be regarded as regional scale grabens crossing the Birch Mountains. Soil sampling results reflect these structural features and define several metal anomalies, the principle ones being in the northernmost and southernmost portions of the Transect, comprising groups of diffusion anomalies characterized by two different metal assemblages:

> **the southern portion** is characterized by a series of conspicuously high Zn concentrations often ranging upwards to x15-x20 background (upward to approximately 1100ppb) correlated also with higher concentrations in the Faulting Suite of elements (particularly Zr, U and Ce). Areas with elevated Zn also report elevated Cu and the entire interval can be regarded to be an area of acute fault-related diffusion anomalies overlying Zn+Cu bearing sulfide mineralization further supported by anomalies also in Te.
>
> **the northern portion** is characterized by very high Ni concentrations (upward to 800ppb) accompanied by equally anomalous levels of Cu and Pd (with subordinate Zn) all of which correlate well with highly anomalous Faulting Suite element concentrations (Zr,U,Th). Similar patterns characterize the sampling over the grid overlying extrapolated extension of the Ni+Cu+Zn+V bearing GOS-1 gossan. Many of these anomalies are also reinforced by a series of high relief halogen anomalies, notably Br and I, further supporting considerable geochemical diffusion in the area.

In addition to the above metal anomalies, an oxidation anomaly over the central portion of the transect is also noteworthy and is characterized predominantly by medium contrasts in Br contents and zones of overall Te enrichment, all of which can be correlated with underlying faulting.

Based on the above, and augmented with results from detailed 1996 grid sampling, several locations were selected by Tintina for future follow-up. After ranking and prioritization based on geological and logistical criteria, ten targets were selected by Tintina to be tested with drilling, to test for the suspected presence of metal enrichment zones buried beneath the soil anomalies. Six of these targets were drilled during the ensuing 1996-1997 drill program which confirmed the presence of metal enrichment beneath the surface anomalies (discussed in Section 6.2.12). Anomalies and drill holes "as planned" and "as drilled" are shown in Figure 22.

Pierre River Transect and Grid (Asphalt Zone and vicinity): Soil sampling was first conducted in 1995 at an approximate sample spacing of 500m along the Pierre River Transect, a 7.5km long transect consisting of 3 parallel traverses approximately 500m apart. The transect is oriented northwesterly paralleling Pierre River, across an aeromagnetic "high" (Figures 30 and 31) which is also coincident with several faults crossing the area. Detailed in-fill follow-up sampling was completed in 1996 over the southern portion of the Transect, along an approximate 6km x 8km grid. Samples were collected at 200m-300m intervals along northwesterly oriented lines spaced 250m-400m apart. The transect and interpreted results therefrom are shown in Figure 23.

The vicinity of the Pierre River Transect and grid is characterized by a multitude of polymetallic stream and lake geochemical anomalies (Figures 16 and 17) as well as abundant gold grains in heavy mineral concentrates (HMC) of alluvial material from Pierre River. HMCs recovered from the area by Tintina have reported abundant sulfides (predominately FeS species) in addition to apatite, pristine zircons, wine stained pyrite, tourmaline, rutile, specularite (or specular hematite), and traces of kyanite, brown tourmaline (dravite?), barite and cinnabar. Some of this mineralogy was corroborated by independent sampling by the AGS (AGS 2001) and by considerable other subsequent heavy mineral characterization work by Tintina conducted in 1998-1999 to investigate diamond indicator mineralogy from the area (discussed in Section 6.3.3 of this report).

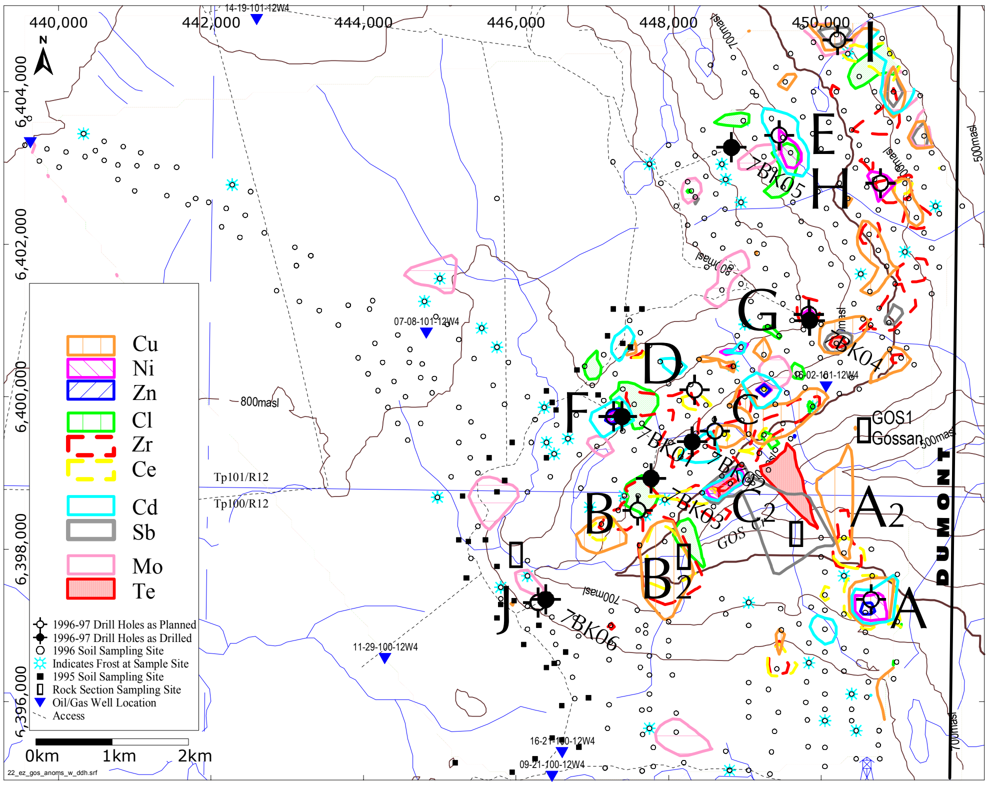


Figure 22: Historic soil geochemical anomalies, GOS Creek Transect and Grid, Buckton Zone. Showing also Tintina drill targets "as planned" and "as drilled". After Figure 28, Alberta Mineral Assessment Report MIN9802, Sabag 1998

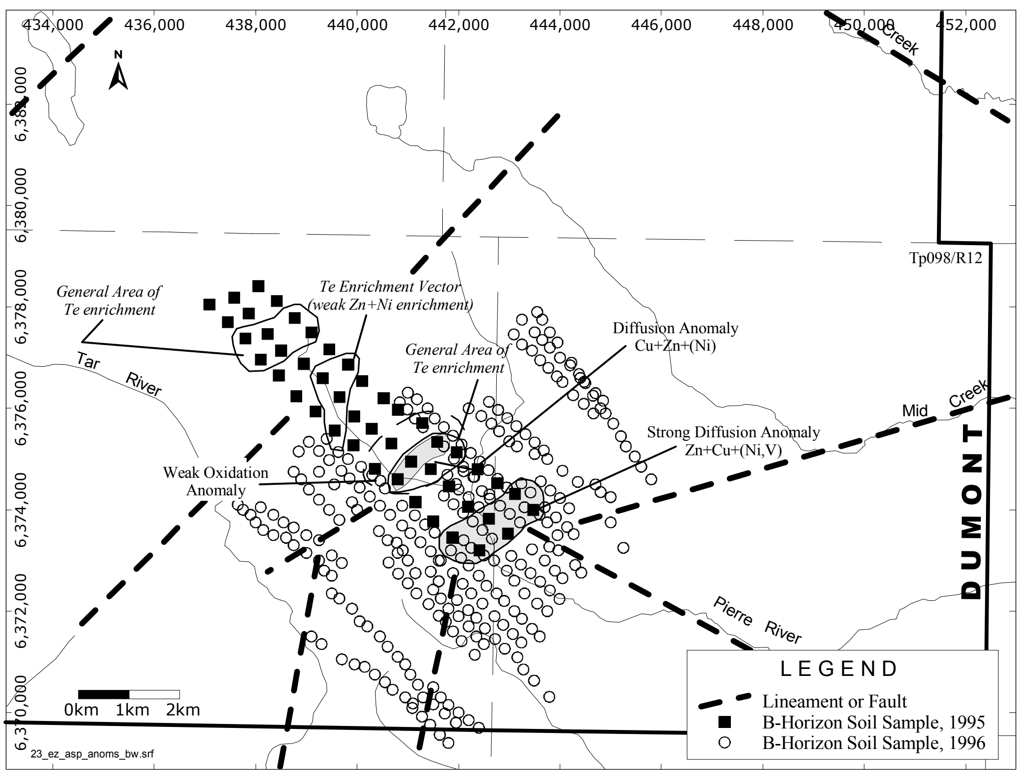


Figure 23: Historic soil sampling locations and general anomalies, Pierre River Transect and Grid. After Figure 25, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Results from the soil sampling are overall characterized by relatively subdued relief for the Oxidation Indicator Suite of elements which define a weak oxidation anomaly directly overlying the magnetic "high" on the flanks of Cu+V+Zn enrichment. This area is also anomalous in Te suggesting possible association with buried sulfides, although anomalies among the Faulting Suite of elements associated with the area could signal fault related diffusion of metals from a buried Cu+Zn+V bearing source.

the southernmost portion of the traverse reported the most conspicuous anomalies, characterized by Zn+Cu+Ni±V anomalies with high foreground-background relief associated with equally well defined anomaly contrasts in the Faulting Suite of elements, notably for Zr and U. Not only are the metallic anomalies in this portion of the Transect characterized by well defined relief, the absolute concentration of the metals in the B-horizon can also be considered to be extremely high insofar as analysis by enzyme leaching methodology is concerned.

the center of the sampling grid reported a series of polymetallic, often coincident, anomalies, congregated within a narrow zone in Pierre River valley between the 600m-650m (asl) elevations are of particular note, as they are strong polymetallic anomalies dominated by Zn/Ni but also locally accompanied by Cu/Sb/Mo. All of these anomalies were interpreted by Tintina to be diffusion anomalies overlying a source of Zn+Cu+Ni±V bearing rocks.

The detailed 1996 follow-up sampling further resolved anomalies, and ten locations were selected for future follow-up. After ranking and prioritization based on geological and logistical criteria, seven targets were selected to be tested with drilling, to test for the suspected presence of metal enrichment buried beneath the soil anomalies. Two of these targets were ultimately drilled during the ensuing 1996-1997 drill program which confirmed the presence of metal enrichment beneath the surface (discussed in Section 6.2.12). Anomalies and drill holes "as planned" and "as drilled" are shown in Figure 24.

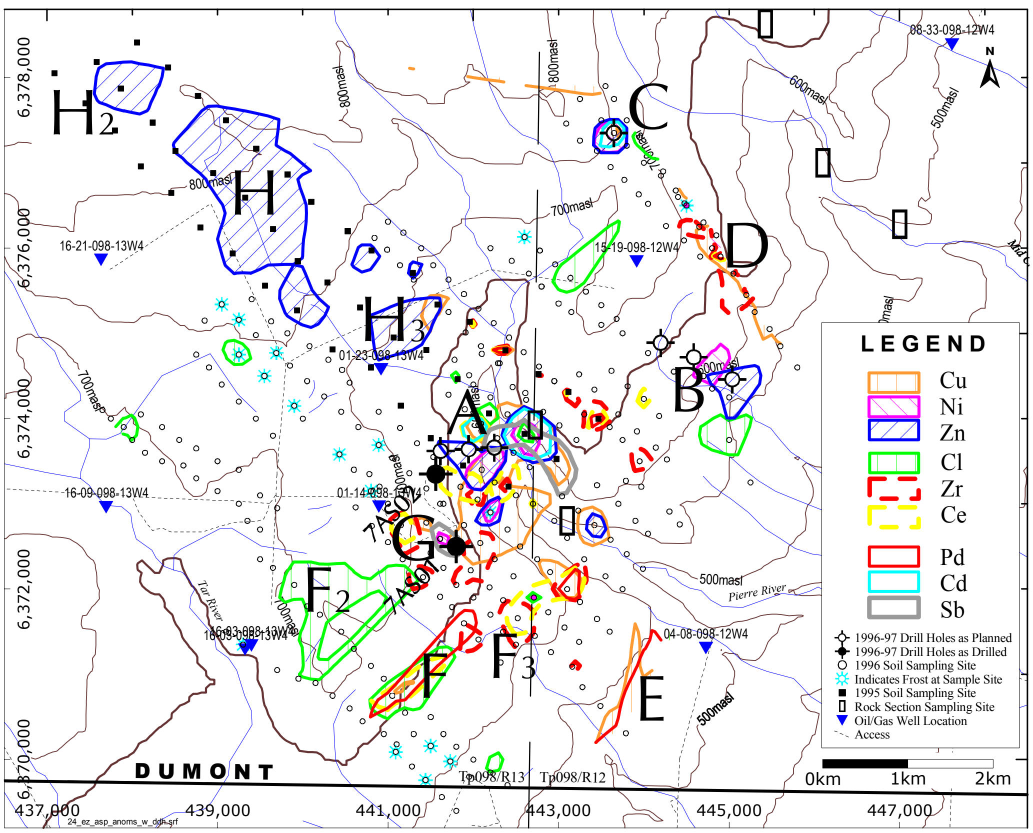


Figure 24: Historic soil geochemical anomalies, Pierre River Transect and Grid, Asphalt Zone. Showing also Tintina drill targets "as planned" and "as drilled". After Figure 29, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Eaglenest Lake Transect: Soil sampling was completed in 1995 along a 35km long transect, consisting of 3 parallel traverses approximately 250m apart, at a 500m sample spacing. The transect is oriented in a general "S" shaped configuration to intersect several faulting directions passing through the area (Figure 25), and it straddles several fault junctions associated with stratigraphic disturbances underlying a number of polymetallic stream and lake geochemical anomalies. There are no bedrock exposures in the area, although debris from glacio-tectonic activity is suspected in the immediate vicinity of Eaglenest Lake (Section 7.4 of this Report).

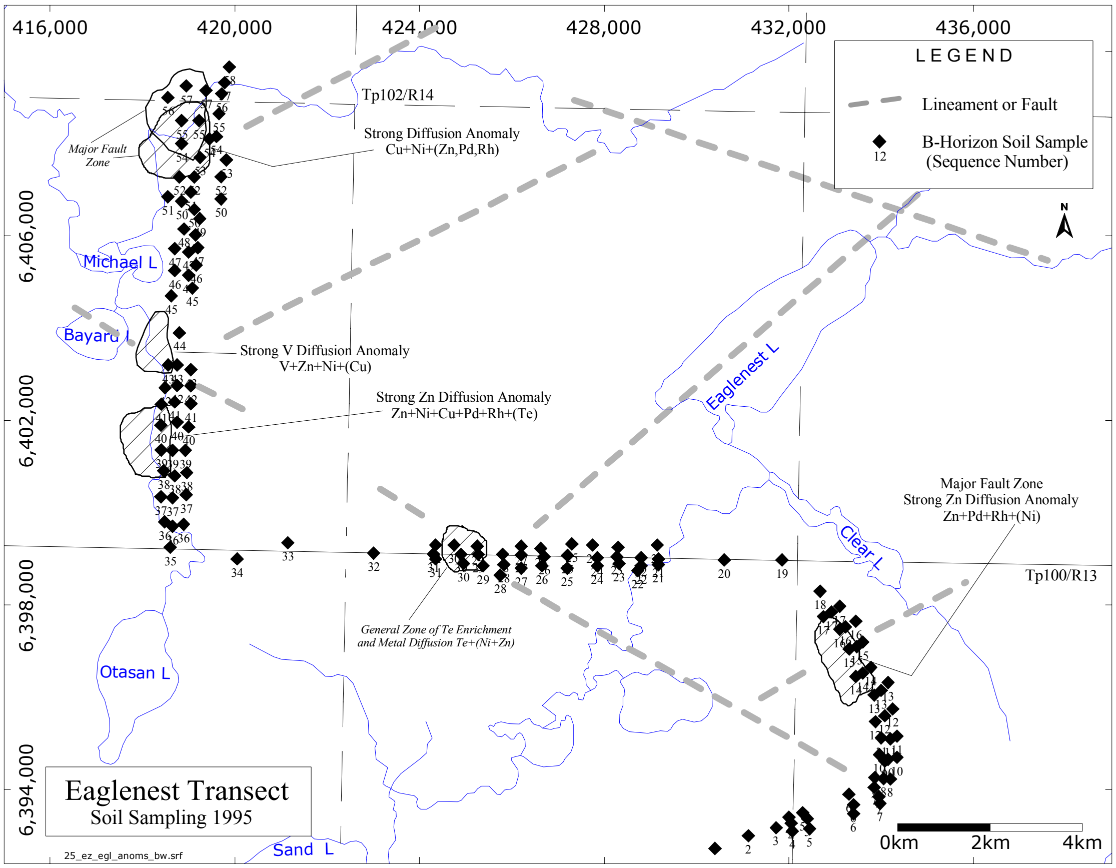


Figure 25: Historic soil sampling locations and general anomalies, Eaglenest Transect. After Drawing E9, Alberta Mineral Assessment Report MIN9612, Sabag 1996c.

Results from the sampling are characterized by the ubiquity of Te anomalies especially over locations with elevated metal contents. The most conspicuous metal anomalies are characterized predominately by Cu+Ni (±Pd,±Rh), or are dominated by V+Zn+Ni+Cu or by Zn (±Pd,±Rh), all of which were interpreted to represent metal diffusion from underlying metal rich sources.

Patterns for the Fault Indicator Suite of elements over the Eaglenest transect correlate very well with a great number of faults which pass through the area most of which had previously been extrapolated from stratigraphic correlations or lineament interpretation. Four principal anomalies were identified by Tintina from the sampling, three of which are located over the northern portion of the transect, one in the middle and one midway over its southern stretch. All anomalies identified were interpreted as being fault related diffusion anomalies.

No follow-up sampling was completed over the Eaglenest area since Tintina ceased work on the area to concentrate its efforts on the Asphalt and Buckton Zones.

6.2.10 Lithogeochemical Sampling and Mapping

Mapping and lithogeochemical sampling programs were completed by Tintina over the Birch Mountains (Figure 26) in 1994 and 1995. Similar concurrent mapping and sampling were also conducted by the AGS-GSC (AGS 2001), to investigate the Shaftesbury and related Formations throughout the region over an area extending east from west-central Alberta to the Birch Mountains (Figure 27). The AGS sampling provides good corroboration for results reported by Tintina from its work, since many of Tintina's sample sites were duplicated also by the AGS work.

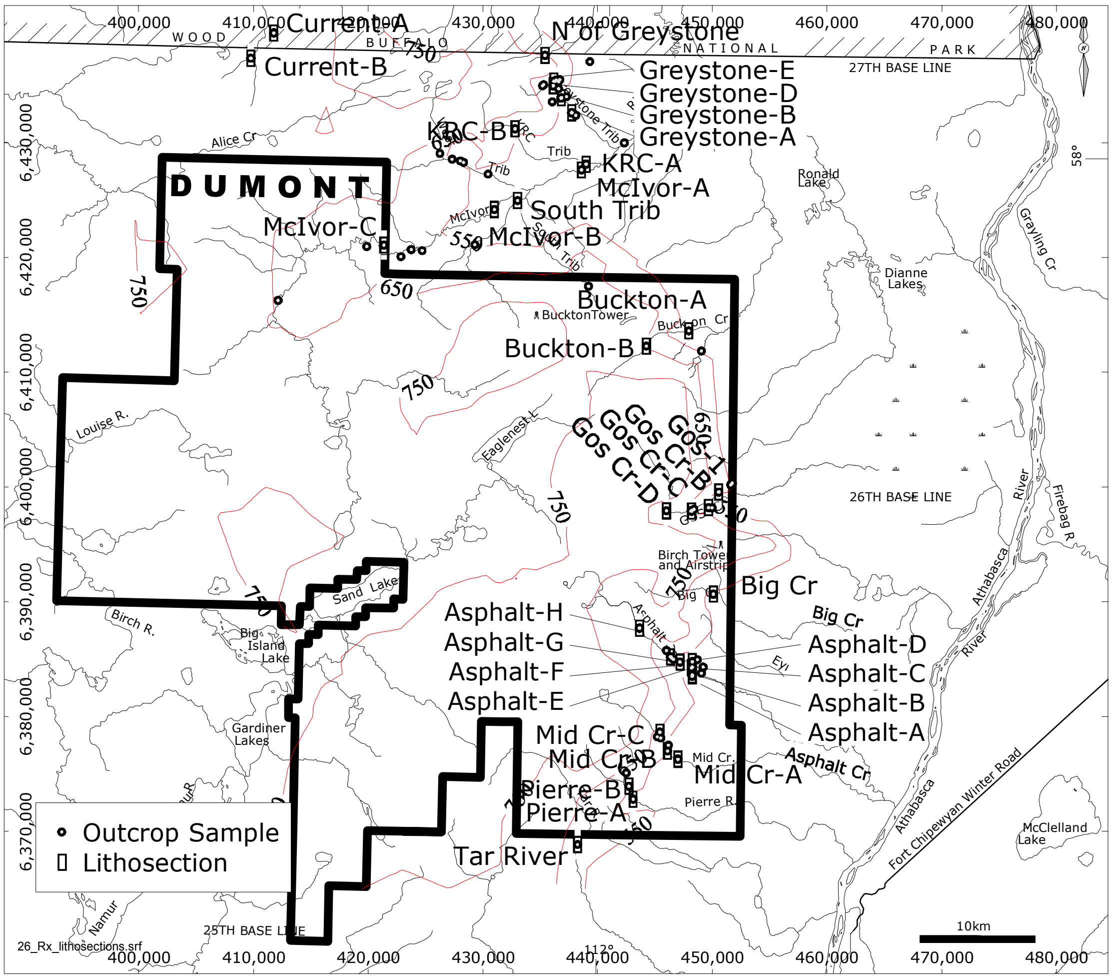


Figure 26: Historic mapping and lithogeochemical sample coverage, outcrops and stratigraphic lithosections, Tintina 1994-1995 programs, Birch Mountains, showing "named" stratigraphic sections. After Figure 25, Alberta Mineral Assessment Report MIN9611, Sabag 1996a.

Tintina's 1994 sampling comprised incidental collection of grab samples of exposures, or float therefrom, to the extent they were encountered during stream geochemical surveys. Majority of samples collected were material slumped from exposures along valley walls. Samples were analyzed by Cantech Laboratories, Calgary. Tintina's 1995 mapping and lithogeochemical sampling programs comprised in-fill sampling and mapping of individual exposures with special focus on systematic mapping and sampling of measured stratigraphic lithosections exposed as cliff-faces, confined mostly to the erosional edge of the Birch Mountains, within a 5km wide arc over the eastern lobe of the Mountains. Lithosections were measured and systematically sampled down-section. Samples were submitted to Activation Laboratories (Ancaster, Ontario) for multielement analysis, for a group of elements by ICP (total sample dissolution) and by INAA, in addition to Corg and S. Au/Pt/Pd were also analyzed by fire assay. Many duplicate cuts were analyzed for comparison, and duplicates from a small suite of samples from the GOS1 gossan previously analyzed at Cantech were also re-analyzed by Activation Labs to evaluate inter-lab variations. (details in Alberta Mineral Assessment Report MIN9611, Sabag 1996a).

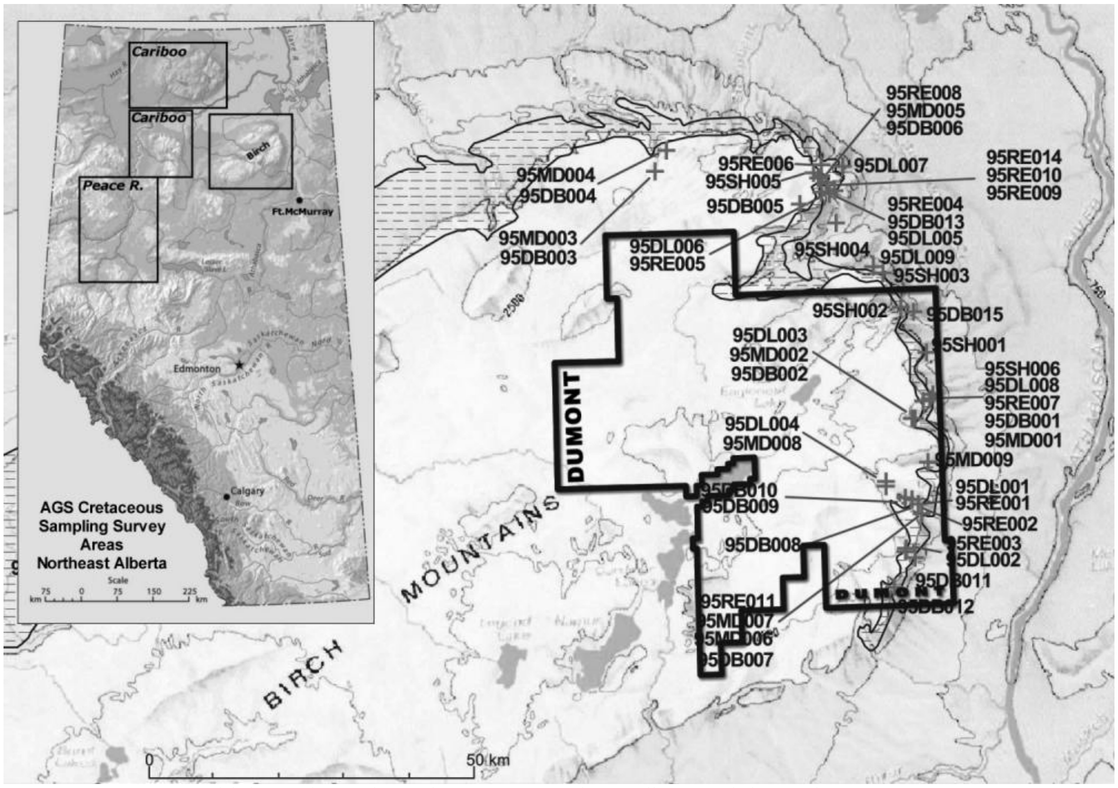


Figure 27: Mapping and lithogeochemical sample coverage, northeast Alberta and the Birch Mountains, AGS-GSC programs, After AGS 2001.

The above mapping and sampling surveys comprise the only mapping and lithogeochemical sampling conducted over the Birch Mountains toward exploration for metals, and results therefrom form the only lithogeochemical databases available from Dumont's Property.

Bedrock exposures throughout the Birch Mountains are scarce (<2%), and are restricted to creek/river valleys which define incisions confined to the erosional edge of the Birch Mountains, forming a narrow 5-10km wide arcuate band over the eastern lobe of the Mountains. The Cretaceous strata exposed in the area are dominated by poorly consolidated recessive sequences of shales and mudstones, exposed in terraces (Plates 4 and 5) partly obscured by considerable slumped material or mud-flows (especially at their base), all of which are highly susceptible to landslides and slumping.

Plate 4: Typical terraced exposures of recessive sequences, Cretaceous Formations, Northeast Alberta. Asphalt Creek Valley, Birch Mountains (Right). Images from Sabag 1994-1999.

Plate 5: Typical stratigraphic section and related slump, Cretaceous Shales, Birch Mountains, Alberta. (Repel mapping by the author)

Nearly all bedrock exposures in the Birch Mountains are in various stages of active mass wasting, and are transformed during prolonged wet weather periods into mudflows requiring the frequent rescue of sinking crew-members from slimy sinkholes (Plate 6).

In many cases slumpage is sufficiently advanced to introduce uncertainties to the definitive determination of stratigraphic position of often similar looking exposed units, especially for shales.

Exposures available throughout the Birch Mountains enable observation and sampling of approximately 300-350 vertical metres across the Cretaceous stratigraphy, extending upward from the top of the Manville to well into the Colorado Group. This section straddles the Albian-Cenomanian boundary, and provides exposures of five Formations: the Clearwater/Grand Rapids Formation, the Viking/Pelican Formation, the Westgate Formation, the Shaftesbury Formation, and the Second White Speckled Shale Formation.

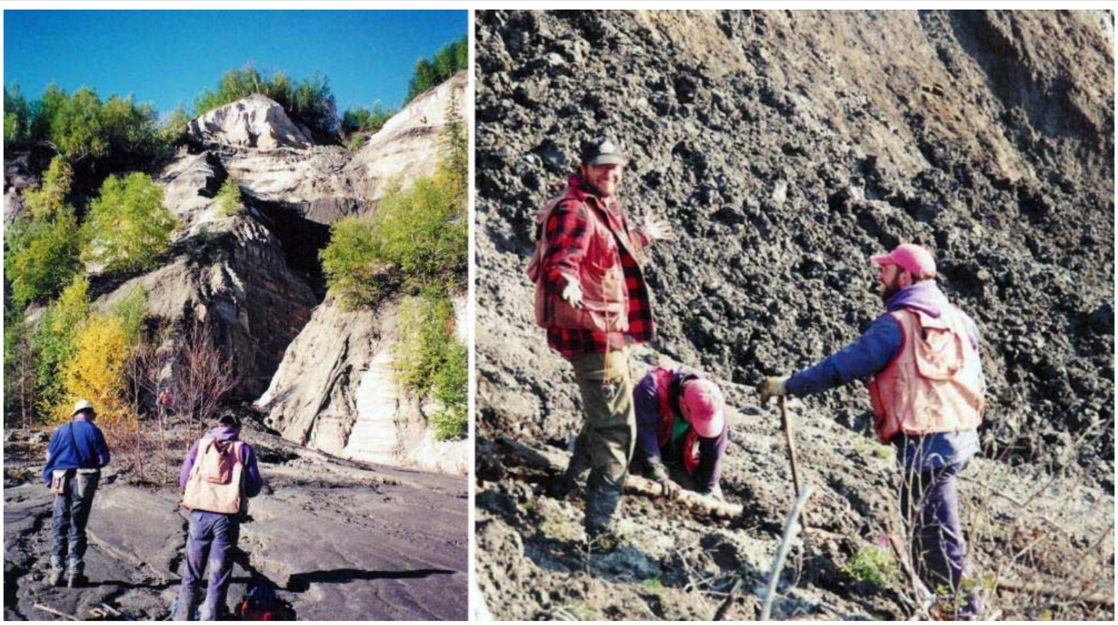


Plate 6: Typical mudflows (left) and crew rescue, GOS1 Gossan (right), Second White Speckled Shale, Birch Mountains.. Images from Sabag 1994-1999.

Significant highlights from Tintina's 1994 work from areas under Dumont's Property include:

- The discovery of large flat Fe-phosphate and Fe-sulfide rich float slabs in Asphalt Creek, immediately below slump zones of suspected Shaftesbury Formation (e.g.sample site 1039). Many of the slabs contain upward to 75% Fe-sulfides by volume, reporting also several hundred ppm of Ni, Zn and lesser amounts of Cu and Ag. Microanalytical investigation of some subsamples by the GSC reported native Ni as overgrowths on some FeS grains[13] (GSC,

[13] Miscellaneous poster sessions, S.B. Ballantyne 1994-1995, GSC.

S.B.Ballantyne). FeS±Ni mineralization was also discovered in fractured carbonate float in Asphalt Creek and McIvor River, similarly also reporting Ni as overgrowths on some FeS grains from Microanalytical inspection.

- The discovery of highly angular sulfide bearing siliciclastic float, with upward to 90% Fe-sulfides by volume, locally also with fish remains in several drainages (identified during subsequent 1995 mapping as the siliciclastic bonebed member of the Second White Speckled Shales Formation);

- The discovery of the GOS1 gossan, a large reddish gossan, at the headwaters of GOS Creek, and the discovery of native pristine gold grains with encrustations and inclusions of Fe-Cu-Sulfides from some samples of the gossan (Sample E5100, E5100B, GOS1 Gossan, Second White Specks Formation). The GOS1 gossan, subsequently recognized to be part of the Buckton Zone, comprises Ni/V/Zn-enriched carbonaceous and muddy shales, which have also reported abundant euhedral zircons, chromite and Mn-wads accompanying a variety of FeS morphologies including crystals, specular composites and spheres, many of the latter studded also by 1µm-5µm granules of native Ni. Orientation XRD from Tintina's work for sample E5100 reported a predominance of illite clay, accompanied by smectite and locally glauconite in the shale (Alberta Mineral Assessment Report MIN9611, Sabag 1996a);

The GOS1 gossan, located at the southeast portion of Twp101/R12, over the Buckton Zone, represents the largest and most continuous exposure of the Second White Speckled Shale Formation in the Birch Mountains and on Dumont's Property. It comprises a 1km long intermittent exposure of conspicuous brick red carbonaceous shales over a ledge, and related slumps, between the 600m-630m (asl) elevations along the northern slopes of the Gos Creek valley. GOS1 offers one of the best exposures of the Second White Speckled Shale Formation in the Burch Mountains. The Formation is also exposed at Gos Creek-B exposure, also on the north flank of the GOS valley, and at the Gos Creek-C exposure is located at its closure. Due to its distinct coloration and the abundant metallic content, GOS1 was initially regarded as a zone of advanced auto-oxidation, although subsequent work indicated that the coloration is likely due to a decade old large forest fire.

With the exception of the uppermost 5m-10m of the gossan ledge, the bulk of GOS1 comprises slumped material consisting of slimy muds or dislocated pieces of hillside in various states of disaggregation. Bedrock exposed along the uppermost ledge is characterized by carbonaceous shales, with bentonite seams and other seams of sulfur and sulfates. The gossan is over an area characterized by junctions of several faults.

The GOS1 and Gos Creek-C localities expose poorly consolidated shales and mudstones (with variable organic components), a thin bentonite (3-5cm), a thin discontinuous carbonate cemented siltstone/concretion (10-15cm thick), and a Siliciclastic Bone Bed (SBB). The bone bed is interpreted as a transgressive lag deposit and is characterized by a calcite cemented, medium to very coarse grained, black chert and glassy quartz sandstone, containing variable amounts of fish debris. While the bone bed is generally a thin (10cm-20cm) unit in the area, and elsewhere in the sedimentary basin, it comprises as many as three distinct chert and quartz sandstone units at the Gos Creek-C exposure, with an overall thickness exceeding 1m, which are interbedded with sandy organic-rich shales. The sandstones of the bone bed are fairly massive and exhibit few sedimentary structures with the exception of vague cross-bedding and occasional mudstone "rip-ups".

Shales at GOS1 contain varying amounts of sulfides (mainly FeS) with a broad range of morphologies ranging from perfectly spherical pyrite/marcasite balls to twin pyramidal and specular aggregations. The FeS is accompanied by abundant euhedral Zircons, chromite and Mn-wads, all of which are hosted in muddy shales predominated by illite clay, accompanied also by smectite and (locally) glauconite. Orientation microanalytical investigation of some subsamples indicate also the presence of 1µm-5µm granules of native Ni as overgrowths on FeS grains (especially those spherical). Native gold grains have been reported in heavy mineral concentrates from the exposure, representing an equivalent grade of nearly 1ppm based on volumetric/gravimetric estimates (by tabling and by panning, Sabag 1996b). The gold grains recovered are characterized by encrustations and inclusions of Fe±Cu-sulfides in various states of oxidation. The gossan has been sampled in great detail by Tintina, and the presence of native gold grains in the shales is corroborated by independent AGS sampling (AGS 2001).

The GOS1 gossan and the Gos Creek-C exposures are enriched in Zn/V, locally in Ni, and also by elevated Cd, Co, Cr and Cu (Sabag 1996). Metal enrichment over the eastern portion of the gossan can be correlated with increasing organic carbon content, although results from its western extremities are characterized by metal enrichment patterns which are independent of C-org supporting metals concentration in forms other than those organic. Lithogeochemical anomalies documented from the gossan by Tintina include 2.8ppm Ag, 36ppb Au, 7ppb Pt, 7ppb Pd, 120ppm Cu, 85ppm Mo, 300ppm Ni, 1051ppm V, and 845ppm Zn. Samples of the Second White Specks Formation have also reported up to 29% organic Carbon, 250ppm U and 33ppm Th. Samples from the Gos Creek-C exposure reported up to 67ppb Au, by fire assay, and 11ppb Pd and 14ppb Pt. Despite recovery of gold grains in heavy minerals from samples of the gossan, routine INA or fire assay analyses have not returned equally high grades.

Detailed geochemistry, geological findings and conclusions from historic lithogeochemical sampling programs are discussed in a later Section of this report in the context of stratigraphy and geology of the Birch Mountains and Dumont's Property (Section 7.7). A statistical summary of lithogeochemical results from Tintina's work is shown in Table 2, and presented also in Figure 28, juxtaposed against a generalized stratigraphic column for the Birch Mountains. Extensive additional data are available also in AGS 2001.

The reader is referred to Alberta Mineral Assessment Reports MIN9611 and MIN9802, Sabag 1996a and Sabag 1998, respectively; in addition to AGS 2001, for a very detailed and exhaustive review of all lithogeochemical trends identified by the historic work, a presentation of which is well beyond the scope of this report. A summary of findings and conclusions from the collective historic work by Tintina and the AGS over Dumont's Property, and the surrounding Birch Mountains, is as follows:

- Tintina concluded from its sampling that metals enrichment zones in the Birch Mountains are hosted in carbonaceous shales of the Second White Speckled Shale Formation, and to a lesser extent, in the Shaftesbury Formation, associated vertically with marine extinction markers, and laterally associated with certain large structural disturbances (fault zones or doming). Metal enrichment zones are characterized by enrichment Ni/Cu/Zn/V/Ag/Mo/(U) accompanied by Au.

- The Second White Speckled Shale Formation and, to a lesser extent, the Shaftesbury Formation, are carbonaceous shales containing up to 29% and 10% organic carbon, respectively (Table 2). Though there is some correlation between metal enrichment in the Second White Speckled Shale Formation with organic carbon, general consensus is that the metals substantially occur in the shale in sulfide or metallic forms rather than as organometallic compounds. As such, the relationship suggested by bulk chemistry between C-org and metals may be incidental.

- Tintina concluded based on its lithogeochemical work that the Second White Speckled Shale and the Shaftesbury Formations, by virtue of their elevated organic carbon contents, present conditions which are highly conducive to scavenging of metals via redox processes from oxidizing metal rich fluids which might be circulating within the stratigraphic pile. (source of the fluids being oxidizing metal enriched basinal fluids seeping upstratigraphy through the Prairie Evaporite salt scarp beneath the Birch Mountains). Tintina further concluded that scavenged metal accumulations in these shales can be expected to have tabular geometry, characterized by relatively restricted thicknesses but with potential to have vast lateral dimensions ranging upward to 100km^2, occupying the near-surface sections of the stratigraphy dominated by Second White Specks and Shaftesbury shales.

Element	Ag	As	Au	Au	Pd	Pt	Cu	Mo	Sb	Cd	Co	Cr	Ni	V	Zn	Al	Ba	Ca	Mg	Sr	Na	K
Method	ICP	INA	Fa	INA	Fa	Fa	ICP	ICP	INA	ICP	INA	INA	ICP	ICP	ICP	ICP	INA	ICP	ICP	ICP	INA	ICP
Det.Limit	0.2ppm	0.5ppm	1ppb	2ppb	3ppb	5ppb	1ppm	2ppm	0.1ppm	0.5ppm	1ppm	5ppm	1ppm	2ppm	1ppm	0.01%	50ppm	0.01%	0.01%	1ppm	0.01%	0.01%
All Birch Mountains Area Formations (n=634)																						
MIN	0.1	0	1	1	1.5	2.5	2	1	0.1	0.3	1	1	2	2	2	0.01	25	0.01	0.01	5	0.01	0.01
MAX	3.6	1200	138	65	14.0	22.0	181	228	51.0	42.4	100	150	315	1051	845	11.08	29000	44.29	12.72	2804	1.47	3.35
AVERAGE	0.4	35	4	4	2.2	2.8	32	16	3.6	2.3	12	65	44	185	121	5.00	951	6.32	0.74	210	0.29	1.35
95th %'ile	1.5	98	12	12	5.0	5.0	85	72	16.0	11.1	32	120	141	627	358	8.95	1735	31.19	1.57	467	0.61	2.37
90th %'ile	1.0	76	8	9	4.0	2.5	69	49	9.3	6.3	25	110	88	447	267	8.24	1300	23.56	1.19	345	0.53	2.24
75th %'ile	0.5	49	4	5	2.0	2.5	41	14	4.7	2.1	15	96	52	233	147	7.37	898	6.63	0.92	235	0.37	1.93
50th %'ile	0.2	17	2	2	2.0	2.5	24	2	1.3	0.7	10	71	30	118	91	5.57	670	1.22	0.69	168	0.27	1.52
Second White Specks (n=354)																						
MIN	0.2	1	1	1	1.5	2.5	3	1	0.1	0.3	1	1	3	4	5	0.28	25	0.05	0.03	23	0.03	0.11
MAX	3.6	1200	138	65	14.0	22.0	181	228	51.0	42.4	100	150	315	1051	845	11.08	29000	44.00	3.47	1203	0.73	2.65
AVERAGE	0.6	52	6	5	2.5	3.0	43	27	5.8	3.5	15	70	61	263	158	5.19	1232	8.89	0.68	230	0.26	1.40
95th %'ile	1.8	130	15	12	5.0	6.0	93	116	19.4	14.0	39	120	195	692	401	9.18	2810	33.31	1.20	487	0.50	2.36
90th %'ile	1.4	91	10	10	4.0	2.5	80	65	14.7	10.5	29	110	122	581	333	8.51	1400	30.10	1.07	365	0.42	2.26
75th %'ile	0.7	67	6	7	3.0	2.5	57	36	6.6	3.9	19	100	72	344	205	7.43	1000	12.77	0.89	254	0.35	2.02
50th %'ile	0.4	39	3	4	2.0	2.5	35	11	3.8	1.6	11	79	44	216	122	5.67	760	3.33	0.65	190	0.26	1.56
Fish Scales / Shaftesbury (n=57)																						
MIN	0.2	2	1	1	1.5	2.5	6	1	0.1	0.3	1	5	2	6	13	0.28	180	0.08	0.03	55	0.06	0.05
MAX	2.7	170	55	22	11.0	10.0	117	51	16.0	30.8	49	120	228	942	761	9.51	4800	37.50	3.20	1601	0.67	2.51
AVERAGE	0.3	21	6	3	2.4	2.8	26	6	1.5	1.5	9	58	28	115	101	4.77	951	6.72	0.76	302	0.31	1.19
95th %'ile	0.8	74	21	17	6.0	5.0	75	27	6.7	4.6	23	110	79	376	288	8.19	1900	31.71	1.76	916	0.59	2.38
90th %'ile	0.5	57	14	10	3.4	2.5	47	14	2.0	1.4	21	110	53	170	173	7.80	1640	30.05	1.01	442	0.56	2.06
75th %'ile	0.2	16	5	3	2.0	2.5	25	5	0.9	0.8	10	80	28	95	96	7.05	1100	7.52	0.88	289	0.41	1.57
50th %'ile	0.2	10	3	1	2.0	2.5	21	2	0.6	0.3	7	55	17	73	63	5.17	740	1.00	0.78	205	0.28	1.25
Westgate (n=88)																						
MIN	0.2	1	1	1	1.5	2.5	3	1	0.1	0.3	1	2	2	2	2	0.11	61	0.02	0.01	7	0.01	0.03
MAX	1.1	420	15	12	5.0	5.0	59	69	13.0	4.6	40	150	122	200	366	9.06	1900	44.29	4.00	2804	1.11	3.35
AVERAGE	0.2	16	2	3	1.9	2.5	22	3	0.8	0.6	9	78	26	106	83	6.25	639	1.49	0.81	189	0.34	1.68
95th %'ile	0.5	20	5	8	2.6	2.5	45	9	1.4	2.1	16	120	56	177	151	8.62	987	5.13	1.12	310	0.57	2.41
90th %'ile	0.4	17	4	6	2.0	2.5	30	4	1.0	1.1	13	110	41	168	120	8.37	896	0.86	1.02	179	0.53	2.35
75th %'ile	0.2	14	2	4	2.0	2.5	25	2	0.8	0.7	11	94	31	125	103	7.76	760	0.55	0.95	156	0.44	1.88
50th %'ile	0.2	11	1	1	2.0	2.5	21	1	0.6	0.3	8	82	25	110	79	7.10	620	0.43	0.84	137	0.34	1.78
Pelican (Viking) (n=79)																						
MIN	0.2	0	1	1	1.5	2.5	2	1	0.1	0.3	1	1	2	2	2	0.05	25	0.01	0.01	5	0.01	0.01
MAX	2.2	64	7	10	4.0	2.5	53	13	2.0	5.8	43	100	63	153	227	9.49	1100	23.39	1.15	899	0.49	1.96
AVERAGE	0.2	7	2	2	1.8	2.5	11	2	0.3	0.4	7	30	16	45	48	2.58	334	0.83	0.30	83	0.12	0.71
95th %'ile	0.4	21	4	6	2.0	2.5	24	3	0.8	1.0	21	80	45	123	145	7.07	892	1.48	0.90	208	0.36	1.72
90th %'ile	0.2	12	3	4	2.0	2.5	21	3	0.6	0.7	16	75	31	103	104	6.60	676	0.83	0.83	160	0.32	1.66
75th %'ile	0.2	8	2	2	2.0	2.5	17	2	0.5	0.3	10	55	21	76	73	4.91	495	0.34	0.57	105	0.20	1.37
50th %'ile	0.2	4	1	1	1.5	2.5	7	1	0.3	0.3	5	17	12	32	35	1.18	240	0.16	0.14	47	0.05	0.48
Clearwater/Grand Rapids (n=15)																						
MIN	0.2	3	1	1	1.5	2.5	9	1	0.3	0.3	3	23	11	33	21	1.59	430	0.44	0.81	124	0.10	0.40
MAX	0.5	25	4	7	2.0	2.5	32	2	1.1	0.7	15	120	38	128	105	10.42	940	26.86	4.07	361	1.47	2.59
AVERAGE	0.3	11	2	2	1.7	2.5	20	1	0.7	0.3	8	67	25	86	66	5.78	555	5.57	1.56	194	0.57	1.62
95th %'ile	0.5	19	4	6	2.0	2.5	31	2	1.0	0.6	14	101	37	120	104	10.41	772	18.48	2.82	299	1.12	2.56
90th %'ile	0.5	16	4	5	2.0	2.5	29	2	1.0	0.5	13	92	36	114	100	9.94	676	14.33	2.15	252	0.96	2.40
75th %'ile	0.4	13	3	2	2.0	2.5	27	1	0.9	0.3	11	86	33	108	85	7.50	630	7.26	1.73	206	0.68	2.15
50th %'ile	0.2	10	1	1	1.5	2.5	18	1	0.8	0.3	9	76	27	98	80	6.34	510	2.06	1.28	181	0.57	1.93

* Statistics are generated from data wherein values below detection were replaced by a value equal to 50% of the detection limit. Sabag 1996a.

Table 2: Statistical summary of historic lithogeochemical sampling results, Cretaceous Formations, Birch Mountains. After Alberta Mineral Assessment Report MIN9611, Sabag 1996a.

Element	U	C-org	P	S	Fe	Mn	La	Ce	Nd	Eu	Yb	Lu
Method	INA	Leco	ICP	Leco	INA	ICP	INA	INA	INA	INA	INA	INA
Det.Limit	0.5ppm	0.001%	0.001%	0.001%	0.01%	1ppm	0.5ppm	3ppm	5ppm	0.2ppm	0.2ppm	0.05ppm
All Birch Mountains Area Formations (n=634)												
MIN	0.3	0.00	0.00	0.0	0.1	7	0	2	3	0.1	0.1	0.0
MAX	250.0	29.10	7.22	30.1	36.3	>det	470	720	490	28.8	63.6	8.4
AVERAGE	15.4	2.30	0.34	2.9	4.9	667	45	78	36	2.0	3.7	0.6
95th %'ile	59.4	9.81	1.43	10.3	15.6	1646	110	164	90	5.4	8.9	1.4
90th %'ile	39.0	7.16	0.65	6.2	10.0	1018	78	120	65	3.9	6.6	1.0
75th %'ile	16.0	2.17	0.23	3.8	5.1	434	48	88	38	2.0	3.9	0.6
50th %'ile	5.2	1.12	0.10	1.5	3.5	190	37	72	28	1.4	3.0	0.5
Second White Specks (n=354)												
MIN	0.3	0.00	0.00	0.0	0.5	29	2	4	3	0.1	0.1	0.0
MAX	250.0	29.10	7.22	30.1	35.7	5112	470	720	490	28.8	37.9	5.7
AVERAGE	23.9	3.04	0.44	4.2	5.4	424	54	90	45	2.5	4.5	0.7
95th %'ile	72.4	11.24	1.75	13.6	15.3	1440	120	170	100	6.2	10.8	1.7
90th %'ile	54.7	9.14	0.91	8.7	10.5	974	92	140	84	4.9	7.8	1.2
75th %'ile	31.0	4.43	0.34	4.9	5.6	497	59	99	50	2.9	5.2	0.8
50th %'ile	12.0	1.23	0.15	3.1	4.0	235	42	78	32	1.6	3.4	0.6
Fish Scales / Shaftesbury (n=57)												
MIN	0.5	0.05	0.02	0.1	0.6	34	8	16	6	0.3	0.6	0.1
MAX	100.0	10.50	6.42	26.3	33.4	4956	400	690	320	22.0	63.6	8.4
AVERAGE	10.2	1.95	0.58	2.9	5.4	442	44	79	33	1.8	4.2	0.6
95th %'ile	39.0	6.92	4.80	16.0	22.3	1280	99	124	70	3.8	7.8	1.1
90th %'ile	25.2	3.67	0.78	5.1	13.8	999	58	108	47	2.5	5.8	0.9
75th %'ile	7.3	2.17	0.23	2.3	3.9	392	43	85	35	1.7	3.9	0.6
50th %'ile	4.9	1.49	0.09	1.3	3.2	181	35	64	25	1.2	2.6	0.4
Westgate (n=88)												
MIN	0.3	0.02	0.02	0.0	0.1	9	2	5	3	0.1	0.2	0.0
MAX	65.0	6.78	3.40	7.9	36.3	2407	190	260	150	7.4	16.4	2.4
AVERAGE	4.7	1.55	0.12	1.4	3.8	186	39	74	30	1.4	3.0	0.5
95th %'ile	9.5	2.44	0.19	3.6	6.7	287	46	94	38	1.8	3.9	0.6
90th %'ile	5.3	2.31	0.11	2.2	4.1	227	45	92	37	1.7	3.7	0.6
75th %'ile	4.4	1.74	0.09	1.5	3.4	168	42	82	33	1.5	3.4	0.5
50th %'ile	3.7	1.46	0.07	1.0	3.1	135	39	74	29	1.3	3.0	0.5
Pelican (Viking) (n=79)												
MIN	0.3	0.01	0.00	0.0	0.1	7	2	2	3	0.1	0.1	0.0
MAX	28.0	22.70	6.22	1.8	12.9	23086	140	210	120	7.6	12.9	2.0
AVERAGE	2.6	1.09	0.17	0.4	2.5	1219	22	43	19	0.9	2.0	0.3
95th %'ile	5.9	2.62	0.39	1.5	8.8	4752	54	111	48	2.3	4.9	0.7
90th %'ile	5.2	1.51	0.20	1.0	5.6	1887	44	90	36	1.7	3.5	0.6
75th %'ile	3.9	0.89	0.09	0.5	3.3	358	34	64	27	1.3	2.9	0.4
50th %'ile	1.7	0.42	0.05	0.2	2.0	133	15	30	15	0.7	1.6	0.2
Clearwater/Grand Rapids (n=15)												
MIN	0.3	0.22	0.04	0.0	2.3	183	11	17	6	0.4	0.8	0.1
MAX	4.1	8.75	0.30	1.9	22.5	2992	48	100	34	1.9	3.3	0.6
AVERAGE	2.2	1.95	0.09	0.4	7.0	700	26	52	21	1.1	2.4	0.4
95th %'ile	3.5	6.87	0.19	0.9	21.3	2041	42	80	31	1.7	3.2	0.5
90th %'ile	3.1	4.80	0.12	0.5	17.3	1559	37	71	30	1.5	3.2	0.5
75th %'ile	2.9	1.50	0.09	0.4	7.8	920	29	60	28	1.4	2.9	0.5
50th %'ile	2.5	1.10	0.08	0.3	4.0	292	27	57	24	1.2	2.5	0.4

Note: Statistics are generated from data wherein values below detection have been replaced by a value equal to 50% of the detection limit. Sabag 1996a.

Table 2 (continued): Statistical summary of historic lithogeochemical sampling results, Cretaceous Formations, Birch Mountains. After Alberta Mineral Assessment Report MIN9611, Sabag 1996a.

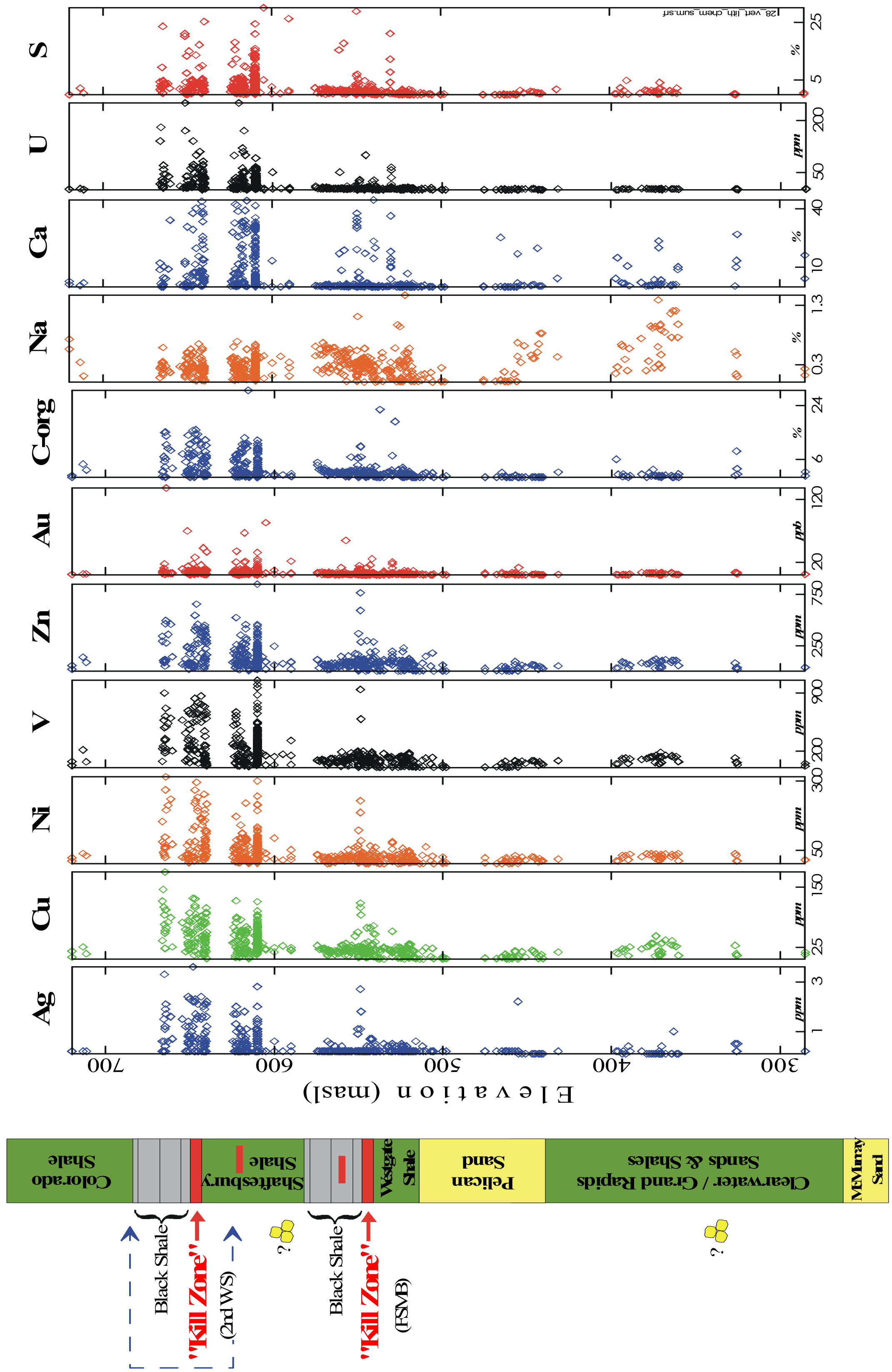


Figure 28: Summary of surface lithogeochemical vertical trends, historic sampling, Birch Mountains. After Figures 36 and 37, Alberta Mineral Assessment Report MIN9611, Tintina Mines, Sabag 1996a. 2ndWS=Second White Speckled Shale Formation, FSMB=Fish Scales Marker Bed (Shaftesbury Formation).

Based on detailed review of interelemental correlations and variograms Tintina concluded that there exists good overall correlation among most of the metals, and noted possible bimodal distribution of some of the metals. Two modal groups identified comprised a Ni-Co-Zn±(Cu,Cd) group and a group V-Ag±Cu. No further conclusions could be derived from the data regarding more detailed metal partitioning.

- The AGS reported from its sampling of mid-Cretaceous bedrock units sampled in northern Alberta over the Peace River, Buffalo Head Hills, Caribou Mountains and Birch Mountains areas that the Second White Speckled Shale Formation in the Birch Mountains reported the highest concentrations of precious and base metals from amongst the units sampled in these areas across northern Alberta. It further reported that, for the most part, sampling of the Shaftesbury Formation did not report significant concentrations of metals, and yielded no significant difference in precious or base metal concentrations, among samples collected from the Peace River, Buffalo Head Hills, Caribou Mountains and Birch Mountains areas.

- The AGS concluded that the Second White Speckled Shale Formation shale exhibits a different geochemical pattern when compared to the Shaftesbury Formation shale and most other shales in northern Alberta. While the majority of shales in northern Alberta, including the Shaftesbury, exhibit a strong correlation between metals and Al, elevated metal concentrations in the Speckled Shale are better correlated with elevated organic carbon content and with elevated S and Fe. In comparison, only Ag, V, Mo and Br in the Shaftesbury shale display a positive correlation with organic carbon, suggesting that different controls for metal concentrations exist in Second White Specks shale (Birch Mountains area) versus the other shales.

- The AGS concluded that samples, from the Birch Mountains, regardless of lithology, contain a significantly different shale-normalized REE profile when compared to samples from over the Peace River, Buffalo Head Hills, Caribou Mountains. Most samples from the Birch Mountains, particularly those from the Second White Specks Formation, display a slightly negative Ce anomaly and a distinctly positive Eu anomaly, in conjunction with elevated to highly anomalous concentrations of Ba (shale samples reported Ba contents ranging from an average of 1,568ppm to a maximum of 31,000ppm). The AGS concluded that the REE patterns, the anomalous Ba and other metals enrichment patterns displayed by many samples from the Birch Mountains suggest a strong influence of low temperature hydrothermal precipitates in the Birch Mountains.

- Tintina concluded from its sampling that metals grades documented from lithogeochemical reconnaissance in the Birch Mountains are relatively low for individual metals when reviewed in the context of conventional mono-metallic base metal deposits. It proposed, however, that the grades are significant when considered on a combined basis, as a polymetallic assemblage of Mo+Ni+Co+Cu+Zn+V+U±Ag±Au, from the perspective of large bulk mining operations, especially those for poorly consolidated deposits which might be developed in most part by low cost earth-moving bulk-mining methods.

- Tintina and the AGS concluded that the metallic budget in the area might be associated with suspected proximal exhalative venting activity in the Birch Mountains, possibly also related to multiple vents. They further concluded that the Second White Speckled Shale and the Shaftesbury Formations, straddling the Albian-Cenomanian transition may have affinities to resedimented kimberlitic material. Tintina further suggested that the possible association of metals enrichment zones throughout the Birch Mountains with interpreted hot springs activity and marine extinction markers is compatible with proximal submarine subaerial venting.

- There is general consensus among all who sampled and mapped the Birch Mountains, that there is excellent potential for discovery of precious metal deposits in the Second White Speckled Shale Formation in the Birch Mountains, but to a lesser extent in the underlying Shaftesbury Formation.

6.2.11 Composite Anomalies and Metal Accumulation Model

A number of anomalous localities were identified in the Birch Mountains by Tintina from the collective of its 1994-1995 exploration programs (Figure 29), comprising areas extending over 20-40 sq km each, which were defined based on results from multimedia sampling and other geological work, They are areas characterized by multiple and coincident, or spatially proximal, surface geochemical and mineral anomalies, typically located over structural or subsurface stratigraphic disturbances. The majority of the localities are located over fault zones or are on their flanks, or are associated with zones of stratigraphic disruption or thickening. Many of the anomalous localities are also adjacent to, or occupy, a topographic "high", and some are associated with magnetic anomalies (Figures 30 and 31). Lithogeochemical metal enrichment trends over the anomalous localities were interpreted to reflect enrichment vectors suggesting an intimate association between structural disruptions and metals enrichment in the Birch Mountains.

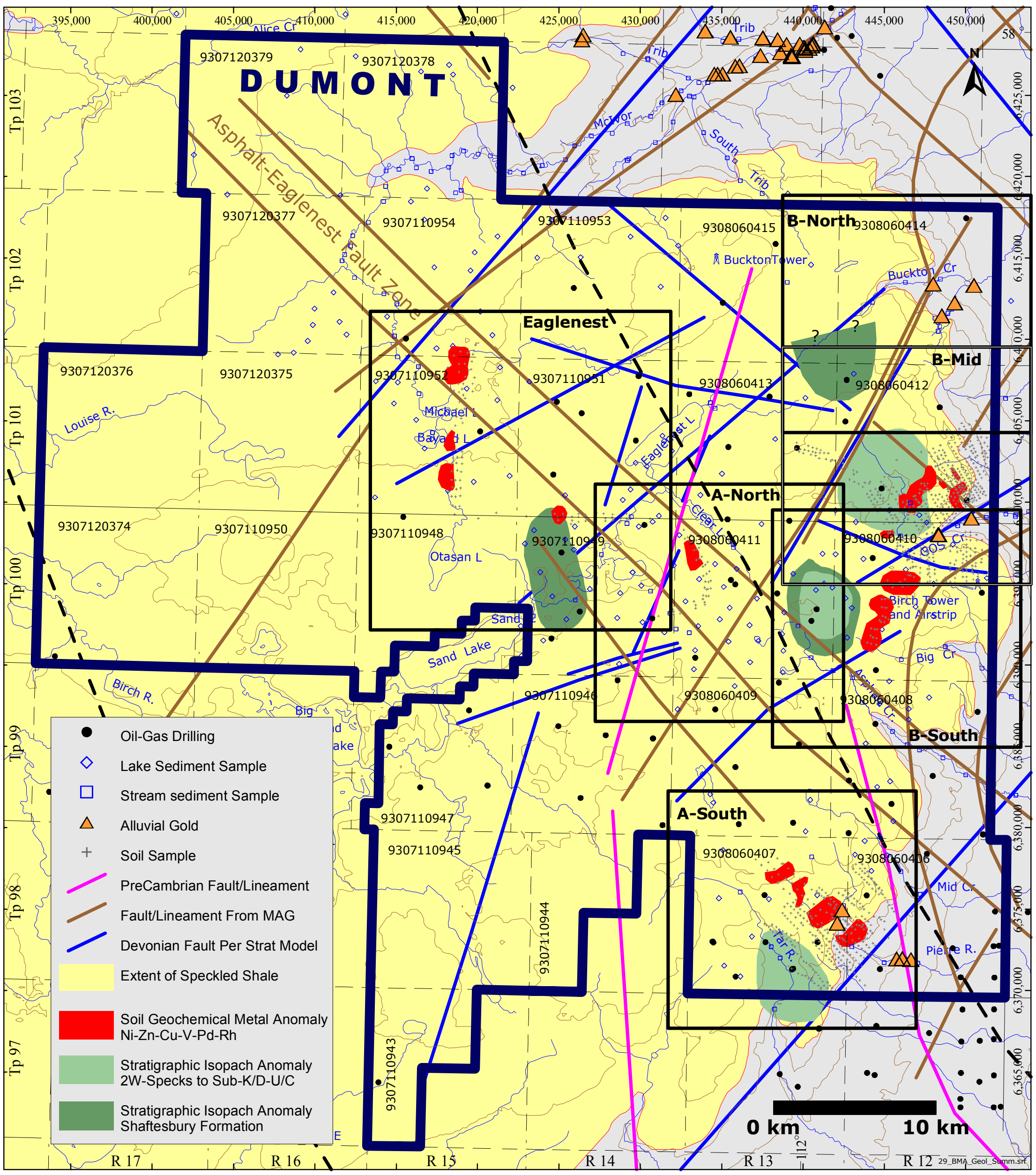


Figure 29: Summary of historic composite anomalous areas ranked by Tintina, Birch Mountains. After Drawing 97-B3, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

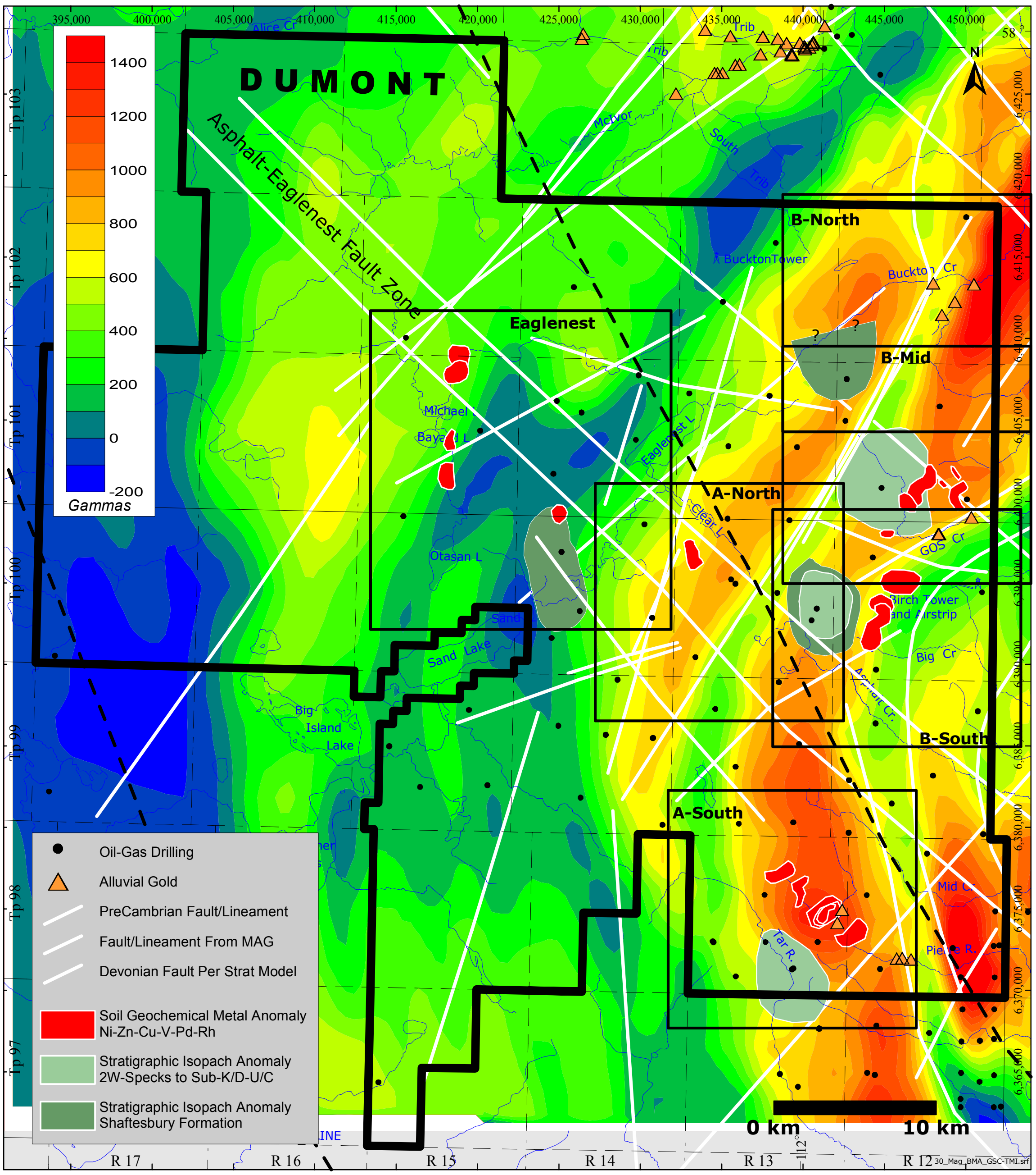


Figure 30: Total Residual Total Field Aeromagnetic trends, showing Tintina composite anomalous areas and major interpreted structures and anomalies, Birch Mountains. Aeromagnetics after GSC Magnetic Anomaly Map, No.12-AM. Other sampling and features after Alberta Mineral Assessment Report MIN9802, Sabag 1998.

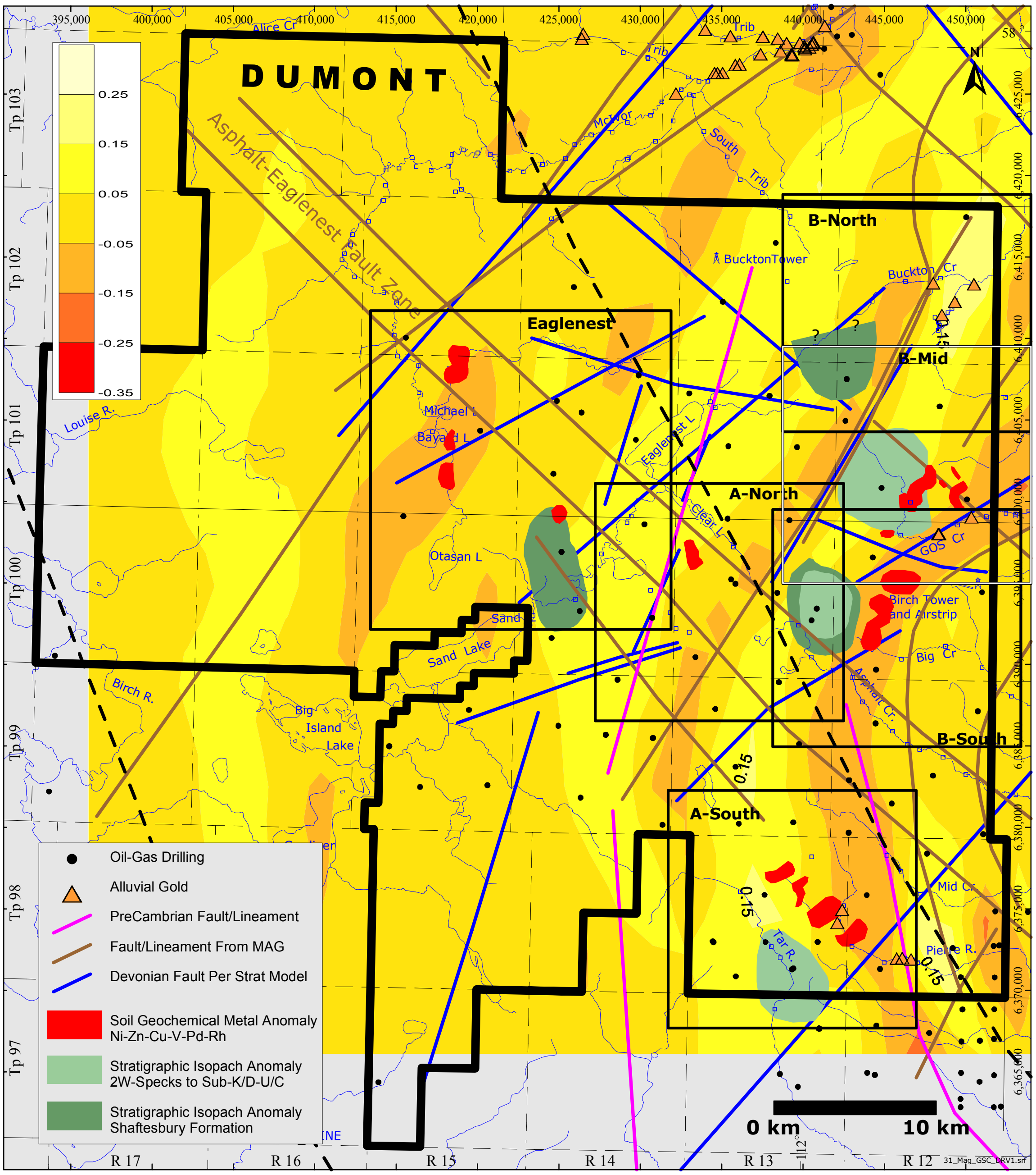


Figure 31: First Derivative of Total Residual Total Field Aeromagnetic trends, showing Tintina composite anomalous areas and major interpreted structures and anomalies, Birch Mountains. Derivatives based on data digitized from GSC Magnetic Anomaly Map, No.12-AM. Other sampling and features after Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Repeated references are made in this Section to various anomalies based on which the areas were designated by TIntina. Details of the anomalies were presented in prior Sections of this Report, and the reader is referred to the respective Sections as follows: Subsurface stratigraphic model and anomalies - Section 6.2.5; Lake sediment anomalies - Section 6.2.6; Stream sediment geochemical and mineral anomalies - Sections 6.2.8 and 6.2.9, respectively; Soil geochemical anomalies - Section 6.2.9; Lithogeochemical anomalies - Section 6.2.10. The composite anomalous areas are described in Tintina reports referenced by Tintina's (then) property names, and comprise the principal anomalies identified to date on Dumont's Property by the historic work. The anomalies are "named" in this Report for easy reference and are as follows:

B-NORTH Composite Anomalous Area: The northern portion of the historic Buckton property is dominated by an aeromagnetic "high" (Figures 30 and 31), flanked on its side by a series of 1km-2km diameter circular topographic features, separated by miscellaneous creeks flowing into, and comprising the headwaters of, Buckton Creek. The area overlies a stratigraphic isopach anomaly reflecting a 60m abnormal thickening in the Shaftesbury Formation.

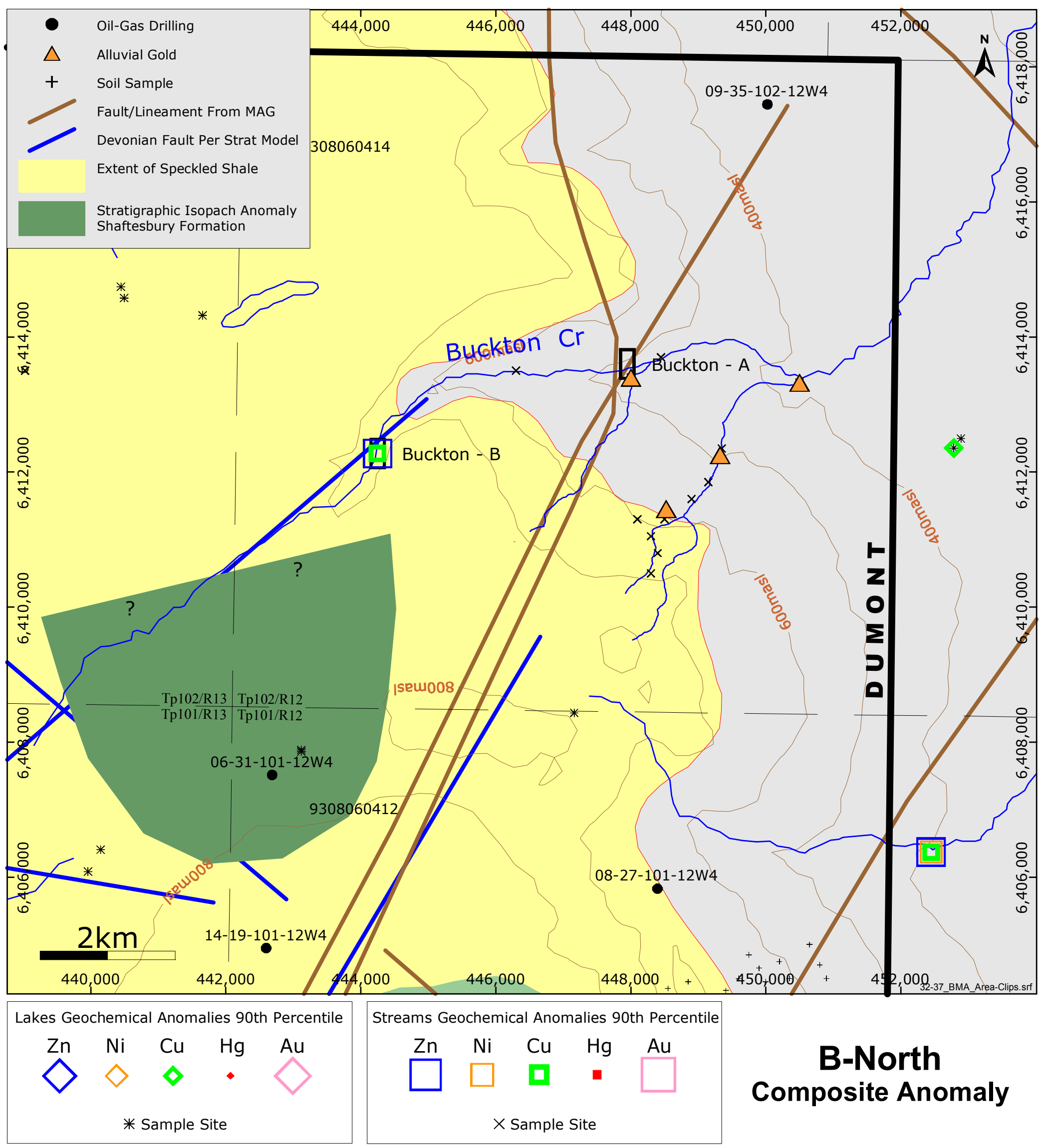


Figure 32: Summary of historic anomalies, Tintina composite anomalous area B-North, Birch Mountains. After Drawing 97-B3, Alberta Mineral Assessment Report MIN9611, Sabag 1996a

Although there is scarce geochemical information from the area due to scarcity of lakes, gold grains have been reported in HMC samples from several localities in Buckton Creek and its tributaries many of which drain slumped shale exposures in the area. Anomalies over this area are summarized in Figure 32.

B-SOUTH Composite Anomalous Area: The southern portion of the historic Buckton property is broadly characterized by lake sediment geochemical anomalies comprising elevated (>90th pctl) Zn±Ni±Cu±Ag±Hg surrounding an interpreted fault swarm with related Zn diffusion anomalies in soil, associated also with localized zones of Te enrichment. The faulting is associated with stratigraphic isopach anomalies comprising abnormal thickening in the stratigraphic pile above the sub-Cretaceous Unconformity (to base of Second White Specks) coincident with a similar thickening in the Shaftesbury Formation reflected by the Fishscales-Second White Specks isopach. This area is summarized in Figure 33.

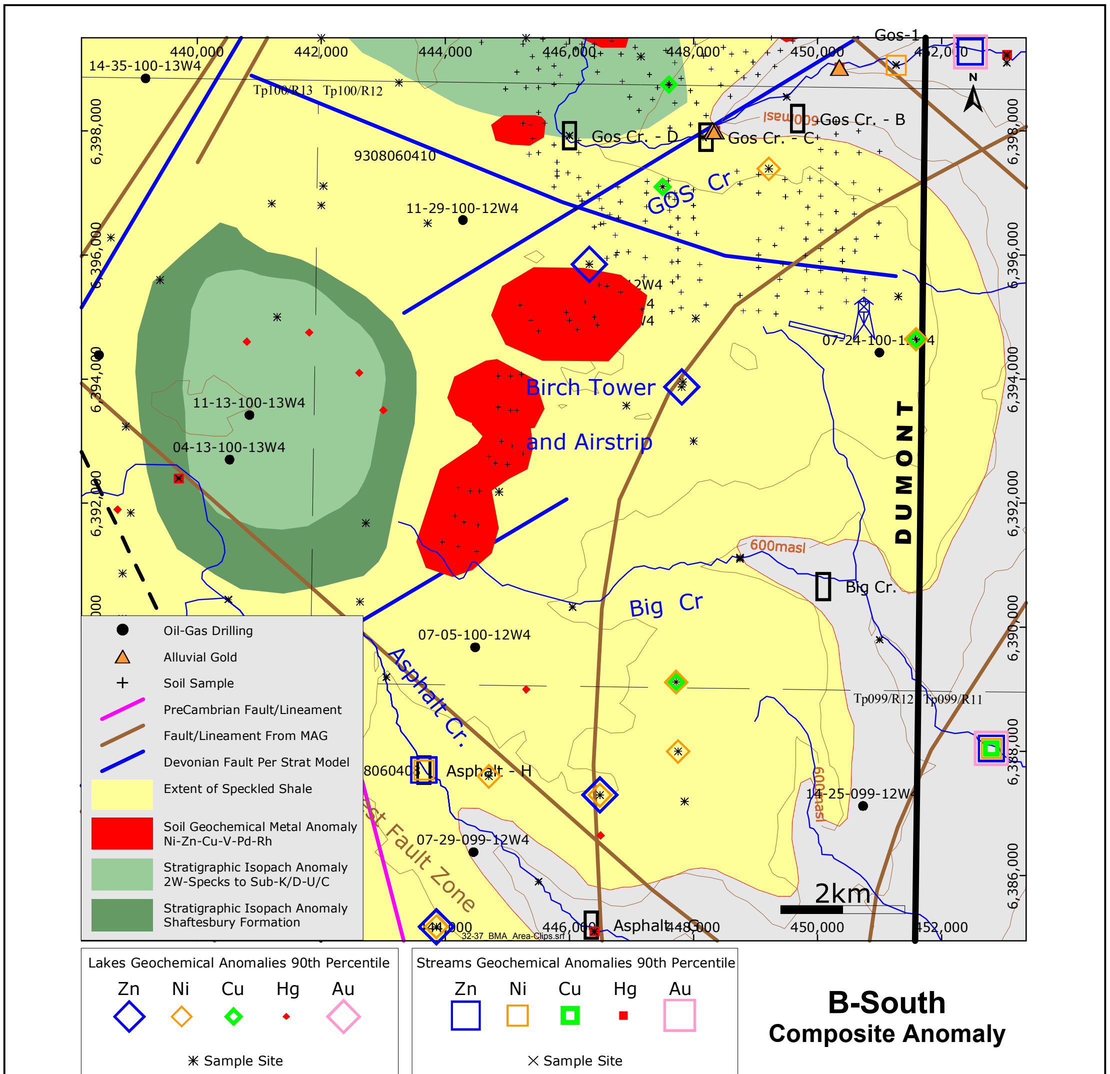


Figure 33: Summary of historic anomalies, Tintina composite anomalous area B-South, Birch Mountains. After Drawing 97-B3, Alberta Mineral Assessment Report MIN9611, Sabag 1996a

The stratigraphic isopach anomaly straddles the boundary between the historic Buckton and Asphalt properties, and while the closure in contouring may be an artifact of noding, the stratigraphic disturbances can be readily seen in cross sections from the area depicting a complex configuration of uplift and subsidence. The coincident isopachs lie within the Asphalt-Eaglenest corridor which has been interpreted as a zone of substantive faulting across the Birch Mountains.

B-MID Composite Anomalous Area: The B-Mid area is located over the central portion of the historic Buckton Property and GOS1 area, and was subsequently recognized by 1997 drilling to host the Buckton Zone (Figure 34). It is dominated by a stratigraphic isopach anomaly comprising abnormal thickening in the stratigraphic pile above the sub-Cretaceous Unconformity (to base of Second White Specks) associated with faulting. A series of cross-sections across the anomaly indicate great structural complexity characterized by the junction of a multitude of faults converging toward the general southern portions of the isopach anomaly, defining a partial radial pattern. The GOS1 gossan lies to the east of this feature, and Gos Creek is characterized by geochemical anomalies (>90th pctl) in Ni±Zn±Hg, accompanied by alluvial gold in stream sediments. Native gold has also been repeatedly recovered from the GOS1 gossan and from Gos-C, both of which are immediately uphill from stream samples reporting also native gold.

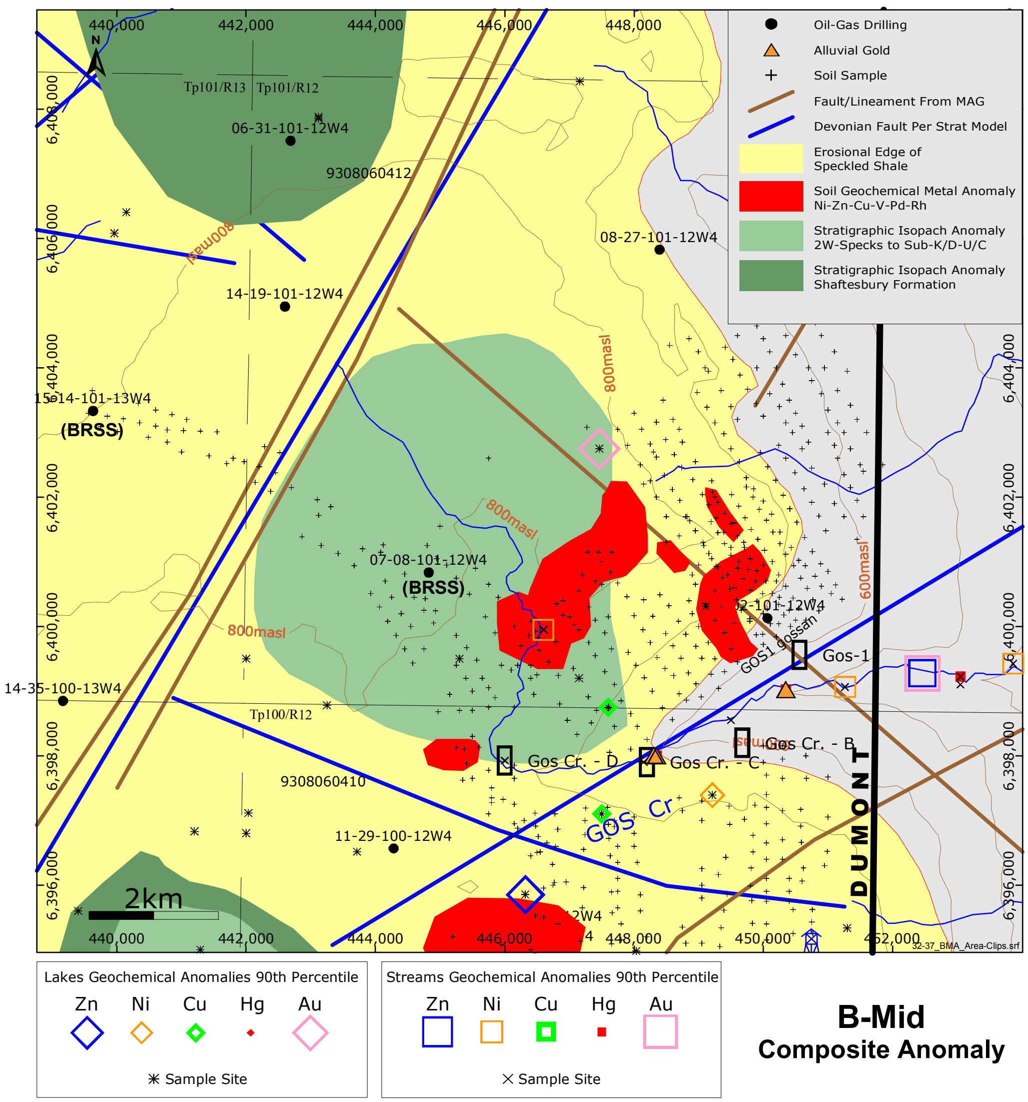


Figure 34: Summary of historic anomalies, Tintina composite anomalous area B-Mid, Birch Mountains. After Drawing 97-B3, Alberta Mineral Assessment Report MIN9611, Sabag 1996a. BRSS=Beaver River Sandstone

Lithogeochemical sampling of available exposures from the vicinity of the isopach anomaly indicate metallic enrichment (Ni-Cu-Zn-V-Co-Ag±Au±Pt±Pd) in sulfide bearing Second White Specks Formation carbonaceous shales, especially nearest its base defined by a siliciclastic bone bed marine extinction marker. This marker is abnormally thickened upward to 1m nearer the isopach anomaly. Metal enrichment patterns in exposures sampled along the Gos Creek valley suggest progressive enrichment nearer the isopach, as do a series of soil geochemical anomalies overlying same which are characterized by acute Ni/Cu diffusion accompanied by Te enrichment over areas straddling the outer boundaries of the isopach (see Section 6.2.9).

Tintina's examination of available archived drill cuttings from two wells in the area (07-08-101-12W4 and 15-14-101-13W4) reported the presence of abundant sulfides within some Cretaceous sections and the presence of Beaver River Sandstone immediately above the sub-Cretaceous unconformity. The sandstone is enveloped in altered shale with up to 50% (by volume) sulfides immediately adjacent to its contacts. This highly silicified sandstone also outcrops in the Fort MacKay area, approximately 40km to the south of the Birch Mountains, where it is generally regarded as a hot springs alteration marker carrying ZrO in addition to gold and base metals, sulfides and iodides (Fenton and Ives 1982, 1984, 1990). Its presence in the Birch Mountains spatially associated with stratigraphic thickening and with metal enrichment zones was considered by Tintina to be diagnostic and suggestive of the localized presence in the area of broad alteration zones overlying centers of hot springs or other metal bearing fluid activity (fumeroles?).

The GOS1 gossan, comprising a nearly 1km ledge exposure of metals enriched Second White Specks Formation, lies over the eastern flank of this isopach feature, and Gos Creek is characterized by geochemical anomalies (>90th pctl) in Ni±Zn±Hg, accompanied by alluvial gold in stream sediment HMCs. Native gold has been repeatedly recovered from the GOS1 gossan as well as from the Gos-C exposure, both of which are uphill from stream samples reporting also native gold. Metal enrichment over the western extremities of the GOS1 gossan are supported by geochemical diffusion anomalies in overlying soils characterized by elevated Ni/Cu/Pd and halogens (Br/I). The gossan is presently regarded to be a geochemical halo, related to broader metal accumulation nearby.

A-NORTH Composite Anomalous Area: The A-North composite anomaly is located over the northern portion of the historic Asphalt Property. It overlaps the western parts of the B-South anomalous area, and lies on the western flank of the isopach anomaly. Area A-North is broadly characterized by lake sediment geochemical anomalies comprising elevated (>90th pctl) Zn±Ni±Cu±Ag±Hg surrounding an interpreted fault swarm associated with coincident stratigraphic isopach anomalies. The isopachs reflect abnormal thickening in the stratigraphic pile above the sub-Cretaceous Unconformity to base of Second White Specks, and similar thickening in the Shaftesbury Formation reflected by the Fishscales-Second White Specks isopach. The coincident isopachs lie in the Asphalt-Eaglenest corridor regarded by Tintina to be a zone of substantive faulting across the Birch Mountains, coincident with numerous geochemical lake sediment metallic anomalies. The coincident stratigraphic isopach anomaly dominates the eastern parts of the area and, while the closure in contouring may be an artifact of noding, the stratigraphic disturbances can be seen in cross sections from the area which depict a complex configuration of uplift and subsidence. This area is summarized in Figure 35.

While stream sediments in Asphalt Creek are characterized by abundant sulfides, the relationship of metallic enrichment documented from lithogeochemical sampling of exposures therein (especially from lithosection Asphalt-H) with faulting in the area and the isopach anomaly is unclear due to the lack of more detailed subsurface information. It is noteworthy that dacitic debris of likely local provenance has been incidentally identified in the vicinity of Clear Lake.

A-SOUTH Composite Anomalous Area: The A-South composite anomaly is located over the southern portion of the historic Asphalt Property, and was subsequently recognized by 1997 drilling to host the Asphalt Zone. It is characterized by countless stream sediment polymetallic geochemical anomalies dominated by Zn/Ni/Cu, especially from Pierre River and Mid Creek, associated also with alluvial gold in HMCs from Pierre Creek accompanied by cinnabar and base metal sulfides. Pierre Creek flows southeasterly from an area characterized by several lake sediment geochemical Zn anomalies in a small lake which has been offset along a northeasterly trend. Northwesterly trending major structures also cross the area. This area is summarized in Figure 36.

Samples from Pierre River and its immediate vicinity have reported by far the most anomalous geochemistry and mineralogy from the area, all of which supported also by equally anomalous geochemical anomalies in soils dominated by Zn/Cu±Ni±V accompanied by Te enrichment overlying a magnetic "high" (Figures 30 and 31). Geochemical and mineral anomalies in the area are located mostly on the northeast flank of an isopach anomaly over Tar River straddling the southern boundary of the Property. The isopach anomaly reflects abnormal thickening in the stratigraphic pile overlying the sub-Cretaceous unconformity.

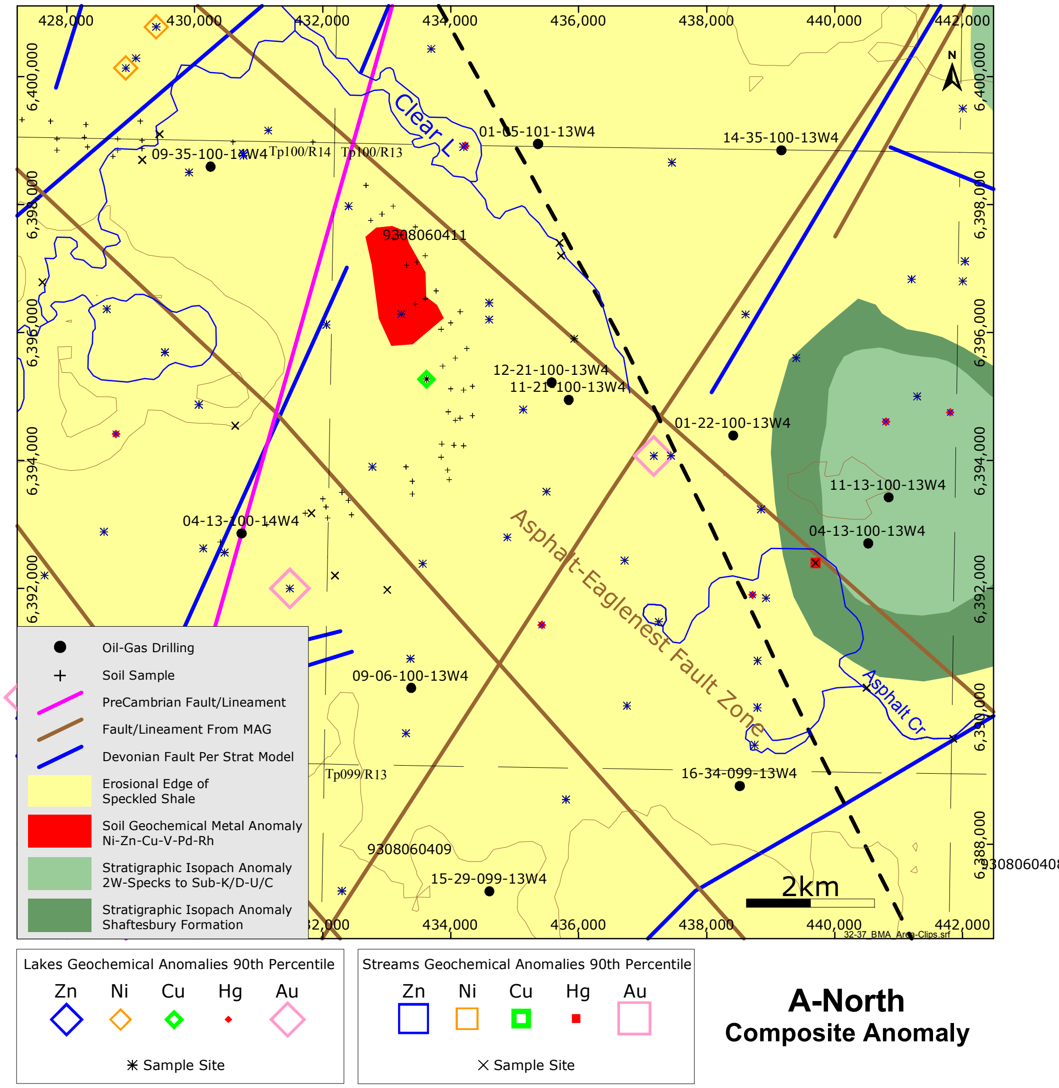


Figure 35: Summary of historic anomalies, Tintina composite anomalous area A-North, Birch Mountains. After Drawing 97-B3, Alberta Mineral Assessment Report MIN9611, Sabag 1996a.

Tintina's examination of available drill core and cuttings from two oil-gas wells in the area (16-21-098-13W4 and 04-08-098-12W4) noted the presence of a 1ft thick pink band of very hard silicified sandstone within McMurray Formation immediately above the sub-Cretaceous unconformity in well 16-21-098-13W4. This sandstone, noted also in oil well core/cuttings from target area B-MID, is identical to the Beaver River Sandstone which is generally regarded as a hot springs alteration marker. Its presence in the Birch Mountains spatially associated also with stratigraphic thickening and with metal enrichment zones is considered diagnostic and suggestive of the localized presence of broad alteration zones overlying possible hot springs or other metal bearing fluid activity (fumeroles?).

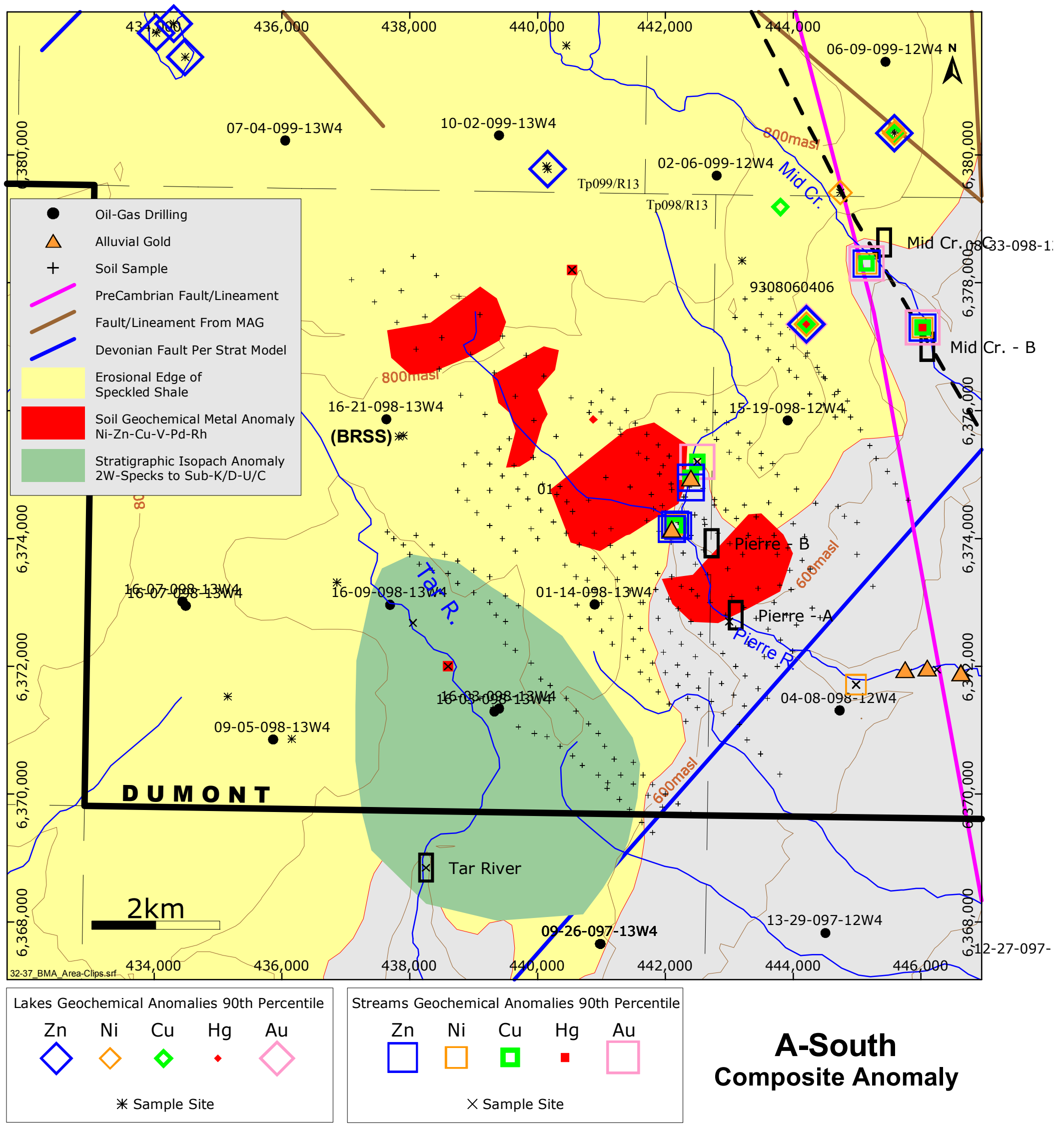


Figure 36: Summary of historic anomalies, Tintina composite anomalous area A-South, Birch Mountains. After Drawing 97-B3, Alberta Mineral Assessment Report MIN9611, Sabag 1996a. BRSS=Beaver River Sandstone.

EAGLENEST Composite Anomalous Area: The Eaglenest anomaly is located over Tintina's historic Eaglenest property. Principal anomalies over this area comprise geochemical anomalies which are coincident with, or proximal to, structural features in the area or the stratigraphic isopach anomaly located over its southern part. The stratigraphic subsurface model for the area indicates that it is underlain mainly by the Second White Specks Formation. This area is summarized in Figure 37.

The Asphalt-Eaglenest fault zone crossing the Eaglenest area is characterized by many vertical offsets based on the stratigraphic model for the area, and is crossed by the northeasterly trending Eaglenest-Sand Lake fault zone, representing a 3km-5km wide zone of considerable subsurface disturbance. This is a significant fault junction adjacent to abnormal thickening of the Shaftesbury Formation reflected by the isopach for the base of Fishscales – base of Second White Specks. It is noteworthy that dacitic debris of likely local provenance has been incidentally identified in the vicinity of Clear Lake located to the southeast of Eaglenest Lake, immediately to the east of the east boundary of the area.

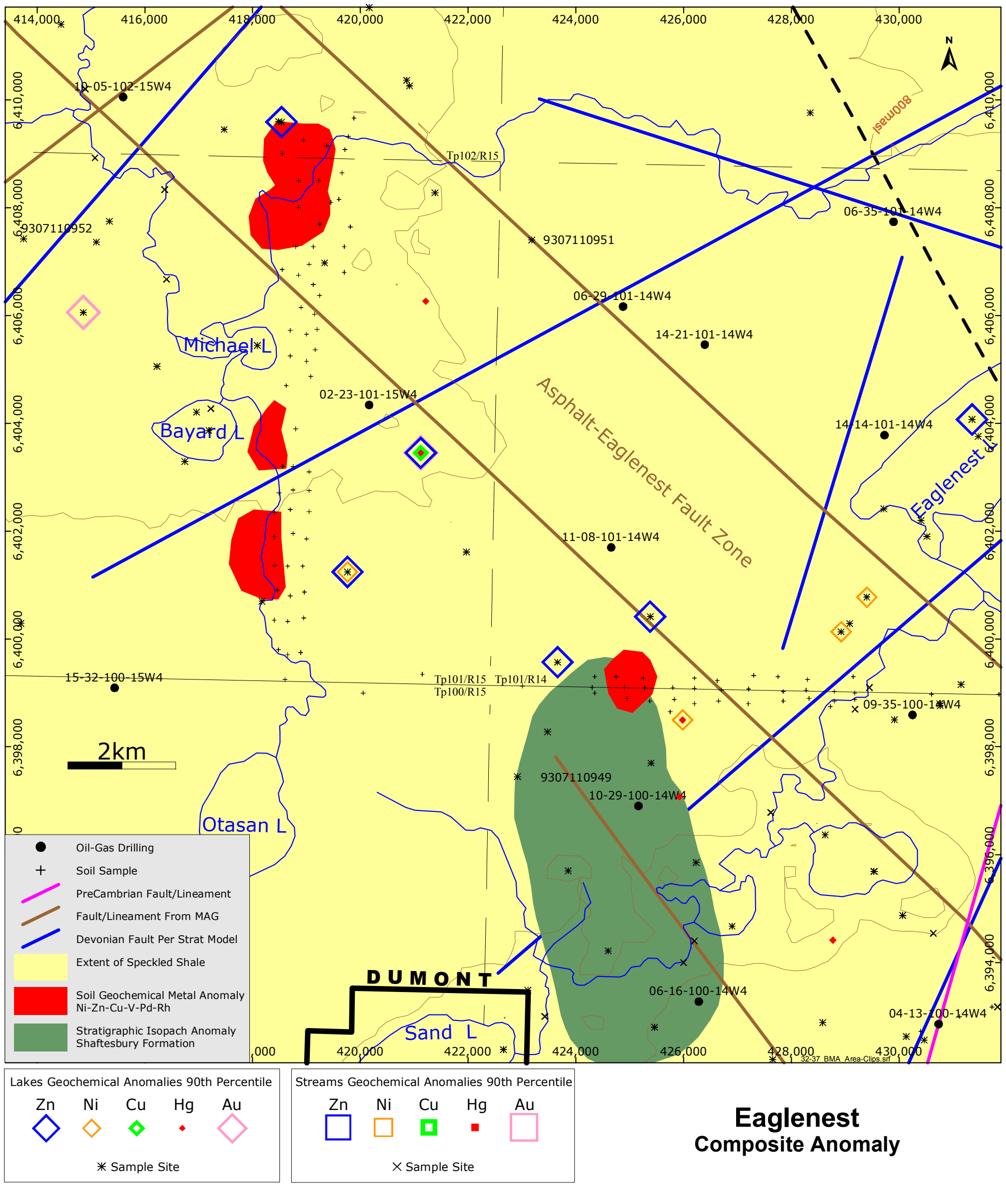


Figure 37: Summary of historic anomalies, Tintina Eaglenest composite anomalous area, Birch Mountains. after Alberta Mineral Assessment Reports MIN9611 and MIN9612, Sabag 1996a and 1996c.

Definitive resolution of individual faults within the two fault zones has not been possible due to the many offsets noted in cross-sections from the area, though many of the interpreted vertical offsets correlate well with lake sediment geochemical anomalies dominated by Zn/Ni/Ag±Au, the majority of which are located on the flank of, or within, the Asphalt-Eaglenest fault zone.

Soil geochemical anomalies identified from localities overlying interpreted faults in Twp101/R15 (near Bayard Lake) are characterized by strong Zn diffusion anomalies, all of which are also accompanied by anomalous Pd/Rh, by subordinate Ni±Cu and by zones of Te enrichment. In contrast to the general predominance of Zn anomalies over the central and the southern portions of the area, its northernmost parts, near Michael Lake, are better characterized by anomalous Cu/Ni diffusion in soils overlying faulting, accompanied by subordinate Zn/Pd/Rh.

Composite Anomalous Area Ranking: Tintina ranked the above anomalies and prioritized the B-Mid and B-South targets, located over the central and southern portions of its historic Buckton Property, as the most prospective near-term drilling targets, characterized by a predominance of Ni/Cu enrichment over the former and of Zn over the latter. The ranking also similarly prioritized A-South, over the southern portion historic Asphalt Property, as a highly prospective target characterized predominantly by Zn enrichment accompanying native gold. The Eaglenest anomaly was not explored beyond the reconnaissance stage despite the many favourable anomalies identified.

The author has reviewed the historic databases and concurs with Tintina's conclusions, especially with the benefit of results from subsequent drill testing (1997) which confirmed presence of metal enrichment beneath the B-Mid and A-South composite anomalous areas (discussed later in Section 6.2.12).

Geological Working Model 1996: A geological working model was formulated for the Birch Mountains by Tintina in 1996[14], based on the composite anomalies, as a guideline for ongoing exploration of Cretaceous horizons in the area (Figure 38). The model was based on the following premises: (i) that deep sourced pre-Prairie oxidizing metalliferous basinal fluids could leak into the Birch Mountains through the countless cross-structures intersecting the Prairie Evaporite salt scarp which is projected to cross the Mountains and underlie it, (ii) that carbonaceous shales across the Birch Mountains, provide good redox interfaces as collectors of metals via redox processes from the oxidizing fluids seeping up from a source beneath the shales, and (iii) that metal concentration in the Birch Mountains can be envisaged to be is controlled primarily by redox processes acting on metal bearing oxidizing fluids circulating through fault zones or fault junctions.

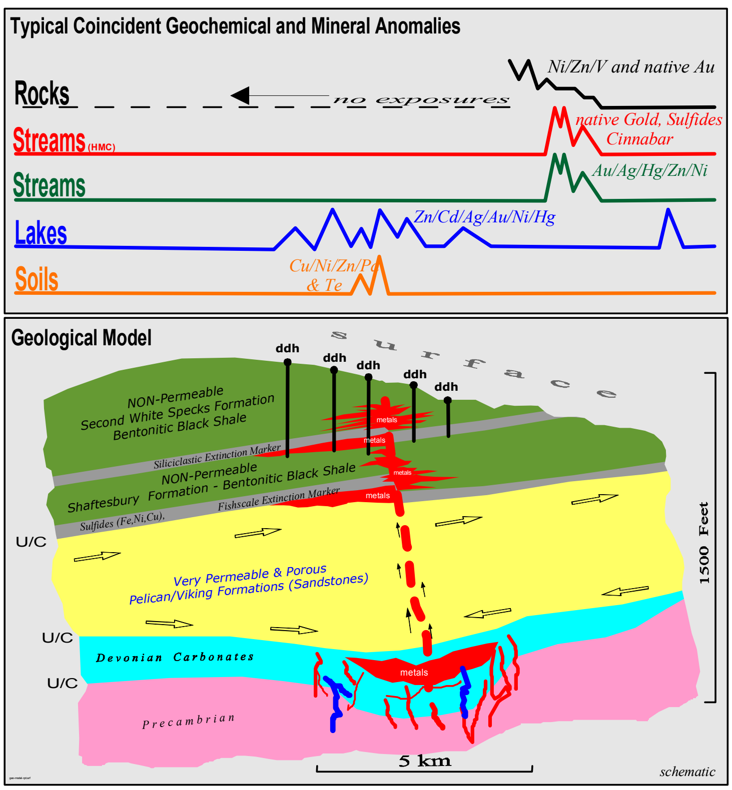


Figure 38: Geological model for metals enrichment, Birch Mountains. Showing typical geochemical and mineral anomaly profiles from historic multimedia surface sampling programs from areas over and near shale hosted metals enrichment zones. From Figure 23, MIN9802, Sabag 1998.

Possible (suspected) hot-springs or volcanogenic activity in the area was not incorporated into the model due to the scarcity of reliable spatially resolved information.

For the purposes of the Birch Mountains Model, stratigraphy of the area was regarded as a sedimentary package consisting of alternating permeable sequences (sandy – eg: Pelican sands) enveloped within impermeable horizons (carbonaceous – Speckled and Shaftesbury Shales). The Model anticipated that metal bearing fluids would circulate upward within the permeable units and would precipitate their metal content against overlying carbonaceous contacts and in permeability traps created by a number of faults and domed locations identified in the course of stratigraphic correlations for the area. Basinal dewatering was regarded as the source of metal rich fluids which would travel up-stratigraphy through the permeability breach created by dissolution of the Prairie Evaporite salt beds.

[14] Alberta Mineral Assessment Report MIN9611, Sabag 1996a.

Extrapolations from the model suggested that the Second White Speckled Shales and Shaftesbury Shale Formations, the principal carbonaceous units in the area, present equally good redox interfaces for the accumulation of metals beneath their lower contacts and, accordingly, offer equally prospective exploration targets.

Tintina decided to drill-test the proposed model by the drilling of a series of holes positioned to cross an anomalous locality and related faulting, to test beneath the base of the Second White Speckled Formation. This Formation is nearer the surface, and was regarded as an adequate proxy for any redox processes which might be active in the area and which would be expected to affect both Formations.

6.2.12 Asphalt and Buckton Zones 1997 Drilling

Tintina carried out a 915.73m drill program in 1996-1997 to test beneath the A-South and B-Mid composite anomalous areas, referred to hereinafter as the Asphalt and Buckton Zones, respectively (Figure 39). Eight 3-inch diameter holes were cored during January-February, 1997, to test suspected metal enrichment in shales buried beneath the anomalies, as envisaged based on the general geological working model.

Drill holes were positioned to collect complete sections of the Second White Specks Formation from its upper contact to its base, to also core sufficient sections beneath the base to test for proposed metal accumulations. Extrapolations from the model suggested that testing of the Second White Specks Formation would suffice to characterize any redox processes which might be active in, and around, the Speckled as well as the Shaftesbury shale beneath it.

Final selection of drill hole locations relied heavily on results of soil sampling completed in 1995-1996.

Drilling was partly constrained by access, topography, and scheduling parameters, and by the limitations of a maximum depth of 150m below which full blow-out prevention equipment would have been required. Accordingly, only eight of 17 planned holes were completed, the balance being omitted due to overly demanding access (over portions of the Buckton Zone) or due to inappropriate elevation (Asphalt - Speckled Shale target encountered nearer surface than anticipated).

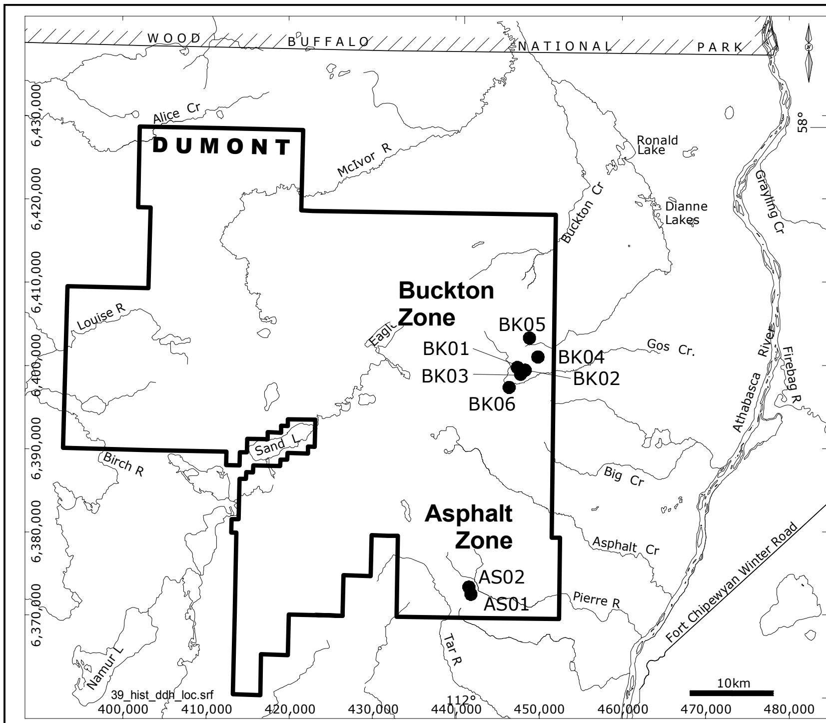


Figure 39: Historic Asphalt and Buckton drill programs location sketch, Alberta Mineral Assessment Report MIN9802, Sabag 1998

Considering the absence of prior mineral exploration drilling (coring) in the area, a secondary objective of the program was to develop drilling and sampling procedures tailored to the exploration of the muddy Cretaceous shales, and to assess the efficacy of drill equipment toward the collection of reliable samples with good recoveries.

A 40km portion of the existing Birch Winter Road was opened up during early December, 1996, to access the Birch Mountain Airstrip and Fire Tower. An additional 18km of road were also opened-up and graded to the west and north of the Airstrip to gain access to drill collar sites.

The nearest known gas-bearing horizon in the Birch Mountains is the Viking Formation which occurs at an elevation of approximately 530m asl (approximately 100m below the Speckled Shale drill targets). This Formation is known to contain localized low pressure gas, and although its gas bearing sections were determined prior to the drilling and found not to pose any risks, the drill was equipped with a suitable gas diverter as a precaution against potential gas pockets. No gas was encountered during any of the drilling.

The drilling program was completed during January-February, 1997, its implementation and core logging/sampling subcontracted to Apex Geoscience (Mr.D.Besserer PGeo during the construction phase of the program, and Mr.M.Dufresne PGeo during drilling and logging/sampling). Core logging and sampling were completed by Mr.Dufresne, at Tintina's secure Fort McMurray warehouse facilities. The entire footage drilled was also reviewed by the author of this Report. One split half of the core was analyzed in its entirety, and the other half archived in the original core boxes[15].

Core recoveries ranged to above 90%. Measured core losses were concentrated at the ends of the core barrel and they are attributed entirely to grinding or to difficulties encountered grabbing the slippery and heavy core sections. Majority of the core, especially the more carbonaceous shaley sections, are pasty when "fresh" (wet) and were split manually utilizing a putty knife or a wood chisel. Once dry, after a two to three day period, the core hardened considerably, necessitating the use of mallet and chisel for splitting ultimately producing in most part shattered samples.

The core was typically sampled in 1.5m intervals under geological control. The Second White Specks Formation was sampled entirely under geological control, the shortest sample interval being 4cm. The 3-inch diameter of the core provided ample material for analytical work (averaging 4.1kg per 1m of split core, avg 3.9kg per sample). Sample weights recorded from shipping waybills enabled estimation of an approximate density for the shales, reporting calculated specific gravities ranging 1.7g/cm^3 to 2.1g/cm^3, with Second White Specks shales generally reporting the higher densities.

Core samples were analyzed by Activation Labs, Ancaster, Ontario, by analytical package 1H, a combination of ICP and INAA, augmented by Leco C-org and Leco S analyses. Samples from the Second White Specks Formation were also fire assayed for Au, Pt and Pd.

In addition to above routine analyses, a suite of 41 drill core samples were also combined into 5 composites, and submitted to the Saskatchewan Research Council (SRC) for concentration and heavy mineral picking (Section 6.3.3). A total of 69 subsamples were also collected by Mr.Leckie (GSC, Calgary) for Rock-Eval analyses and for a preliminary micropaleontological study (Leckie 1997, Section 6.4). Drill core was made available to the AGS for collection of select litho-type intervals, as well as for more detailed sampling of overburden footages.

Drill hole details are summarized in Table 5, showing also intercepts of the Second White Speckled Shale Formation footages.

Tintina completed a total of 749.63m in six 3-inch diameter holes (of 10 planned) across the Buckton Zone, collared along an 8km long fence as a cross-section across the southeast flank of the 5kmx8km B-Mid composite anomaly, to test beneath its eastern one third (Figure 40). Four of the holes (BK06, BK01, BK04 and BK05) were spaced approximately 2km-2.4km apart, whereas the remaining two holes (BK02 and BK03) were collared within approximately 700m radius of hole BK01 to assess local variations. The drill fence can be regarded to comprise two separate parallel 4km to 5km long "staggered" cross-sections 1km-2km apart, which also radially parallel Gos Creek and its valley walls 1km-2km to the southeast. The fence is regarded as a cross-section for the purposes of this Report.

[15] Subsequently delivered to the Alberta Mineral and Core Research Facility for archiving. See Section 6.5 of this report)

Drill hole cross section is presented in Figure 42 in addition to a summary downhole stratigraphy of the principal sub-Formational units.

Drill Hole Name	UTM East	UTM North	Collar Elev (masl)	Depth (m)	Elev Top 2WS (masl)	Elev Bottom 2WS (masl)	Thickness 2WS (m)	Section/Range Location
7BK01	447390	6399740	760	149.1	627.0	not int.	est 21.3	11-03-101-12W4
7BK02	448310	6399410	685	101.5	624.2	605.9	18.4	08-03-101-12W4
7BK03	447770	6398930	695	106.9	620.0	593.8	26.2	02-03-101-12W4
7BK04	449850	6401000	750	158.2	629.4	608.3	21.1	08-11-101-12W4
7BK05	448825	6403270	730	101.2	653.2	634.8	18.4	13-14-101-12W4
7BK06	446390	6397340	730	132.7	622.4	599.8	22.6	02-33-100-12W4
7AS01	441800	6372500	675	76.3	not int.	656.5	est 11.4	06-12-098-13W4
7AS02	441560	6373350	690	89.8	668.4	657.0	11.4	11-13-098-13W4

Table 3: Summary of historic drill holes, Asphalt and Buckton Properties 1997 drilling. Showing elevation and thickness of the Second White Specks Formation (2WS). Buckton hole BK01 did not reach bottom contact of the Formation, a total thickness is estimated to be 21.3m based on projections from adjacent holes. Asphalt hole AS01 collared in Speckled Shale, total thickness estimated to be 11.4 based on projections from adjacent hole. Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Hole depths varied 75m-100m to probe from surface (approximate elevation of 700m-750m asl) down to the base of the Second White Specks Formation (approximate elevation of 600m-630m asl). All holes reached their targets, except hole BK01 which was collared too high to reach the bottom contact of the Second White Speckled Shale. The Formation in Drill hole BK01 is 16.12m thick but is estimated to be 21.3m thick based on projections from adjacent holes.

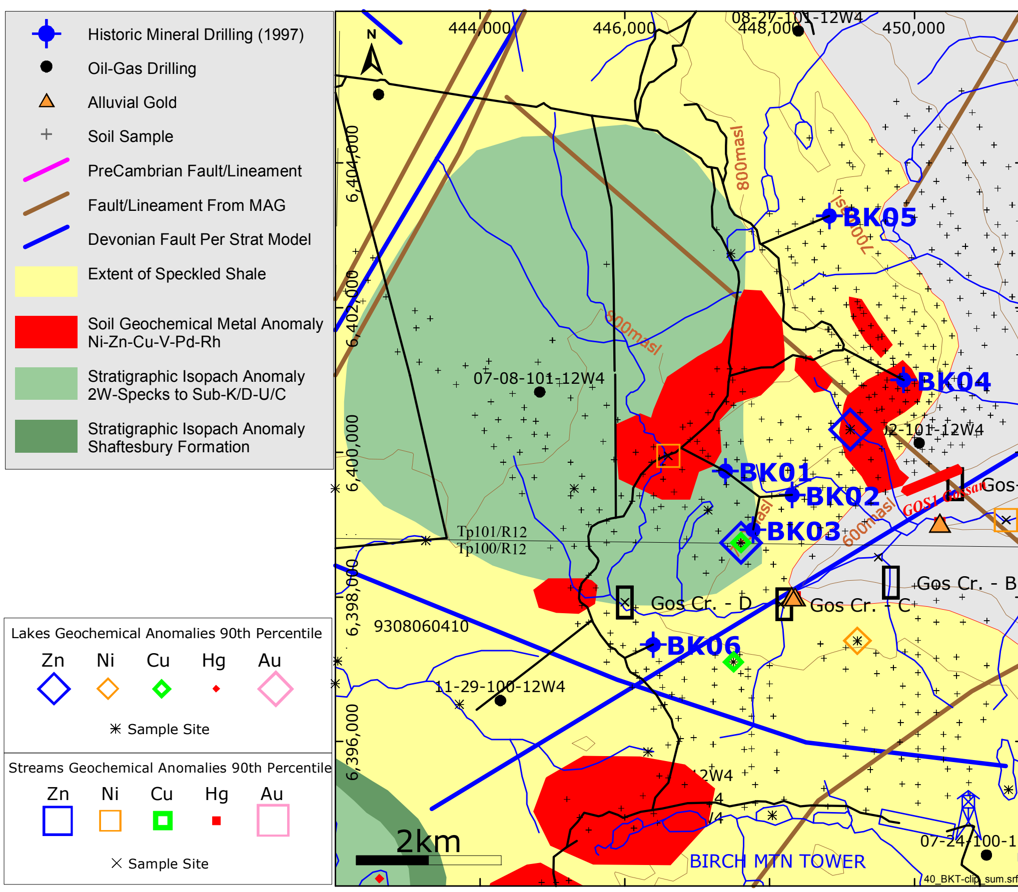


Figure 40: Historic drilling drill hole location sketch, Buckton Zone (Composite Anomaly B-Mid), Tintina Drill Program 1997, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Two 3-inch diameter vertical holes were cored (of 7 planned) over the Asphalt Zone, over the eastern part of the A-South composite anomaly, with an aggregate of 166.10m (Figure 41). The two holes were spaced 900m apart and both holes reached their targets. The drill holes cross section is presented in Figure 42, in addition to a summary downhole stratigraphy of the principal sub-Formational units.

The Second White Speckled Shale Formation was encountered approximately 40m-50m higher than expected as interpreted from the subsurface stratigraphic database for the area. As a result, drill hole AS01 collared directly in the upper contact of the Formation and succeeded to core only its lower sections. The upper contact of the Formation in hole AS01 is in casing and only 7.2m were cored compared to 11.4m cored in hole AS02. The Formations' thickness in AS01 was, accordingly, estimated to be 11.4m based on the adjacent hole AS02 for geological discussions.

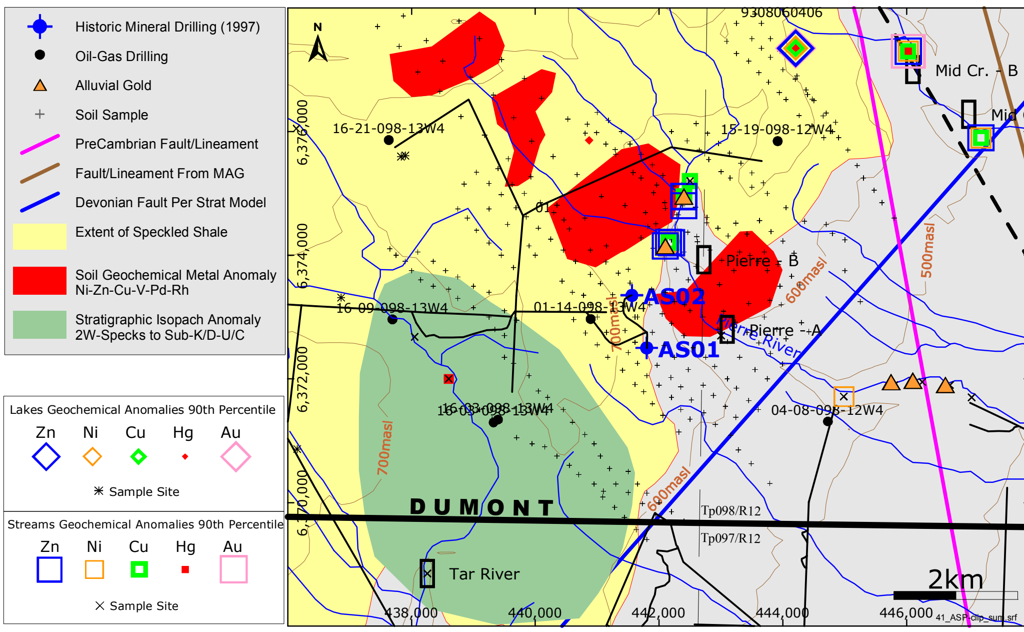


Figure 41: Historic drill hole location sketch, Asphalt Zone (historic Composite Anomaly A-South), Tintina drill program 1997, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

In addition, material similar to the Second White Speckled Shale, as well as bentonites, were noted 5m-10m below its lower contact in the Belle Fourche (Shaftesbury) Formation beneath it. This repetition was attributed to block movement in the area or equally likely galcio-tectonic thrusting. The holes are located at, or very near, the erosional edge of the Birch Mountains in a complex zone of faults and valley slumps.

Downhole lithogeochemistry from the drilling, relative to stratigraphy, is presented in Figure 43 for all of the holes combined. Analytical data for select metals and elements for all drill core intercepts of the Second White Speckled Shale Formation are summarized in Table 4, which also includes comparative data from other black shales from elsewhere in the world. Average formational lithogeochemistry are summarized in Table 5.

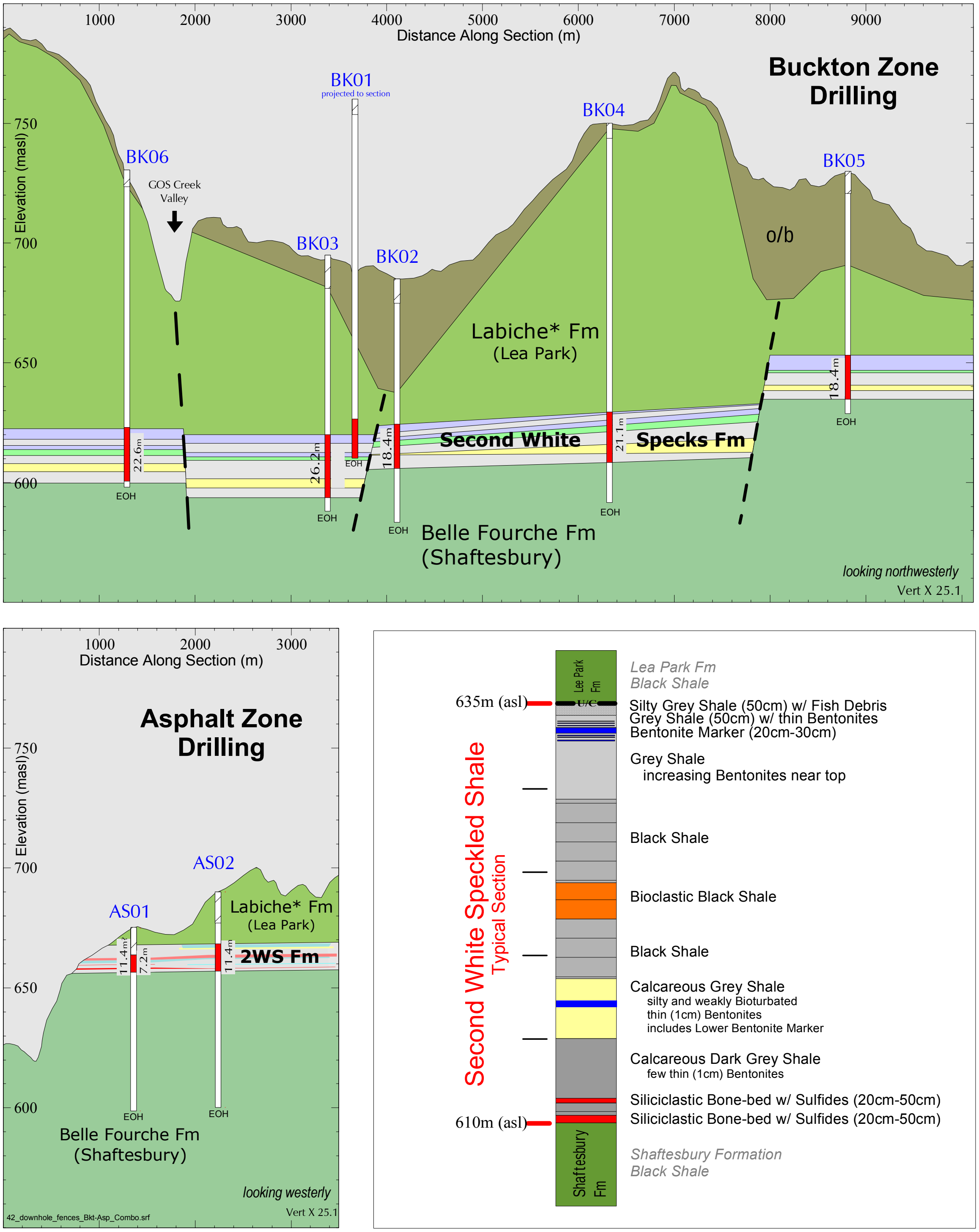


Figure 42: Drill cross-sections, historic drilling Asphalt and Buckton Zones. After Figures 16a and 16b, Alberta Mineral Assessment Report MIN9928, Sabag 1998. Type stratigraphic column for the Second White Speckled Shale also shown.

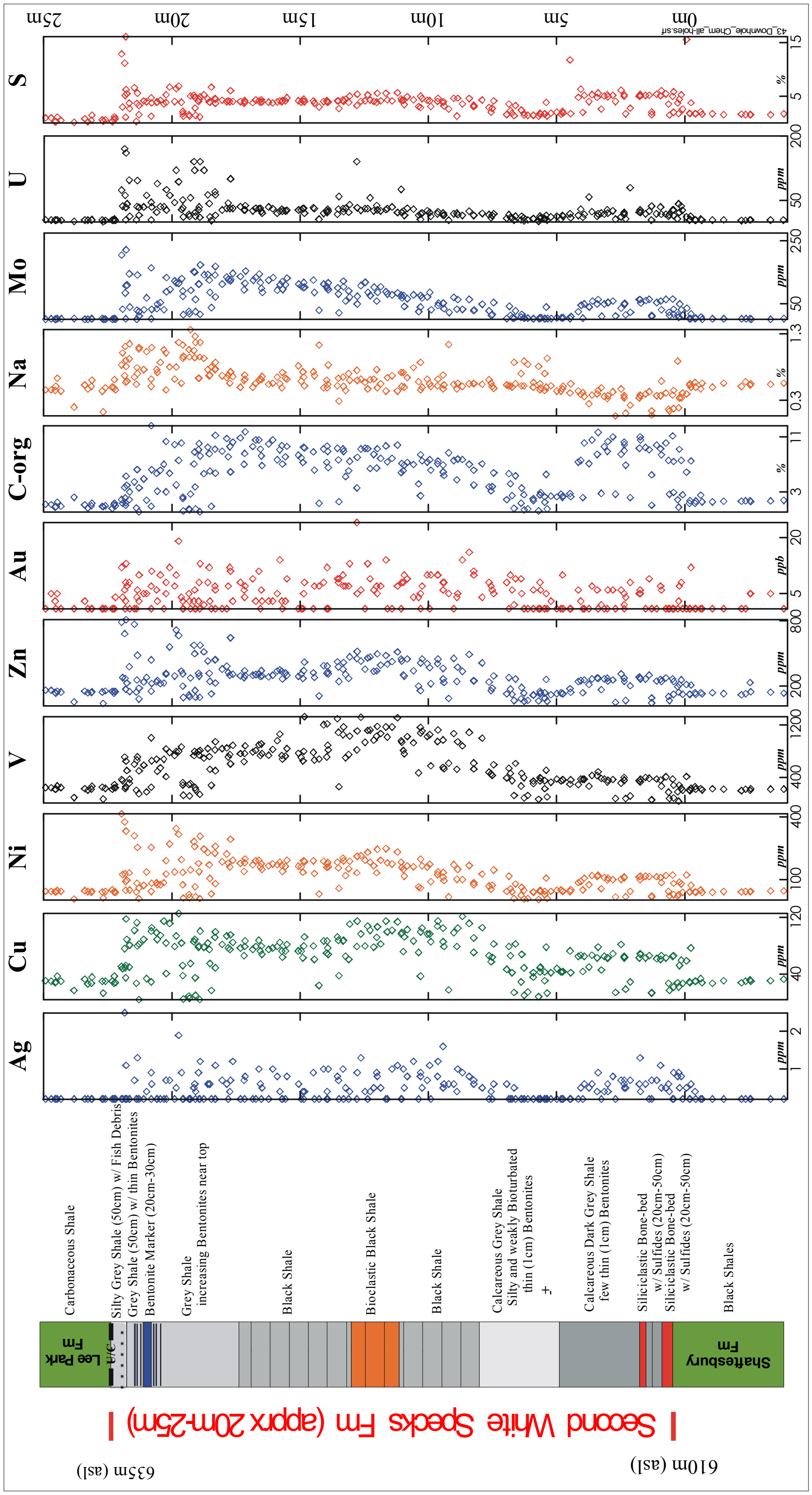


Figure 43: Composite downhole lithogeochemistry, all historic drilling, Asphalt and Buckton Zones. After data from Alberta Mineral Assessment Report MIN9802, Sabag 1998. Data normalized to constant formational thickness for plotting purposes.

Sample No.	From (m)	To (m)	Length (m)	Rock Type	Ag ICP ppm	Au FA ppb	Au INA ppb	Ba INA ppm	C-org Leco %	Ca ICP %	Cd ICP ppm	Co INA ppm	Cu ICP ppm	Fe INA %	Mo ICP ppm	Na INA %	Ni ICP ppm	S Leco %	U INA ppm	V ICP ppm	Zn ICP ppm
7BK0113298	627.02	626.84	0.18	2shgsu	0.2	11	3	7800	3.1	5.1	6.0	25	89	3.8	48	0.72	75	4.0	89	495	249
7BK0113316	626.84	626.79	0.05	2shgsu	0.2	10	10	8100	6.1	2.0	5.6	20	95	4.8	53	0.87	75	4.3	36	543	221
lc	626.79	626.10	0.69																		
7BK0113390	626.10	625.83	0.27	2shrbnsu	0.2	6	1	9600	2.0	3.3	3.5	10	38	4.4	73	1.13	75	1.8	33	286	197
7BK0113417	625.83	625.65	0.18	2bnlsu	0.2	3	5	710	0.5	1.3	1.2	3	9	1.6	26	1.06	30	1.6	18	291	113
7BK0113435	625.65	625.44	0.21	2shrbnsu	0.5	9	3	5000	7.0	5.0	14.9	35	86	5.4	152	1.05	281	5.2	140	729	574
7BK0113456	625.44	624.60	0.84	2shrbnsu	0.6	6	8	2600	9.5	5.5	12.2	25	84	4.1	143	0.76	229	4.6	63	835	429
7BK0113540	624.60	623.72	0.88	2shrbnsu	0.7	6	11	7200	5.9	6.5	15.7	38	96	5.9	126	0.73	293	6.1	100	606	642
7BK0113628	623.72	622.72	1.00	2shrca	0.2	9	3	1200	10.5	7.9	8.9	20	79	3.5	133	0.56	190	4.3	32	809	303
7BK0113728	622.72	621.72	1.00	2shrcabn	0.2	5	3	1000	9.7	10.2	9.7	18	73	3.5	120	0.49	169	4.0	30	730	333
7BK0113828	621.72	621.07	0.65	2shrcabn	0.2	5	5	1500	9.5	5.5	10.6	21	80	4.1	117	0.65	191	4.5	32	797	341
7BK0113893	621.07	619.98	1.09	2shrbnlfd	0.2	6	1	930	7.3	5.0	9.0	17	70	3.7	105	0.60	159	4.2	26	711	316
7BK0114002	619.98	619.40	0.58	2shrbnfd	0.2	2	7	1100	6.0	5.0	8.1	16	61	3.5	90	0.70	152	3.9	23	746	268
7BK0114060	619.40	618.75	0.65	2shrbc	0.4	6	1	1300	9.3	6.9	12.1	21	80	4.0	118	0.57	194	4.2	31	929	351
7BK0114125	618.75	618.22	0.53	2shrbc	0.5	5	7	960	7.8	8.4	13.8	22	83	4.0	104	0.55	192	4.2	26	1063	390
7BK0114178	618.22	617.22	1.00	2shrcabn	0.2	7	1	3100	5.8	6.3	15.0	22	97	4.3	77	0.72	184	4.6	76	955	448
7BK0114278	617.22	616.22	1.00	2shrcabnfd	0.7	6	10	950	7.3	5.5	14.7	23	97	3.9	72	0.62	160	4.3	26	1020	404
7BK0114378	616.22	615.22	1.00	2shrcabn	0.6	6	1	590	7.5	3.9	16.5	22	99	4.3	70	0.54	172	4.7	19	1065	454
7BK0114478	615.22	614.10	1.12	2shrcabn	0.5	7	4	610	7.1	2.9	15.3	19	106	4.2	48	0.54	126	4.3	20	995	412
7BK0114590	614.10	612.70	1.40	2shrszbnfdgl	0.2	7	9	780	5.3	2.4	6.9	15	83	3.4	27	0.55	79	3.3	14	612	262
7BK0114824	612.70	611.76	0.94	2shrszbnfdgl	0.2	6	5	720	5.5	3.0	5.2	20	78	3.7	39	0.50	107	3.9	15	509	258
7BK0206078	624.22	623.87	0.35	2shb	1.1	10	13	13000	5.3	6.5	23.5	55	118	8.0	108	0.81	331	6.3	160	648	810
7BK0206113	623.87	623.54	0.33	2shb	0.2	2	1	1600	0.6	0.5	0.3	15	27	3.8	1	0.54	41	0.3	5	205	143
7BK0206146	623.54	623.22	0.32	2shbbnsu	0.4	2	5	22000	1.8	8.3	5.2	22	34	4.4	69	1.03	137	4.0	62	181	279
7BK0206178	623.22	622.26	0.96	2shbbnsu	0.2	4	8	12000	3.0	2.8	6.3	20	41	5.9	88	1.01	127	5.3	75	412	307
7BK0206274	622.26	622.10	0.16	2shbbnsu	0.2	1	1	840	0.2	1.4	0.8	3	5	1.6	15	0.96	12	1.3	12	132	92
7BK0206290	622.10	621.52	0.58	2shbbn	0.6	6	6	4800	8.8	4.0	14.5	37	89	5.5	150	0.94	258	4.8	120	792	497
7BK0206348	621.52	621.15	0.37	2shbbnsu	0.6	9	12	1900	8.5	5.8	9.3	21	75	4.1	125	0.67	170	4.0	43	714	315
7BK0206385	621.15	620.17	0.98	2shbbnfd	0.4	5	12	1100	9.5	8.4	8.9	21	75	4.3	121	0.56	161	4.0	32	749	297
7BK0206483	620.17	619.17	1.00	2shbbnfd	0.6	4	1	1700	9.2	9.1	8.7	22	73	4.1	117	0.62	160	4.0	32	730	285
7BK0206583	619.17	618.73	0.44	2shbcabn	0.2	6	1	1200	7.0	4.5	7.4	17	64	4.4	95	0.72	139	4.2	25	678	264
7BK0206627	618.73	617.82	0.91	2shbca	0.4	3	1	1300	7.2	5.9	7.3	18	63	4.2	101	0.73	136	4.1	31	649	268
7BK0206718	617.82	617.70	0.12	2shbcabn	0.2	2	7	590	1.3	1.4	2.9	7	24	3.5	29	1.13	31	3.0	7	678	105
7BK0206730	617.70	616.55	1.15	2shbcacc	0.7		8	900	7.6	5.7	15.2	20	88	4.3	80	0.63	156	4.2	30	1083	375
7BK0206845	616.55	615.39	1.16	2shbcabn	0.5	3	6	1100	8.4	6.1	12.0	23	78	4.7	103	0.62	166	4.1	26	964	333
7BK0206961	615.39	614.38	1.01	2shbcafd	0.8	6	9	1100	7.3	3.9	16.0	27	103	5.5	66	0.64	166	5.0	32	1019	447
7BK0207062	614.38	613.37	1.01	2shbcafd	1.2	7	10	780	7.5	3.4	16.5	25	115	5.2	52	0.62	137	4.7	24	1119	445
7BK0207163	613.37	612.37	1.00	2shbcafd	0.8	5	16	680	7.0	4.5	16.3	28	112	5.5	64	0.55	167	4.6	25	1081	490
7BK0207263	612.37	612.07	0.30	2shbcafdbn	0.2	4	8	880	3.7	4.9	5.2	15	66	3.8	27	0.61	69	3.0	17	481	235
7BK0207293	612.07	611.06	1.01	2shbszbn	0.2	6	1	770	5.6	3.7	5.2	23	79	4.6	42	0.52	116	3.6	17	541	276
7BK0207394	611.06	610.06	1.00	2shbsz	0.2	4	8	1100	2.5	1.2	1.0	13	49	3.5	6	0.55	49	1.9	14	395	151
7BK0207494	610.06	609.06	1.00	2shbsz	0.2	6	1	1000	2.3	1.2	0.7	12	42	3.1	9	0.55	51	1.8	10	364	140
7BK0207594	609.06	608.06	1.00	2shbsz	0.2	2	2	1300	2.8	2.8	0.3	20	46	3.7	10	0.49	57	2.7	21	382	164
7BK0207694	608.06	607.78	0.28	2sbb	0.7	4	6	710	8.4	1.8	3.4	30	82	7.9	36	0.47	102	6.2	12	317	308
7BK0207722	607.78	607.45	0.33	2sbbsh	0.7	4	8	1000	2.2	13.9	2.7	9	29	2.9	23	0.23	44	2.8	80	117	200
7BK0207755	607.45	606.56	0.89	2shbcafd	0.2	2	9	680	9.1	4.5	3.3	26	66	5.9	64	0.43	115	5.2	25	386	299
7BK0207844	606.56	605.85	0.71	2sbb	0.2	2	1	530	2.9	28.1	1.8	8	22	2.1	16	0.18	29	2.0	28	89	120

Table 4: Select analytical data, Buckton and Asphalt Zones historic drilling. After Alberta Mineral Assessment Report MIN9802, Sabag 1998. (Continued next page) Comparative data from select other black shales also shown (at end of table).

Sample No.	From (m)	To (m)	Length (m)	Rock Type	Ag ICP ppm	Au FA ppb	Au INA ppb	Ba INA ppm	C-org Leco %	Ca ICP %	Cd ICP ppm	Co INA ppm	Cu ICP ppm	Fe INA %	Mo ICP ppm	Na INA %	Ni ICP ppm	S Leco %	U INA ppm	V ICP ppm	Zn ICP ppm
7BK0307503	619.97	619.38	0.59	2shbsssu	0.2	5	7	4000	3.9	2.3	3.1	28	89	6.1	109	0.59	97	5.5	42	505	223
7BK0307562	619.38	619.04	0.34	2shbsufd	0.2	8	4	7600	6.2	2.1	5.6	20	113	4.6	29	0.79	83	3.7	36	666	252
7BK0307596	619.04	618.75	0.29	2shsu	0.2	7	5	7700	4.9	3.3	5.4	17	89	4.2	31	0.76	73	4.1	35	588	236
7BK0307625	618.75	617.84	0.91	2shbbnfd	0.2	9	6	6800	5.7	1.6	5.4	18	99	4.5	34	0.76	85	3.9	23	676	236
7BK0307716	617.84	617.53	0.31	2shbbnfd	0.7	9	12	14000	5.7	2.9	18.7	38	112	6.3	95	0.80	270	6.7	62	781	558
7BK0307747	617.53	617.26	0.27	2shrbnsu	0.5	8	10	9200	4.0	4.1	18.7	47	94	7.8	116	0.80	344	6.5	120	793	713
7BK0307774	617.26	616.90	0.36	2shbbnsufd	0.2	6	3	12000	2.2	4.7	5.7	19	52	5.0	90	0.93	134	2.2	51	322	312
7BK0307810	616.90	616.65	0.25	2shbbnfd	0.2	1	3	470	0.4	1.3	0.6	2	6	1.4	18	0.95	14	1.4	14	123	96
7BK0307835	616.65	616.37	0.28	2shbbnfd	0.2	1	1	7300	3.7	4.8	3.8	10	35	3.0	64	1.26	66	2.9	23	246	157
7BK0307863	616.37	616.23	0.14	2shbbnfd	0.2	1	1	410	0.1	1.1	0.3	1	4	1.3	16	0.95	9	1.2	11	145	93
7BK0307877	616.23	615.95	0.28	2shgszbnsu	0.2	5	2	5200	5.6	4.3	13.0	29	78	5.6	142	0.93	246	5.3	120	691	514
7BK0307905	615.95	615.24	0.71	2shgsu	0.2	6	7	3600	9.2	4.6	12.2	30	92	4.8	141	0.76	226	4.7	70	818	438
7BK0307976	615.24	614.69	0.55	2shgsu	0.2	7	7	2200	8.1	6.0	9.4	21	77	4.0	127	0.68	178	4.2	44	712	322
7BK0308031	614.69	614.14	0.55	2shgsu	0.2	4	8	1400	10.8	8.5	8.4	21	77	3.7	136	0.50	178	4.1	36	760	291
7BK0308086	614.14	613.50	0.64	2shgcasu	0.2	6	9	830	9.6	8.0	8.4	18	75	3.6	124	0.50	170	3.8	26	785	297
7BK0308150	613.50	612.70	0.80	2shgcasu	0.2	4	3	1400	9.9	9.2	7.7	21	75	4.2	124	0.54	166	3.9	35	737	282
7BK0308230	612.70	611.94	0.76	2shgcabnsu	0.2	1	3	1200	8.1	4.6	9.2	19	73	4.2	110	0.63	163	4.2	26	724	320
7BK0308306	611.94	611.23	0.71	2shgcabnsu	0.2	4	1	1300	7.9	4.7	8.5	20	73	4.1	106	0.59	160	3.9	28	701	306
7BK0308377	611.23	610.69	0.54	2shgcabnsu	0.2	4	7	1200	6.1	5.5	8.4	18	61	4.2	85	0.67	129	3.7	31	664	279
7BK0308431	610.69	610.00	0.69	2shbbcsu	0.2	3	1	1200	8.9	6.8	10.6	21	77	4.3	116	0.54	182	4.0	30	887	328
7BK0308500	610.00	609.24	0.76	2shbbcsu	0.2	6	7	860	8.9	5.5	15.4	22	88	4.3	104	0.51	190	4.1	24	1162	415
7BK0308576	609.24	608.75	0.49	2shbbcsu	0.2	4	24	1900	3.6	9.3	16.6	20	79	3.3	49	0.75	133	3.3	140	816	452
7BK0308625	608.75	608.00	0.75	2shbbcsu	0.4	4	9	1500	6.4	5.9	16.8	23	102	4.3	76	0.61	184	4.3	56	1117	465
7BK0308700	608.00	607.17	0.83	2shbbcsu	0.2	4	1	1500	7.3	5.2	13.0	27	100	5.1	81	0.64	180	4.4	31	1013	399
7BK0308783	607.17	606.64	0.53	2shbbcsu	0.2	5	8	740	7.1	5.4	16.2	22	99	4.4	69	0.51	159	4.2	22	932	428
7BK0308868	606.32	605.61	0.71	2shbbcsu	0.5	6	7	750	7.5	4.1	17.4	24	105	4.6	69	0.50	166	4.6	21	1104	449
7BK0308939	605.61	604.88	0.73	2shbbcsu	0.8	5	10	920	7.1	2.8	14.6	20	108	4.5	44	0.52	124	4.1	19	945	404
lc	604.88	604.19	0.69																		
7BK0309081	604.19	603.97	0.22	2shbbcsu	0.9	7	14	790	7.7	1.8	9.6	17	122	4.1	32	0.51	100	3.6	15	877	332
7BK0309103	603.97	603.15	0.82	2shbbcsu	0.6	4	10	840	4.0	3.5	5.7	17	71	3.9	31	0.55	85	3.4	15	528	247
lc	603.15	601.64	1.51																		
7BK0309336	601.64	601.03	0.61	2shsz	0.2	4	5	1700	3.5	1.6	2.7	13	68	3.4	16	0.52	63	2.5	13	462	185
7BK0309397	601.03	600.57	0.46	2shsz	0.2	1	6	870	1.7	0.8	0.7	12	36	2.9	3	0.57	39	1.6	8	306	116
7BK0309443	600.57	600.53	0.04	2shszbn	0.2	1	1	360	0.2	1.1	0.3	2	8	1.4	3	0.81	5	1.3	2	69	60
7BK0309447	600.53	600.00	0.53	2shgsz	0.2	1	1	1100	2.3	0.8	0.3	11	43	2.8	2	0.45	45	1.7	9	350	134
7BK0309500	600.00	599.00	1.00	2shgsz	0.2	1	1	860	2.7	1.0	0.5	11	43	2.7	6	0.44	50	1.7	7	347	134
7BK0309600	599.00	598.00	1.00	2shgsz	0.2	2	1	1100	2.2	1.4	0.3	13	44	3.0	4	0.42	50	2.0	11	372	136
7BK0309700	598.00	597.65	0.35	2shgsz	0.4	2	6	680	8.4	1.3	3.2	19	63	4.5	49	0.40	116	4.8	13	431	272
7BK0309735	597.65	597.03	0.62	2shb	0.6	1	1	650	8.8	6.8	3.6	20	63	5.1	54	0.33	99	5.3	29	331	270
7BK0309797	597.03	596.91	0.12	2sbb	0.2	10	1	140	2.6	35.5	0.7	5	14	3.9	11	0.07	17	4.0	7	81	47
7BK0309809	596.91	596.22	0.69	2shb	0.7	4	2	640	9.0	6.7	3.4	22	64	5.1	51	0.34	109	5.0	23	354	272
7BK0309878	596.22	595.52	0.70	2shb	0.6	5	5	680	9.3	4.6	3.1	24	63	5.3	63	0.34	114	5.1	23	349	280
7BK0309948	595.52	595.07	0.45	2sbb	0.7	4	1	710	1.1	25.4	1.1	5	14	1.6	10	0.14	21	1.7	37	64	87
7BK0309993	595.07	594.62	0.45	2shbfd	0.5	6	6	790	8.3	1.4	3.2	27	66	7.9	31	0.59	86	6.1	18	271	240
7BK0310038	594.62	594.32	0.30	2sbb	0.4	1	1	240	2.6	33.7	1.1	6	17	1.6	12	0.14	22	1.6	17	80	62
7BK0310068	594.32	593.77	0.55	2sbb	0.9	7	3	840	0.7	12.8	2.6	7	22	2.1	7	0.19	29	1.8	42	41	139
7BK0412060	629.40	629.33	0.07	2shbsuszglbn	0.2	4	12	31000	1.9	2.4	23.7	180	51	11.4	205	0.83	414	12.9	74	370	787
7BK0412067	629.33	629.14	0.19	2shbszsubn	0.2	4	1	27000	2.1	1.6	6.2	22	49	5.7	84	1.11	128	5.2	62	230	268
7BK0412086	629.14	629.01	0.13	2shbbn	0.2	2	8	20000	1.9	2.7	8.0	20	50	6.2	145	0.92	133	3.7	97	316	377
7BK0412099	629.01	628.76	0.25	2shb	0.7	9	1	6700	4.4	11.9	24.3	42	102	8.5	316	0.65	310	6.6	260	599	767
7BK0412124	628.76	628.67	0.09	2bnlsu	0.2	1	3	1300	0.1	1.2	0.5	1	4	1.8	11	1.07	9	1.6	16	154	78
7BK0412216	627.84	626.93	0.91	2shbcasugl	0.2	2	7	1400	9.8	7.9	10.3	24	79	4.7	122	0.62	137	4.1	45	734	289
7BK0412307	626.93	626.02	0.91	2shbcasubngl	0.2	4	8	2100	10.0	6.1	10.5	25	80	4.9	112	0.63	138	4.5	35	740	289
7BK0412398	626.02	625.72	0.30	2shgbnlsu	0.2	1	1	1000	5.7	3.0	7.4	15	49	4.1	72	0.77	81	3.7	16	502	223
7BK0412428	625.72	625.16	0.56	2shgbnl	0.6	2	1	2000	10.7	5.7	12.6	27	94	4.7	135	0.64	223	4.0	32	845	381
7BK0412484	625.16	624.38	0.78	2shgbnlsu	0.2	3	4	1500	8.6	4.8	11.2	22	79	4.5	115	0.68	180	4.2	28	763	338
7BK0412562	624.38	623.92	0.46	2shgbnl	0.2	5	6	1300	8.2	6.0	13.4	23	80	4.9	99	0.61	176	4.4	25	906	339
7BK0412608	623.92	623.00	0.92	2shbcabcsu	0.4	5	14	880	9.1	6.2	14.3	22	85	4.6	111	0.55	183	4.2	25	1055	347
7BK0412700	623.00	622.08	0.92	2shbcabcsu	0.4	6	8	890	9.3	5.9	19.3	23	93	4.4	103	0.52	187	4.0	21	1322	419
7BK0412792	622.08	621.30	0.78	2shbcabcsu	0.4	8	12	800	9.6	7.2	18.2	22	87	4.2	99	0.49	175	4.0	22	1212	383
7BK0412870	621.30	621.19	0.11	2shbcabcsugl	0.2	3	9	1200	1.6	33.4	9.2	10	38	2.7	21	0.29	59	2.8	59	263	241
7BK0412881	621.19	620.51	0.68	2shgszsu	0.4	4	13	1100	7.4	5.5	17.5	32	111	6.1	71	0.60	188	5.1	41	1025	467
7BK0412949	620.51	619.83	0.68	2shgszsu	0.2	4	13	920	9.3	6.0	16.5	36	108	6.5	85	0.47	231	5.3	31	1112	457
7BK0413017	619.83	619.15	0.68	2shgszsu	0.2	6	14	830	9.7	5.9	17.1	34	115	6.3	88	0.44	248	5.6	29	1162	478
7BK0413085	619.15	618.47	0.68	2shgszsu	0.5	6	10	790	6.9	2.6	8.2	20	93	4.1	41	0.50	116	3.5	15	759	289
7BK0413153	618.47	618.09	0.38	2shgszglbcsu	0.2	7	4	1000	4.1	3.4	4.9	15	71	4.0	25	0.58	65	3.1	16	468	197
7BK0413191	618.09	617.54	0.55	2shgszsu	0.2	4	10	940	6.1	2.2	4.2	19	86	4.0	31	0.51	90	3.1	13	575	218
7BK0413246	617.54	617.15	0.39	2shgszsu	0.5	1	6	910	5.9	3.0	6.0	26	86	5.0	51	0.47	134	4.1	21	554	262
7BK0413285	617.15	616.55	0.60	2shgszsu	0.4	6	4	900	4.7	3.4	4.8	22	79	4.5	33	0.47	102	1.4	21	524	238
7BK0413410	615.90	615.15	0.75	2shgszglsu	0.2	4	6	940	3.7	1.5	2.1	18	64	4.1	16	0.51	74	2.8	15	435	179
7BK0413485	615.15	614.40	0.75	2shgszglsu	0.2	3	6	1100	2.4	0.9	0.3	13	42	3.0	5	0.50	42	1.9	9	351	122
7BK0413560	614.40	613.60	0.80	2shgszglsu	0.2	1	1	1100	2.0	0.9	0.3	13	42	3.0	2	0.50	42	1.5	8	343	114
7BK0413640	613.60	613.51	0.09	2bngshsu	0.2	1	1	830	1.5	0.8	0.3	11	31	2.7	3	0.70	28	1.8	6	230	86
7BK0413649	613.51	613.43	0.08	2bngsu	0.2	1	1	570	0.5	1.0	0.3	4	13	1.8	3	0.93	10	1.4	5	104	58
7BK0413657	613.43	613.22	0.21	2shgsz	0.2	1	3	1100	2.4	0.9	0.3	14	42	3.3	3	0.52	45	1.9	12	328	117
7BK0413678	613.22	612.54	0.68	2shgsz	0.2	1	1	1300	2.4	1.7	0.3	14	44	3.3	5	0.51	45	2.0	13	364	125
7BK0413746	612.54	612.09	0.45	2shgsz	0.2	3	6	1000	7.3	0.8	2.4	22	65	5.9	24	0.44	86	4.8	15	291	239
7BK0413791	612.09	611.49	0.60	2shbogszgl	0.6	5	7	770	10.5	5.8	3.9	23	67	5.8	58	0.38	120	5.3	24	431	263
7BK0413851	611.49	610.89	0.60	2shbogszgl	0.4	1	6	800	10.3	7.4	3.3	25	63	5.2	53	0.37	108	5.0	21	357	243
7BK0413911	610.89	610.29	0.60	2shbogszgl	0.5	1	1	720	9.8	6.1	3.3	26	63	5.6	48	0.37	109	5.3	21	362	242
7BK0413971	610.29	609.69	0.60	2shbogszgl	0.4	1	5	880	10.5	6.8	3.5	26	68	5.9	52	0.37	117	5.1	22	372	262
7BK0414031	609.69	609.09	0.60	2shbogszgl	0.7	1	1	730	9.8	3.8	3.2	24	62	6.0	54	0.37	114	5.4	19	379	244
7BK0414091	609.09	608.49	0.60	2shbogszgl	0.2	1	1	670	11.1	5.4	3.4	25	65	5.9	65	0.38	122	5.0	28	374	263
7BK0414151	608.49	608.34	0.15	2shbogssgl	0.2	1	1	890	2.6	2.2	0.5	9	27	3.6	13	0.41	39	2.6	27	206	121

Table 4 (Continued): Select analytical data, Buckton and Asphalt Zones historic drilling. After Alberta Mineral Assessment Report MIN9802, Sabag 1998. (Continued next page). Comparative data from select other black shales also shown (at end of table).

Sample No.	From (m)	To (m)	Length (m)	Rock Type	Ag ICP ppm	Au FA ppb	Au INA ppb	Ba INA ppm	C-org Leco %	Ca ICP %	Cd ICP ppm	Co INA ppm	Cu ICP ppm	Fe INA %	Mo ICP ppm	Na INA %	Ni ICP ppm	S Leco %	U INA ppm	V ICP ppm	Zn ICP ppm
7BK0507680	653.20	652.93	0.27	2shbbnlsu	2.5	2	6	3900	3.6	6.6	19.9	66	76	9.4	365	0.67	375	11.2	170	707	681
7BK0507707	652.93	652.39	0.54	2shbbnlsu	1.3	2	6	13000	6.2	7.0	13.2	30	80	7.3	141	0.70	254	5.6	96	712	481
7BK0507761	652.39	652.01	0.38	2shbbnlsu	0.9	1	7	1700	12.6	1.3	14.7	29	101	5.1	164	0.62	254	4.8	46	999	438
7BK0507799	652.01	651.41	0.60	2shbbnlsu	0.7	1	5	1100	10.3	10.1	10.1	21	84	4.0	133	0.46	191	3.9	28	834	316
7BK0507859	651.41	651.01	0.40	2shbbnlsu	0.9	6	4	1400	10.1	9.1	11.4	21	84	4.2	129	0.56	195	3.9	29	864	336
7BK0507899	651.01	650.32	0.69	2shbbnl	0.9	3	3	1500	9.1	5.5	9.9	23	78	4.4	112	0.63	177	4.1	28	794	316
7BK0507968	650.32	650.27	0.05	2shbbnl	0.6	2	3	580	6.0	3.0	6.3	14	55	3.7	86	0.68	106	3.9	12	522	241
7BK0507973	650.27	650.21	0.06	2bnlsu	0.2	3	1	430	0.9	1.3	0.7	4	17	7.1	38	0.80	31	6.7	4	281	124
7BK0507979	650.21	649.57	0.64	2shbbnsu	0.7	9	1	1900	8.9	4.8	11.8	23	82	4.7	112	0.67	185	4.3	28	835	354
7BK0508043	649.57	648.78	0.79	2shbbnsu	0.7	1	6	1300	7.0	9.7	8.3	20	66	4.2	94	0.60	139	3.7	28	637	275
7BK0508122	648.78	648.39	0.39	2shbbnsu	0.5	4	3	1400	6.8	4.9	9.8	20	68	4.4	86	0.66	149	4.0	21	764	291
7BK0508161	648.39	647.80	0.59	2shbbnsu	0.8	2	5	1300	7.7	6.1	12.5	21	79	4.5	93	0.65	171	4.0	21	956	336
lc	647.80	646.80	1.00																		
7BK0508320	646.80	646.35	0.45	2shbbccasu	1.0	2	8	960	9.2	6.2	16.6	20	87	4.4	112	0.49	188	4.0	20	1198	385
7BK0508365	646.35	645.90	0.45	2shbbccasu	0.8	6	9	940	9.3	6.1	18.6	23	93	4.4	101	0.52	183	4.2	18	1289	421
7BK0508410	645.90	645.83	0.07	2shbbccasu	0.5	18	7	1300	5.2	18.3	11.2	18	65	4.3	58	0.45	120	4.5	32	696	306
7BK0508417	645.83	645.13	0.70	2shbsugl	0.9	4	5	1400	8.0	6.2	17.8	34	115	6.2	74	0.60	211	5.4	33	1102	516
7BK0508487	645.13	644.52	0.61	2shbsugl	0.8	1	5	940	9.2	6.3	15.5	39	107	6.7	86	0.49	245	5.6	28	1173	493
7BK0508548	644.52	643.82	0.70	2shbsugl	1.1	8	7	740	9.8	5.5	18.7	35	114	6.3	84	0.44	232	5.7	22	1306	512
7BK0508618	643.82	643.00	0.82	2shbsugl	0.9	5	1	780	8.4	5.9	13.8	29	100	5.5	76	0.46	198	5.1	19	1071	412
7BK0508700	643.00	642.30	0.70	2shbsuglsz	0.6	6	8	850	5.4	3.8	4.9	19	79	4.0	35	0.53	96	3.2	16	530	231
lc	642.30	641.30	1.00																		
7BK0508870	641.30	640.77	0.53	2shbsugl	0.6	6	5	790	5.7	4.4	6.0	29	83	5.3	54	0.48	146	4.2	19	592	291
7BK0508923	640.77	640.20	0.57	2shgszglsu	0.2	4	10	1100	4.2	1.4	2.0	14	66	3.7	13	0.52	57	2.4	11	462	170
7BK0508980	640.20	640.07	0.13	2shgszglsu	0.2	1	9	880	1.4	0.7	0.3	11	29	3.4	8	0.70	26	2.5	5	270	81
7BK0508993	640.07	639.99	0.08	2bngsh	0.2	3	1	550	0.4	0.9	0.3	3	10	1.8	4	0.89	7	1.5	3	90	58
7BK0509001	639.99	639.86	0.13	2bngsh	0.2	1	1	640	0.5	1.0	0.3	4	15	1.9	4	0.84	10	1.5	6	125	66
7BK0509014	639.86	639.16	0.70	2shgszglsu	0.2	1	1	1100	2.6	1.0	0.3	13	43	3.0	4	0.46	45	1.8	8	347	127
7BK0509084	639.16	638.40	0.76	2shgszglsu	0.2	2	10	1200	2.2	1.9	0.3	16	43	3.4	5	0.47	45	2.2	15	368	127
7BK0509160	638.40	637.75	0.65	2shbca	0.6	2	1	710	10.1	6.2	3.1	26	65	5.7	49	0.36	107	5.2	18	372	253
7BK0509225	637.75	637.10	0.65	2shbca	0.4	1	1	760	9.5	7.2	3.2	23	65	5.4	49	0.36	110	5.1	18	378	263
7BK0509290	637.10	636.45	0.65	2shbca	0.6	3	5	710	10.2	5.5	3.0	23	65	5.4	48	0.37	113	5.3	17	400	269
7BK0509355	636.45	635.70	0.75	2shbca	0.6	4	1	840	9.4	4.5	2.9	25	63	6.3	60	0.40	116	5.2	19	402	262
7BK0509430	635.70	635.13	0.57	2shbca	0.5	2	1	790	10.1	3.9	3.3	24	63	6.2	64	0.41	119	5.5	18	410	272
7BK0509487	635.13	634.81	0.32	2sbb	0.5	1	7	690	9.1	10.8	2.6	20	52	5.1	49	0.34	89	4.5	22	283	210
7BK0610765	622.35	622.21	0.14	2shbbnlglsufd	0.2	4	4	27000	1.3	1.6	4.5	57	48	4.0	33	1.01	125	3.0	37	351	274
7BK0610779	622.21	622.09	0.12	2ss_bnlsu	0.2	3	3	11000	1.4	1.5	1.5	36	52	13.4	221	0.90	91	16.1	34	263	167
7BK0610791	622.09	621.89	0.20	2shgbnsu	0.2	1	1	11000	3.0	1.1	0.3	15	81	3.7	39	1.15	50	2.7	13	374	146
7BK0610811	621.89	621.33	0.56	2shbbnsu	0.2	8	10	6400	3.6	2.2	3.1	18	83	4.0	25	1.09	60	3.3	34	500	177
7BK0610867	621.33	620.87	0.46	2shgbnsu	0.6	8	11	5000	6.2	2.1	6.3	22	106	4.6	32	1.09	83	3.8	35	653	222
7BK0610913	620.87	620.38	0.49	2shbbnsu	0.2	5	1	4600	7.0	1.8	5.2	22	115	4.8	31	1.06	85	3.7	36	675	223
7BK0610962	620.38	619.70	0.68	2shgbnsu	1.9	8	19	6800	7.5	2.6	22.7	52	126	8.9	114	1.17	316	6.9	93	796	664
7BK0611030	619.70	619.42	0.28	2shgbnsu	0.2	4	1	9000	2.7	3.1	5.8	24	55	5.5	92	1.36	147	5.1	56	303	271
7BK0611058	619.42	619.29	0.13	2bnl	0.4	1	1	1500	0.5	1.1	1.0	2	10	1.7	25	1.17	18	1.5	14	209	95
7BK0611071	619.29	619.05	0.24	2shbszsu	1.2	5	13	4800	8.2	4.1	16.3	37	101	5.3	173	1.17	307	4.9	140	811	574
7BK0611095	619.05	618.08	0.97	2shbbnlszsugl	1.1	8	6	2400	11.2	6.7	13.7	29	100	4.7	168	0.87	259	4.5	63	939	441
7BK0611192	618.08	617.64	0.44	2shbbnsu	1.2	5	3	1200	10.2	8.4	9.2	20	85	4.0	146	0.66	193	4.1	32	888	307
7BK0611236	617.64	617.09	0.55	2shgbn	0.8	5	7	1300	11.7	10.0	9.2	20	87	3.8	153	0.62	199	3.9	38	880	296
7BK0611291	617.09	616.54	0.55	2shbbnsu	1.0	4	11	950	10.5	8.8	9.8	21	88	4.3	144	0.60	193	4.2	31	892	313
7BK0611346	616.54	615.99	0.55	2shb	1.0	10	3	1100	10.5	11.5	8.7	16	77	3.5	133	0.56	175	3.8	31	824	297
7BK0611401	615.99	615.42	0.57	2shbsuog	0.8	3	9	1200	9.6	7.7	9.0	20	82	4.9	131	0.62	193	4.8	27	835	295
7BK0611458	615.42	615.04	0.38	2shbbnlsuog	0.6	5	1	1500	8.3	4.6	8.4	19	73	4.2	113	0.82	164	4.2	28	765	287
7BK0611496	615.04	614.26	0.78	2shbbn	0.9	3	1	1600	8.8	6.2	9.4	23	80	4.2	125	0.73	190	4.1	33	780	321
7BK0611574	614.26	613.84	0.42	2shbbng	1.0	3	1	1500	6.5	5.2	10.4	19	68	4.0	94	0.83	161	4.0	25	820	310
7BK0611616	613.84	613.06	0.78	2shbsubc	1.0	3	10	1200	9.2	8.0	12.7	21	87	4.6	121	0.65	203	4.3	31	1046	351
7BK0611694	613.06	612.43	0.63	2shbsubng	1.3	1	6	890	9.2	7.1	17.7	21	97	4.8	108	0.62	214	4.1	27	1313	428
7BK0611757	612.43	611.80	0.63	2shbsubngbc	0.9	6	7	1400	6.5	6.2	13.5	18	92	4.1	58	0.76	133	3.9	38	1022	336
7BK0611820	611.80	611.18	0.62	2shbsubn	1.0	5	1	1300	7.8	5.9	19.3	22	102	4.3	78	0.67	175	4.2	35	1163	422
7BK0611882	611.18	610.91	0.27	2shbsubng	1.0	6	8	910	6.0	5.8	11.0	20	72	4.3	76	0.72	148	4.3	25	808	301
7BK0611909	610.91	610.39	0.52	2shbbnlsu	1.2	9	4	1700	6.9	4.7	13.1	23	87	4.7	78	0.79	162	4.4	30	923	338
7BK0611961	610.39	610.34	0.05	2bngsh	0.8	4	5	390	2.4	2.2	5.7	9	37	2.9	40	0.87	60	3.0	7	1159	156
7BK0611966	610.34	609.65	0.69	2shbbnlsu	1.1	3	1	700	7.6	6.7	14.5	23	97	4.4	85	0.55	174	4.2	22	1047	366
7BK0612035	609.65	609.25	0.40	2shbbnlsu	1.6	4	8	890	6.9	2.6	17.1	19	105	4.3	51	0.68	112	3.8	16	968	360
7BK0612075	609.25	609.20	0.05	2bngsh	0.6	2	5	430	8.6	1.2	2.9	5	18	2.8	22	1.14	18	2.7	4	616	82
7BK0612080	609.20	608.55	0.65	2shbbnlsu	1.0	6	5	850	7.7	3.5	12.9	25	105	5.1	63	0.56	150	4.7	17	940	371
7BK0612145	608.55	607.90	0.65	2shbbnlsu	0.7	6	11	880	6.1	3.6	6.0	15	91	3.7	28	0.56	77	3.1	15	618	243
7BK0612210	607.90	607.17	0.73	2shgszsuglbn	0.4	3	7	930	3.1	1.0	1.7	13	58	3.1	12	0.56	54	2.1	9	457	154
7BK0612283	607.17	606.67	0.50	2shgszsugl	0.6	3	8	970	1.8	0.7	0.3	11	47	2.8	3	0.53	44	1.7	9	393	124
7BK0612333	606.67	606.55	0.12	2bnlsh	0.5	4	2	490	0.6	0.9	0.3	4	14	1.7	4	0.87	10	1.5	4	125	64
7BK0612345	606.55	605.89	0.66	2shgsz	0.2	1	1	940	2.6	0.8	0.3	13	49	3.1	5	0.52	49	1.9	10	398	132
7BK0612411	605.89	605.23	0.66	2shgsz	0.2	1	6	980	2.9	0.9	0.5	12	50	3.0	6	0.49	48	1.7	9	384	134
7BK0612477	605.23	604.58	0.65	2shgsz	0.2	2	1	1000	2.3	1.1	0.3	12	48	2.9	5	0.44	49	2.1	13	379	128
7BK0612542	604.58	604.19	0.39	2shgsu	0.2	4	1	870	2.7	1.1	0.3	19	73	8.6	3	0.41	43	11.8	19	299	172
7BK0612581	604.19	603.70	0.49	2shg	0.5	1	3	950	7.5	1.0	2.4	20	67	7.7	45	0.39	92	6.4	30	375	247
7BK0612630	603.70	603.52	0.18	2sh_fdgl	0.5	1	1	590	7.1	19.8	2.6	14	50	3.8	40	0.25	75	4.1	58	268	212
7BK0612648	603.52	602.98	0.54	2shgsu	0.9	6	1	660	11.6	0.8	3.6	22	78	5.1	63	0.45	121	5.6	19	484	269
7BK0612702	602.98	602.36	0.62	2shgogszsuglbn	0.8	4	6	630	11.0	6.9	3.5	25	69	5.7	58	0.43	100	5.2	26	369	254
7BK0612764	602.36	601.94	0.42	2ss_casu	0.5	1	4	210	6.8	37.4	0.7	7	19	1.9	14	0.11	19	1.8	8	79	63
7BK0612806	601.94	601.21	0.73	2sh_casu	1.3	2	6	630	11.0	5.6	3.0	25	69	5.7	63	0.38	100	5.4	28	331	269
7BK0612879	601.21	601.01	0.20	2ss_casu	0.2	1	1	230	5.5	44.9	0.3	4	13	1.9	12	0.08	17	2.1	5	59	42
7BK0612899	601.01	600.50	0.51	2shbcasu	1.1	2	7	800	9.2	6.4	2.7	23	61	5.8	58	0.37	111	5.1	35	359	258
7BK0612950	600.50	600.37	0.13	2bbgsuog	0.6	3	1	330	7.6	29.6	1.2	10	27	3.8	23	0.17	43	3.6	14	177	101
7BK0612963	600.37	600.10	0.27	2shgsu	0.9	4	1	650	7.4	5.0	2.8	21	66	6.5	33	0.45	82	5.8	15	283	239
7BK0612990	600.10	600.05	0.05	2bng	0.8	1	1	430	1.8	2.9	1.0	7	28	3.9	14	0.89	22	3.8	7	182	190
7BK0612995	600.05	599.80	0.25	2shgsuog	0.8	1	8	730	7.5	8.7	3.0	22	60	7.0	31	0.34	80	5.3	37	232	256

Table 4 (Continued): Select analytical data, Buckton and Asphalt Zones historic drilling. After Alberta Mineral Assessment Report MIN9802, Sabag 1998. (Continued next page). Comparative data from select other black shales also shown (at end of table).

Sample No.	From (m)	To (m)	Length (m)	Rock Type	Ag ICP ppm	Au FA ppb	Au INA ppb	Ba INA ppm	C-org Leco %	Ca ICP %	Cd ICP ppm	Co INA ppm	Cu ICP ppm	Fe INA %	Mo ICP ppm	Na INA %	Ni ICP ppm	S Leco %	U INA ppm	V ICP ppm	Zn ICP ppm
7AS0101127	663.73	663.23	0.50	2shbbnlsu	0.2	5	12	1000	13.3	8.8	10.2	23	89	3.8	157	0.28	196	4.1	45	807	319
7AS0101177	663.23	662.73	0.50	2shbbnlsu	0.2	2	11	470	7.5	7.6	7.2	14	63	3.4	114	0.22	122	3.7	24	673	225
7AS0101227	662.73	662.21	0.52	2shbbnlsu	0.2	1	10	710	9.9	10.0	9.8	20	80	4.1	131	0.26	184	4.2	35	846	280
7AS0101279	662.21	661.71	0.50	2shgbnlsu	0.2	6	10	930	4.9	6.2	13.1	20	86	4.0	79	0.43	170	4.2	57	752	375
7AS0101329	661.71	661.21	0.50	2shgbnlsu	0.2	5	9	660	6.4	6.9	7.8	20	74	4.1	73	0.32	151	4.1	21	745	266
7AS0101379	661.21	660.70	0.51	2shgbnlsu	0.2	4	5	1000	5.1	5.2	13.0	22	87	4.3	46	0.48	145	4.2	38	732	365
7AS0101430	660.70	660.50	0.20	2shgbnlsu	0.5	6	12	800	6.0	4.6	12.9	17	93	3.9	42	0.41	120	3.9	26	882	323
lc	660.50	659.81	0.69																		
7AS0101519	659.81	659.72	0.09	2sbbfdsucagl	0.2	4	1	1700	1.4	18.1	11.7	13	62	2.8	20	0.37	55	2.8	100	254	315
lc	659.72	659.39	0.33																		
7AS0101561	659.39	658.89	0.50	2shg	0.2	3	8	1200	4.6	7.2	14.3	16	96	3.9	36	0.43	117	3.8	40	741	361
7AS0101611	658.89	658.39	0.50	2shg	0.9	11	6	880	6.8	4.3	12.7	17	117	4.1	33	0.37	107	3.9	23	884	319
7AS0101661	658.39	658.08	0.31	2shg	0.7	6	6	1400	6.5	4.6	11.5	16	117	3.5	29	0.35	111	3.4	33	777	342
7AS0101692	658.08	657.71	0.37	2sbbfdsucagl	0.2	5	1	1500	2.4	15.4	19.4	29	94	5.2	32	0.54	183	4.0	100	439	612
lc	657.71	656.61	1.10																		
7AS0101839	656.61	656.52	0.09	2shgbnlsu	0.7	7	13	740	6.6	1.2	10.9	30	106	8.6	170	0.37	179	6.7	24	716	556
7AS0202161	668.39	668.27	0.12	2bng	0.2	9	9	850	4.4	1.0	5.2	12	61	3.3	31	0.78	66	2.6	17	496	206
7AS0202173	668.27	667.75	0.52	2shbbnsugl	0.4	12	10	3700	7.6	0.8	3.4	14	97	4.2	19	0.75	69	2.8	17	503	206
7AS0202225	667.75	667.01	0.74	2shbbnsugl	0.2	10	3	3300	6.9	0.7	6.1	16	111	4.2	21	0.75	83	2.6	15	636	251
7AS0202299	667.01	666.54	0.47	2shgszbn	0.2	7	10	5100	2.8	0.8	1.7	16	58	4.3	16	0.96	62	1.7	16	364	182
7AS0202346	666.54	666.21	0.33	2shgszbntt	0.2	8	10	6700	3.1	0.6	2.0	13	60	4.4	14	0.89	63	2.1	14	377	178
7AS0202379	666.21	665.79	0.42	2shbsuglbn	0.4	13	1	1400	9.2	0.9	14.3	24	99	5.0	80	0.64	150	4.2	24	930	371
7AS0202421	665.79	665.15	0.64	2shbsuglbn	0.2	12	14	3700	5.6	1.0	2.1	20	111	4.7	15	0.89	76	2.8	16	542	199
7AS0202485	665.15	664.51	0.64	2shbsuglbn	0.2	8	1	6200	6.5	1.4	3.9	18	115	4.8	33	0.87	87	3.6	25	618	227
7AS0202549	664.51	663.88	0.63	2shbsuglbn	0.2	5	10	6100	5.3	0.8	0.3	14	103	3.7	6	0.74	71	2.3	11	421	184
7AS0202612	663.88	663.62	0.26	2shbsuglbn	0.2	7	11	6500	5.8	0.9	1.4	16	116	4.1	11	0.76	74	2.6	14	473	198
7AS0202638	663.62	663.05	0.57	2shbbcbnsugl	0.5	4	8	2300	13.1	8.3	10.0	27	87	4.5	160	0.66	209	4.4	44	965	358
7AS0202695	663.05	662.35	0.70	2shbbcbnsugl	0.5	2	1	1100	11.7	9.1	8.6	20	78	3.5	147	0.56	169	3.8	41	827	298
7AS0202765	662.35	662.18	0.17	2shbbnsu	0.2	5	1	18000	5.3	1.6	5.5	21	55	5.4	112	1.06	169	5.4	49	394	274
7AS0202782	662.18	662.08	0.10	2bnlshsu	0.2	2	1	2900	3.5	1.1	3.2	14	57	7.5	86	1.01	80	6.9	22	547	212
7AS0202792	662.08	661.92	0.16	2bnlshsu	0.2	1	1	1600	1.4	1.2	1.8	6	16	2.2	36	1.08	40	1.9	18	296	129
7AS0202808	661.92	661.23	0.69	2shbbn	0.4	7	10	3600	11.9	5.7	10.7	28	95	4.8	167	0.76	226	4.6	62	840	385
7AS0202877	661.23	660.54	0.69	2shbbn	0.2	3	6	1000	10.2	10.9	9.3	21	77	4.1	133	0.51	173	3.7	34	774	293
7AS0202946	660.54	659.85	0.69	2shbbn	0.2	9	9	1100	6.5	7.2	9.1	25	79	5.2	81	0.68	169	4.4	45	789	326
7AS0203015	659.85	659.36	0.49	2shbbn	0.2	9	7	970	5.8	4.6	10.4	25	86	5.4	54	0.71	146	4.5	34	810	323
7AS0203064	659.36	659.28	0.08	2bnlshgsu	0.2	4	7	4200	2.1	4.8	4.3	21	90	6.2	92	0.95	96	5.5	29	854	244
7AS0203072	659.28	659.05	0.23	2shgsugl	0.6	6	8	910	6.6	2.7	11.9	22	88	4.8	50	0.73	122	4.3	26	777	357
7AS0203095	659.05	658.97	0.08	2bnlsu	0.2	2	7	630	4.4	1.6	6.3	7	46	3.3	17	0.92	33	3.0	5	460	191
7AS0203103	658.97	658.47	0.50	2shgsugl	0.2	10	11	1100	5.7	4.8	11.5	19	101	4.4	32	0.61	110	3.9	42	789	347
7AS0203153	658.47	657.96	0.51	2shgsugl	0.5	10	10	940	7.3	3.0	10.4	20	116	4.4	29	0.52	100	3.7	23	840	318
7AS0203204	657.96	657.72	0.24	2shgszcasu	0.2	8	10	1200	5.1	7.0	16.4	32	107	5.9	47	0.57	182	4.8	52	822	476
7AS0203228	657.72	657.58	0.14	2shgszcasu	0.2	8	2	1900	2.9	12.2	17.3	41	103	5.9	40	0.46	232	4.6	110	493	660
7AS0203242	657.58	657.42	0.16	2sbbszcasuog	0.2	6	10	2500	2.1	15.2	12.6	20	78	3.6	29	0.44	110	3.1	100	371	439
7AS0203258	657.42	657.08	0.34	2shbsu	0.2	1	3	1200	3.2	1.7	2.1	16	56	4.0	32	0.49	74	2.8	16	446	187
7AS0203292	657.08	656.98	0.10	2shbbnsu	0.2	5	7	980	1.8	0.7	0.7	11	33	3.2	9	0.61	39	2.0	5	347	123

Rocktype Legend

[Rock Type]	[color]	[descriptive]	[other]
[2 digits]	[1 digit]	[2 digits]	[2 digits]
sh - shale	b - black	sz - silty	su - >1% sulfides
bn - bentonite	r - brown	ca - calcareous	gl - glauconitic
bb - bone bed	g - grey	bc - bioclastic	og - high organic content
sbb - siliciclastic bone bed	w - white	bn - bentonitic	fd - shell fragments or fish debris
cc - concretion	l - steely blue	tt - tuffaceous	
sz - siltstone	y - yellow		
ss - sandstone	***Example:***	2shgcabn = grey bentonitic calcareous shale of the Second White Specks Formation	

Comparative Data From Other Black Shales Worldwide

Black Shale Location Name	Ag ppm	Au ppb	Au ppb	Ba ppm	C-org %	Ca %	Cd ppm	Co ppm	Cu ppm	Fe %	Mo ppm	Na %	Ni ppm	S %	U ppm	V ppm	Zn ppm
Chuniespoort Mean (1)	na	na	na	726	1.2	1.8	na	17	61	2.2	3	0.04	125	0.7	2	105	36
Dushantuo: V-rich, black Illite shale (2)	na	na	na	1548	4.2	0.2	na	20	236	2.1	na	5.28	99	na	na	4350	na
Dushantuo: Ag-V-rich, black Illite shale (2)	na	na	na	4014	3.3	0.4	na	24	406	2.4	na	4.72	90	na	na	6225	na
USGS Standard SDO-1 (3)	0.1	na	na	397	10.0	na	na	47	60	na	134	na	100	na	49	160	64
Nick Deposit: NICK-2 (4)	6.0	103	na	3800	2.2	na	na	350	390	na	2467	na	78000	na	61	590	8700
Bohemian Massif: Normal black shale (5)	na	4	na	na	0.7	na	na	12	93	4.2	33	na	88	na	na	570	383
Bohemian Massif: Metal-rich black shale (5)	na	62	na	na	3.5	na	na	21	590	8.3	153	na	600	na	na	1109	243
Talvivaara: Black Schist 1 (6)	na	na	na	na	7.5	na	na	na	600	8.8	na	na	500	7.4	na	600	2600
Talvivaara: Black Schist 2 (6)	na	na	na	na	7.7	na	na	na	1300	10.4	na	na	2600	8.2	na	600	5200
U-rich Black Shale Southern Storsjon Jamtland (7)	na	na	na	na	14.2	2.3	na	na	138	3.4	460	0.06	440	4.4	245	1600	270
U-rich Alum Shale, Ranstad, Vastergotland (8)	na	na	na	500	15.5	0.7	na	25	110	6.0	340	0.21	200	7.0	300	750	130
Av Alum Shale, Upper Mbr, Billingen (9)	1.4	na	na	500	13.7	0.7	na	50	190	7.1	270	0.17	160	6.7	206	680	150
Av Alum Shale, Middle and Lower Mbrs, Billingen (9)	na	na	na	500	6.1	0.5	na	na	180	6.8	70	0.12	90	4.5	10	450	na
Av Black shale (10)	<1	na	na	300	3.2	1.5	na	10	70	2.0	10	0.70	50	na	8	150	<30

(1) Meyer & Robb, 1996; (2) Delian & Tiebing, 1992; (3) Bloomstein & Clark, 1990; (4) Hulbert et al, 1992; (5) Pasava et al, 1996;
(6) Loukola-Ruskeeniemi & Heino, 1996; (7) Gee & Snall, 1981; (8) Andersson et al, 1983; (9) Armands, 1972; (10) Vine & Tourtelot, 1970

Table 4 (Continued): Select analytical data, Buckton and Asphalt Zones historic drilling. After Alberta Mineral Assessment Report MIN9802, Sabag 1998. Comparative data from select other black shales also shown.

	Detection	Buckton Zone Drill Holes																		Asphalt Zone Drill Holes						
		BK1	BK1	BK2	BK2	BK2	BK3	BK3	BK3	BK4	BK4	BK4	BK5	BK5	BK5	BK6	BK6	BK6	Avg	Avg	Avg	AS1	AS1	AS2	AS2	AS2	Avg	Avg
Unit		Lab	2WS	Lab	2WS	BF	Lab	2WS	BF	Lab	2WS	BF	Lab	2WS	BF	Lab	2WS	BF	Lab	2WS	BF	2WS	BF	Lab	2WS	BF	Lab	2WS
UnitThick		9.77	15.26	9.42	18.37	9.49	10.05	26.20	4.46	10.31	21.06	10.65	10.20	18.39	6.01	10.69	22.55	2.45	10.07	20.31	6.61	7.21	10.30	6.75	11.41	10.04	6.98	10.86
Ag -ICP	0.4 ppm	0.2	0.4	0.2	0.5	0.2	0.2	0.4	0.2	0.2	0.3	0.2	0.2	0.7	0.2	0.2	0.8	0.3	0.2	0.5	0.2	0.3	0.2	0.2	0.3	0.2	0.3	0.2
Ag-INA	5 ppm	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3
Al -ICP	0.01%	7.8	6.6	6.8	6.5	7.5	8.3	6.4	8.5	7.9	6.8	7.1	8.3	6.8	7.8	8.1	7.0	7.9	7.9	6.7	7.8	5.4	7.9	8.6	7.3	8.0	7.0	7.6
As-INA	0.5 ppm	19.6	57.2	13.8	56.4	15.2	22.9	58.8	15.2	24.1	62.6	18.4	20.7	65.4	16.7	19.5	54.9	28.2	20.1	59.2	18.7	76.6	21.9	20.3	51.4	30.0	48.4	36.6
Au-FA	1 ppb		6.30		4.33			4.36			3.48			3.44			4.20			4.35		4.95	1.00		7.28			4.14
Au-INA	2 ppb	2	5	2	6	6	6	6	3	2	6	2	2	5	3	2	5	1	2	6	3	8	3	1	7	5	4	5
Ba-INA	50 ppm	962	2194	1070	2322	1017	1324	2047	1025	1200	1580	938	1094	1440	845	1200	1965	940	1142	1924	953	1025	996	1961	3042	1364	1493	2019
Be -ICP	2 ppm	2	1	2	1	2	2	1	2	2	2	2	1	1	1	1	1	1	2	1	1	2	2	1	1	1	1	1
Bi -ICP	5 ppm	3	3	3	3	3	3	3	3	8	5	7	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Br-INA	0.5 ppm	2.3	12.3	2.0	12.8	4.1	2.4	12.4	3.8	2.1	14.0	3.0	2.7	14.7	4.1	3.6	13.2	4.4	2.5	13.2	3.9	9.7	6.6	7.9	17.7	8.0	8.8	12.1
C-org-Lecc	0.003%	1.07	7.07	0.81	5.99	1.75	1.07	5.99	1.64	0.96	7.18	1.46	1.05	7.61	1.52	1.14	7.20	1.84	1.02	6.84	1.64	5.92	2.19	1.67	7.00	2.49	3.80	4.59
Ca -ICP	0.01%	0.71	5.21	1.24	5.56	0.90	0.60	5.15	0.37	0.54	4.64	0.72	0.46	5.40	0.38	0.67	5.86	0.39	0.70	5.31	0.55	8.22	0.67	0.65	4.04	1.03	4.43	2.36
Cd -ICP	0.5 ppm	0.3	10.9	0.3	8.2	0.3	0.3	7.6	0.4	0.3	8.1	0.3	0.3	8.9	0.3	0.3	7.8	0.3	0.3	8.6	0.3	12.4	0.3	0.3	7.1	0.9	6.3	3.7
Ce-INA	3 ppm	66	86	68	106	95	82	85	76	69	84	76	65	82	76	86	93	91	73	89	83	224	67	76	111	86	150	89
Co-INA	1 ppm	13	21	13	21	11	16	19	11	15	23	11	14	24	11	14	21	14	14	21	12	20	11	14	20	13	17	15
Cr-INA	5 ppm	104	82	102	95	147	132	86	134	104	95	110	97	91	122	120	98	143	110	91	131	80	104	129	110	116	104	107
Cs-INA	1 ppm	8	4	7	5	9	10	5	9	8	5	7	8	5	7	10	5	10	9	5	8	3	8	9	5	8	6	6
Cu -ICP	1 ppm	30	83	26	70	30	32	73	30	28	73	27	31	77	29	34	78	33	30	76	30	89	42	40	89	45	64	66
Eu-INA	0.2 ppm	1.3	2.3	1.4	2.7	1.8	1.5	2.4	1.5	1.5	2.3	1.8	1.4	2.3	1.7	1.7	2.2	1.6	1.5	2.4	1.7	8.8	1.3	1.6	3.4	1.8	5.2	2.3
Fe-INA	0.01%	6.42	4.00	3.72	4.53	3.74	4.42	4.12	3.24	4.18	4.70	3.52	3.43	4.96	3.55	3.81	4.58	4.31	4.33	4.48	3.67	4.39	2.94	3.92	4.46	3.77	4.15	3.70
Hf-INA	1 ppm	5	5	6	6	8	6	4	5	5	5	6	5	4	6	6	5	6	5	5	6	4	5	5	5	6	4	5
Hg-INA	1 ppm	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ir-INA	5 ppb	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3
K -ICP	0.01%	1.9	1.4	1.8	1.5	2.1	2.1	1.5	2.2	2.3	1.9	2.4	2.3	1.8	2.4	2.2	1.8	2.5	2.1	1.7	2.3	1.3	2.3	2.4	1.8	2.4	1.9	2.0
La-INA	0.5 ppm	37.2	58.3	37.4	64.4	49.1	46.5	64.5	48.5	40.5	53.8	43.8	36.9	54.1	44.0	45.3	54.1	45.2	40.6	58.2	46.1	189.2	44.9	48.9	82.5	56.5	119.0	63.7
Lu-INA	0.05 ppm	0.45	0.75	0.52	0.92	0.69	0.67	0.85	0.60	0.53	0.72	0.53	0.51	0.71	0.56	0.70	0.82	0.63	0.56	0.80	0.60	2.09	0.59	0.65	1.06	0.71	1.37	0.83
Mass	0 g	28.5	25.7	22.3	25.1	24.3	22.3	24.8	23.8	20.9	18.3	19.2	21.6	18.6	17.6	20.5	18.8	18.9	22.7	21.9	20.8	29.6	28.3	24.5	21.4	20.0	27.1	24.9
Mg -ICP	0.01%	1.1	0.9	1.0	0.9	0.8	1.0	0.9	0.9	0.9	0.9	0.8	0.9	0.8	0.8	1.0	0.9	0.9	1.0	0.9	0.8	0.8	1.0	1.1	1.0	1.0	1.0	1.0
Mn -ICP	1 ppm	1464	201	372	194	129	501	205	129	1173	196	135	570	216	113	421	201	155	750	202	132	317	139	196	211	155	256	175
Mo -ICP	2 ppm	1	86	1	66	2	1	62	2	2	67	3	2	77	2	2	72	4	2	72	3	73	3	3	63	7	38	33
Na-INA	0.01%	0.47	0.64	0.41	0.61	0.64	0.57	0.55	0.54	0.50	0.53	0.54	0.44	0.52	0.58	0.56	0.65	0.55	0.49	0.59	0.57	0.38	0.39	0.63	0.71	0.53	0.51	0.55
Nd-INA	5 ppm	28	42	27	57	38	35	39	32	31	43	35	28	46	33	39	49	37	32	46	35	155	25	27	59	35	91	42
Ni -ICP	1 ppm	43	160	40	126	39	45	121	42	40	129	38	44	152	41	43	133	48	42	137	42	144	46	48	122	50	96	84
P -ICP	0.001%	0.106	0.239	0.095	0.235	0.088	0.098	0.243	0.085	0.099	0.228	0.134	0.094	0.236	0.095	0.148	0.208	0.087	0.107	0.232	0.098	0.976	0.124	0.124	0.310	0.152	0.550	0.217
Pb -ICP	4 ppm	19	23	20	19	17	21	22	25	21	22	24	19	16	17	19	20	22	20	20	21	24	24	20	20	24	22	22
Pd-FA	3 ppb		2.61		2.23			2.61			2.38			2.06			2.20			2.35		2.88	2.00		2.51			2.26
Pt-FA	5 ppb		3.68		2.60			2.79			2.85			2.77			3.88			3.10		3.89	2.50		2.97			2.73
Rb-INA	15 ppm	115	61	114	85	148	148	82	149	134	94	115	128	88	130	143	85	132	130	83	135	62	120	148	91	130	105	105
S-Leco	0.003%	0.87	4.17	0.53	3.84	1.73	0.78	3.71	1.66	0.41	3.86	1.83	0.70	4.34	1.68	0.74	4.17	2.57	0.67	4.02	1.89	4.11	1.61	1.13	3.52	2.11	2.62	2.56
Sb-INA	0.1 ppm	1.4	14.9	1.1	13.6	2.5	1.8	11.1	4.4	1.5	11.5	1.1	1.3	11.4	1.1	1.7	11.8	1.5	1.5	12.4	2.1	11.7	2.0	2.3	11.8	2.7	7.0	6.9
Sc-INA	0.1 ppm	15.2	10.9	14.1	13.7	19.2	19.1	11.1	15.7	14.7	11.5	13.7	13.9	11.3	14.9	18.3	12.9	18.1	15.9	11.9	16.3	14.2	13.6	17.1	14.0	15.1	15.7	13.8
Se-INA	3 ppm	2	34	2	27	2	2	21	2	2	25	2	2	30	3	2	21	2	2	26	2	35	2	2	25	4	19	14
Sm-INA	0.1 ppm	5.0	8.2	5.4	10.8	7.3	6.9	8.6	6.0	5.6	8.5	6.3	5.1	8.1	5.8	7.0	9.1	6.8	5.8	8.9	6.4	34.4	5.4	6.3	13.0	7.5	20.3	9.2
Sn-INA	0.01%	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Sr -ICP	1 ppm	171	305	145	271	153	179	273	161	171	230	161	184	242	160	201	314	158	175	273	159	346	177	258	354	206	302	266
Sr-INA	0.05%	0.03	0.05	0.03	0.03	0.03	0.03	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.07	0.03	0.04	0.03	0.04	0.05	0.06	0.04	0.03	0.05	0.04
Ta-INA	0.5 ppm	0.7	0.4	0.5	0.9	1.0	1.2	0.6	0.9	0.6	0.5	0.7	1.1	0.8	1.4	0.4	0.6	0.7	0.8	0.6	0.9	0.8	0.9	1.3	0.8	1.0	1.1	0.8
Tb-INA	0.5 ppm	0.8	1.5	0.8	1.7	0.7	0.6	1.5	0.7	0.6	1.3	0.9	0.6	1.3	0.9	0.5	1.3	1.0	0.7	1.5	0.8	6.1	0.8	0.9	2.2	1.0	3.5	1.5
Th-INA	0.2 ppm	11.8	11.9	11.2	12.8	14.1	13.2	11.6	13.6	12.1	12.1	12.4	11.0	11.3	12.5	12.8	11.9	14.0	12.0	11.9	13.3	16.5	12.1	12.8	13.6	14.6	14.6	12.9
Ti -ICP	0.01%	0.3	0.2	0.3	0.2	0.4	0.4	0.2	0.4	0.4	0.3	0.4	0.4	0.2	0.4	0.4	0.3	0.4	0.4	0.2	0.4	0.2	0.4	0.4	0.3	0.4	0.3	0.3
U-INA	0.5 ppm	4.4	36.7	4.2	34.1	6.1	5.6	30.2	5.2	4.3	26.9	4.8	4.5	25.3	4.4	4.6	29.9	5.8	4.6	30.5	5.3	47.3	5.6	6.1	31.0	9.0	26.7	18.3
V -ICP	2 ppm	223	776	211	648	199	241	623	210	222	645	184	245	722	211	265	668	241	234	680	209	690	361	303	664	350	496	513
Y -ICP	2 ppm	21	60	23	58	24	22	55	24	25	52	30	25	58	27	31	53	25	25	56	26	238	27	30	84	40	134	55
Yb-INA	0.2 ppm	2.9	4.6	3.4	5.9	4.2	3.9	4.7	3.3	3.3	4.5	3.6	3.1	4.6	3.5	4.4	5.1	4.1	3.5	4.9	3.7	13.5	3.2	3.9	6.5	4.3	8.7	4.9
Zn -ICP	1 ppm	145	360	135	305	127	158	289	167	130	282	110	142	318	120	144	282	135	143	306	132	376	121	164	282	143	270	201
Zn-INA	50 ppm	149	360	158	377	192	226	304	173	189	321	146	150	336	157	200	320	186	179	336	171	406	141	210	341	171	308	241

Table 5: Summary of Average Formational lithogeochemistry for the LaBiche (Lab), Second White Speckled Shale (2ws) and Belle Fourche (BF, ie: Shaftesbury) Formations, historic drilling, Asphalt and Buckton Zones, Tintina drilling 1997, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Downhole Stratigraphy: Although the drill holes from the Asphalt and Buckton Zones exhibit many lithological, textural and geochemical contrasts, the holes intersected the same principal units and a collective discussion of same on a combined basis serves to characterize gross near-surface stratigraphy of the Second White Specks and enveloping Formations at the two Zones, and probably the Birch Mountains in general. Considering that only two short holes were drilled at the Asphalt Zone one of which collared partway into the Second White Specks Formation, the stratigraphic descriptions below necessarily rely in most part on observations made from the Buckton Zone drilling.

The Second White Specks Formation at the two Zones comprises a sequence of carbonaceous and bentonitic shales enveloped between the overlying LaBiche Formation shales and underlying Belle Fourche Formation (Shaftesbury). With the exception of drilling at the Asphalt Property, overburden was encountered in all of the holes, ranging 6m to 47m of intermixed till, clay and shale, and is most probably locally derived incorporating considerable material from the underlying LaBiche Formation. Downhole stratigraphy is as follows:

> Considerable footages of the upper portions of the drill holes cored shales of the **LaBiche Formation,** consisting predominantly of battleship gray muddy shale which, with the exception of the occasional isolated carbonate concretion or (rarer) bentonite seam, is a monotonous sequence devoid of lithological and geochemical variations.
>
> Preliminary micropaleontological examination conducted by the GSC (Leckie 1997) on LaBiche Formation drill core samples taken by Mr.D.Leckie from the Buckton Property suggest an unexpected 4-6 million year gap between the top of the Second White Specks Formation and the base of LaBiche, indicating that shales logged/mapped at the Buckton Zone as LaBiche are likely part of the Upper Cretaceous Lea Park Formation.
>
> The **Belle Fourche Member** of the Upper Shaftesbury Formation was intersected in all of the holes which penetrated below the base of the Second White Specks Formation. Belle Fourche in the area is dominated by light gray bioturbated silty shales with occasional silty/sandy seams.
>
> The **Second White Specks Formation** was intersected in all of the holes and was cored in its entirety with the exception of holes AS01 and BK01. AS01 was collared partway into the Formation and cored only its lower parts, and BK01 was collared too high and did not reach the bottom contact. Stratigraphic and textural observations suggest that the Formation has been disturbed by faulting or a glacial thrust at the Asphalt Zone.
>
> The Second White Specks Formation varies in thickness from 18m to 26m at the Buckton Property and is thinner at the Asphalt Property averaging approximately 11m. It is broadly characterized by three principal horizons: (i) silty shales nearer the lower sections, (ii) a bioclastic black shale midsection, and (iii) bentonitic gray shales nearer its top. The Formation's upper and lower contacts are well marked by the development of bentonites near its top and bone beds (often siliciclastic) defining its base.
>
> The basal 3m-5m of the Formation is typically characterized by one or more pebbly lag deposits intercalated with lenses of calcareous (coccolithic) non-bioturbated organic rich shale with "poker chip" appearance. The lag deposits are generally carbonate cemented and contain abundant fish debris, quartz, clear-white and black chert, glauconite and sulfides (pyritic and marcassitic). The bone-bed horizons are often well lithified and contain some silica cement – hence are generally termed siliciclastic bone beds. In many instances, the bone beds contain angular shardy clear quartz which exhibits no evidence of transport and has been interpreted to be of likely volcanic provenance as it resembles similar quartz observed in bentonites, suggesting proximal availability of ash/pyroclastic material at the onset of Second White Specks deposition.
>
> The bone-bed/poker-chip shale assemblage is overlain by 3m-5m of poorly calcareous to non-calcareous and non-bioturbated **silty shales** which contain minor amounts of clastic material

(quartz, biotite) and a bentonite ranging in thickness upward from a few centimeters to 20cm. This bentonite (**Lower Bentonite Marker**) is a good marker unit noted in all of the drill holes and contains subangular to subrounded clasts of other bentonites and shale.

The silty shales are succeeded upward by a 4-6m thick calcareous non-bioturbated black shale which locally contains carbonate cemented silt lenses and a few bentonites with thicknesses ranging upward to 5cm. These shales are overlain by a 1m-3m thick very calcareous black shale characterized by the presence of horizons of shell material (particularly Inoceramus) and is devoid of bentonites. Due to its pitch-black colour and the presence of shells, this **bioclastic shale** presents a good correlative marker between holes.

The bioclastic shale is succeeded upward by 3-5m of calcareous black shale with varying amounts of bentonite which are most abundant in the lower 2m-3m of the sequence (upward to 14 separate thin beds) and throughout its top which is marked by the **Upper Bentonite Marker**. Midsection, these shales are only moderately calcareous and nearly devoid of bentonites.

The **Upper Bentonite Marker**, observed in all of the drill holes, is a 10-25cm thick steely gray to blue distinct marker which contains trace amounts of pyrite/marcassite and mica. It is succeeded upward by a 1m-3m thick poorly calcareous gray-brown **bentonitic shale** which contains upward to 20 separate thin bentonite seams (typically 2mm-1cm) at various angles to core. The unit typically contains abundant pyrite/marcassite (10-20% volume) as well as white powdery layers which are likely ash or sulfates, or an admixture thereof. The Marker is tightly folded in drill hole BK03 (Plate 7) at the Buckton Property and is accompanied by a thickening of the Second White Specks Formation in its uppermost 4m (the result likely massive slumping within the GOS Creek valley).

Plate 7: Tight fold in Upper Bentonite Marker, surrounded by thin bentonite seams, Drill hole BK03 Buckton Zone., Tintina Mines drilling 1997. Image from author's collection of lecture photographs, Sabag 1994-1999.

The bentonitic shale is capped by a 10cm-50cm thick sulfidic shale (10-30% sulfides volume) containing clasts of bentonite and other shale, as well as matrix quartz and chert similar to the basal lag deposits. The unit also occasionally contains a green clay-like material (altered ash, pyroclastic or galuconite?) as clasts and as matrix. Although this unit may be a basal lag deposit to the overlying LaBiche Formation, the shardy volcanic quartz and bentonite clasts suggest that it belongs to the Second White Speckled Shale and has significant pyroclastic affinity.

In general terms, the drilling served as follows:

- The drilling confirmed that the surface composite anomalies A-South and B-Mid indeed reflect buried metal mineralization in shales beneath the surface, over a 8km cross-section across the Buckton Zone at B-Mid and over a 900m cross-section across the Asphalt Zone at A-South.

- The drilling confirmed the presence of metal enrichment in the Second White Speckled Shale, but indicated that sections beneath its bottom contact are relatively unmineralized, contrary to the proposal of the geological working model formulated for the area. The drilling, accordingly, disproved the model and demonstrated that the Second White Speckled Shale, and to a much lesser extent also the Shaftesbury Formation beneath it, is ***itself*** the primary host to the metals.

- All of the holes reported metal enrichment from the entire width (thickness) of the Second White Speckled Shale intersected which, over the Buckton Zone, is a 18.4m-26.2m thick flat-lying "blanket" of poorly consolidated black shale, gently block-faulted in several places. Over the Asphalt Zone the Shale is estimated to be 11.4m thick. The drilling confirmed enrichment of Mo, Ni, U, V, Zn, Cu, Cd, Co, Ag and Au in the Shale.

- The holes demonstrated good continuity of geology and grades between the widely spaced holes across the Buckton Zone, and the closer spaced holes similarly reported minimal variability well within limits documented from sampling of large outcrops in the area. Grade variations documented from the drilling are, overall, compatible with those documented from sampling of the larger valleys in the area, and from sampling of intermittent exposures of the mineralized Speckled Shale along the valley walls of GOS Creek valley which parallels the 8km long drilled section approximately 1km away to its southeast.

- Downhole lithogeochemistry demonstrated that the Second White Specks Formation is characterized by the most conspicuous geochemical relief in the area, providing the only geochemical variations within an otherwise featureless and monotonous stratigraphic package. Samples from the LaBiche Formation reported by far the most monotonous geochemistry, and geochemical similarities of overburden material to the underlying LaBiche shales indicated a predominance of locally derived overburden in the area;

- The drilling demonstrated that metals enrichment within the mid-Cretaceous stratigraphic package is conspicuously confined to the Second White Specks Formation, characterized by metal contents varying x2 to x10 of its enveloping Formations. While concentrations of many of the base metals (e.g. Ni, Mo, Zn) were noted to be better concentrated nearer the Formation's upper contact, dominated by intermixture of considerable bentonitic seams into the shale, other metals (e.g. V, Cu) are better concentrated throughout its midsection. Metals enrichment within the upper sections of the Formation is also accompanied by Ba, S, Na and Corg enrichment, and by higher pyritic sulfide contents ranging upward to 20% by volume.

- LaBiche, Belle Fourche and Second White Specks Formation shales meet the textural and compositional criteria to be classed as bona fide "black shales" in the strictest of sense, and the Second White Specks Formation shales are "metal enriched black shales" in respect of Au, Sb, Zn, V, Ag, Sr, Ba, Ca, P and Se;

- Despite good apparent relationship between metals enrichment and Corg, Tintina's interpretations of interelemental variations, and of metal-Corg and metal-S relationships, suggested that the metals are hosted in multiple carrier minerals some of which are sulfides and others are likely organic forms, with a suggested grouping of the various metals into one group (Ni, Zn, Mo) characterized by affinities for enrichment predominantly in, or as, inorganic minerals and another group (V, Cu) exhibiting affinities for enrichment in, or as, organic species, some subpopulation portioning, notwithstanding.

A detailed presentation of lithogeochemical trends and interelemental relationships documented by Tintina in its reports is well beyond the scope of this Report. The reader is referred to Alberta Mineral Assessment Report MIN9802 (Sabag 1998) and to AGS 2001 for an indepth review. Downhole elemental profiles for select metals from drill hole BK06 are presented in Figure 44 along with select variograms and SDO1 normalized profiles.

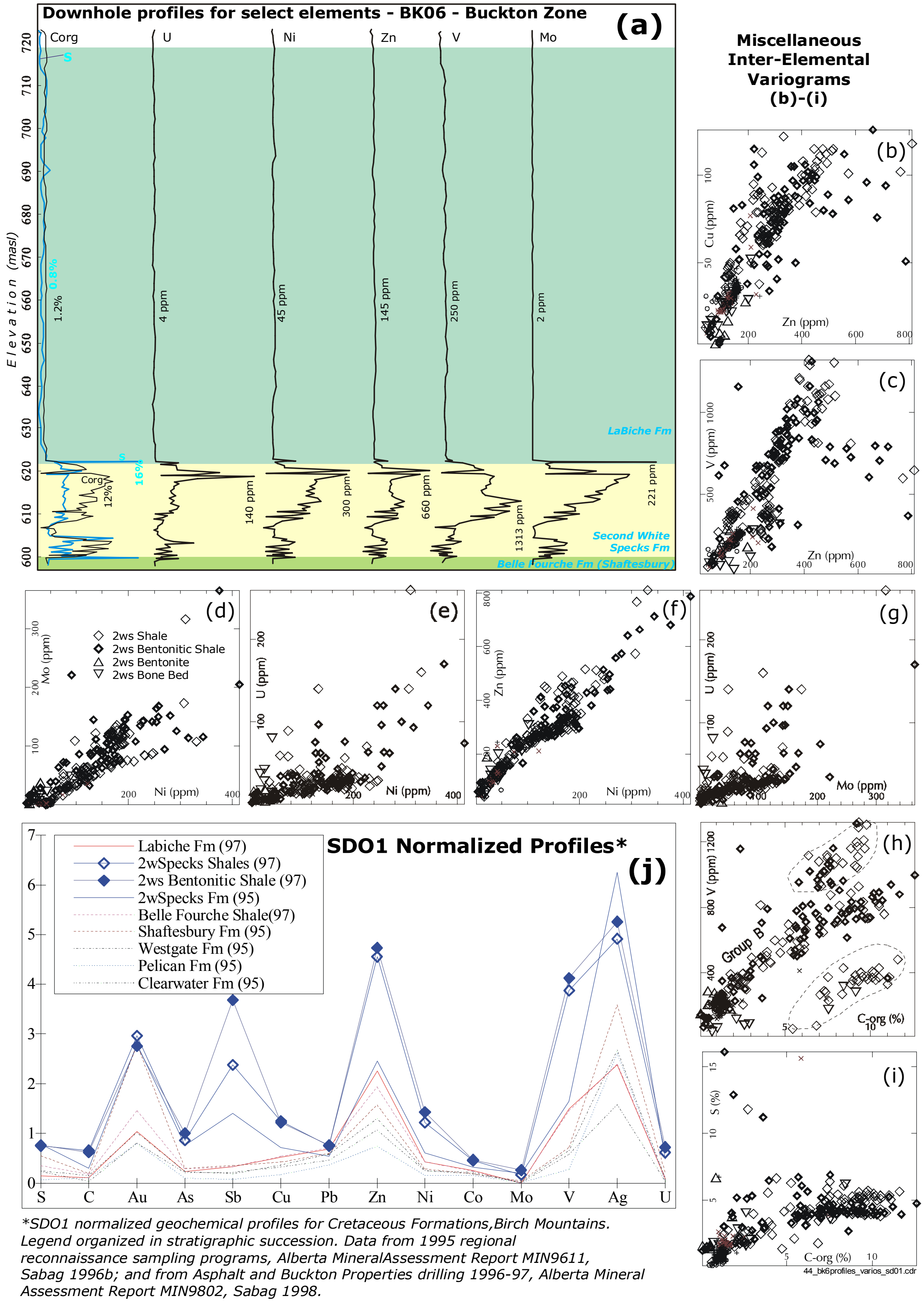


Figure 44: (a) Select downhole metals profiles hole BK06, Buckton Zone, historic drilling. After Alberta Mineral Assessment Report MIN9802, Sabag 1998; (b)-(i) Miscellaneous inter-elemental variograms, historic drilling, Asphalt and Buckton Zones.After figures from Alberta Mineral Assessment Report MIN9802, Sabag 1998; (j) SDO1 normalized geochemical profiles, Cretaceous Formations, historic surface sampling 1995-1997 and 1997 drilling, Birch Mountains. After Figure 36, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

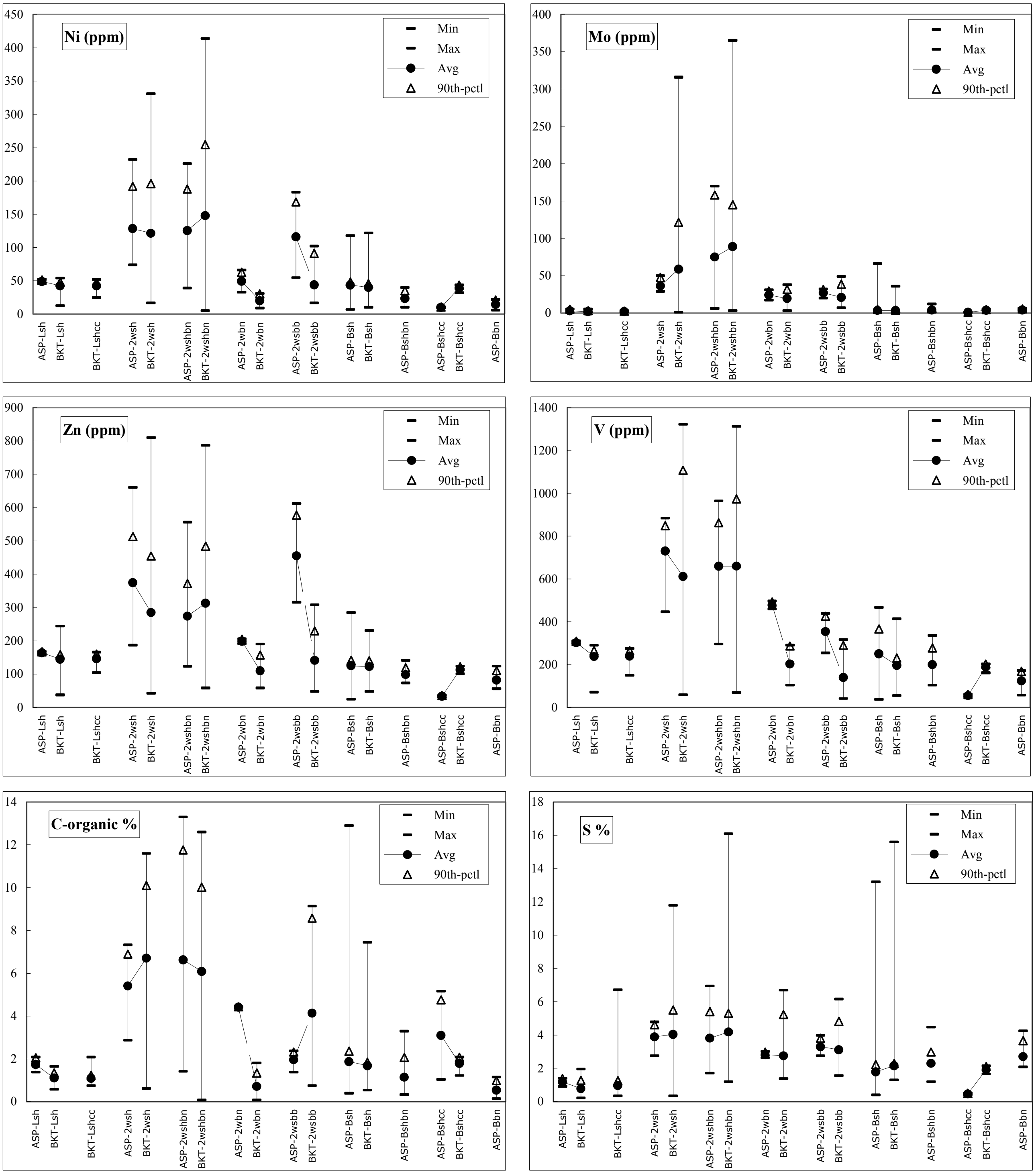


Figure 45: Summary of C-org, S, Ni, Mo, Zn and V variations for sub-formational units of LaBiche (L), Second White Specks (2w) and Belle Fourche (B) Shales, historic drilling Asphalt (ASP) and Buckton (BKT) Zones. (sh=unmixed shale; shbn=bentonitic shale; shcc=concretionary shale; bn=bentonite; sbb=siliciclastic bonebed). After Figures 56 and 57, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Figure 44 is self explanatory, showing good correlation among metals (in 44b-44g), and equally good correspondence among them downhole (44a) with progressively better concentration of most of the metals over the upper sections of the Second White Speckled Shale Formation, but with a secondary subzone dominated by preferential concentration of V midsection in the hole accompanied by lesser similar enrichment in other metals. Figure 44 also shows likely multiple populations for V and to a lesser extent also for Cu and U (44h, 44b and 44c). Content of select metals as well as C-org and S for various sub-components of the Shale are shown in Figure 45, which is also self-explanatory.

The various shales were classified based on the black shale classification scheme of the general IGCP Project 254 guidelines, and Huyck, 1988, according to which:

- a "**black shale**" is a dark (gray or black), fine grained (silt or finer), laminated sedimentary rock that is generally argillaceous and contains appreciable organic carbon (>0.5 wt%); and
- a "**metalliferous black shale**" is a black shale which is enriched in any given metal by a factor of x2 (except Be, Co, Mo, U for which x1 is sufficient) relative to USGS standard SDO-1.

C-org, S, Ba, Na and Ca contents for the LaBiche, Second White Specks and the Belle Fourche (Shaftesbury) Formations are summarized in Table 6. Averages for organic Carbon (C-org) contents range 1.1% to 6.7% and shales from all three Formations meet the textural and compositional criteria to be classed as "black shales". Shales from the Second White Specks Formation report by far the highest C-org contents, are more calcic and are characterized by elevated Fe and S. In addition, bentonitic shales, being shales intermixed with many fine layers and seams of bentonitic material, reflect their composite nature reporting the higher average Na and Ba levels, especially for the Second White Specks Formation.

	Property	C-org %	S %	S/C	Ca %	Fe %	Ba ppm	Na %	Ni/Cu
Labiche Shale	Asphalt	1.7	1.2	0.7	0.6	3.9	2240	0.66	1.2
Labiche Shale	Buckton	1.1	0.8	0.7	0.8	3.9	1175	0.43	1.3
Second White Specks Shale	Asphalt	5.4	3.9	0.8	5.3	4.5	1192	0.50	1.3
Second White Specks Shale	Buckton	6.7	4.0	0.7	5.6	4.6	1484	0.51	1.6
Second White Specks Bentonitic Shale	Asphalt	6.6	3.8	0.7	4.1	4.5	3099	0.66	1.6
Second White Specks Bentonitic Shale	Buckton	6.1	4.2	1.4	4.5	4.5	4097	0.77	2.1
Bell Fourche Shale	Asphalt	1.9	1.8	1.0	1.2	3.4	953	0.49	1.3
Bell Fourche Shale	Buckton	1.7	2.2	1.3	1.4	3.9	944	0.58	1.4
Bell Fourche Bentonitic Shale	Asphalt	1.1	2.3	3.1	1.0	3.1	702	0.56	0.8

Table 6: Summary of C-org, S, S/C, Ca, Fe, Ba, Na, Ni/Cu averages for shales, Asphalt and Buckton Zones drilling, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

SDO1 normalized geochemical profiles for the various Formations (Figure 44j) demonstrate that the Second White Specks Formation shales are "metal enriched shales" in respect of most of the metals, as they are present in quantities greater than twice those of SDO1. Second White Specks shales in the Asphalt Zone drill holes are, overall, also enriched in REE compared to SDO1 even though the bentonitic component of the shales report REE contents equivalent to SDO1 as do shales from the LaBiche and Belle Fourche Formations. In marked contrast to the Asphalt Zone, none of the Formations sampled at the Buckton Property are REE enriched.

Additional salient observations, and trends noted or inferred by Tintina from its drilling programs, as applicable also to exploration work elsewhere in the Birch Mountains, are summarized below, extracted from its reports. Majority of the conclusions reached are consistent with conclusions and proposals also offered by the AGS from its mapping and sampling (AGS 2001) of Cretaceous Formations across northeast Alberta and the Birch Mountains:

- Comparative geochemical profiles from the drilling (similarly from sampling of Cretaceous Formations in the Birch Mountains) exhibit an overall gross trend of progressively better metals enrichment upstratigraphy, peaking at the top of the Second White Specks Formation. The enrichment trend is reversed in the overlying LaBiche Formation, averages from which exhibit relative depletions. The trend is best seen in relative Au, Zn, Ni, V and Ag enrichment, and is accompanied by similar trends for Ba and REE;

- Culmination of the Second White Speckled Shale Formation depositional cycle likely coincided with a significant increase in volcanism as evidenced by the great volume and number of bentonites marking its upper contact and their general association with Ba enrichment. The suggested volcanism is supported by the presence of pyroclastic material in a lag deposit often capping the Formation, suggesting that at least some of the volcanism is localized in the Birch Mountains ;
- A close link between metal enrichment in the Second White Specks Formation shale with volcanic processes is reinforced by the shale's overall elevated S/C ratio averaging 1-1.2, well above an overall ratio of 0.32 common to normal shales. Since elevated S/C ratios exceeding 0.32 are commonly regarded to be the result of input from volcanogenic-hydrothermal processes, a similar history can be proposed for the Second White Specks Formation shales and, to a lesser extent, also for the enveloping LaBiche and Bell Fourche Formations;
- A volcanogenic provenance for the Second White Specks Formation Shale is supported by its higher than typical contents of Corg ranging 5.8-7% and S 4-4.2%, both of which are well above published data from normal black shales (avg C-org 0.5-0.7%, avg S 1.5-2%), and are comparable with data from many other metal enriched black shales from elsewhere in the world which are believed to have formed via volcanogenic and hydrothermal input (e.g. metal enriched shales from Bohemian Massif, Czech Republic, Pasava et al 1996; the Talvivaara deposit, Loukola-Ruskeeniemi and Heino 1996; gold bearing Russian black shales, Buryak 1976);
- The 4-6 million year gap identified between the top of the Second White Specks Formation and the base of LaBiche Formation by preliminary micropaleontological examination points to a period of significant uplift and erosion, and is compatible with syn-sedimentary tectonic activity related to increase in volcanism toward the end of the Second White Specks depositional cycle;
- Bentonites exhibit by far the most conspicuous stratigraphic trends and contrasts between the drill holes from the Asphalt Zone compared to those from the Buckton Zone. Distribution, thickness and frequency of bentonites noted in the drill holes at the Asphalt Zone suggest a local proximal source for bentonites, whereas a nearby source to the northeast is suggested by bentonites noted in the Buckton Zone drill core;
- While bentonitic shales, or shale intercepts near bentonites, in the Second White Specks Formation generally report the higher metal and sulfide contents from both properties, a similar, though weaker, trend can also be discernible in shale intercepts near bentonites in the underlying Belle Fourche Formation (Shaftesbury Fm) in the Asphalt Zone drill holes, reiterating a more general association between bentonites (i.e. volcanism) and metal concentration in the area;
- The discovery of abundant garnets and possible eclogitic garnets in heavy mineral concentrates from drill core support speculations regarding the presence of kimberlitic material, or similar venting, in the area. This is also supported by the presence of diamond stability field mineralogy in stream sediment heavy mineral concentrates from the vicinity of the two Zones;
- Tintina noted that the proposed existence of previously unrecognized volcanogenic material (and activity) in northeast Alberta is novel and represents a departure from the general geoscientific dogma for the region which has traditionally invoked a singularly brinally controlled metallogenic setting to the exclusion of other processes (eg: Feng and Abercrombie 1994). Others have also recognized a similar non-brinal metallogenic potential (Olson 1994a and 1994b, AGS 2001)
- Tintina also noted that discoveries and conclusions from its exploration work in the Upper Cretaceous stratigraphic package overwhelmingly suggest a local source(s) to the metals discovered, with a strong volcanogenic association. Tintina also proposed that metallic mineralization documented in the Birch Mountains are congregated around distinct volcanic centers characterized by considerable exhalative activity as evidenced by the abundance of bentonites and ejecta material of probable localized provenance. Cryptovolcanic activity or venting via kimberlitic pipes were also considered to present equally likely sources to the abundant ejecta material incorporated into the Second White Specks Formation.

Tintina ultimately concluded that while none of the metals is present in the shales in sufficiently high concentrations to be of economic merit by itself, the “pay” metals Mo, Ni, V, Zn, and Cu (and to some extent also Ag and U) collectively represent sufficient in-situ value on a combined basis to place the Second White Specks Formation shales within reach of economic viability, provided the metals can be recovered on a combined basis, especially when reviewed in the context of the low operating costs afforded to bulk mining and treatment operations of similar unconsolidated material in the region and elsewhere in the world. Weighted averages of metal grades for intersections of the Second White Speckled Shale in the drill holes are summarized in Table 7, showing also grades as converted to, and restated as, equivalent metal pounds per short ton (Ag reported in g/t).

Hole No.	Interval Thickness (m)	Mo -ICP (ppm)	Ni -ICP (ppm)	U-INA (ppm)	V -ICP (ppm)	Zn -ICP (ppm)	Cu -ICP (ppm)	Co-INA (ppm)	Ag -ICP (ppm)
BK1	15.26*	86	160	37	776	360	83	21	0.4
BK2	18.4	66	126	34	648	305	70	21	0.5
BK3	26.2	62	121	30	623	289	73	19	0.4
BK4	21.1	67	129	27	645	282	73	23	0.3
BK5	18.4	77	152	25	722	318	77	24	0.7
BK6	22.6	72	133	30	668	282	78	21	0.8
AS1	7.21**	73	144	47	690	376	89	20	0.3
AS2	11.4	63	122	31	664	282	89	20	0.3
Metal Prices 1997	USD$	$4.4/lb	$3.1/lb	$9/lb	$4.1/lb	$0.78/lb	$0.9/lb	$24.3/lb	$5.2/oz

Metal Prices as at October 6, 1997; USD$ x 1.4 = CDN$

*Hole BK1 did not reach bottom contact of the Formation. Total thickness is estimated to be 21.3m per projections from adjacent holes

** Asphalt hole AS1 collared in Speckled Shale. Total thickness estimated to be 11.4 based on projections from adjacent hole

Hole No.	Interval Thickness (m)	Mo -ICP (lb/st)	Ni -ICP (lb/st)	U-INA (lb/st)	V -ICP (lb/st)	Zn -ICP (lb/st)	Cu -ICP (lb/st)	Co-INA (lb/st)	Ag -ICP (g/t)
BK1	15.3	0.17	0.32	0.07	1.55	0.72	0.17	0.04	0.01
BK2	18.4	0.13	0.25	0.07	1.30	0.61	0.14	0.04	0.02
BK3	26.2	0.12	0.24	0.06	1.25	0.58	0.15	0.04	0.01
BK4	21.1	0.13	0.26	0.05	1.29	0.56	0.15	0.05	0.01
BK5	18.4	0.15	0.30	0.05	1.44	0.64	0.15	0.05	0.02
BK6	22.6	0.14	0.27	0.06	1.34	0.56	0.16	0.04	0.03
AS1	7.2	0.15	0.29	0.09	1.38	0.75	0.18	0.04	0.01
AS2	11.4	0.13	0.24	0.06	1.33	0.56	0.18	0.04	0.01

Table 7: Summary of weighted average grades for select metals, Second White Speckled Shale intersections, Asphalt and Buckton Zones historic drilling. After Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Based on October, 1997, metal prices, Tintina estimated that grades for select “pay” metals represented an aggregate in-situ value per tonne on a combined basis ranging $10-$20/tonne (excluding Pt, Pd and Au) for the entire thickness of the Second White Speckled Shale Formation as intersected in the drill holes. The metal prices and estimated aggregate gross in-situ value represented by each hole are summarized in Table 7. Tintina also prepared estimates of gross in-situ values of the various components of the Shale, and its enveloping shales, to identify the better collective grading sections for additional future follow-up. A summary of the subformational estimates is presented in Table 8, based on which Tintina concluded that the Second White Speckled Shale Formation presents the most prospective target in the sedimentary package, and that some of its components represent higher value than others. Although the author has reviewed Tintina’s calculations and the underlying data, and finds them to be reliable, the figures can be misleading if considered to reflect economic worth of the Shale. **The reader is CAUTIONED that the foregoing figures are conceptual in nature, are based on broad assumptions and generalizations, and do not represent economic worth of the Shale, but rather reflect the aggregate gross value of metals contained in the shale based on exploration analyses**, as at October 1997 metal prices, assuming 100% recovery. The figures only provide a relative yardstick which might guide future exploration, since there is no certainty that the metals can or might be recoverable from the shale, or whether they can be recovered on a combined basis to reflect the aggregate values estimated.

No additional information can, or should, be interpreted from the relative subformational values in Table 8 since the figures are partly an artifact of the relative metal prices as at October 1997 (for example: average metal prices for the one year period Sept/07-Aug/08 are disproportionately different than those of 1997; being approximately multiple of x7.2 Mo, x3.9 Ni, x8.5 U, x2.9 V_2O_5, x1.4 Zn, x3.9 Cu, x1.7 Co and x3 Ag, of the 1997 figures).

The reader is cautioned that, tempting as it may be to re-calculate the figures in Table 8 per current metal prices, the re-stated revised figures would be meaningless in the absence of an economic analysis and resource study, since there has since also been commensurate increase in mining costs for the bulk mining operations cited the historic work as comparative examples. The foregoing are addressed in Section 18.3, Section 18.4 and Section 19 of this report.

Further discussions of in-situ values are better suited to an economic evaluation or scoping study relying on a future resource study. Challenges of exploring polymetallic deposits are discussed in greater detail later in this Report in Section 19.3.

Summary of Grades (ppm)

PTY/Fm	Cu (ppm)			Mo (ppm)			Ni (ppm)			Co (ppm)			V (ppm)			Zn (ppm)			U (ppm)		
Rocktype	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
ASP-Lsh	35	47	40	1	5	3	46	52	49	13	16	14	297	310	302	160	168	164	4	8	7
BKT-Lsh	12	47	32	1	5	2	13	54	43	3	21	12	71	290	238	37	244	145	0	7	4
ASP-2wsh	56	117	100	29	50	36	74	232	128	16	41	22	446	884	730	187	660	374	16	110	41
BKT-2wsh	13	122	73	1	316	59	17	331	121	4	55	21	59	1322	611	42	810	285	5	260	30
ASP-2wshbn	16	116	82	6	170	75	39	226	126	6	30	19	296	965	659	123	556	274	5	62	29
BKT-2wshbn	4	126	71	3	365	89	5	414	148	1	180	23	69	1313	660	58	787	313	2	170	38
ASP-2wbn	46	61	54	17	31	24	33	66	50	7	12	10	460	496	478	191	206	199	5	17	11
BKT-2wbn	4	28	14	3	38	20	9	31	20	1	7	4	104	291	204	58	190	110	4	18	11
ASP-2wsbb	62	94	78	20	32	27	55	183	116	13	29	21	254	439	355	315	612	455	100	100	100
BKT-2wsbb	14	82	31	7	49	21	17	102	44	5	30	11	41	317	139	47	308	142	7	80	29
ASP-Bsh	7	75	34	1	66	3	7	118	44	2	26	11	37	467	251	24	285	125	1	36	6
BKT-Bsh	10	77	29	1	36	4	10	122	40	5	56	12	55	413	196	47	230	123	3	13	6
ASP-Bshbn	20	42	31	1	12	4	10	40	23	5	9	7	104	336	200	73	141	98	2	8	4
ASP-Bshcc	8	11	10	1	1	1	9	11	10	3	4	4	49	62	56	30	36	33	2	2	2
BKT-Bshcc	20	31	26	3	5	4	32	44	39	10	11	10	161	203	188	101	124	114	4	4	4
ASP-Bbn	13	27	21	3	6	4	6	22	15	5	8	6	57	172	125	56	124	82	2	7	5

Summary of In-Situ Values (CAN$/tonne)

PTY/Fm	Cu (CAN$)			Mo (CAN$)			Ni (CAN$)			Co (CAN$)			V (CAN$)			Zn (CAN$)			U (CAN$)			Total (CAN$)		
Rocktype	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
ASP-Lsh	0.1	0.1	0.1	0.0	0.1	0.0	0.4	0.5	0.5	1.0	1.2	1.1	6.8	7.1	6.9	0.4	0.4	0.4	0.1	0.3	0.2	8.8	9.6	9.2
BKT-Lsh	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.5	0.4	0.2	1.6	0.9	1.6	6.6	5.4	0.1	0.6	0.3	0.0	0.2	0.1	2.1	9.7	7.3
ASP-2wsh	0.2	0.3	0.3	0.4	0.7	0.5	0.7	2.2	1.2	1.2	3.1	1.7	10.2	20.2	16.6	0.5	1.6	0.9	0.5	3.6	1.3	13.6	31.6	22.5
BKT-2wsh	0.0	0.3	0.2	0.0	4.2	0.8	0.2	3.2	1.2	0.3	4.1	1.6	1.3	30.2	13.9	0.1	2.0	0.7	0.2	8.5	1.0	2.1	52.5	19.3
ASP-2wshbn	0.0	0.3	0.2	0.1	2.3	1.0	0.4	2.2	1.2	0.5	2.3	1.4	6.8	22.0	15.0	0.3	1.3	0.7	0.2	2.0	0.9	8.2	32.4	20.5
BKT-2wshbn	0.0	0.4	0.2	0.0	4.9	1.2	0.0	3.9	1.4	0.1	13.5	1.7	1.6	29.9	15.1	0.1	1.9	0.8	0.1	5.6	1.2	2.0	60.1	21.6
ASP-2wbn	0.1	0.2	0.1	0.2	0.4	0.3	0.3	0.6	0.5	0.5	0.9	0.8	10.5	11.3	10.9	0.5	0.5	0.5	0.2	0.6	0.4	12.3	14.5	13.4
BKT-2wbn	0.0	0.1	0.0	0.0	0.5	0.3	0.1	0.3	0.2	0.1	0.5	0.3	2.4	6.6	4.6	0.1	0.5	0.3	0.1	0.6	0.4	2.8	9.1	6.0
ASP-2wsbb	0.2	0.3	0.2	0.3	0.4	0.4	0.5	1.7	1.1	1.0	2.2	1.6	5.8	10.0	8.1	0.8	1.5	1.1	3.3	3.3	3.3	11.8	19.4	15.7
BKT-2wsbb	0.0	0.2	0.1	0.1	0.7	0.3	0.2	1.0	0.4	0.4	2.3	0.8	0.9	7.2	3.2	0.1	0.7	0.3	0.2	2.6	0.9	1.9	14.7	6.1
ASP-Bsh	0.0	0.2	0.1	0.0	0.9	0.0	0.1	1.1	0.4	0.2	2.0	0.8	0.8	10.7	5.7	0.1	0.7	0.3	0.0	1.2	0.2	1.2	16.7	7.6
BKT-Bsh	0.0	0.2	0.1	0.0	0.5	0.0	0.1	1.2	0.4	0.4	4.2	0.9	1.3	9.4	4.5	0.1	0.6	0.3	0.1	0.4	0.2	2.0	16.5	6.4
ASP-Bshbn	0.1	0.1	0.1	0.0	0.2	0.1	0.1	0.4	0.2	0.4	0.7	0.5	2.4	7.7	4.6	0.2	0.3	0.2	0.1	0.3	0.1	3.1	9.6	5.8
ASP-Bshcc	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.3	1.1	1.4	1.3	0.1	0.1	0.1	0.1	0.1	0.1	1.6	2.0	1.8
BKT-Bshcc	0.1	0.1	0.1	0.0	0.1	0.0	0.3	0.4	0.4	0.8	0.8	0.8	3.7	4.6	4.3	0.2	0.3	0.3	0.1	0.1	0.1	5.2	6.5	5.9
ASP-Bbn	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.4	0.6	0.5	1.3	3.9	2.8	0.1	0.3	0.2	0.1	0.2	0.1	2.0	5.4	3.9

Formation / Rocktype Legend

Lsh = Labiche Shale	2wsh = Second White Specks Shale	Bsh = Belle Fourche Shale
	2wsb = Second White Specks Bentonitic Shale	Bshbr = Belle Fourche Bentonitic Shale
	2wbr = Second White Specks Bentonite	Bshcc = Belle Fourche Concretionary Shale
	2wsb = Second White Specks Siliciclastic Bone Bed	Bbn = Belle Fourche Bentonite

Table 8: Summary of grades and in-situ value of select metals from the LaBiche, Second White Specks and Belle Fourche Formations, Asphalt (ASP) and Buckton (BKT) Zones drilling 1997. From Table 15, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

As a guide to its future exploration work, based on very broad extrapolations reinforced by the drilling results, Tintina proposed that should surface and subsurface metallic anomalies identified at the Asphalt and Buckton Zones, and over the other composite target areas identified, indeed reflect the true size of underlying mineralization, metals concentration zones in the Speckled Shale Formation can be conjectured to extend over areas generally measuring upward to approximately 5km x 5km (reinforced by the approximate 8km long cross-section drilled across the Buckton Zone). In addition, based on an extrapolated average thickness of some 30m for the Formation, and an average specific gravity of 2.1, the shale can potentially host metal concentrations of approximately 60 million tonnes per $1km^2$ of lateral extent, representing approximately 1,500 million tonnes per any deposit extending over a 5kmx5km area.

To support the above conjecture, and as a guide to its future in-fill grid drilling, Tintina prepared an estimate, in December 1998[16], of the volume of mineralized material implied by the drilling at the Buckton Zone, to be approximately 430 million cubic metres, representing the aggregate of all Second White Speckled Shale intercepts logged in the drilling, without grade nor thickness optimization. It also estimated that this volume extends over an approximate 2.5kmx8km area with a thickness ranging 18.4m to 26.2m, and represents approximately 904 million tonnes of mineralized material, averaging approximately 72ppm Mo, 137ppm Ni, 30ppm U, 680ppm V, 306ppm Zn, 76ppm Cu, 21ppm Co, 1ppm Ag and traces of gold (Table 9), representing an aggregate in-situ value on a combined basis of approximately $16 for the "pay" metals at 1997 metal prices. This mineralized volume is "open" in all directions, except to the east which marks the erosional edge of the Birch Mountains where the Shale Formation has been eroded away.

Average Grade	Avg Thickness (m)	Mo -ICP (ppm)	Ni -ICP (ppm)	U-INA (ppm)	V -ICP (ppm)	Zn -ICP (ppm)	Cu -ICP (ppm)	Co-INA (ppm)	Ag -ICP (ppm)
Min-Vol-1	21.3	72	137	30	680	306	76	21	1
Metal Prices	USD$	$4.4/lb	$3.1/lb	$9/lb	$4.1/lb	$0.78/lb	$0.9/lb	$24.3/lb	$5.2/oz

Metal Prices as at October 6, 1997; USD$ x 1.4 = CDN$

Average Grade	Avg Thickness (m)	Mo -ICP (lb/st)	Ni -ICP (lb/st)	U-INA (lb/st)	V -ICP (lb/st)	Zn -ICP (lb/st)	Cu -ICP (lb/st)	Co-INA (lb/st)	Ag -ICP (g/t)
Min-Vol-1	21.3	0.14	0.27	0.06	1.36	0.61	0.15	0.04	0.03

Table 9: Average grades of select metals, Buckton Zone mineralized volume, per Tintina drilling 1997. After Alberta Mineral Assessment Report MIN9802, Sabag 1998.

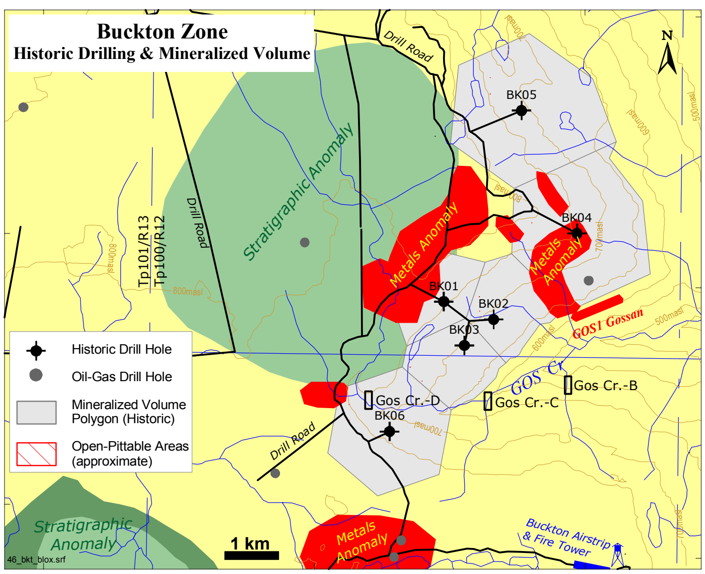


Figure 46: Buckton Zone mineralized volume, per Tintina drilling 1997. All features except polygons after Alberta Mineral Assessment Report MIN9802, Sabag 1998. Mineralized polygons from miscellaneous other Tintina communications documents. See also Figure 40.

The above figures are based on volumetric calculations relying on simple polygons centered on Speckled Shale drill intercepts extending outward from each drill hole midway to the next adjacent hole. Tonnages were calculated at a specific gravity of 2.1 as calculated from drill sample weight records. Some of the polygons are reinforced by similarly mineralized outcrops sampled along river valley walls in the area and, along the GOS Creek valley walls which parallel the 8km drilled section 1km to its southeast. The GOS Creek valley walls contain intermittent exposures of mineralized Second White Speckled Shale, including a 120m long mineralized exposure at the GOS1 Gossan which has been extensively sampled by Tintina as well as the AGS, and has occasionally also yielded free gold grains in heavy minerals from panned concentrates.

The reader is cautioned that the above estimate is not a mineral resource, that it pre-dates NI-43-101 and does not conform to it, and that it should not be considered to be a definitive indication of mineralization which could, or might, exist at the Buckton Zone, but that it is a relevant and significant indication of the overall potential of the Zone, and of the magnitude of mineral aggregations which it might host subject to confirmation by future in-fill grid drilling. The above mineralized volume is discussed later in Section 19.4.1 in the context of a Potential Mineral Deposit proposed for the Buckton Zone.

[16] Included in miscellaneous Tintina communication documents 1998-1999, and in regulatory discussions Feb/1999.

The author has reviewed Tintina's estimates and believes that they are based on sound data and a realistic first order approximation to depict a mineralized volume to be better defined by additional drilling. Despite good lateral continuity of geology and acceptable continuity of grades historically documented from the Second White Speckled Shale from extensive surface outcrop sampling over and around the Zone, the drill spacing forming the basis of Tintina's estimates is, overall, too wide to support a resource calculation or classification. The spacing of drill holes BK01, BK02 and BK03 is, however, consistent with drill spacing common to exploration of black shales and oil sands deposits to support blocking out of an area of interest for additional in-fill drilling.

It is noteworthy in the above regard that, during pre-development stages of the Fort Hills oil sands deposit near Dumont's Property, drill data based on a 400m spacing (plus localized 200m tests) was considered to provide adequate confidence in a calculated resource to support decisions whether to proceed toward the $15 billion capital project. A 200m spacing was subsequently considered adequate to support preliminary feasibility study and preliminary mine planning (Burns et al 2001). Similarly, inferred resource modeling for the MyrViken Uraniferous Alum black shale deposit (Continental Precious Minerals) relied on a drill hole spacing ranging 30m-380m, averaging 300m, and concluded that a 100mx100m grid drilling would be required to upgrade resources (Harron 2008). Similarly, minimum drill hole spacing necessary to support a Measured and Indicated Resource classification at Paracatu gold deposit has been established to be a 200mx200m "five spot" pattern, resulting in an average nominal drill hole spacing of 140m (Kinross 2006). It is the author's opinion, based on his six years of mapping and sampling experience of the Second White Speckled Shale across the Birch Mountains, that a 400m-500m nominal drill spacing (with localized 200m tests) may be adequate to support estimation of inferred resources for the Buckton Zone, though 200m-400m would be preferable and may enable partial upgrading of the classification.

There are, to the author's knowledge, no additional positive or negative data or information, nor any subsequent exploration work, which would change or equivocate the historic figures. There has been no subsequent drilling on the Property in search for metals.

As comparative analogues of operations from other similarly large deposits, Tintina proposed that given the unconsolidated nature of the shales, mining operations for the extraction of material therefrom could be expected to principally comprise large scale earth moving operations similar to the mining of the nearby oil sands deposits and can, accordingly, be expected to entail comparable costs. At an average oil sands grade of approximately 1bbl/2tonnes and an average operating costs ranging $12-$15/bbl (1998 figures, including costs of refining to a shipping crude), Tintina proposed that the calculated cost of $6-$7.5/tonne for the mining of oil sands is a reasonable guideline for the mining and treatment of unconsolidated materials in the region.

Tintina also noted that the above figures are slightly higher than then mining costs reported from similarly unconsolidated material elsewhere in the world, citing the Brasilia gold deposit (presently known as the Paracatu deposit) averaging 0.43ppm Au, then mined in bulk by TVX-RTZ, mined and processed at an operating cost of $303/oz, equivalent to $3.8/tonne; and at a cash cost of $202/oz, equivalent to $2.5/tonne (Alberta Mineral Assessment Report MIN9802, Sabag 1998. See also Section 18.4 of this Report).

Tintina also concluded that the most attractive features of the Second White Speckled Shale Formation shales from an economic perspective are (i) their proximity to surface and their unconsolidated nature hence amenability to extraction by low cost large scale bulk mining; and (ii) the potentially immense lateral extent of metal enriched portions therein estimated to occupy tens of square kilometers as extrapolated from surface and subsurface exploration results. Tintina subsequently focused its attentions on metallurgical testwork intended to determine recoverability of the metals from the shale and to establish economic parameters.

6.2.13 Benchtests and Leaching Tests – Asphalt and Buckton Properties

Tintina undertook a series of studies and related testwork in 1998-1999 as an initial and preliminary assessment of the viability of recovering metals from the shale on a combined basis. Details of the tests are outlined in Alberta Mineral Assessment Report MIN9928, Sabag 1999. They are summarized below:

Sequential Leaching Tests 1998: A series of sequential selective leaching tests were completed in early 1998 at Activation Labs, Ancaster, Ontario, under the supervision of Dr.R.Clark, to investigate whether metals could be leached from the shale samples. Ten samples were selected from the Buckton drilling drill core footages of the Second White Speckled Shale: six samples with the higher Ni content (316ppm-414ppm) and four samples with the higher V contents (1117ppm-1289ppm).

The objectives of the testwork were (i) to determine metal content of the organic and the inorganic fractions of the samples by sequentially and selectively leaching five major fractions of the samples: the Light Organic, Heavy Organic, Oxide, Sulfide and Silicate fractions; and (ii) to establish metals partitioning patterns within the shale, to enable grouping of the various metals into groups which might be recovered within the same leaching circuit. The analytical work was completed during Nov/97-Jan/98 by Activation Laboratories (ActLabs) according to leaching procedures formulated by Dr.R.Clark of Actlabs tailored to the samples' matrix. Duplicate cuts of head samples were also analyzed to monitor analytical work, and to compare to initial analyses of the samples from the 1997 drilling programs (Sabag 1998). A sample of SDO1 USGS black shale standard was concurrently analyzed as an internal analytical standard.

The leaching sequence tested 10gm subsamples. It first entailed leaching in Heptane to remove light organics; the solution from which was analyzed and the residues leached in Acetic Acid to dissolve oxides. The Acetic acid leach solution was analyzed and the residues therefrom were leached in Sodium Pyrophosphate to collect heavy organics. The Sodium Pyrophosphate solution was analyzed and the residues therefrom were split into four parts and analyzed as follows: one fraction was analyzed by INA, another was analyzed by ICP following dissolution in Aqua Regia; another was analyzed by ICP following dissolution in four-acids; and the final fraction was split and analyzed in duplicate by Leco for C species (C-organic, C-graphitic, CO_2 and C-total) and S.

Unexpected weight gains were noted in residue during the Acetic acid and Na-Pyrophosphate leaching stages, which were attributed to the formation of acetates during Acetic acid leaching, and the formation of various Na-phosphates during Na-Pyrophosphate leaching stage (supported also by considerable Na and P enrichment in residues as compared to head grades). Given these gains, mass balanced elemental partitioning could not be calculated.

Despite the complexities introduced by weight gains, and failure to completely "strip" organics from the samples, inferences were made regarding elemental partitioning from comparison of final residues from Aqua Regia dissolved samples with those from samples which were dissolved in four-acids and those which were analyzed without any dissolution by INA. A set of head samples were also dissolved in AquaRegia, residues therefrom weighed and analyzed for Cttl and Corg. Based on the foregoing convergent qualitative inferences, Tintina (and Clark) concluded that the metals enriched in the shale are in most part hosted in recoverable forms (sulfides, native or oxides).

Ortech Composite Sample 1998 and Tests: A series of preliminary beneficiation and leaching tests were completed by Ortech Corporation, Mississauga, Ontario, during 1998, under the supervision of Agra Monenco Inc., Oakville, Ontario, to investigate parameters for the formulation of a preliminary flowsheet for the extraction of base metals from the shale on a combined basis. Testwork details are outlined in Agra Monenco (1999), a stand-alone report from Agra (and Ortech)[17] included as Appendix B2 in Alberta Mineral Assessment Report MIN9928, Sabag 1999.

A 65kg weighted representative weighted composite sample was prepared by Ortech from the Buckton Zone drill core from holes BK02, BK04 and BK05, by combining previously crushed material from all

[17] REPORT: Processing of Polymetallic Sulfide Ores, Tintina Project BKT0327; Agra Monenco Project TML109774, February 1999. Appendix B2 in Alberta Mineral Assessment Report MIN9928, Sabag 1999.

intervals of the Second White Speckled Shale Formation intercepts from the three holes (Formation intercepts lengths: BK2-18.4m, BK4-21.1m, BK5-18.4m). The three holes collectively characterize the northern half of the area drilled where mineralized Speckled Shale sections are beneath shallow overburden cover. A portion of the sample was set aside for future work.

Ortech Flotation Tests 1998: Ortech conducted simple flotation tests in 1998 which confirmed unsuitability of simple flotation to the beneficiation of a concentrate from the fine grained sulfidic shale. Flotation concentrates obtained (mostly slimes) reported compositions nearly identical to the feed material. Magnetic separation also similarly proved unsuited. No attempt was made to optimize test conditions to disaggregate the fine clay content of the sample material, a known inhibitor to the concentration of minerals by flotation from black shales. No further pre-concentration tests were carried out by Ortech (clean heavy mineral concentrates were successfully produced in 1999 by Lakefield Research Laboratories, from a handful of samples, during preliminary tests completed under the supervision of Strathcona Mineral Services, Toronto. The Lakefield tests successfully concentrated some base metals as well as gold from samples after disaggregating (de-sliming) their clay matrix by deflocculation - discussed later in this Section).

Ortech Sulfuric Acid Leaching Tests 1998: Ortech also carried out two preliminary leaching tests on two 200gm sub-samples from the composite sample. The leaching achieved extracted recoveries of 97.2% Nickel, 100% Zinc and 33.6% Vanadium by 6-hour long leaching in sulfuric acid at 75C and ambient pressure. Acid consumption ranged 300kg/t-340kg/t and was considered too high to be a viable leachate. No optimization tests were conducted, and no clay disaggregation pre-treatment was investigated.

The leaching tests did not record data for Molybdenum, Uranium and Copper, nor for any of the other metals known to be enriched in the shale sample tested. Despite high recoveries reported, the Ortech testwork, overall, concluded that without due pre-concentration, reagent consumption costs would be inhibitive. No further tests were carried out.

Deflocculation Tests 1998: A series of tests were initiated by Tintina in late 1998 to investigate alternatives to pre-concentration by flotation. 5kg subsamples from the above Ortech composite sample were tested at Claytech Environmental Services Inc., Sudbury, to assess the suitability of deflocculants to disaggregate the fine clay in the shale, and to the segregate its metallic and non-metallic fractions. Sufficient quantities of visible gold grains were incidentally noted in the de-slimed testwork product material that, after duplicate corroborative tests, a series of conventional bottle roll cyanidation tests were subsequently completed at Lakefield Research Laboratories (currently SGS Labs), Lakefield, Ontario.

Cyanidation Tests 1999: Conventional bottle roll cyanidation tests were completed by Lakefield in early 1999 on multiple 500gm charges prepared from 3kg-5kg subsamples of the Ortech composite sample. Various test conditions were tested on duplicate splits for comparison, including leaching after roasting and after deflocculation. The tests reported gold grades ranging 0.07g/t to 0.47g/t from 0.5kg deflocculated (de-slimed) carbon-in-leach tests. The cyanidation tests confirmed preg-robbing gold losses from carbon-in-pulp tests, and overall reported higher grades from samples which had been de-slimed. In addition, multiple duplicate fire assays from several samples reported a wide range of gold grades ranging nil to 1.17g/t, suggesting nugget effect.

Gold Check Assaying 1999: An extensive check assaying program was conducted by Tintina in 1999 to address the discrepancy between the cyanidation work which reported results an order of magnitude higher (from the 0.5kg-5kg test samples) than those previously documented from routine analytical work carried out during exploration programs utilizing typical 1 assay ton fire assay samples or similarly sized samples analyzed by INA (approximately 30gm). Nearly all drill samples from the 1997 drill program were subsequently re-assayed by fire assay (Loring Laboratories, Calgary) and by INA (Activation Labs). Part of the program was carried out by, and under the supervision of, Strathcona Minerals Services, Toronto, Ontario, and included extensive duplicate check assaying, in addition to heavy mineral separation work and mineralogical examination. The check assaying work tested pre-crushed samples, in addition to subsamples of the Ortech composite and new material collected from archived drill core under rigorous chain of custody. Details of Strathcona's work are outlined in their detailed report[18] included as Appendix D4 in Alberta Mineral Assessment Report MIN9928, Sabag 1999.

The check assaying program results were erratic, and though some results were successfully duplicated others were not, nor observed discrepancies explained. Overall, the collective work suggested that the drill footages may contain sub-gram grade gold sections, typically ranging 0.1g/t-0.4g/t, which were missed during the 1997 routine analytical work, likely due to the small sample sizes (approximately 30gm) routinely used during fire assays and other analyses. Strathcona further suggested that gold mineralization in the Second White Speckled Shale Formation is likely better concentrated nearer its upper and lower contacts.

The check assaying work repeatedly reported greater than >1g/t gold grades from multiple duplicate fire assays of samples which had previously reported very low, single digit ppb level, gold from routine analytical work by instrumentation INA and fire assay. A sampling of the data is presented below in Tables 10 and 11, as an example. The foregoing discrepancy was not explained nor resolved by the check assaying work. Considerable additional data are included in Alberta Mineral Assessment Report MIN9928, Sabag 1999.

After testing many sample suites, duplicates of the samples, multiple subsamples from duplicates and duplicates of the multiple subsamples, Tintina ultimately concluded that gold distribution in many of the samples is nuggetted as demonstrated by highly variable results from multiple assaying of ten or more fractions from each sample. Tintina further noted a progressive concentration of gold in the final fractions of subsample suites which were consumed in their entirety by multiple fire assays. Tintina ultimately concluded that the standard 30gm sample size routinely used during fire assaying is non-representative for analysis of the shales for gold.

Total (m) Cored In Target Zone	Total Core (m) Represented by Composite Sample Tested	Average Weighted Grade per re-assaying of core intervals Gold (g/t) *(Note1)*	Lakefield Head Assays of Composite Sample For Entire Zone Gold (g/t) *(Note2)*	Grade per Cyanidation of Composite Sample For Entire Zone Gold (g/t) *(Note 3)*
11.4	11.4	0.62	<0.02, 0.2, <0.02, 0.43 0.47, 0.36, 1.17, <0.02 <0.02, 0.12, 0.24 Average = 0.27	0.47
Notes: (1) Weighted average of 55 fire assays from 29 drill core intersections, Loring Labs, Tintina check assaying program 1999; (2) Multiple duplicate 1AT fire assays, Lakefield Research; (3) CIL bottle roll cyanidation of 500gm deflocculated sample, Lakefield Research				

Table 10: Comparative data and multiple gold assays for a composite sample of Second White Specks Formation from Asphalt Property Drill Hole AS02, From Table 26, Alberta Mineral Assessment Report MIN9928, Sabag 1999.

Heavy Mineral Concentration 1999: A handful of heavy mineral concentrates were prepared during the check assaying work by Lakefield Research, under Strathcona's supervision, for mineralogical examination of some of the samples tested by cyanidation. Samples ranging 1kg-2.5 kg were first deflocculated with sodium-hexametaphosphate to disaggregate their clay matrix. Good quality clean heavy minerals were collected by heavy oil separation. Gold and base metals were successfully, though incidentally, concentrated in the heavy minerals, confirming the presence of native gold in the shale, and reiterating that deflocculants are an effective pre-treatment during concentration of minerals and metals from the shale's otherwise muddy matrix. The heavy oil concentrates achieved concentration ratios ranging x25-476 for Au, x6-15 for Zn, x2-20 for Co, x2-11 for Ni, and x1-2 for U.

[18] REPORT: Strathcona Mineral Services 1999. Audit of Drill Core Samples, Northeast Alberta Project, Tintina Mines - NSR

Given that the concentration tests were conducted simply to obtain heavy minerals for examination, quantitative information therefrom is too sparse to support extrapolations other than to clearly demonstrate that metals can effectively be concentrated from the shale with minimal pre-treatment.

Buckton Property Drill Hole BK2: Re-assaying Program 1999

Drill Core Footage			Aggregate	Total Number	Gold (g/t)		
From	To	Length	Sample Weight (gm)	of Fire Assays	Range (Gold g/t)		Weighted Average
(m)	(m)	(m)	Assayed	completed	Minimum	Maximum	Gold (g/t)
60.78	61.13	0.35	65.2	3	0.68	3.41	1.21
61.13	61.46	0.33	112.1	4	0.26	1.86	0.55
61.46	61.78	0.32	110.1	5	nil	0.24	0.19
61.78	62.74	0.96	40.4	2	0.22	1.55	0.67
62.74	67.18	4.44	708.1	28	nil	0.21	0.10
67.18	67.30	0.12	49.9	3	0.05	0.65	0.20
67.30	68.45	1.15	119.0	5	nil	0.12	0.08
68.45	69.61	1.16	114.9	5	nil	0.04	0.03
72.63	72.93	0.30	132.2	5	0.08	0.22	0.11
69.61	70.62	1.01	112.0	5	0.08	0.58	0.13
70.62	77.22	6.60	834.3	34	nil	0.13	0.02
77.22	77.55	0.33	103.0	4	nil	0.27	0.19
77.55	78.44	0.89	109.9	5	nil	nil	nil
78.44	79.15	0.71	193.0	7	nil	0.08	0.03

Notes: (1) Sieved metallics fire assays of non-pulverized samples, Loring Labs, Tintina check assaying program Mar/99; (2) Grades reported which are less than 0.05 g/t should be regarded to be in most part nil; (3) majority of gold reported is from the fine fraction of the sample (<80 mesh).

Table 11: Multiple gold assays, Buckton drill core sample BK02. Tintina check assaying program, Alberta Mineral Assessment Report MIN9928, Sabag 1999, from Tintina Press Release April 19, 1999.

6.3 Previous Work History – Diamond Exploration

6.3.1 Overview

Kimberlite indicator minerals were incidentally noted in, and documented from, stream sediment heavy mineral concentrates during Tintina's stream sediment heavy mineral sampling programs, though not follow-ed up by additional field work. Tintina, however, set aside duplicate samples from many of its stream sediment sampling surveys for future use.

Discovery by third parties of kimberlites and diamonds to the southwest of Tintina's Properties (Legend Kimberlite Pipes; Buffalo Head Hills Kimberlites), and similar contemporaneous Cretaceous shales in Saskatchewan (Fort a la Corne), prompted Tintina to take a closer look at the diamond potential of the Birch Mountains, especially given the availability of sample material it had previously collected therefrom. As initial first steps, a series of heavy mineral suites on-hand were re-examined, additional archived samples were also concentrated and examined, and geophysical work was commissioned.

Dumont's focus is the development of, precious metals, base metals and uranium hosted in the shales identified on its Property. Diamond exploration is, accordingly, beyond the scope of its objectives. The sections following on results from historic diamond exploration work are included in this report for completion (see also Dufresne et al 1994).

6.3.2 Airborne Geophysical Survey

The only aeromagnetic information available from the Birch Mountains, and the Property, predating Tintina's work is coarse scaled national airborne geophysical data series and related maps. Preliminary reviews of the digital regional aeromagnetic data were completed by Tintina during its 1994-1995 regional exploration programs to resolve discontinuities and lineaments, relying also on first and second derivative manipulations of the available data. Potions of the data providing coverage for the Property were previously shown in contoured form in Figures 30 and 31.

Resources Inc., R.Von Guttenberg, Strathcona Mineral Services, July 15, 1999.

A high resolution aeromagnetic survey was commissioned by Tintina in 1997 over the Asphalt and Buckton Zones to better resolve the many structural trends in the area, and to investigate the suspected presence of vents which might be related to diamond indicator minerals discovered in the two areas. The surveyed area consists of an eight township quadrant bounded by UTM coordinates: 451381E-6369640N; 431620E-6369920N; 432331E-6413610N; 451889E-6413460N. The surveyed area comprises the eastern one third of Dumont's Property (Figure 47).

A total of 3,127km of east-west oriented fixed-wing lines were flown by Questor Surveys Limited at a 120 meter terrain clearance with an overall 400 meter line spacing, and north-south oriented tie lines spaced approximately 1,200 meters apart. Data from the survey were processed and presented by World Geoscience. Details of the survey are outlined in a stand-alone report by Questor Incorporated as Appendix E1 in Alberta Mineral Assessment Report MIN9802 (Sabag 1998).

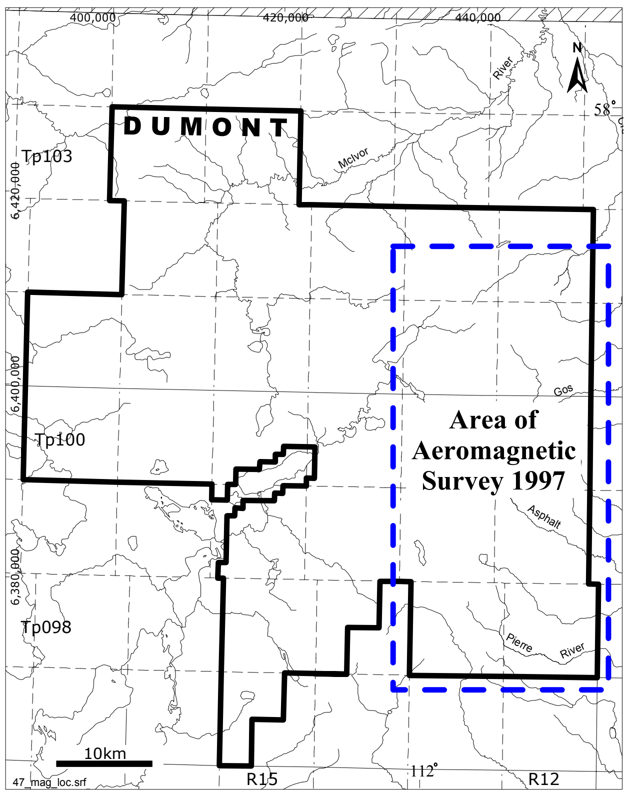


Figure 47: Historic aeromagnetic survey location sketch, Asphalt and Buckton areas, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Contoured Total Magnetic Intensity (TMI) results from the survey are presented in Figure 48, showing also locations of all previous sampling and drilling conducted in the area by Tintina. The area is characterized by a number of broad (5-10km wide) bands of contrasting magnetic relief trending north-northwesterly across the Asphalt Zone in the southern parts of the area, and northeasterly across the Buckton Property in its northern half. The magnetic trends were interpreted to reflect features in the precambrian basement some 1000m below surface.

TMI results exhibit a number of small near-circular or "closed" magnetic features which underlie mineralized or geochemically anomalous portions of the historic Asphalt and Buckton Properties. The most conspicuous of these features are an easterly oblong anomaly at the top of the Pierre River valley over the Asphalt Zone, and a circular anomaly immediately to the north of GOS-1 gossan over the Buckton Zone.

Other magnetic features of interest are: (i) an area of acute high magnetic susceptibility at the southeastern corner of the survey area located to the east of the Asphalt Zone; (ii) a northwesterly broad band of magnetic disruptions paralleling the Asphalt Creek valley and coinciding with the Asphalt-Eaglenest Fault Corridor; and (iii) a series of northeasterly trends which appear to disrupt or offset magnetic contours.

Total Magnetic Intensity (TMI) for the Shallow Pseudo Depth Slice 1 (PDS1), is presented in Figure 49, as a representation of nearest surface variations in magnetic susceptibility which also offer a level of magnetic detail otherwise obscured in TMI contours.

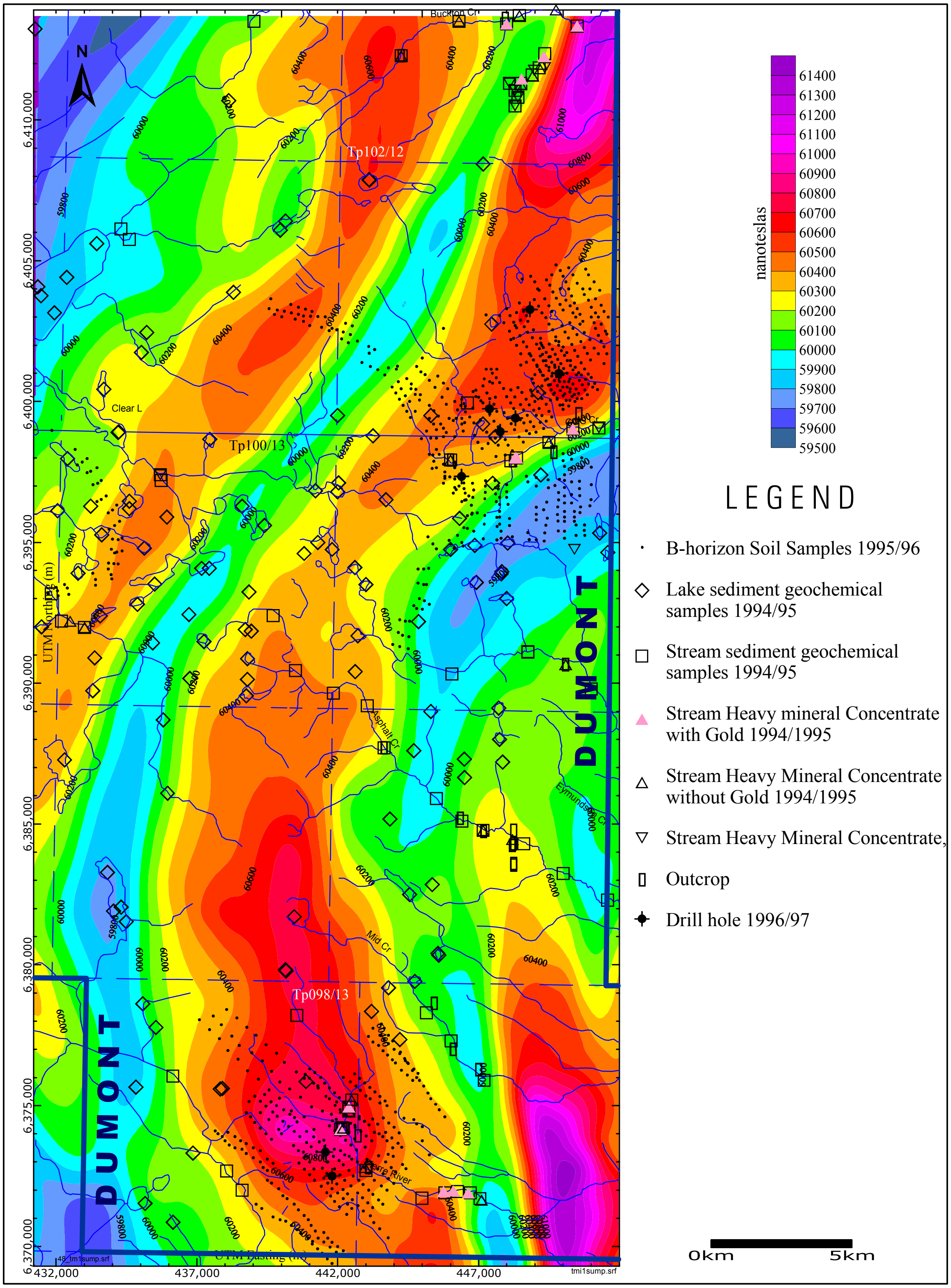


Figure 48: Summary of aeromagnetic total magnetic intensity (TMI) anomalies, historic aeromagnetic survey 1997, Asphalt and Buckton areas. Showing also location of all prior historic sampling in the area, after Figure 59, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

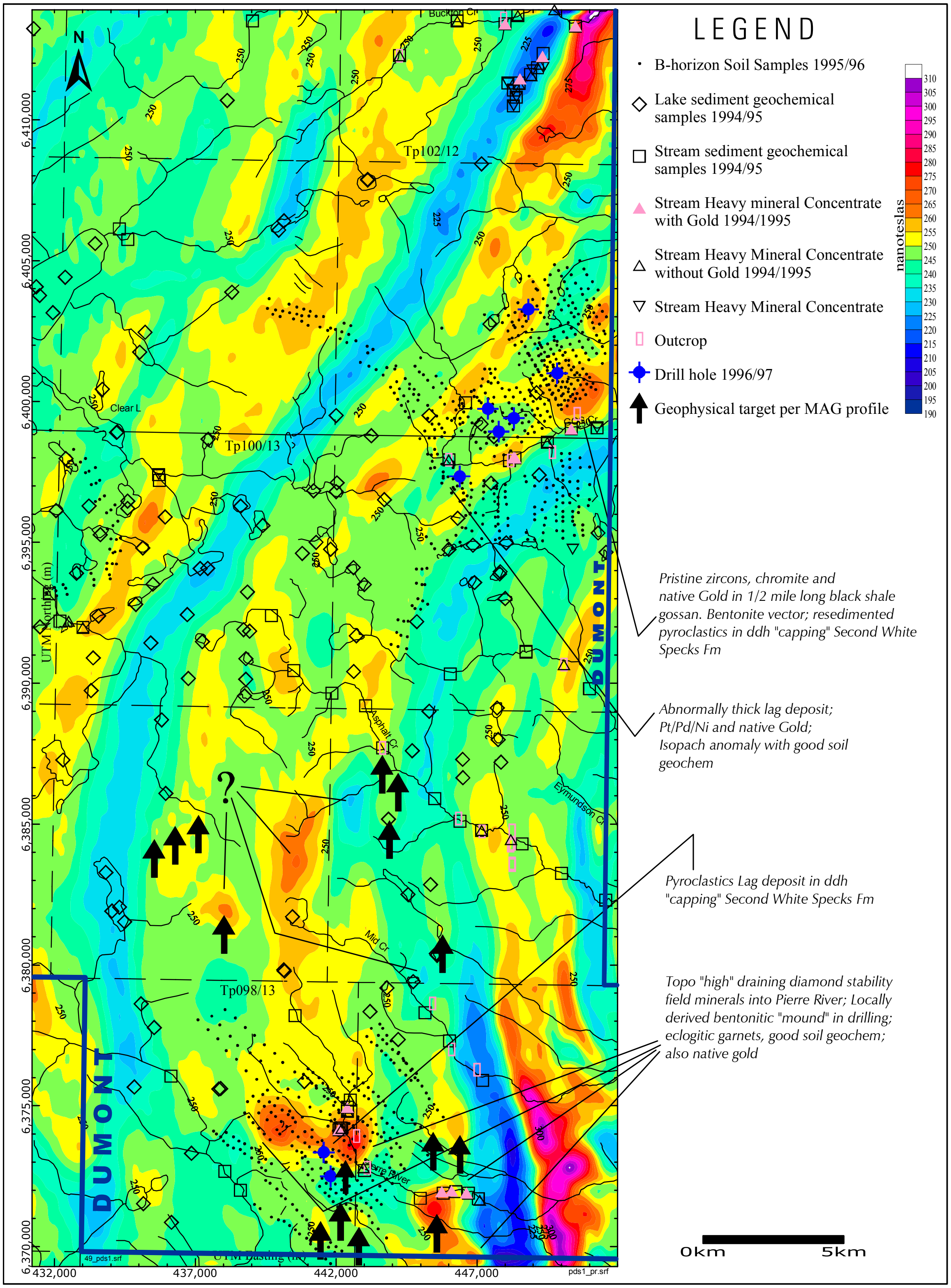


Figure 49: Summary of aeromagnetic shallow pseudo-depth slice anomalies. Historic aeromagnetic survey 1997, Asphalt and Buckton areas. Showing also location of all prior historic sampling in the area, after Figure 60, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

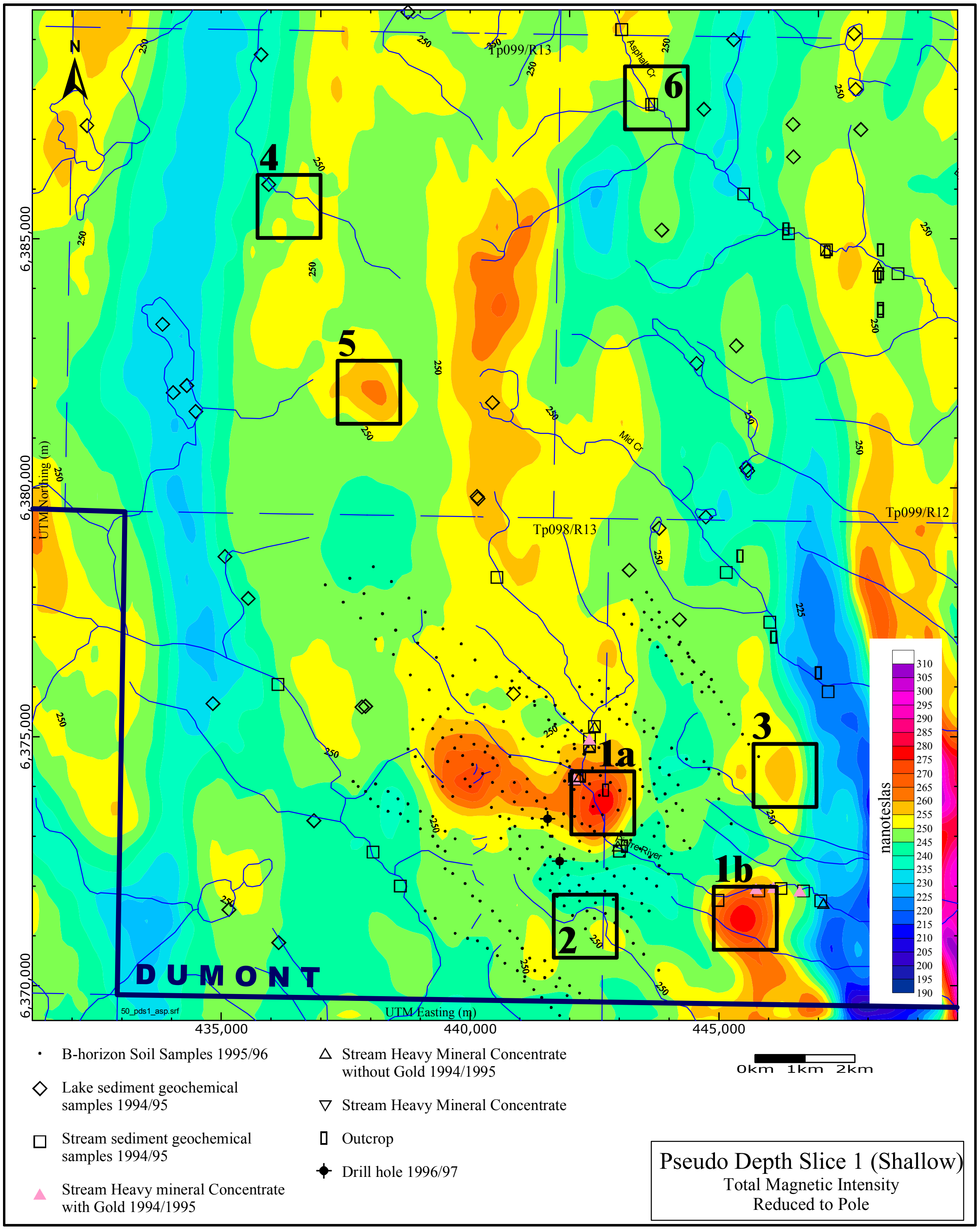


Figure 50: Summary of aeromagnetic shallow pseudo-depth slice anomalies and localities selected for additional field inspection (Oct/97 for kimberlite mineral indicator sampling, Asphalt Zone area). Historic aeromagnetic survey 1997. Showing also location of all prior historic sampling in the area, after Figure 61, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

The airborne geophysical survey results were submitted to Dr.W.G.Wahl, Wahlex Limited, Toronto, for a preliminary review. Wahlex also reviewed heavy mineral concentrates databases and geochemical data compiled by Tintina from previous work in the area, and concluded in its letter opinion and map (appended in Appendix E4 in Alberta Mineral Assessment Report MIN9802, Sabag 1998):

- that diamond stability field minerals were indeed recovered from surface sampling in the area, that same are probably locally derived, and that they are derived from surface exposures of ejecta from diatremes introduced during Cretaceous sedimentation;
- that the diatremes would be reflected in the geophysical data as "blind" intrusives;
- that several small magnetic anomalies can be discerned in the geophysical data indicative of circular intrusives at the precambrian surface, and that two of these anomalies which measure approximately 1500m in diameter are indicative of zoned intrusives at the precambrian surface beneath the Asphalt and Buckton Zones.

Wahlex furthermore identified a number of anomalies to be investigated by field visits, including anomalies in the Pierre River area associated with several conspicuous circular topographic features, and associated also with alluvial gold discovered at several sites immediately downstream in the Pierre River during 1995 stream sediment sampling work (Sabag 1996a).

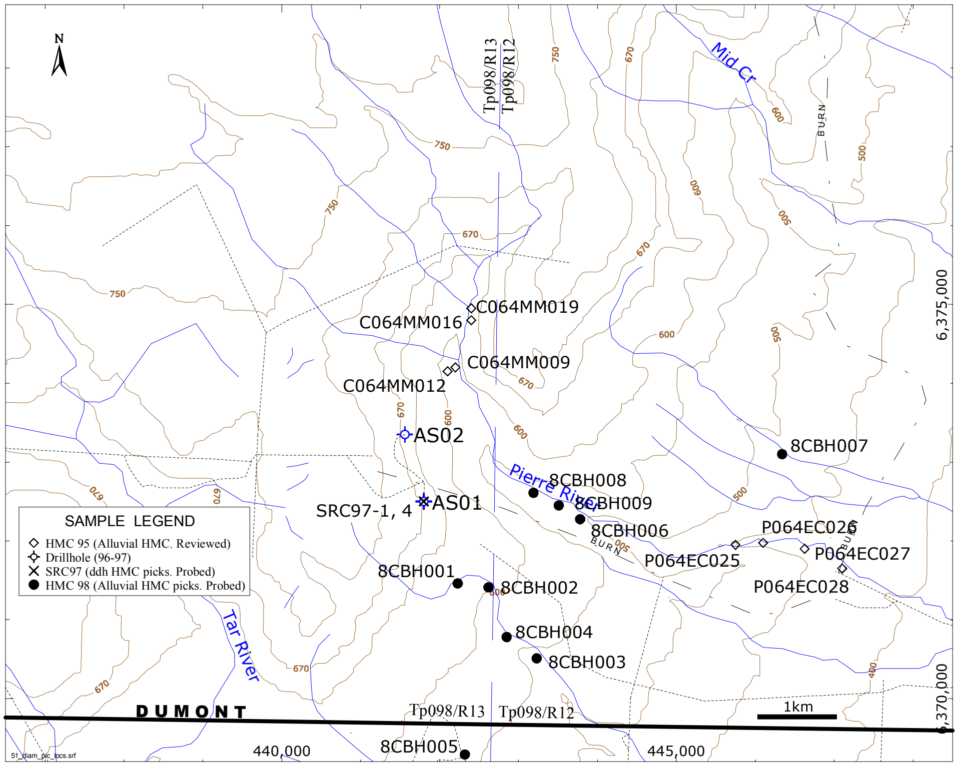
The aeromagnetic survey data were subsequently reviewed in greater detail during the winter 1997-1998 by Mr.M.Dufresne of APEX Geoscience with a view to follow-up field inspection of select areas during the 1998 field season. APEX identified seven general areas over the southern part of the aeromagnetic survey (Asphalt Zone and northern vicinity) for further examination in greater detail in line profiles rather than as contoured data, to locate discreet shallow sourced magnetic bodies such as kimberlitic intrusions or related proximal volcanics. These localities are shown in Figure 50. APEX's findings are outlined in a March 5, 1998, memo report incorporated as Appendix C1 in Alberta Mineral Assessment Report MIN9928, Sabag 1999.

After review of a subset of the data, APEX concluded that several of the magnetic anomalies selected could well be indicative of near-surface intrusions or related volcanics, and recommended that detailed review of all of the aeromagnetic data be completed, complemented by follow-up field work to include surface prospecting, possible ground geophysics and/or drill testing. Some of these recommendations were implemented by Tintina by way of a field resampling program in September 1998 confined to the southern portion of the historic Asphalt Property.

6.3.3 Heavy Mineral Concentrates, Mineral Picks and KIMS

Target areas located in the vicinity of Pierre River selected by APEX following its review of the 1997 aeromagnetic survey results were sampled in September, 1998, and an aggregate of nine large stream sediment samples were collected downstream from Areas 3, 1a and 2. Sample locations are shown in Figure 51. The samples (series 8CBH001-8CBH009) were sized and concentrated at Cominco mineral treatment facilities, Vancouver B.C., and heavy mineral fractions therefrom were subsequently examined and picked by I.M.Morrison Geological Services, Delta B.C.. APEX's field sampling report is incorporated as Appendix C3 in Alberta Mineral Assessment Report MIN9928, Sabag 1999. I.M.Morrison's findings are summarized below, along with findings from other samples also examined by I.M.Morrison minerals picks from which were subsequently analyzed.

Five composite samples were reconstructed from select bentonitic sections of Second White Specks Formation drill core from the Asphalt and Buckton historic drilling programs (Table 12. See also Sabag 1998) to examine heavy mineralogy therefrom. The samples were concentrated and reviewed by the Saskatchewan Research Council (SRC) heavy mineral laboratory facilities. The SRC "picked" many garnets from the mineral concentrates including possible eclogitic garnet from sample SRC97-1.



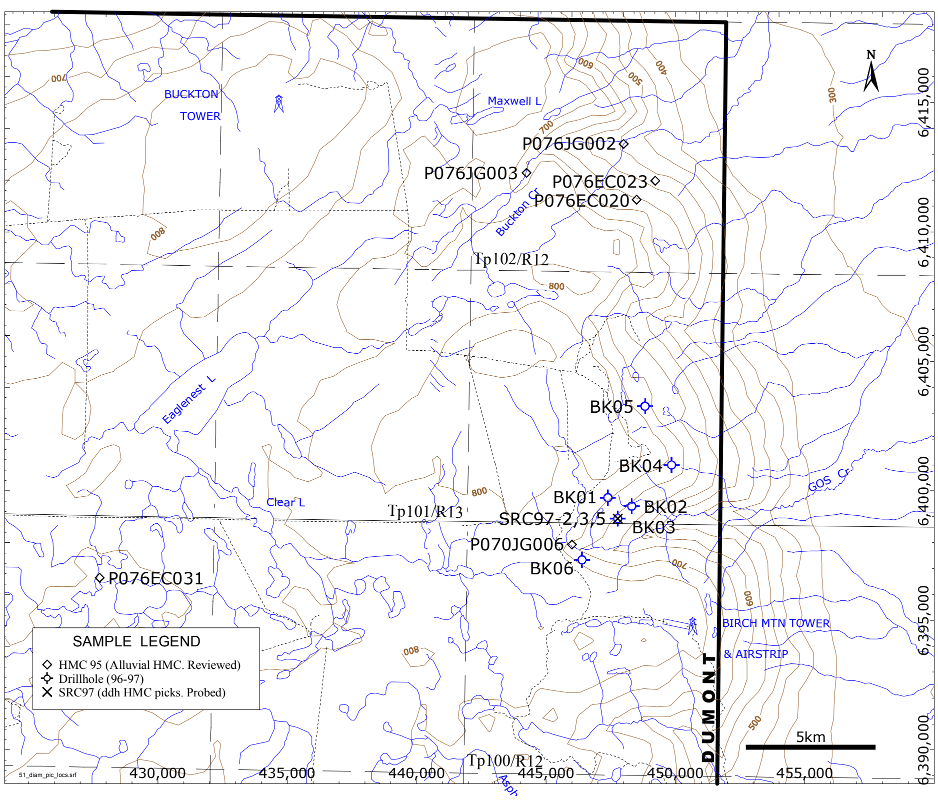


Figure 51: Historic Kimberlite indicator follow-up sampling suites, Asphalt (above) and Buckton (below) areas. After Figures 19 and 20, Alberta Mineral Assessment Report MIN9928, Sabag 1999.

Sample No.	Drill Hole	From (m)	To (m)	Length (m)	Total Weight (gm)	SRC Concentrate Weights (gm) +1.7mm	MAG-mid	MAG-heavy
SRC97-1	7AS01	11.27	14.50	3.23	5735	0.00	1.26	0.54
		15.19	15.28	0.09				
		15.61	17.29	1.68				
		18.39	18.48	0.09				
SRC97-2	7BK03	75.03	78.77	3.74	4568	0.00	1.32	0.21
SRC97-3	7BK03	78.77	84.31	5.54	8066	0.00	0.98	0.31
SRC97-4	7AS01	44.02	45.08	1.06	2458	0.00	0.09	0.01
SRC97-5	7BK03	93.36	97.35	3.99	5180	0.00	0.82	0.04

Table 12: Historic composite samples reconstructed for mineral concentration and picking by SRC 1997. From Table 13, Alberta Mineral Assessment Report MIN9928, Sabag 1999.

Electron microprobe analyses (by Mr.T.Bonil, University of Saskatchewan) for select garnet grains from each of the five composite samples are shown in Table 13. The data were reviewed by Mr.M.Dufresne and included in a September, 1998, memo report by APEX Geoscience appended in Alberta Mineral Assessment Report MIN9928, Sabag 1999).

Sample#	Pt#	Mineral	SiO2	TiO2	Al2O3	Cr2O3	FeO	MgO	MnO	CaO	Na2O	K2O	Total
SRC 97-2	1	G_05_Magnesian_Almandine	38.9	0.09	21.6	0.05	25.8	5.6	0.43	7.8	0.13	0.00	100.4
SRC 97-2	2	G_03_Calcic_Pyrope_Almandine	38.1	0.05	22.3	0.01	23.0	5.8	0.66	10.3	0.02	0.00	100.2
SRC 97-3	3	G_03_Calcic_Pyrope_Almandine	39.2	0.03	22.9	0.00	21.5	6.5	0.57	10.0	0.00	0.00	100.6
SRC 97-3	4	G_05_Magnesian_Almandine	38.9	0.05	22.1	0.00	24.7	5.2	0.81	8.9	0.03	0.00	100.7
SRC 97-4	5	G_05_Magnesian_Almandine	38.0	0.06	21.3	0.05	23.4	4.4	0.95	11.0	0.01	0.00	99.2
SRC 97-4	6	G_03_Calcic_Pyrope_Almandine	39.3	0.21	22.2	0.00	23.6	6.5	0.75	8.3	0.06	0.00	100.8
SRC 97-4	7	Almandine	38.7	0.10	21.9	0.00	31.7	3.6	1.01	4.8	0.05	0.00	101.7
SRC 97-4	8	G_03_Calcic_Pyrope_Almandine	39.7	0.14	22.9	0.00	21.2	7.3	0.45	9.5	0.07	0.00	101.2
SRC 97-5	9	G_05_Magnesian_Almandine	39.2	0.06	22.1	0.02	24.0	5.8	0.55	8.7	0.07	0.00	100.4
SRC 97-5	10	G_05_Magnesian_Almandine	37.7	0.10	21.3	0.02	25.1	3.1	0.84	11.4	0.04	0.00	99.6
SRC 97-5	11	G_05_Magnesian_Almandine	37.7	0.09	21.6	0.04	26.8	3.3	0.67	9.6	0.03	0.00	99.7
SRC 97-5	12	Almandine	37.3	0.12	21.1	0.00	32.1	0.3	1.51	8.4	0.00	0.00	100.8
SRC 97-1	13	G_03_Calcic_Pyrope_Almandine	38.6	0.06	21.9	0.04	22.3	6.5	0.60	9.7	0.00	0.00	99.8
SRC 97-1	14	G_01_Titanian_Pyrope	42.3	0.83	20.9	2.30	9.0	19.7	0.27	5.0	0.07	0.00	100.4
SRC 97-1	15	G_03_Calcic_Pyrope_Almandine	39.1	0.09	22.7	0.00	22.7	5.1	0.65	10.4	0.00	0.00	100.8
SRC 97-1	16	G_05_Magnesian_Almandine	39.1	0.02	22.5	0.03	25.3	5.6	0.54	8.2	0.00	0.00	101.2
SPI pyrope	std	G_09_Chrome_Pyrope	42.5	0.00	20.7	4.86	7.2	19.3	0.42	5.6	0.03	0.00	100.5

Table 13: Historic electron microprobe analytical results (oxide %) for select SRC-picked garnets from historic 1997 drill core samples. From Table 14, Alberta Mineral Assessment Report MIN9928, Sabag 1999.

Based on his review of the data, Mr.Dufresne concluded:

- that the microprobe analytical data indicate that most of the garnets are almandines, with some possible G3 or G5 of possible eclogitic origin, which by themselves would likely not be considered significant, since almandine garnets of crustal origin are common in northern Alberta;

- that one of the orange garnets from sample SRC97-1, reported chemistry consistent with a G1 high titanium (0.83 wt% TiO2), high magnesium (19.69 wt% MgO) pyropic garnet with significant chromium (2.30 wt% Cr2O3), and that garnets of this chemistry typify the macrocryst-megacryst suite of orange pyrope garnets that are commonly found in kimberlites but very few other rock types. Recovery of this single grain from the highly bentonitic Second White Specks shale, which contains little or no detrital clastic material, indicates that it could be derived from an ash fall possibly derived from a local explosive kimberlite breaching surface;

- that recovery of the above G1 pyropic garnet may also indicate that the low iron (<22 to 23 wt% FeO) G3 or G5 almandine garnets could be of eclogitic origin if they are derived from ashes of possible local origin possibly related to the eruption of a kimberlite or a deeply derived alkaline volcanic rock;

- that several of the low iron garnets which reported elevated sodium and titanium concentrations are characteristic of some eclogitic garnets which have been recovered as inclusions in diamonds from elsewhere in the world.

Based on Mr.Dufresne's recommendations several additional suites of samples were selected and submitted to I.M.Morrison during 1998 for detailed microscopy and picking. The samples comprised the following: (i) incidental possible indicator minerals picked by Tintina during 1994-1996 regional reconnaissance field programs; (ii) minerals picked by J.Lourim during 1995 (see Section 6.2.8); (iii) other mineral concentrates previously reviewed by the SRC from drill core footages; and (iv) mineral concentrates from the 1998 resampling over the historic Asphalt property following the geophysical survey. Samples are tabulated below (Table 14). I.M.Morrison's findings are outlined in their stand-alone reports which is incorporated as Appendix C4.1 and C4.2, in Alberta Mineral Assessment Report MIN9928, Sabag, 1999.

Sample	Easting	Northing
5088	435840	6426780
5089	437390	6427440
5062, 9040	440645	6428175
C040WK022	436100	6426950
C064MM009	442200	6374200
C064MM012	442100	6374150
C064MM016	442400	6374800
C064MM019	442400	6374950
MM3	440241	6427919
P032EC029	426150	6394350
P032EC031	427750	6396650
P041MM026	426500	6428700
P041MM028	426400	6428400

Sample	Easting	Northing
P048AT060	439300	6431400
P048AT063	437400	6433400
P048DH003	435200	6434750
P049MM025	426500	6430500
P064EC025	445750	6371950
P064EC026	446100	6371975
P064EC027	446625	6371900
P064EC028	447100	6371650
P070JG006	446000	6397925
P076EC020	448500	6411250
P076EC023	449225	6411975
P076JG002	448000	6413400
P076JG003	444250	6412275

Resampling 198 Suite		
Sample	Easting	Northing
8CBH001	442230	6371460
8CBH002	442620	6371410
8CBH003	443230	6370510
8CBH004	442850	6370780
8CBH005	442320	6369290
8CBH006	443780	6372275
8CBH007	446340	6373100
8CBH008	443190	6372610
8CBH009	443510	6372450

SRC Sample Suite		
Sample	Easting	Northing
SRC97-1	441800	6372500
SRC97-2	447770	6398930
SRC97-3	447770	6398930
SRC97-4	441800	6372500
SRC97-5	447770	6398930

Table 14: Historic samples re-examined for kimberlite indicator minerals, From Table 15, Alberta Mineral Assessment Report MIN9928, Sabag 1999.

In addition to garnets, a number of potential kimberlite indicator minerals were also identified and picked by I.M.Morrison, including chromite, ilmenite, chrome diopside, kyanite, and olivine. Select mineral grains were subsequently analyzed R.L.Barnett by electron microprobe. The analytical results are incorporated as Appendix C4.3, in Alberta Mineral Assessment Report MIN9928, Sabag 1999.

A number of favourable mineral compositions were discovered from the above work in samples of drill core as well as stream sediments, all of which were reviewed in detail by Mr.M.Dufresne. For a detailed discussion of the data, the reader is referred to a report by APEX Geoscience included as Appendix C5 in Alberta Mineral Assessment Report MIN9928, Sabag 1999. APEX's conclusions are excerpted and summarized as follows:

- Important indicator minerals indicative of kimberlite and other related alkaline intrusions have been obtained from bentonitic sections of drill core from drill hole AS01 from the Asphalt Zone, and from BK03 from the Buckton Zone. The indicator minerals include a titanian macrocrystic pyrope, several possible eclogitic garnets, abundant chromites from two distinct trends including a high chrome (>60 wt% Cr_2O_3) mantle derived chromite and one picroilmenite;
- stream sampling from the headwaters of the Pierre and Calumet rivers in the vicinity of drill hole AS01 yielded a high chrome mantle derived chromium diopside, several important high chrome mantle derived picroilmenites, several iron rich chromites similar to those obtained from drill core, as well as a high chrome mantle derived chromite and a high titanium kimberlitic chromite.
- The macrocrystic pyrope, along with the high chrome picroilmenites, high chrome chromites and high titanium kimberlitic chromite are strong evidence that as yet undiscovered pipes of kimberlitic (or very closely related compositions) exist in the Birch Mountains over the historic Asphalt and Buckton properties or their vicinities;

- Likely one or more of the ashes or bentonites within the Second White Specks mudstone intersected in drill hole AS01 from the Asphalt Zone is kimberlitic in origin. The indicator minerals obtained suggest that these kimberlites tapped the upper mantle;
- Stream sediment samples collected from the vicinity of the Asphalt Zone yielded far fewer indicator minerals (particularly chromites) than did samples of drill core from hole AS01, supporting proposal that the diamond indicator minerals derived from the drill core are likely derived from bentonitic units in the Second White Specks and Upper Shaftesbury formations, which are far less voluminous than the enclosing mudstones which represent the bulk of the bedrock underlying the area;
- Although stream sediment samples collected nearest drill hole AS01 and the magnetic anomalies at Target 2 yielded the highest number of indicator minerals, these samples yielded far less indicator minerals than did core samples from drill hole AS01, suggesting that the diamond indicator minerals contained within bentonitic sections of the Second White Specks and Upper Shaftesbury formations are quickly lost and/or diluted downstream;

APEX concluded that more aggressive exploration in search of kimberlite is warranted over the historic Asphalt and Buckton properties. More specifically: it recommended that (i) that the 1997 airborne magnetic data from the area be combined with digital elevation and RadarSat data to help identify prospective kimberlite targets and structures that the kimberlite intrusions may have used during ascent to surface; (ii) that the 1997 airborne magnetic data be reviewed on a line by line basis for a detailed analysis of the "raw" magnetic profiles; (iii) that additional fieldwork be initiated over the area, to include detailed (0.5km) sampling of headwaters of the Pierre and Calumet Rivers as well as the sampling of tills in the area specifically targeting localities in the vicinity of magnetic anomalies identified. None of the above recommendations were subsequently implemented by Tintina.

6.4 Previous Work History – Oil and Gas Exploration

A total of 69 small subsamples were collected by Mr.Leckie of the Geological Survey of Canada (Calgary) from drill holes BK01 and BK02 for Rock-Eval analyses and for a preliminary micropaleontological study. The Rock-Eval results are shown in Figure 52 (after Leckie 1997).

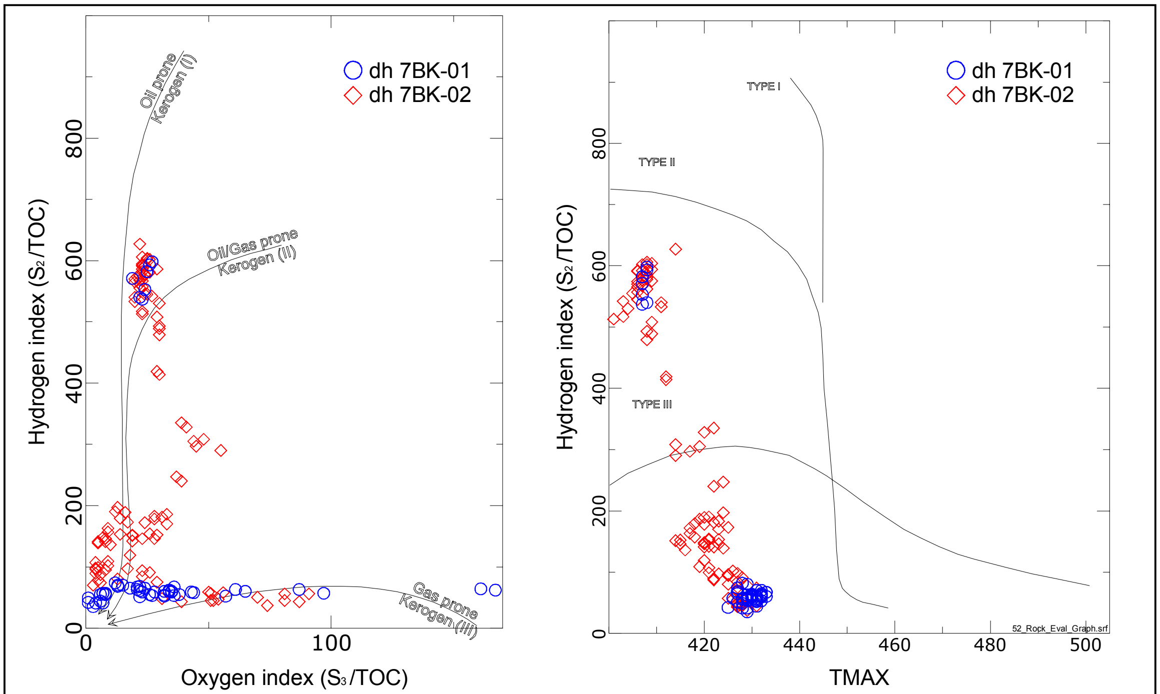


Figure 52: Historic Rock Eval analyses, Buckton drill core samples. Leckie 1997, after Alberta Mineral Assessment report MIN9802, Sabag 1998.

Mr.Leckie had considerable input into the identification of diagnostic criteria particular to the Second White Specks and Fish Scales Formations, all of which were instrumental during logging of often similar looking and apparently featureless material.

The preliminary micropaleontological study revealed an unexpected 4-6 million year gap between the top of the Second White Specks Formation and the base of LaBiche Formation suggesting a period of significant uplift and erosion, and suggesting that the Formation overlying the Speckled Shale in the area is the Lea Park Formation.

Results from Mr.Leckie's study are included as a stand-alone report in Appendix D5.1, in Alberta Mineral Assessment report MIN9802, Sabag 1998. The rock Eval results were presented in Figure 52. The data is beyond the scope of this Report and Dumont's scope which is the search for metals, rather than oil and gas in the area.

There has been exploration in the area for gas in Formations beneath the black shales which are Dumont's targets. There are existing active gas operations over the southwestern corner of Dumont's Property and to its south (Section 15.2).

6.5 SAMPLE ARCHIVES FROM HISTORIC WORK

Considerable sample material is currently archived in storage at the Mineral and Core Research Facility (MCRF), Edmonton, from sampling programs conducted by Tintina. The samples collectively provide a broad variety of duplicate sample material all of which are available for reference, verification and for future testwork. The archives include split drill core from Tintina's 1997 drilling in addition to material from thematic sampling suites, ranging from regional reconnaissance work to follow-up and in-fill sampling, in addition to mineral concentrates from various heavy mineral sampling surveys.

The above sample archives were organized and catalogued by the author who was retained by the Alberta Energy Utilities Board (EUB) and the Alberta Geological Survey in April, 2000, to consolidate all databases and reports from Tintina's work into digital formats for the EUB/AGS, and to organize retrieval of sample duplicates archived by Tintina from its programs for their repatriation to Alberta for archiving at the MCRF storage facilities. A total of some 830 sample archives were retrieved in 57 pails/boxes.

Split half of the entire drill core footage from the 1997 drill program were submitted to the MCRF facility by Tintina in late 1997. Small portions of the footage, confined mainly to Second White Specks intersections, were recalled by Tintina in 1999 during its check assaying work (holes BK04, BK06, BK02 and AS02). Core sections which can be expected to be currently in storage at the MCRF comprise complete footages from four of the eight holes drilled (i.e from AS01, BK01. BK03, BK05) and all, except Second White Specks Formation footages, from the remaining holes.

Dumont completed an inventory (in July, 2008) of core footages archived at the MCRF which would be available for future testwork. All available footages archived were photographed, catalogued and downhole lithology was cross-checked against drill logs by Dumont's senior structural geologist, Dr.J.P.Robinson, PGeo. The split core was found to be in good condition, and the inventory is consistent with the above MCRF records. Holes with sections of Second White Speckled Shale intact are AS01, BK01, BK03 and BK05; holes lacking Second White Speckled Shale sections are AS02, BK02, BK04 and BK06. The inventory noted no significant discrepancy between downhole lithology as documented in original drill logs and that noted in core boxes archived. The inventory noted no evidence of disruption which might be expected to compromise core sample integrity. The MCRF retains no formal record of past review of the core by others.

All of the above material would be available to Dumont for any verification sampling and testwork. Any effects of the possible oxidation of some of the metallic and organic mineralogy, despite the organic matrix of the shales, on future analytical work is unknown.

7. GEOLOGICAL SETTING

7.1 GENERAL GEOLOGICAL AND TECTONIC SETTING

Alberta geology is dominated by sedimentary sequences of the Western Canada Sedimentary Basin which unconformably overlie a relatively stable Precambrian platform with localized zones of reactivation. The sedimentary pile is bounded by the Canadian Shield in the east and the thrust-fold foothills and the Rocky Mountains in the west. The Sedimentary Basin extends southward into the US Great Plains Basin, and many Albertan stratigraphies have US counterparts (Figure 53).

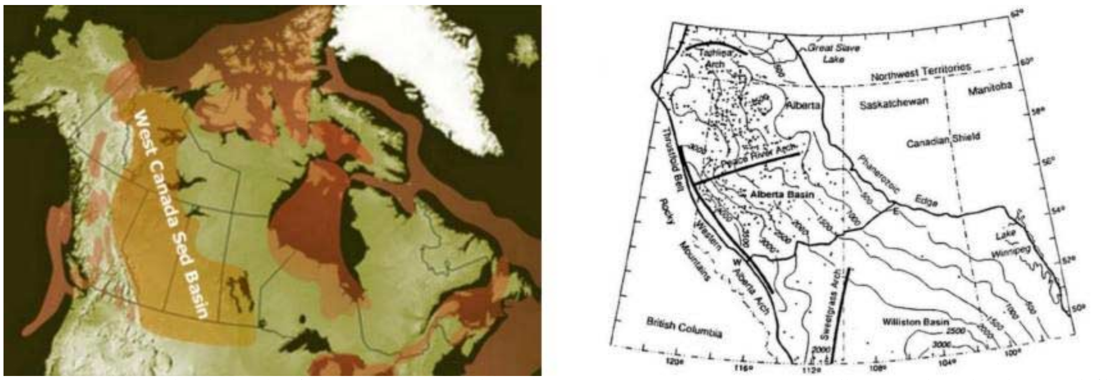


Figure 53: Generalized sketch of the Western Canada Sedimentary Basin (WCSB) across Alberta and Saskatchewan (left). General sketch of WCSB sub-basins after Bachu 1992, showing also Alberta sub-basin (right)

The Western Canada Sedimentary Basin consists of smaller sub-basins separated by a network of arches. One of the sub-basins is the Alberta sub-basin which dominates geology across northeast Alberta, consisting of a wedge of sediments, thickening from 200m in the east to over 6,000m in the west (Figure 54). Gross stratigraphy of the sedimentary pile comprises sediments unconformably overlying the Precambrian shield which is exposed approximately 150km to the northeast of Fort McMurray, and which is buried by progressively thicker sedimentary formations southward and southwestward.

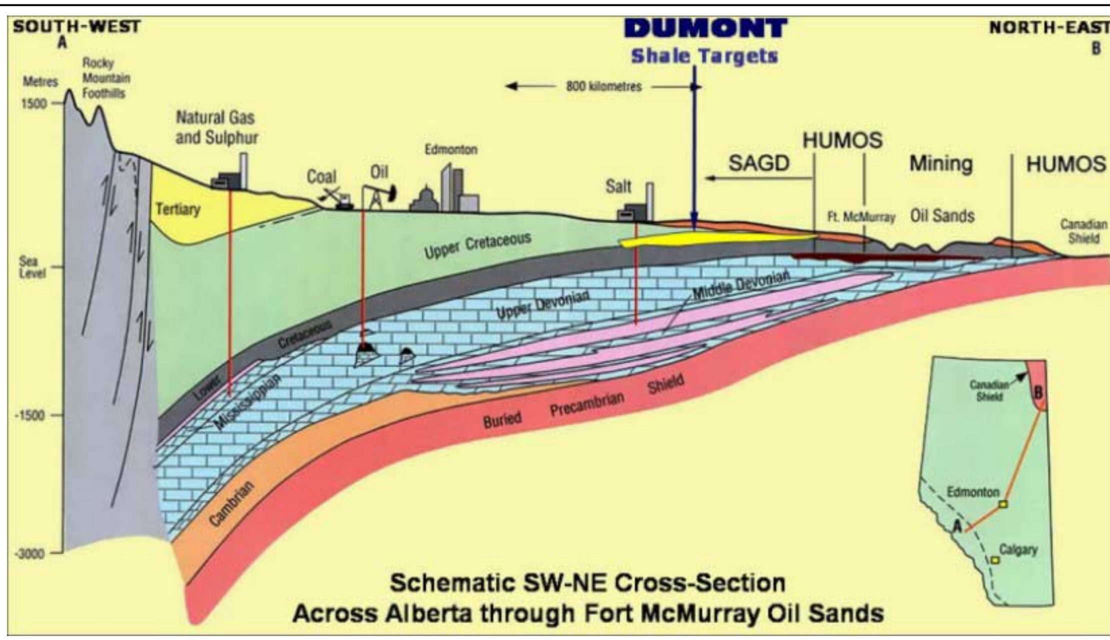


Figure 54: Generalized SW-NE cross-section sketch across Alberta (looking northwesterly).

The Western Canada Sedimentary Basin across Alberta is a prolific source of minerals though it is best known for its hydrocarbon potential, notably for hosting the Alberta Oil Sands Deposits.

Tectonic setting for northeast Alberta is shown in Figure 55. Recognized basement hot-spots are shown in Figure 56. Generalized geology of northeast Alberta and regional cross section are shown in Figure 57.

In broad terms, regional geology of northeastern Alberta is represented by a sequence of substantially flat-lying Devonian carbonates overlain by equally flat-lying predominantly clastic Cretaceous and younger sediments. The Devonian sequences unconformably overlie the Precambrian Shield which is sporadically exposed only in the northeasternmost part of the region near the Saskatchewan border, from whence southwestwards the Precambrian is buried by progressively thicker sedimentary formations of the Western Canada Sedimentary Basin.

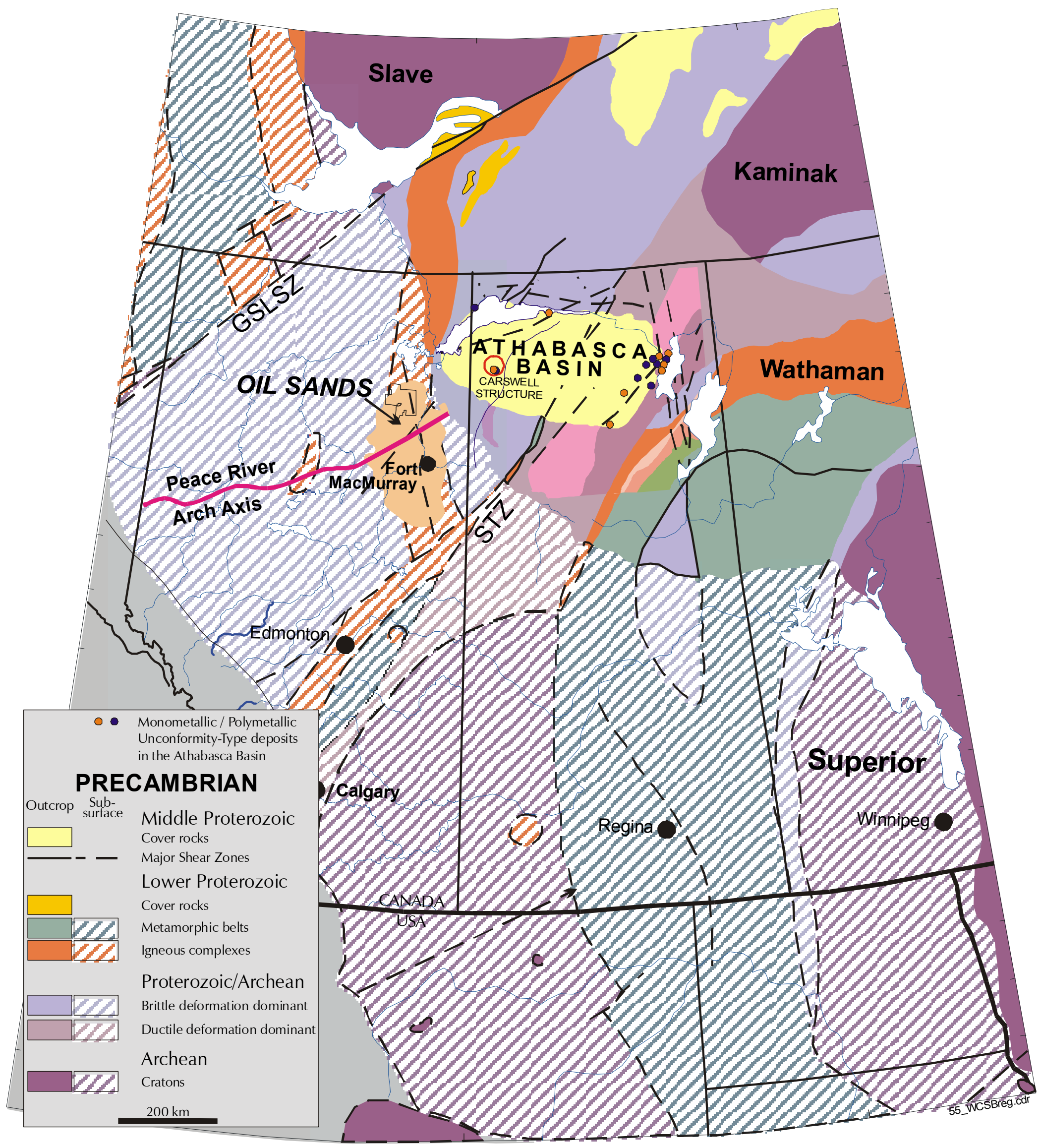
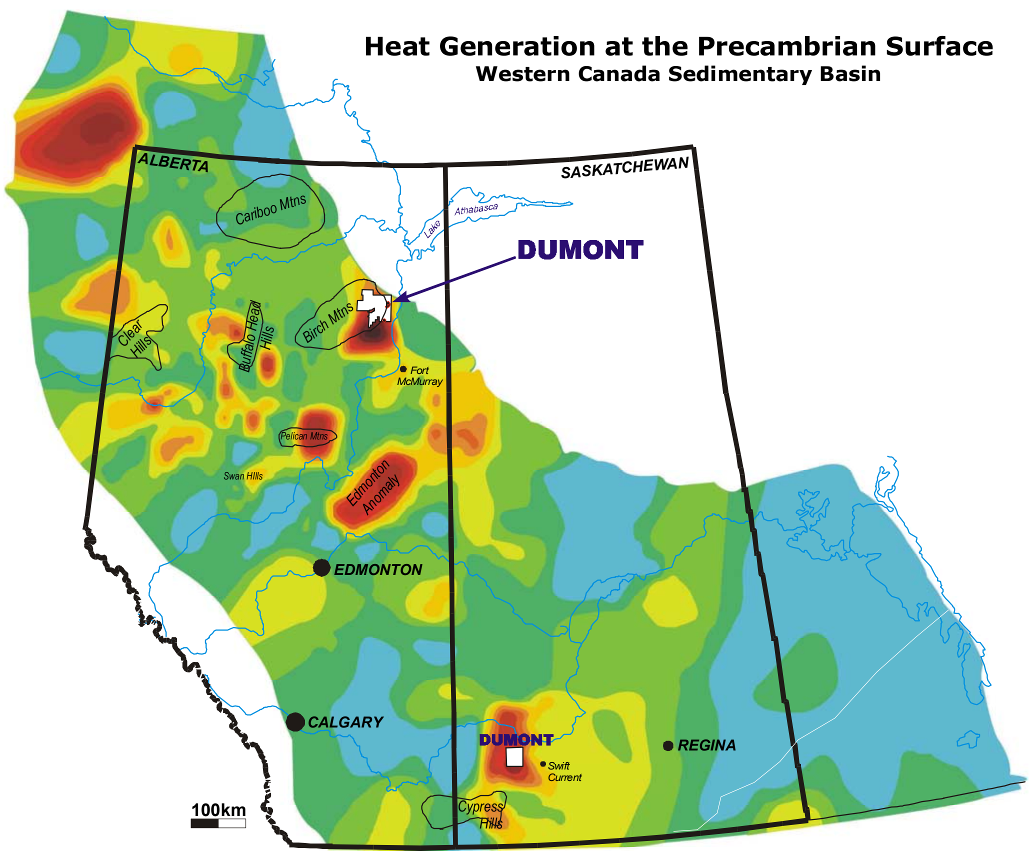


Figure 55: Generalized tectonic setting of the West Canada Sedimentary Basin, Litho-structural units of the exposed Shield, and inferred crystalline basement beneath the Western Canada Sedimentary Basin. STZ=Snowbird Tectonic Zone; GSLSZ=Great Slave Lake Shear Zone.

The sedimentary pile consists of Devonian sequences (carbonates, evaporite and red beds), which are unconformably overlain by Cretaceous clastic sediments, the lowermost of which (McMurray Formation) host to the oil sands deposits. The Lower Cretaceous sequences transition upward through a series of unconformities and disconformities to Upper Cretaceous clastic sequences separated from same by a principal extinction marker (the Fish Scales Marker Bed, Shaftesbury Formation) and a lesser known extinction horizon, the Second White Specks Formation.

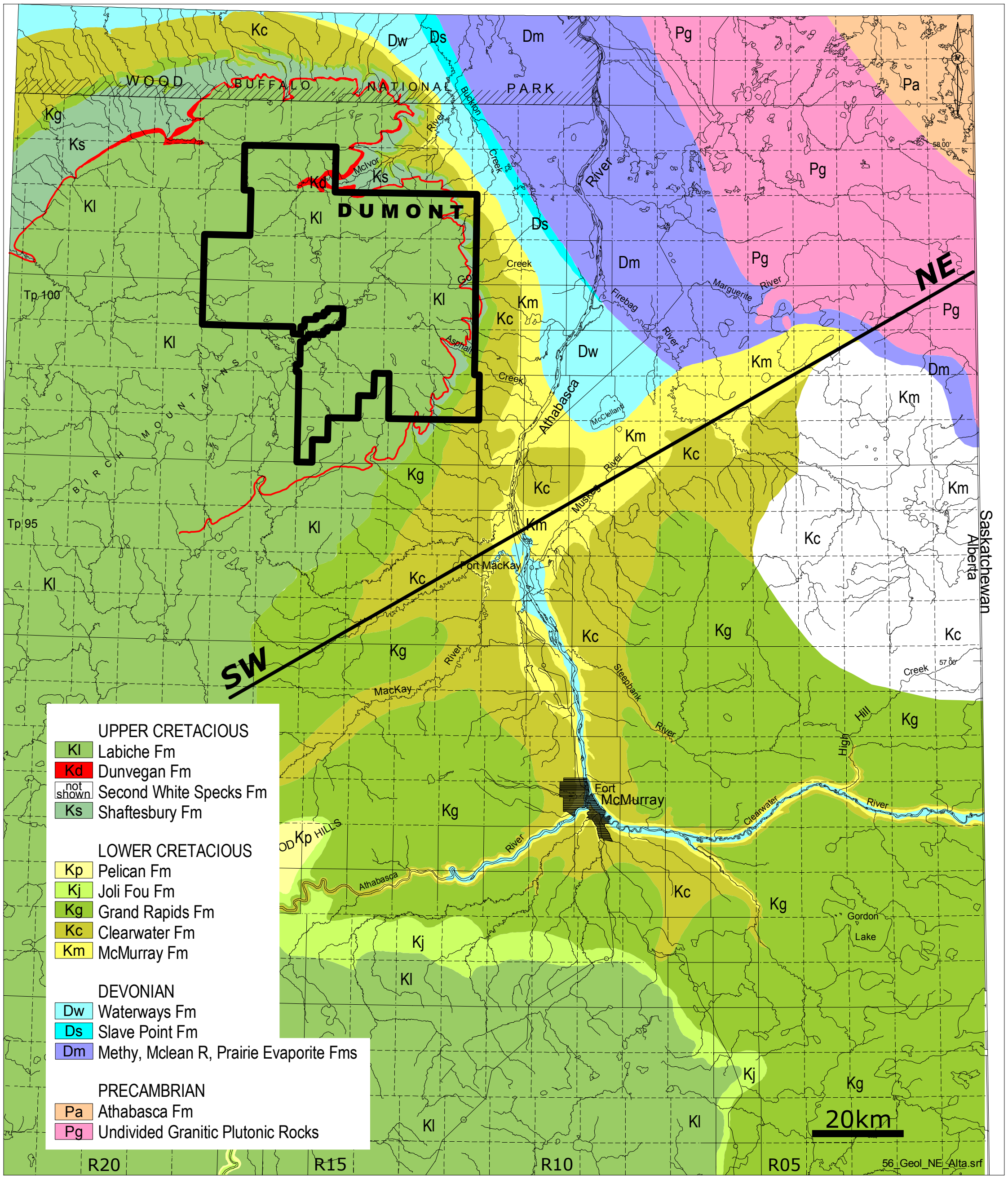
Precambrian rocks underlying the region belong to the Talston Magmatic Arc (TMA) and the Rae Province. The TMA is a major crustal suture zone marking the boundary between the Archean Rae Province to the east and the Proterozoic Buffalo Head Terrain to the west (Ross and Bowring, 1991), and it is characterized by a sinuous aeromagnetic fabric consistent with the geology of its exposed portions in the northeast of the region where large anastomosing mylonitic shear zones cut through large (up to 50km diameter) granitic batholiths intruding 2.0-1.8Ga old ortho and paragneisses. The TMA can be traced north for several hundred kilometers from the Snowbird Tectonic Zone (~100km southeast of Fort McMurray) to the Great Slave Lake Shear Zone where it is displaced to the northeast and continues as the Thelon Magmatic Zone.

A number of "hot-spots" have been recognized in the Precambrian, believed to reflect heat generation by the decay of radioactive elements at the top of the Precambrian basement beneath the Western Canada Sedimentary Basin Property (Mossop and Shetsen, 1994). The Birch Mountains, and the Property, lie over one of the more significant hot-spots recognized.



After Figure 30.2, Geological atlas of the Western Canada Sedimentary Basin, 1994

Figure 56: Distribution of heat generation by the decay of radioactive elements at the top of the Precambrian basement beneath the Western Canada Sedimentary Basin. After Figure 30.2, Geological atlas of the Western Canada Sedimentary Basin; the Canadian Society of Petroleum Geologists and the Alberta Research Council, ARC-AGS 1994. Mossop and Shetsen 1994. Showing also Dumont's Alberta Property, and an additional property it holds in southwest Saskatchewan.



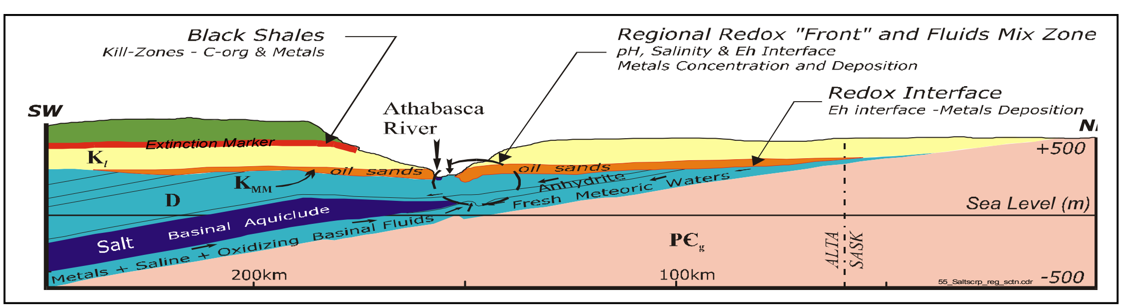


Figure 57: Generalized geological sketch of northeast Alberta, and schematic SW-NE cross-section (Bachu 1993). Geology after Alberta Mineral Assessment Report MIN9611, Sabag 1996a. Second White Speckled Shale is not shown but its trace is proxied by trace of the Dunvegan Formation.

Studies of Basement Heat Flow in the Western Canada Sedimentary Basin (Bachu 1993) suggest the TMA in northeast Alberta to be a relatively young (2.0-1.8Ga) magmatic arc, characterized by high geothermal gradients suggestive of an upper layer of thermal activity in the crust. The studies also show a trend of progressive increase in calculated basement heat flows north-northeastward to a maximum in northeast and northern Alberta. Anomalously high geothermal gradient characterizes the area around Fort MacKay, the outline of which approximates extents of the oil sands region. Similar geothermal anomalies characterize the area over the Great Slave Tectonic Zone underlying the Pine Point deposits.

The overall region is better known for its oil sands operations than for its mineral potential, although co-product metals (V, Ti) in oil sands deposits (and tailings) have from time to time attracted passing attention.

7.2 FORMATIONAL FLUIDS AND BRINES

The Western Canada Sedimentary Basin contains approximately 1.75 trillion barrels of crude oil and is one of the most prolific hydrocarbon domains in the world. Northeast Alberta is within one of a number of its sub-basins, and is located over the northeasternmost "feather" edge of the Basin,.

The Athabasca oil sands deposits are, in general terms, believed to have been concentrated by fluids flowing up-dip from the west-southwest which were trapped into local reservoirs, and were subsequently biodegraded and washed by meteoric waters introduced from local flow systems (Bachu and Underschultz 1993, Hackbarth and Nastasa 1979). Regional geological discussions of northeast Alberta are, accordingly, meaningless in isolation from discussions of formational waters and related processes.

The Devonian Prairie Evaporite Formation, occupying a substantial portion at the mid-section of the stratigraphy in northeast Alberta. It is the most prominent major hydrogeological feature throughout the region, and is a regionally extensive aquiclude which impedes hydraulic communication between surface and near surface (shallow) waters and those flowing beneath it trapped above the underlying impermeable Precambrian basement. Post-Prairie Devonian aquifers and pre-Prairie aquifers are recognized in the region, the latter characterized by northeasterly up-dip flows (southwest to northeast) and the former by flows mostly in response to local physiography. Pre- and post- Prairie fluids have markedly different chemistries. Pre-Prairie flows at the base of the stratigraphy are saline brines and flow within, and through, sedimentary sequences dominated by shales and red-bed sequences, whereas post-Prairie flows are primarily within carbonates (Figure 57). Pre-Prairie fluids are, furthermore, oxidizing fluids which are anomalously enriched in metals - Ni, V, Cu, Zn, Co, U, Ti, Fe, Mn, Au, Ag and PGE (Bachu 1994)[19].

Over portions of the region (e.g. to the north of Fort McMurray), Salt dissolution within the Prairie Evaporite is advanced, and salt removal from the unit is nearly complete to the east of the Athabasca River. The dissolution creates considerable collapse breccias, and the dissolution front (subsurface scarp) represents a major break in the aquiclude allowing the mixing of pre-Prairie formational waters with those above the formation, thereby bringing into contact waters of markedly different salinities, acidity, Eh and elemental compositions.

Transport and deposition of metals is known to be a function of Eh/pH, and their transport is dependent upon the availability of complexing agents such as halides, bisulfate or other organic species. Transporting complexes are highly dependent on, and sensitive to, variations in Eh/pH, and characteristic complexes gain prominence under different chemical conditions. Abrupt changes in ambient chemistry, therefore, present chemical “fronts” which can cause precipitation of metals via redox reactions.

The Prairie Evaporite dissolution front, as well as major structures within, and across it, represents a significant permeability breach allowing hydraulic communication between pre-Prairie metalliferous

[19] Bachu, S. 1994. Distribution of Transitional Elements In Formation Waters in Northeastern Alberta, Bachu S., July 1994, Alberta Geological Survey, Alberta Research Council. Special Study Commissioned by Tintina Mines, included in Appendix A in Alberta Mineral Assessment report MIN9611, Sabag 1996a.

oxidizing fluids with post-Prairie "shallow" fluids, and can be regarded as a chemical environment conducive to the accumulation (precipitation) of metals where: (i) basinal fluids first mix with the shallow waters of markedly different chemistry; or (ii) the basinal fluids first come into contact with (are discharged against) surfaces of contrasting chemistry, especially surfaces of reducing strata such as carbonaceous material (e.g. the oil sands or the black shales). Tintina's historic work programs focused on exploration of the projection of the dissolution front across the region in search for metal deposits along redox fronts.

7.3 STRUCTURAL GEOLOGY

Structural elements in northeast Alberta are represented by a broad variety of regional and localized features, many of which are within the Precambrian but others are confined to the overlying stratigraphic sequence in general, or the Devonian in particular. Many major structures extend into Alberta from neighboring Saskatchewan. Structural highlights are as follows:

- The boundary between the Archean Rae Province (approx. 4Ga) and the much younger Talston Magmatic Arc (approx. 2Ga) is the principal tectonic feature in the region, passing through its northeastern portion. This boundary is known to have undergone some readjustments. Other major Precambrian structures in the area comprise a series of north-northwesterly features, currently only viewed as lineaments, two of which are known downdropped faults and have been correlated from measured offsets in deep oil well data.

- In broad terms, at least three different principal orientations of faulting are recognized in the basement underlying northeast Alberta as follows: (i) northerly trending sinuous shear zones of the TMA (inferred from the aeromagnetic signatures of the area) characterized by mylonites of varying stages of deformation ranging from early, broad, Granulite facies to more brittle, late stage, greenschist facies, many of which structures are suspected reactivations of brittle structures; (ii) northeasterly extension of the Peace River Arch passing through the region, broadly through the Birch Mountains, possibly also with a splay trending through the Fort MacKay area, and seen in northeast trending offsets in aeromagnetic contours as well as in vertical offsets documented from scant drilling; (iii) northwesterly, potentially fluid bearing, faults inferred from faults observed in the Andrew Lake region of northeastern Alberta wherefrom several late stage (cross-cutting) faults with extensive silicification and hematization of crushed country rock have been documented (Langenberg, 1993).

- Studies of jointing patterns within the sediments in the area conclude that several of the patterns are conformable with structures in the underlying Precambrian basement, reflecting also several readjustments in the Precambrian which have been generally recognized (see Babcock 1975, Babcock and Sheldon 1976).

- Younger structures in the area, apparently restricted to the sedimentary sequence, are dominated by a series of regional northeasterly trending faults, several of which pass through the Fort MacKay area and vicinity. The principal member of this family of faults is a dextral strike-slip fault (Martin and Jamin 1963, see also Figure 12) whose location and trend are based on interpretations from stratigraphic correlation of oil/gas well data. Other members of the northeasterly group of linear trends are interpreted per broad surficial features and per major offsets in regional aeromagnetic data, and have not been corroborated by stratigraphic correlations, although it is of note that all metallic occurrences reported to date from the region are from locations which are at, or in the immediate vicinity of, northeasterly features, particularly where these features cross certain other Precambrian trends, or where they intersect the Prairie Evaporite Dissolution front (scarp).

- The limited drilling penetrating the Precambrian suggests that at least some of the northeasterly structures noted in the sediments reflect Precambrian features, and that offsets along the structures also include a substantive vertical component defining a complex horst/graben framework.

- By far the largest zone of disturbance in the region is the **Peace River Arch**, which is a major regional tectonic zone extending east-northeasterly from the Front Ranges in northeastern British Columbia over approximately 750 kilometers across north-central Alberta to the Saskatchewan border. It comprises a 140km wide zone of structural disturbances which were active from as early as the Late Paleozoic to the Late Cretaceous, with no readily discernible aeromagnetic or gravity expression, although a subtle crustal uplift at the Moho, partially coincident with its axis, is suggested by seismic studies. All inidications are that the Arch is not the result of a discrete Precambrian structure but is rather the end product of the confluence of a variety of complex and episodically active structures. The origin(s) of the Arch are poorly understood and mechanisms suggested as to its development range from thermal to entirely flexural (non-thermal) hypotheses. It suffices to say that it represents a deep structural feature with a complex tectonic history characterized by periodic reactivation and episodic crustal extension.

  The Peace River Arch trends across northeastern Alberta within a wide zone passing to the north of Fort MacKay, across the southern parts of the Birch Mountains. Although the sedimentary record in the area suggests that it was an emergent feature during the late Devonian and principally a zone of subsidence during the Cretaceous, work completed by Tintina and the AGS in the 1990's in the Birch Mountains indicate many localized variations, suggesting also that at least portions of the north flank of the Arch were the locus of considerable uplift during the Early-Late Cretaceous transition, coincident with the development of extinction marker horizons and abundant bentonites in the area.

- Other young structures within the region comprise a variety of localized faulting and jointing patterns reflected in surface (and paleo) topography, some of which as linear trends, and others as circular features attributed to salt dissolution sinkholes. A number of the larger (20km-30km diameter) circular features are evident in LANDSAT remote sensing imagery from the region although their nature remains unresolved.

7.4 Glacial Setting

Glacial history of northeast Alberta is complex. In gross terms, multiple glacial advances from the east/northeast/north (Laurentide source) and the west (Cordilleran or Rocky Mountain source) have been recognized, as have been also considerable interactions between the two principal ice directions. (Dufresne et al 1994b)

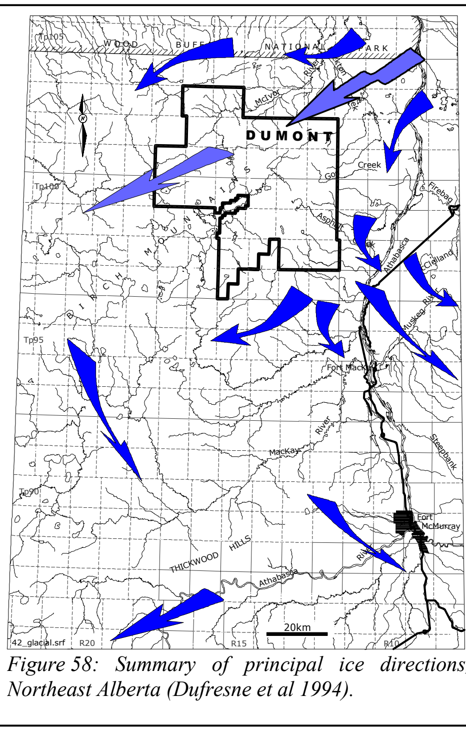


Figure 58: Summary of principal ice directions, Northeast Alberta (Dufresne et al 1994).

Transverse advances in glacial directions in response to localized topography have been documented and recent work suggests that the Birch Mountains have had a significant affect on local ice directions in the area. Generalized principal ice directions are shown in Figure 58.

Principal ice direction throughout the Birch Mountains Area is southwesterly and can be seen in large scale glacial scouring across the area (Plate 8), although ice flow is believed to have splayed around, and over, the Birch Mountains such that crosscutting composite directions are common to its south, manifested as multiple tills.

The reader is referred to various work reports by the AGS toward resolution of Quaternary geology over the region.

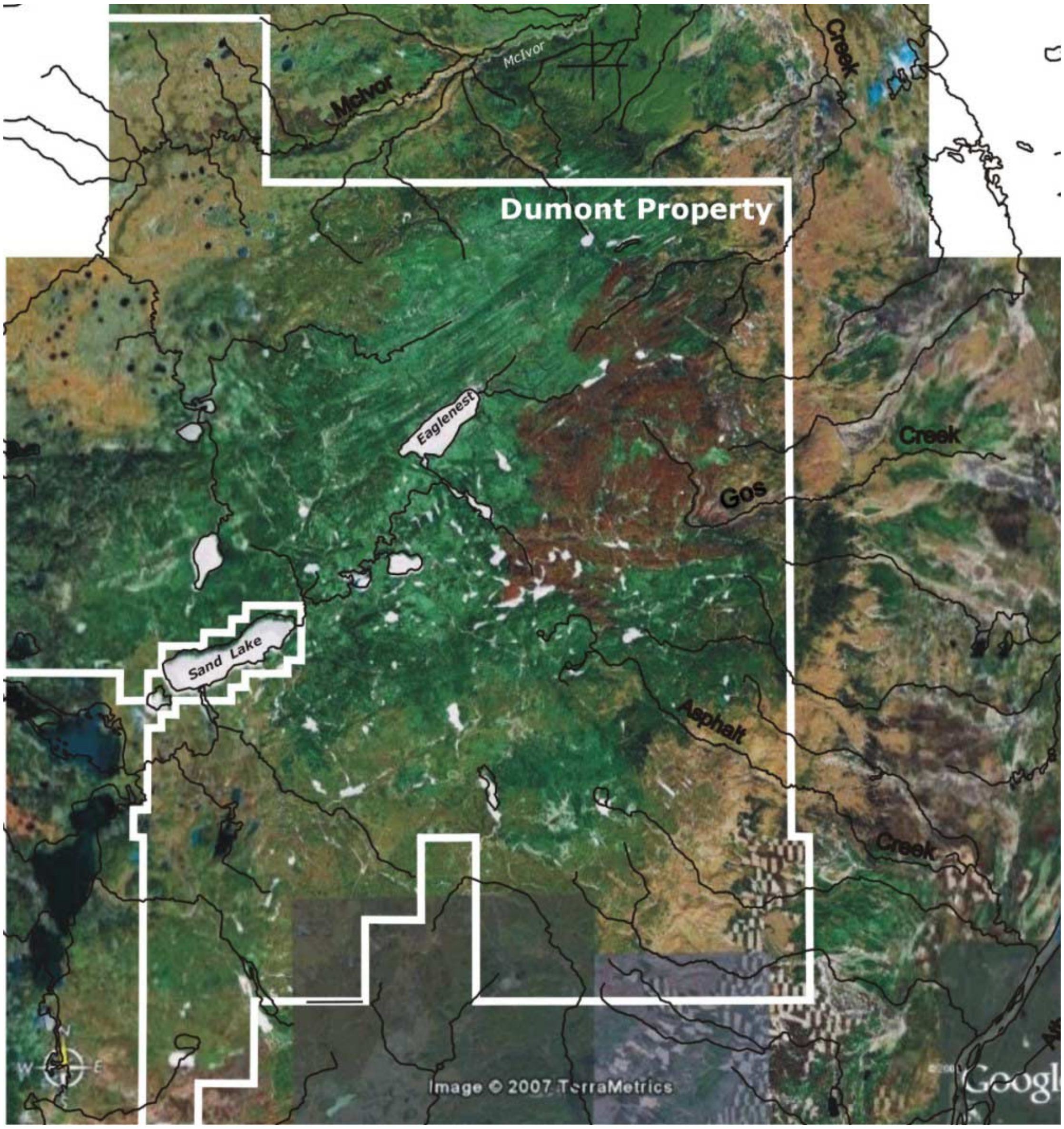


Plate 8: Remote image of the Birch Mountains showing glacial scouring. From Google Earth image bank.

7.5 GEOPHYSICAL OVERVIEW

Regional aeromagnetics of northeastern Alberta are characterized by a series of northerly and northwesterly features, offset along several conspicuous northeasterly trends. Many of these trends extend well into neighboring Saskatchewan.

On a sub-regional scale, aeromagnetics typically define elongate northerly trends of relatively gentle magnetic relief, locally disrupted by abrupt offsets in magnetic contours, by flexures and by dilative features. Many of these features can be correlated with other surficial as well as remote sensing imagery information and are commonly regarded to be manifestations of reactivated structures deeper within the precambrian, many with lateral offsets of 10-30km. Some of the interpreted structures are also suspected to be associated also with considerable vertical movement ranging 50m to 100m.

Preliminary reviews of digital regional aeromagnetic data were conducted by Tintina during its 1994-1995 regional exploration activities to better resolve discontinuities and lineaments (faulting) over the region and across the Birch Mountains, relying on first and second derivative manipulations of the available digital regional data.

Gravity Bouguer Anomalies in the region define many trends corroborated by supporting aeromagnetics, and in general depict Bouguer configurations compatible with horst-graben subsurface geometry suggesting block movements, especially in the general vicinity of, and to the north of, Fort McMurray.

7.6 REGIONAL SEDIMENTARY STRATIGRAPHY

Overall stratigraphy within the region has been documented in most part from subsurface data collected from oil well formational picks due to the scarcity of exposures of the typically flat-lying stratigraphy which can be observed only in river valley walls. A stratigraphic column for the region is summarized in Figure 59, and a regional north-south cross-section is presented in Figure 60 which extends southerly from the McIvor River, across the Property, to as far south as Fort MacKay. A southeasterly section across the Birch Mountains and the Property is presented in Figure 61.

An overview of the sedimentary pile is described below, extending upward from the Devonian sequences at its base, to the Cretaceous Formations which dominate the Birch Mountains and the area under and around Dumont's Property.

Devonian Carbonates

Devonian units immediately overlie the Precambrian across the region, and consist primarily of near flat-lying (dipping ~4° west) Middle and Upper Devonian strata, unconformably overlain by Lower Cretaceous sequences. In the center of the region, in the vicinity of Fort MacKay, the Devonian is a 300m thick sedimentary sequence dominated by siliceous carbonates near the surface giving way, through evaporite and dolomitic rocks, to progressively more clastic units and shales or red-beds at depth, all of which are separated from the Precambrian basement by a thin regolith unit. The Precambrian paleosurface dips gently (~ 5°-7°) to the southwest, such that the Devonian sequence is thinner in the northeast portion of the region where it has an estimated thickness ranging 50m-100m in the Firebag River area.

The Devonian sequence is divided into the **Lower to Middle Devonian Elk Point**, **Middle to Late Devonian Beaverhill Lake** and **the Late Devonian Woodbend Groups**. The Elk Point Group consists of a lower succession of shales, red beds and salts and an upper section of platform carbonates and evaporites. The Beaverhill Lake Group and the Woodbend Group are composed of alternating calcareous shales and argillaceous limestones.

Of particular interest within the Elk Point Group are the **Keg River Formation** and overlying Prairie Evaporite Formation. In the Fort McMurray area, the Keg River Formation has been pervasively altered to sparry tan dolostone and dolomitic limestone, and can be seen in outcrops along the Firebag River just east of the Athabasca River. The Keg River Formation hosts the Pine Point Pb-Zn deposits located adjacent to Alberta's northwest corner.

The Keg River Formation is conformably overlain by an evaporitic succession, the **Prairie Evaporite Formation**, consisting primarily of extensive thicknesses of salt and lesser interbedded anhydrite/gypsum, which thicken to the northwest from 160m to 275m. Thinner intervals along this trend are the result of reef build-ups in the underlying Keg River Formation.

Portions of the salt beds within the Evaporite horizon, have been dissolved and are responsible for the creation of collapse breccias up-stratigraphy. The Prairie salts are a substantive regional feature, known to extend southward into North Dakota, and dissolution within the salts defines a north-northwesterly trending regional linear domain regarded as a dissolution front, or subterranean scarp, to the east of which salt members of the evaporite have been removed (e.g. Fort MacKay is located over the foot of the dissolution scarp, east of which salt removal is nearly complete, and it is believed that some 75m of salt have been removed from the Prairie Evaporite by dissolution).

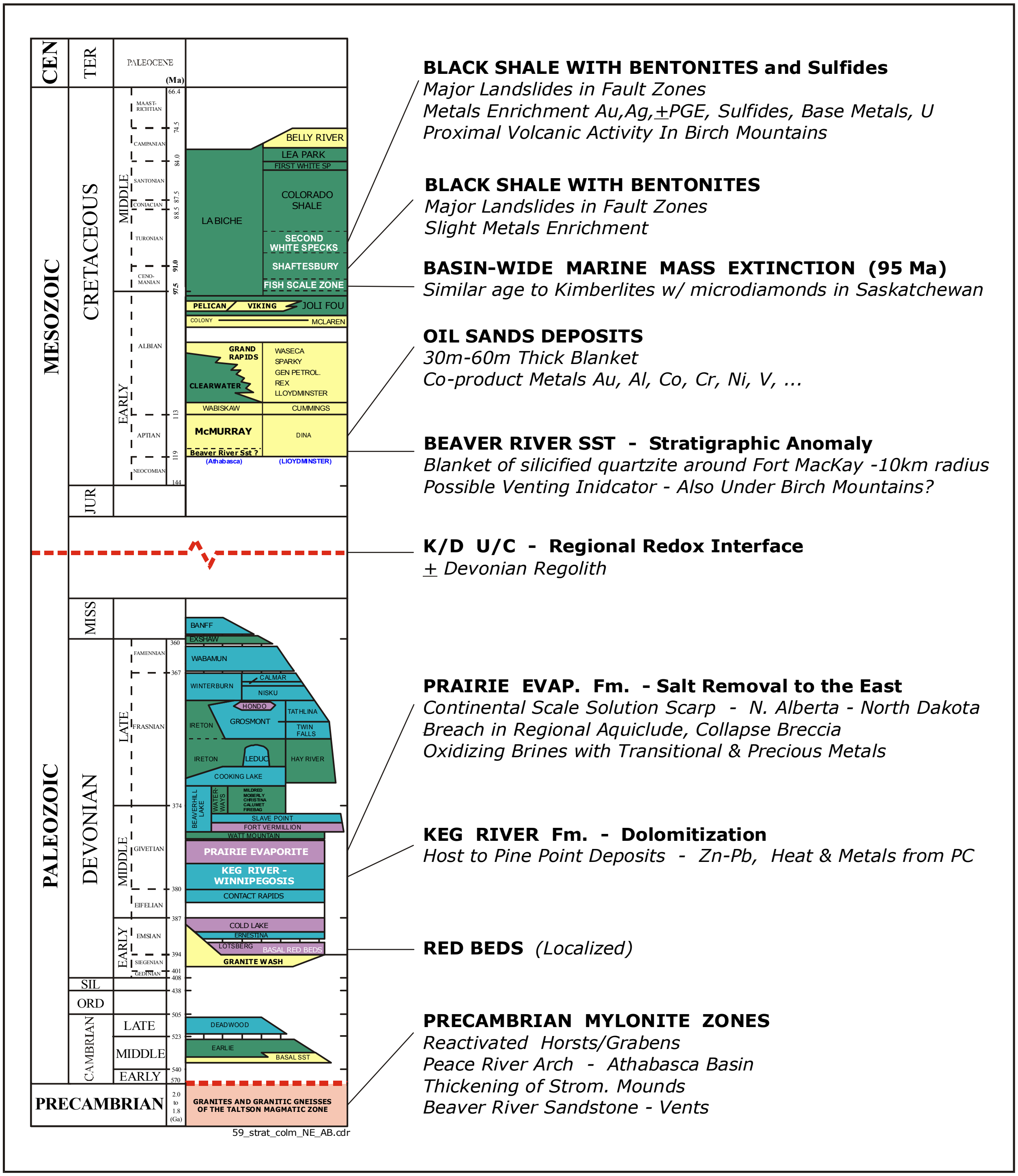


Figure 59: Stratigraphic column - Northeast Alberta. After Figure 14, Alberta Mineral Assessment Report MIN9802, Sabag 1998

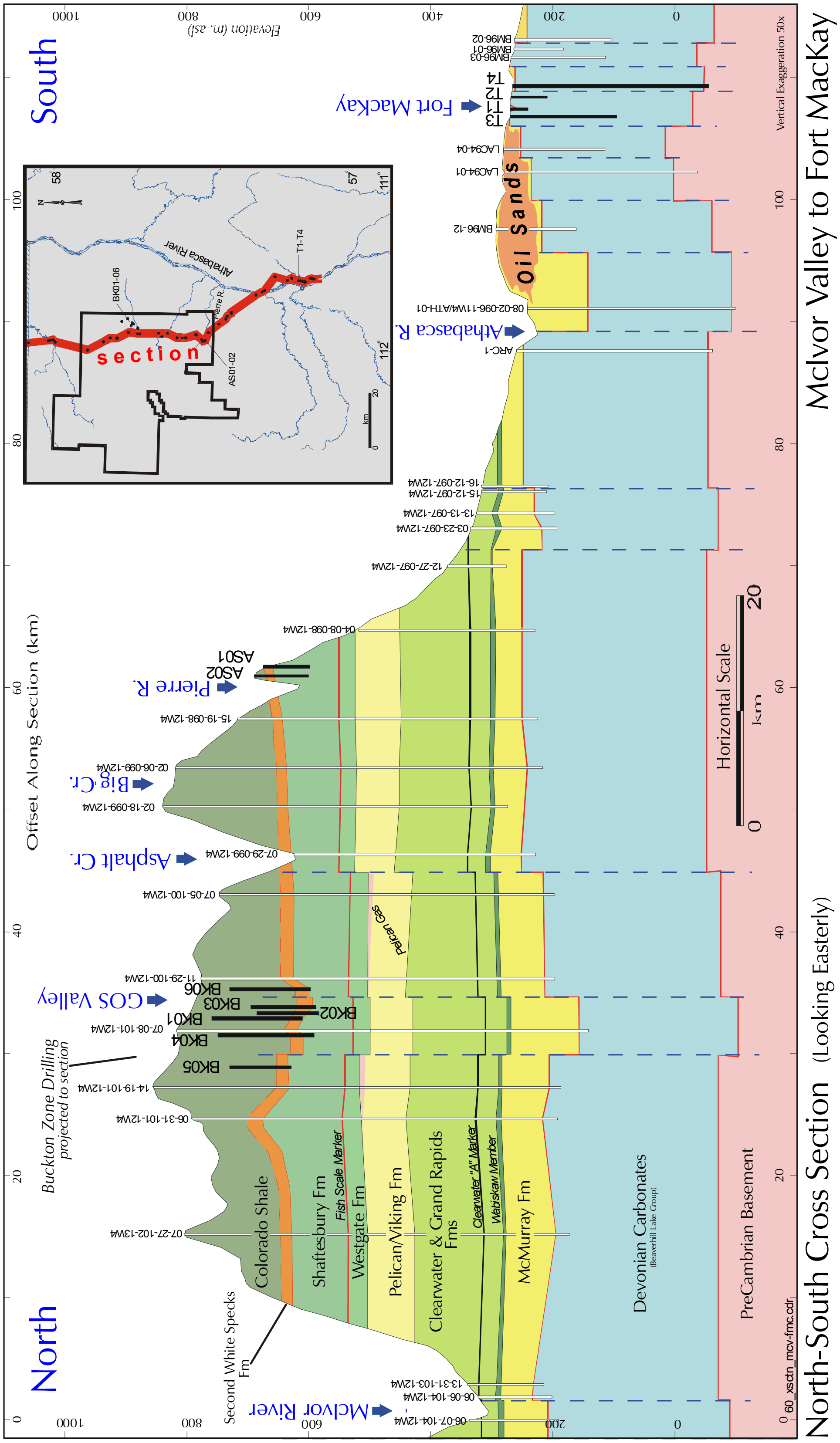


Figure 60: Regional North-South geological cross-section across the Birch Mountains and the Property, McIvor River to Fort MacKay. After Figure 13, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

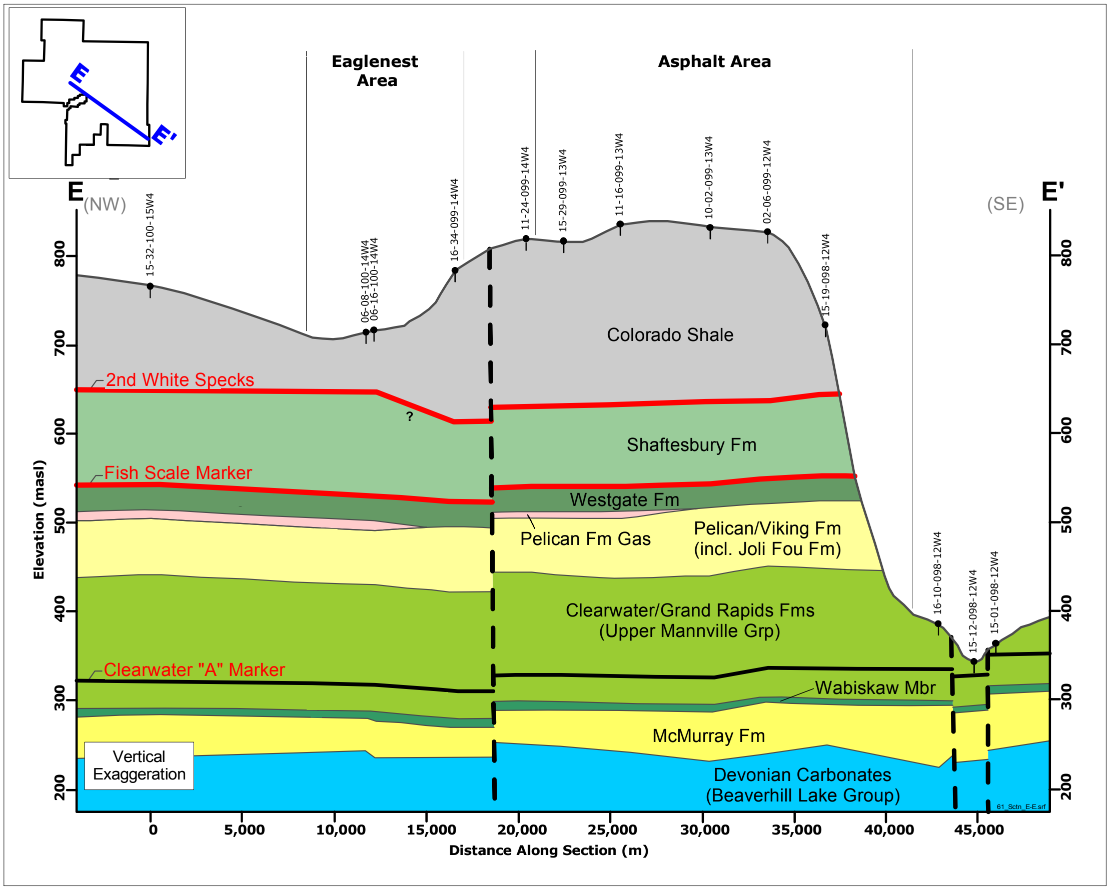


Figure 61: Cross section E-E', southeasterly across the Property. After Drawing D4.3, Alberta Mineral Assessment Report MIN9613, Sabag 1996b.

The eastern lateral boundary of the Prairie Evaporite Formation is the salt dissolution scarp which comprises a 20km-25km wide band extending north-northwesterly across the region from (see Figure 12). The scarp defines an abrupt facies change from anhydrite to salt and has been progressing basinward since the end of Middle Devonian time. Salt dissolution within the Prairie Evaporite Formation has traditionally been credited for the bulk of karsting and brecciation in overlying Formations throughout the region, often to the detriment of the resolution of other structures of purely tectonic affinities.

The Prairie Evaporite represents a principal basinal hydrogeological feature acting as a regional aquiclude below which saline and metal enriched oxidizing fluids flow updip northeasterly into the region until they are discharged along the dissolution scarp representing the main breach in the hydrological system. Leakages of fluids along faulting crosscutting the Prairie Evaporite also provide localized communication between "shallow" waters with deeper formational fluids flowing beneath the sedimentary pile.

Cretaceous Clastics

The **Mannville Group** and the **Colorado (or Alberta) Group** dominate the Cretaceous sequences of northeast Alberta. The two Groups are described below.

The **Mannville Group** represents the first major depositional sequence of the Cretaceous throughout Alberta, following a long period of uplift and erosion of older strata. This Group consists in ascending order of the **McMurray Formation**, the **Wabiskaw** member, the **Clearwater Formation**, and the **Grand Rapids Formation**.

The **McMurray Formation** is the most well known of these units. It is a basal deltaic, quartzitic sandstone deposit which unconformably overlies the Devonian Carbonates. The McMurray Formation hosts the Athabasca Oil Sands deposits, centered around the Fort McMurray area, representing the largest accumulation of hydrocarbons in the world. It attains a maximum thickness of approximately 50m north of Fort McMurray, but thins slightly and undergoes a facies transition to a more terrestrial sequence of shales and coal in the area of the Firebag River. Accumulations of near-economic gas have been known to occur within the Formation.

The base of the McMurray Formation marks the Cretaceous-Devonian unconformity representing a principal temporal marker within the region, though one that is poorly understood and complicated by the localized presence of horizons and rocktypes which represent stratigraphic or temporal anomalies of unknown age and provenance. This unconformity is well-exposed near Fort MacKay, and is occupied by the Beaver River Sandstone, a silicified 1m-3m thick "blanket" of crystalline quartz sandstone of assumed Jurassic or Lower Cretaceous age. This unit, though previously assumed to be confined to the Fort MacKay area, has also been noted by Tintina in oil/gas well drill cuttings at the base of the McMurray Formation from areas of active structural and geochemical disturbances within the Birch Mountains, and interpreted to represent a decalcification marker in areas overlying venting or hot springs activity.

The Wabiskaw member is a transgressive siltstone to sandstone which overlies the McMurray Formation and is part of the transitional sedimentation into the overlying Clearwater Formation.

The Clearwater Formation is a collection of fine grained marine clastic sediments which developed as a result of a transgressive event which saw the end of the development of the McMurray delta. The Formation also contains several shale units used as stratigraphic markers, these include in ascending order (above the Wabiskaw member) the **Clearwater "A" marker** and the **"Regional Marine Shale"**.

The Clearwater Formation grades laterally and vertically into the Grand Rapids Formation which represents the contemporaneous development of a prograding barrier bar complex, which thins to the northwest. The sandstones of the Grand Rapids Formation are easily distinguished from those of the underlying Clearwater Formation due to the usually considerable amount of glauconite and shaley interbeds in the latter.

The Lower to Middle Cretaceous (Albian-Santonian) **Colorado Group** represents the second major clastic depositional sequence throughout the Alberta Sedimentary basin. It consists of a lower section comprising the **Joli Fou Formation**, which envelops the **Pelican** or **Viking Formation**, and an upper section which is dominated by the **LaBiche Formation**. The LaBiche Formation has been subdivided into the **Westgate, Fish Scale, Belle Fourche, Second White Specks**, and **Colorado Formations**. All outcrops mapped and sampled in the historic work in the Birch Mountains, and on the Property, are exposures of the foregoing Cretaceous units.

The various members of the Colorado Group represent depositional events which extended over much of North America over a period of approximately 25-30 million years during a time when sea levels were high and the North American craton was experiencing a regional down warping (Leckie et al, 1992). As a result, the Colorado Group is dominated by marine shales which are occasionally punctuated by coarser sediments deposited during brief high-stands.

The Colorado Group reaches a maximum thickness of approximately 1500m in northwest Alberta and is generally thickest nearer the Cordillera. The erosional edge of the Colorado Group in northeast Alberta is represented by a shale dominated package of strata which reaches a maximum thickness of approximately 450m-500m in the Birch Mountains (the Colorado Group underlies all of Dumont's Properties in the Birch Mountains, and dominates near surface exposures).

The stratigraphy of the Colorado Group is complicated by: (i) different terminologies often used in different areas; (ii) the shale dominated sequence can only be sub-divided by micropaleontological work rather than gross lithologic features, and (iii) the sequence is not well exposed and thus not well understood lithologically, particularly in northeast Alberta. The Colorado group of northeast Alberta is best described, in ascending order, in terms of the **Joli Fou, Viking (or Pelican), Westgate, Fish Scale, Belle Fourche, and Second White Specks Formations** (Bloch et al, 1993).

The Upper Albian **Joli Fou Formation** in northeast Alberta unconformably overlies the Clearwater-Grand Rapids Formations of the Mannville Group, and is composed of gray, non calcareous, marine shale with minor fine to medium-grained sandstone. The Joli Fou Formation is not well exposed in the region.

Sandstones of the **Viking Formation** overlie the Joli Fou Formation and they are more commonly known as the Pelican Formation in northeast Alberta. The Formation represents an eastward thinning wedge of coarse clastic detritus which extends from British Columbia to Saskatchewan. In central Alberta the thickness of the Viking Formation ranges 15m-30m and is known to thicken southward to more than 75m. Within the region, the Pelican Formation represents somewhat of a stratigraphic anomaly as exposures of medium to coarse-grained, clean, quartzitic sandstones, and minor interbedded shales and mudstones, with a thickness of up to 80m have been mapped and sampled in the Birch Mountains (Twp 104, R 13 W4M). The uppermost 5-10m of the Formation are known to locally (e.g. Birch Mountains) carry accumulations of low-pressure gas which are generally uneconomic.

The remainder of the Colorado Group consists almost entirely of shale and mudstone and has been subdivided based on two distinctive basin-wide stratigraphic markers, the **Fish Scales Zone** and the **Second White Specks Zone**. The shales that conformably overlie the sandstones of the Viking Formation, but lie beneath the Fish Scale Zone, belong to the **Westgate Formation** which is described primarily from outcrops in the Peace River area, as a laminated to bioturbated mudstone to siltstone with a thickness of approximately 20m-25m. (Bloch et al, 1993). Above the Westgate Formation are the Fish Scale bearing shales of the **Shaftesbury Formation**, which represents the stratigraphic interval between the Fish Scales Zone and the Second White Specks Formation, and comprises the **Fish Scale Formation**, near its base, and the overlying **Belle Fourche Formation**.

The **Fish Scales Formation** consists of a concentration of fish debris, such as bones, teeth and scales, within shales (and lesser amounts of sandstone) with relatively high total organic Carbon values of 5-10%. It is generally less than 20m thick. The Formation can contain >75% fish debris, and may represent either an anoxic event at the Albian-Cenomanian boundary which prevented the normal decay of the bioclastic material or as a transgressive lag deposit. It is ill understood and poorly delineated.

The **Belle Fourche Formation** overlies the Fish Scale Formation, and it consists of massive shales and mudstones characterized by low amounts of total organic Carbon. A distinctive foraminiferal assemblage, and a lack of bioclastic material set it apart from the underlying Fish Scale Zone and the overlying Second White Speckled Shale (Bloch et al, 1993). The **Belle Fourche Formation**, occasionally also referred to as the Upper Shaftesbury Formation, is not well exposed in the region with the exception of many slump zones throughout the Birch Mountains which contain masses of gray shales and mudstones. Although little detailed lithological information can be extracted from mapping/sampling of the slumps, it is noteworthy that the upper portions of the Shaftesbury Formation are locally characterized by the occurrence of numerous large (0.5m-2m) rounded, calcareous concretions containing abundant sulfides (predominantly FeS) as disseminations and as nodules. Both the shales and the concretions of the Shaftesbury Formation locally contain abundant pyrite nodules which range 0.5cm-5cm and are generally rounded agglomerations of individual crystalline grains.

The **Second White Speckled Shale** (or **Second White Specks Formation**) is another basin-wide subsurface stratigraphic marker within its shales given its radioactivity which can be easily detected in down-hole drill logs. The Second White Specks is so named for the common occurrence of coccoliths. This unit, and its surrounding shales, commonly form large slumping outcrops toward the top of many of the creeks draining the Birch Mountains. It is characterized by a distinctive coarse grained (occasionally conglomeratic), sub-rounded, chert and quartz sandstone which usually contains abundant fish debris similar to that of the Fish Scale Zone. The cherty bioclastic sandstone, referred to as the Siliciclastic Bone Bed or SBB (thus differentiating it from the Fish Scales Marker bone bed - FSMB), ranges in thickness from a few centimeters up to 1.2m, and is normally calcite cemented. Just above the SBB there is usually a thin (approx. 10cm) limestone or carbonate cemented siltstone layer followed by a 5m to 10m interval marked by numerous thin (1cm-20cm) bentonite seams. The shales within this interval are characterized by elevated total organic Carbon contents in excess of 10% by weight. The shales of the Fish Scales-Second White Specks section are also characterized by the occurrence of large (0.5m-2m) rounded, calcareous concretions.

The LaBiche Formation overlies the Second White Speckled Shale, although little can be said by way of a description given lack of exposures in the area and in the Birch Mountains under Dumont's Property. Two small and badly slumping outcrops of massive gray Colorado or LaBiche Formation shale previously observed well above those of the Second White Specks Formation have been assumed to represent LaBiche Shales and the youngest Cretaceous strata preserved in the Birch Mountains area of northeast Alberta. Locally, the LaBiche shales have been eroded due to periods of uplift (eg: micropaleontological examination of LaBiche Formation from Birch Mountains drilling at the Buckton Zone suggests an unexpected 4-6 million year gap between the top of the Second White Specks Formation and the base of the LaBiche Formation, and indicates that shales previously logged/mapped as LaBiche are likely part of the Upper Cretaceous Lea Park Formation.

7.7 PROPERTY GEOLOGY

Dumont's 2,444 square kilometer Property is large and covers the eastern half of the Birch Mountains, including its eastern and southern erosional edges. Geology of the Property is, therefore, also the geology of the Birch Mountains.

To the extent that the historic work completed by Tintina, combined with work by the AGS of the same vintage, comprise the substance of descriptive geological knowledge from the Birch Mountains, discussions of descriptive stratigraphy over the Mountains and under Dumont's Property are extracted from reports by the foregoing groups, all of which has been presented in previous sections of this Report. General geology of the area was previously presented in Figure 57, Section 7.1. Available exposures and stratigraphic lithosections previously mapped in detail and sampled were shown in Figure 26, Section 6.2.10. A stratigraphic column for the Birch Mountains Area juxtaposed with lithogeochemical profiles for select elements was previously presented in Figure 28, Section 6.2.10.

7.7.1 Stratigraphy

Bedrock exposures throughout the Birch Mountains are scarce (<2%) and, given the flat-lying stratigraphy, they are restricted to valley walls of the many creeks and rivers which define incisions confined to the eastern and southeastern erosional edge of the Birch Mountains, forming a narrow 5-10km arcuate lobe. The available exposures throughout the area, nonetheless, enable intermittent observation and sampling across 300m-350m of Cretaceous stratigraphy, extending upward from the top of the Manville to well into the Colorado Group, straddling the Albian-Cenomanian boundary, providing 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. Many of these Formations are eroded to the east of the Birch Mountains and to its south, and their exposures can be seen in cliffs and escarpments along the eastern and southern erosional edges of the Birch Mountains, and in valley walls of rivers and streams draining the Mountains.

The five Formations which have been mapped and sampled in historic work over the Birch Mountains are described below, capturing information from a large area extending north from the vicinity of Pierre River, through Asphalt Creek, across the Buckton Creek area to the McIvor River and its tributaries located immediately to the north of Dumont's Property.

The Clearwater/Grand Rapids Formation can be seen throughout the Birch Mountains area in exposures at the lowest elevations (e.g. KRC-A exposure, to the north of the McIvor River on KRC Tributary, the McIvor-A exposure and the South Tributary). The Formation is generally characterized by thinly interbedded, dirty glauconitic sandstones, silty shales and mudstones with occasional interbedded channel sandstones which range in thickness from 5-50cm and are massive in appearance with occasional cross bedding and contain lags of very coarse grained sand with coal, occasional bivalve coquina, and locally abundant ammonites (e.g.McIvor-A). The interbedded sandstones and shales are locally cut by channel-filled sands which are often carbonate cemented and appear as prominent iron stained pods between 10-50cm in thickness and 1-5m in width. Minor disseminated pyrite has been observed in samples from this unit.

The Viking/Pelican Formation is shown in the regional geology map of northeast Alberta (Green et al, 1970) to be part of the Grand Rapids Formation which is clearly not the case. This Formation has been mapped and sampled in the Birch Mountains at ten lithosections located along Pierre River, Mid Creek, Asphalt Creek, Buckton Creek and Greystone Creek. By far the best lithosections are located in the Asphalt and Greystone Creek valleys. These exposures are characterized by sections of a clean, unconsolidated, medium to coarse grained, well rounded, massive, quartzitic sandstones with minor interbedded shales. The predominance of quartz and its massive appearance are distinctive features which differentiate this Formation from the glauconitic sands of the underlying Clearwater Formation. Based on outcrop and subsurface measurements, the Formation has a relatively consistent thickness in the area varying 40-45m.

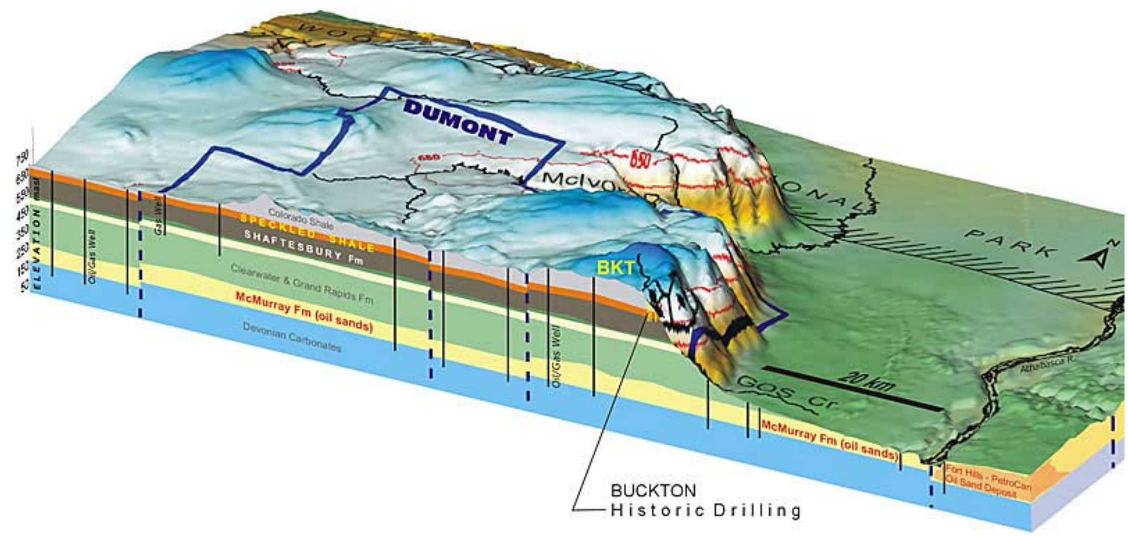


Figure 62: East-West 3-Dimensional cutaway block diagram across the Birch Mountains and the Property, showing also oil-gas wells, generalized stratigraphy and Buckton Zone historic drilling. Information from various Alberta Mineral Assessment Reports, Sabag 1996-1999.

The contact between the Pelican Formation and the overlying Westgate Formation shales can be seen in lithosections Mid Creek-B, Asphalt-A to -E, and Greystone-B, and is characterized by a 5m of interbedded quartzite and mudstone with abundant iron staining which is progressively more pervasive nearer the contact. Minor silicification has been observed at the top of the Formation at Greystone-B, and pervasive iron staining along with massive "manganese wad" development has been noted at Mid Creek-B. While no significant geochemical anomalies have been identified in the Pelican Formation, highlights from historic work include 2 samples from a 1m(±) thick shale bed exposed near the top of the Greystone-B lithosection, with 18.7% and 22.7% organic Carbon. Other highlights include up to 10ppb Au at Asphalt-E, 53ppm Cu and 43ppm Co on Asphalt Creek, 153ppm V at Greystone-B, and 227ppm Zn at Asphalt-A.

The Westgate Formation in the area is represented by a handful of poor exposures of badly slumping shales and mudstones which apparently overly the Pelican Formation and which are devoid of fish debris and can hence be assumed to underlie the Fish Scales (or Shaftesbury) Formation. The Westgate Formation has been characterized (Bloch et al 1993) as a laminated-to-bioturbated, heterolithic mudstone to siltstone that typically contains less than 2% organic Carbon and underlies the Fish Scales Zone (or Formation). Identification of the Westgate Formation from field relationships alone has to date proven difficult due to the lack of a diagnostic lithological break between it and the overlying Shaftesbury Formation, and due to its unconsolidated nature.

The full extent of the Formation is exposed in the Greystone-B section, north of McIvor River, as a massive (20m) poorly consolidated dark gray mudstone overlying the Pelican Formation. The mudstones are interbedded with thin (<1cm) discontinuous (10-20cm long) fine-grained sandstone and siltstone lenses within their uppermost 5m, and the top of the Formation is marked only by the sudden appearance of fish scales. Westgate mudstones are frequently iron and sulfur stained, and yellowish sulfates (jarosites?) can be seen near its base at the Greystone-B lithosection in abundant irregular 2m-4m long and 1cm-3cm wide fractures.

The Westgate Formation is characterized by relatively subdued geochemical variations: Vanadium contents range 50ppm-150ppm and average 115ppm; Zinc contents vary 2ppm-366ppm and average 89ppm; Ni contents range 2ppm-186ppm and average 27ppm; Au and PGE contents are sporadic; and indicator elements such as Cu, Mo, As and Sb are marginally anomalous.

The Fish Scales (or Shaftesbury) Formation is normally characterized as a fish scales bearing mudstone or claystone, with minor associated sandstones and conglomerates, with up to 8% organic Carbon (Bloch et al 1993). The Formation is defined as the stratigraphic interval from the base of the Fish Scales bearing section to the base of the Second White Specks section, and is also referred to as the Shaftesbury Formation, which includes the Fish Scale and Belle Fourche Formations of Bloch et al (1993).

The Fish Scale bearing section is marked by the sudden appearance of fish scales and other skeletal debris in an otherwise massive unit of silty shales and mudstones, representing a conspicuous marker bed - the Fishscales Marker Bed (FSMB). The FSMB, described in sections from the Peace River area as a coarse grained sandstone with large concentrations of fish debris surrounded by organic Carbon-rich shales, is noticeably absent in the Birch Mountains where it is proxied for by fish scales bearing black shales.

Exposures of the FSMB are rare in the area and have been positively identified only at Greystone-B, although other occurrences have also been noted in badly slumped exposures along Asphalt Creek. At Asphalt-F, a section of the Creek is characterized by the presence of an unusual abundance of friable float slabs and blocks up to 5cm thick, composed of a concentrated bed of fish scales (>80% by volume) (e.g. samples F067AT222 and F067AT257, Sabag 1996a), at an elevation of approximately 530m, consistent with projected FSMB exposure per oil well picks compiled in the subsurface stratigraphic database. The exposure is located well away from exposures of the overlying Second White Specks Formation. Samples of this material are characterized by up to 5% P; 16% Fe; by slightly elevated base metal concentrations; by elevated Pt, Pd, Mo, As and Sb; and 20ppb and 17ppb Au.

Lithogeochemistry of the FSMB, to the extent represented by the scant surface sampling collected throughout the Birch Mountains, show it to be a potential trap of metals with an apparent correlation between the better metal contents with the higher C-org content of samples. While the samples indicate that the Formation is enriched in metals relative to underlying units, U and Th concentrations are surprisingly low and insufficient to produce the typical radioactive anomaly characterizing the FSMB picks in oil well down-hole geophysical logs. U and Th concentrations average only 10.2ppm and 9.9ppm, respectively, and only 3 of 57 historic samples collected report U exceeding 50ppm. It is likely, therefore, that the FSMB as "picked" from well logs is not fully exposed in the Birch Mountains area, or that same has not yet been definitively located.

Geochemically significant anomalies from the FSMB have been identified at the Greystone-C exposure, reporting upward to 10.5% C-org, 117ppm Cu, 228ppm Ni, 942ppm V, 761ppm Zn, and 12ppb Au. While very anomalous relative to other samples from the FSMB within the region and those from all other Formations, the exposure may be material slumped from the overlying Second White Specks Formation.

Of particular significance is the presence throughout select localities in the Birch Mountains area of spherical and quasi-spherical carbonate concretions ranging in size upward to 2m spatially associated with the FSMB. The concretions consist predominantly of black calcite and carry considerable sulfide mineralogy as disseminations of predominantly FeS and as pyrite nodules ranging in size upward to 5cm, consisiting of aggregations of crystalline grains. In addition, presence of concretions typically characterize all exposures located by tracing sulfide-rich alluvial material upstream, especially those carrying also alluvial gold. By far the best location to observe the carbonate concretions is KRC-B wherein gravel bars along the KRC tributary to the McIvor River host countless carbonate concretions surrounded by alluvial material consisting of upward to 50% sulfides. Carbonate concretions can also be seen at the Greystone-B lithosection, strewn about in slumped shales and muds carrying also considerable pyrite nodules.

The Second White Specks Formation is described by Bloch et al (1993) from outcrops in the Peace River area of northwest Alberta and from sub-surface data from around the Alberta Basin as consisting of a calcareous shale or siltstone with organic carbon rich shales commonly associated with a bentonite up to 20cm thick, in turn associated with a carbonate concretionary layer. With the possible exception of an abundance of carbonate matrix, the Second White Specks Formation has been identified at many exposures throughout the Birch Mountains, and it is relatively well exposed in the creeks and rivers. The Formation has been mapped and sampled at exposures between the 600m and 650m elevations (asl) along Mid, Asphalt, Gos, Greystone, and Current Creeks.

Asphalt-H, located toward the headwaters of Asphalt Creek, represents a typical section of the Second White Specks Formation in the area, consisting of a succession of lithologies commencing at the bottom with a Siliciclastic Bone Bed (SBB) characterized by a coarse grained, sub-rounded, poorly sorted, carbonate cemented, black chert and glassy quartz sandstone, which often contains large concentrations of fish debris. A thin, 10cm-20cm thick, carbonate concretionary unit overlies the SBB (normally within ±1m), and is itself overlain by bentonite or a zone of bentonitic shale.

At Asphalt-H, a distinct zone of bentonites are evident immediately above the SBB, continuing for 3m-5m up-section, in which the thicker bentonite seams are, upon close inspection, seen to be composed of countless thin bentonites in a 15cm-20cm zone. The bentonites are hosted in a shale matrix with variable C-org content ranging from trace upward to 29% (avg 3%). Calcareous shales are patchy at Asphalt-H, although several sections were found to contain white specks or coccoliths and fossils such as fish debris including teeth (shark?), bivalve coquina, and Inoceramus imprints.

Whereas the SBB in the area typically varies in thickness 10cm-20cm, it attains a thickness exceeding 1m at the Gos-C lithosection exposure, near the Buckton Zone, wherein it is also associated with metals enrichment in surrounding shales (Gos-C is at the eastern flank of a principal stratigraphic disturbance in the area). It is of note that SBB has been documented in the area from several elevations varying 600m-640m (asl), and that the variations are probably the result of multiple slumping. Repetitive sedimentary/extinction events cannot, however, be entirely ruled out.

Samples of the Second White Speckled Shale Formation have to date reported by far the most anomalous concentrations of base as well as precious metals from the Birch Mountains, in addition to yielding native gold grains from certain localities (e.g.GOS1 gossan, Gos Creek-C and Current Creek). Geochemical anomalies identified from the Formation define relatively systematic base metal enrichment zones, dominated by Ni-Cu-Mo-V-Zn (±U-Co-Cd-Ag-Au), spatially associated vertically with the more carbonaceous sections immediately overlying the SBB, and a suggested lateral association with proximity to certain faults in the Birch Mountains. Considerable intraformational geochemical inhomogeneities notwithstanding, Asphalt-H, GOS1 and Gos-C present by far the best metal enrichment localities documented from the Second White Specks Formation in the area.

7.7.2 Structural and Stratigraphic Disturbances and Anomalies

A number of large stratigraphic anomalies were identified by Tintina's stratigraphic model and subsurface database over the Birch Mountains based on interpretations from drill logs from historic oil-gas drilling. These were presented earlier in this Report (Section 6.2.4 and 6.2.5). They fall broadly into three categories as follows:

- isopach anomalies representing abnormal thickening of the Cretaceous stratigraphic pile, or its uppermost portions, only locally associated with karsting in the Devonian, but more often associated with interpreted readjustments in Precambrian faulting and suspected arching active well into the mid-Cretaceous. These anomalies would also be compatible with existence of very localized venting by way of hot springs, volcanic vents or pipes;

- linear, predominantly northeasterly, trends reflected as sharp lateral discontinuities in structural contours of lower as well as middle Cretaceous well picks, interpreted to represent rotational faulting with possible considerable strike-slip component;

- localized closures in structural contours particularly in the top of the Devonian, all of which interpreted to represent advanced karsting.

Stratigraphic anomalies identified in historic work on Dumont's Property are incorporated into the compilation sketches from anomalous areas presented in Section 6.2.11 of this Report, either as interpreted faults zones, fault block boundaries or as "closed" features contoured based on the data from the subsurface stratigraphic database. The "closed" shape of some of the anomalies may be an artifact of contour noding and it is possible that they reflect faulted blocks, although the closed shapes have support from coincident roughly circular domed topographic relief features.

It is of special note that nearly all of the historic surface geochemical and mineral anomalies discovered by historic work on the Property are in structural zones which are interpreted based on stratigraphic disturbances (e.g. Asphalt-Eaglenest Fault Zone), or are on the flanks of circular (domed?) stratigraphic disturbances (e.g. Buckton and Asphalt polymetallic Zones). These are discussed in Section 19 of this Report. Should the "closed" shaped stratigraphic anomalies ultimately be demonstrated to represent faulted blocks rather than domes, considerable significance would be placed on fault junctions, and junctions among fault swarms, as prospective and likely conduits for any volcanic exhalative venting in the Birch Mountains and on the Property. The many fault junctions on the Property, accordingly, present high priority future exploration targets for volcanic vent related exhalative mineralization on the Property.

8. Deposit Type

8.1 Classification

The metal enriched Second White Speckled Shale Formation and the Shaftesbury Shale Formation meet all textural and compositional criteria to be classed as bona fide "black shales" in the strictest of sense, and the Second White Speckled Shale Formation meets test criteria for classification as a "metal enriched black shale".

Metal enrichment in the Alberta metalliferous black shales is, furthermore, compatible with the Rift-Volcanic Type of metal enrichment style recognized from black shales worldwide and is, accordingly, so classed. The classification is supported by (i) relatively thick tabular geometry of the metalliferous black shale layers alternating with layers of ejecta material (bentonites and pyroclastic material); (ii) Ni/Cu ratios; (iii) spatial association of metal enrichment zones with suspected venting (volcanic centers); (iv) predominance of V-Zn-Cu mineralization over Ni-Mo-PGE.

8.2 Black Shales, Mineralization Types and Alberta Analogues

Black shales series worldwide represent important hosts for the concentration of immense metallic mineral resources, especially for precious metals (Au, Ag, PGE), transitional metals (Mo, Cu, Ni, Cr, V and Zn) and Uranium. They also provide extensive sources of hydrocarbons and have attracted intermittent interest over the years, especially during the past two decades, as a long term source of metals.

Black shales are generally regarded to have been deposited within anoxic deep water depositional environments, although they can be formed in a broad variety of depositional environments ranging from fresh to estuarine to marine waters with conditions ranging from anoxic to oxic (Quinby-Hunt and Wilde, 1996). All black shales are not metal enriched, and metal enrichment in black shales throughout world has been demonstrably linked to nearby metal deposits (Coveney et al 1992). Among these are black shales hosting major gold deposits of the Getchel Trend, Nevada; the Pilot shales hosting the Alligator Ridge deposits, Nevada; Bendigo, Australia, (Bloomstein and Clark, 1990); Sabie-Pilgrim's Rest goldfield, S.Africa, and numerous deposits in the former USSR (Buryak, various publications). Other notable black shale hosted metal deposits include, a number of Ni-Mo and Mo deposits, south China (Coveney and Chen, 1991); high Ni-Zn-PGE accumulations at the Nick deposit, Yukon, Canada (Hulbert et al 1992); Ag-V deposits in Upper Sinian Doushantuo Formation, Western Hubei, China (Delian et al, 1992), and the Zechstein district in the Polish Kupferschiefer (Kucha 1982, 1983).

Mineralogy of any given black shale Formation and metals contained therein reflect their source, and hence the shale's provenance. Metals accumulation in black shales must, accordingly, be viewed as a dynamic and virtually continuous process extending from the onset of sedimentation throughout diagenesis, and over the entire history of any given deposit as suggested by Vine and Tourtelot (1970). Black shales typically exhibit relatively uniform mineralogy and chemistry over large lateral distances, though they can vary considerably in vertical section reflecting changes in sedimentation processes, in weathering and hydrological history of the depositional basin area and those of the sources to the shale.

Black shales are not all necessarily metalliferous, nor do all metal bearing black shales contain the same suite of metals or kerogens. The role of organics notwithstanding, as metal scavengers often cited for black shale enrichment, processes commonly cited (for example Goodfellow 1990, Krauskopf 1955 & 1956) as being responsible for metal enrichment in black shales include: (i) preservation of metalliferous ejecta from meteoritic impact; (ii) episodic venting of metalliferous hydrothermal fluids; (iii) organically scavenged metal concentration during rapid sedimentation; (iv) redox fronts within the water column; (v) metal trapping by diagenetic H_2S generated in organic rich units.

Given a suitable source of metals, black shale depositional settings are capable of aggregating and hosting immense metalliferous deposits whose concentration is nearly always bacterially mitigated, although source of the metals and their carrier mineralogy straddle organic and inorganic geochemical processes.

Black shale ores are typically polymetallic with a variable proportion of sulfidic component. Their exploitation on large scale has principally been hampered by: (i) the inefficiency of conventional metallurgical processing (smelting) for recovery of valuable contained metals, (ii) the environmental impact and energy costs of the application of the conventional techniques, and (iii) practical constraints of assembly of vast land positions given the large aerial extent of the metal deposits which often extend over hundreds of square kilometers (e.g. the Kupferschiefer is a lithological formation that extends over 600,000 sq km from England to Poland, but exploitable Cu reserves therein are mostly concentrated at the southern edge of the Zechstein Basin and represent only 0.2% of the total area).

From a mineral processing perspective, by far the biggest challenge to extraction of metals from black shales has been morphology of the metal-bearing compounds which are typically dispersed throughout the shale as very fine particles, and are often trapped in the organic and fine clay components of the shale or in slimes. Traditional black shale mining operations have been notoriously inefficient, producing also considerable fine grained, often slimy, metal bearing waste material (e.g more than two million tons of copper have been produced from the Kupferschiefer formation to date, along with noble and rare metals, all of which from mining operations wherein they were being extracted as by-products with a poor recovery). Recent break-through advances of applied bioleaching are, however, mitigating many of the foregoing challenges, enabling the exploitation of one of the world biggest deposit types of metals.

From the explorationist's perspective, black shale metal deposits are best discovered in areas wherein (i) large land positions ranging in 100's sq km can be assembled quickly and inexpensively, (ii) adequate access and infrastructure exists to enable efficient exploration of the land position, (iii) exploration, development and mining activities can take place without the complications of competing land use, (iv) open pitting of large areas is accommodated by the local industrial, logistical and regulatory fabric, and (v) the metal enriched zones are near enough to the surface to be available to bulk mining methods. Black shale deposits discovered in areas other than the foregoing cannot realistically be expected to hold promise for development and are, as such, only of academic interest.

To the best knowledge of the author, few black shale ores have been commercially exploited on a large scale, though many have been sporadically mined on a local scale and are associated with other deposits or mining camps often with an affinity to large metal-bearing geological systems. Analogues from elsewhere in the world which have similar geological setting to northeast Alberta, namely the juxtaposition of carbonaceous environments in brinally active domains include: the Zechstein district in the Polish Kupferscheifer, evaporites of southwest Shaba, Zaire, black shales of south China, the Nick deposit, Yukon. In addition, the Uraniferous Alum Shales, Sweden, and the Talvivaara Nickel deposit, Finland provide good examples of currently active black shale exploration and development operations, the latter of which commenced production in October 2008 (discussed in Section 18.4).

Two types of metal enrichment styles have been recognized from black shales, contrasted by their mineral assemblage, trace element geochemistry, geometry and extent of mineralized horizons, and the geochemistry and temperature of ore-bearing fluids (Pasava 1993). The two distinct types also correspond to two different geotectonic settings, and are as follows:

> **Rift Type**: documented from black shales in association with intracontinental rifting without any intrusive rocks. Metal accumulations of the Rift Type typically represent very high grade but thin (varying millimeters to several tens of centimeters) and often laterally extensive (to 100's of km2) metal concentration zones associated with phosphatic layers, carbonate, REE-phosphates and U. Metal grades documented from this Type often range 10's to 100's ppm precious metals (Au or PGE), and 5% to 25% in base metals. Examples of this Type include Ni-Zn-PGE at the Nick Deposit, Selwyn Basin, Canada (Hulbert et al 1992); Mo concentrations at several deposits in the Guizhou Province, China (Coveney et al 1992).
>
> **Rift-Volcanic Type**: documented from black shales associated with intracontinental rifting and basic volcanism in the oceanic crust. Metal accumulations documented from this group of black shales are known to occur only around basic volcanic centers and typically comprise alternating layers of metalliferous black shale and tuffaceous material. The metal accumulations are characterized by (i) ore layers ranging in thickness from a few meters to several tens of meters (considerably thicker than those of the Rift Type), (ii) by metal grades lower than those typifying the Rift Type, (ii) by generally low minor element contents (except Cu, Cr), and (iii) by Ni/Cu ratios and other elemental patterns similar to conventional mafic-ultramfic deposits of PGE (e.g. Ni/Cu Sudbury-1.18; Platreef-1.5; Merensky Reef-1.6. Compared to Ni/Cu ratios for typical Rift Type deposits such as the Nick Ni/PGE deposit-173.6; Chinese Mo deposits-34.4; Pasava, 1993).
>
> Metal accumulation within Rift-Volcanic Type of black shales is believed to have been controlled by hydrothermal-volcanogenic events (submarine exhalations) in the presence of organic matter. Examples of this Type include PGE deposits in the Barrandian of the Czech Republic, and the Talvivaara Nickel (Ni-Cu-Zn) deposit, Finland, among others.

While there are many overall similarities between mineral assemblages of ore horizons from the two Types of environments, there is a predominance of Ni-Mo-PGE as the principal metals of interest associated with the Rift Type, in contrast to Fe-Zn-Cu-V for those of the Rift-Volcanic Type. The Rift-Volcanic Type are further characterized by modest-low grading tabular deposits of immense size (300-1,000+ million tonne range) extending over tens of square kilometers, with thicknesses ranging 20m-100m.

The Alberta metalliferous black shales documented from the Birch Mountains, and from Dumont's Property, are compatible with the Rift-Volcanic Type and have, accordingly, been so classed. The classification is supported by (i) relatively thick tabular geometry of the metalliferous black shale layers alternating with layers of ejecta material (bentonites and pyroclastic material); (ii) Ni/Cu ratios ranging 0.8 to 2.1 (typically 1.3-1.6); (iii) spatial association of metal enrichment zones with suspected venting (volcanic centers); and (iv) predominance of V-Zn-Cu mineralization over Ni-Mo-PGE.

Discussions of episodic venting scenarios for the Albertan black shales can benefit from an overview of the spatial and temporal constraints presented by volcanic arcs. The Skellefte Mining District, Sweden, provides guidelines for the facies architecture and events characterizing the development of a 1.9 Ga submarine volcanic arc (Allen et al 1997). The volacanotectonic cycle is believed to have occurred within a 10-15 million year period characterized by episodic and localized intense marine volcanism accompanied by periods of localized differential uplift and subsidence creating horst and graben paleogeography.

The Skellefte District represents an area of 120kmx30 km containing over eighty-five pyritic Zn-Cu-Au-Ag massive sulfide deposits (and a few vein Au deposits) majority of which are associated with a felsic-dominant volcanic unit. Massive sulfide deposits in the district are associated with subaqueous rhyolite cryptodome-tuff volcanoes which are relatively small features measuring 2km-10km in diameter with thicknesses ranging 250m-1200m at the center. The cryptodome-tuff volcanoes represent only one of the seven main volcano types identified, and the ores occur in near-vent and volcaniclastic facies. All indications from the district are that spatial proximity to vents is more critical to the formation of deposits than their stratigraphic position. These associations are reminiscent of interpretations from the Alberta middle Cretaceous shales (see AGS 2001, Sabag 9802, Ballantyne 1994, among others). The confinement of metal enrichment in the Albertan black shales to localities over, and flanking, the Peace River Arch (eg: the Birch Mountains) lends further support to suggestions of volcanogenic affinity, especially considering discoveries of considerable venting in the form of kimberlitic material and associated ejecta aprons from areas overlying the Arch in central Alberta.

Black shale metal deposit have attracted special recent attention due mainly to break-through advances in the industrial application of bioleaching technology processes on a large scale to extraction of metals with considerably enhanced economics when compared to traditional methods, and with lesser energy dependence and minimal environmental footprint.

8.3 SEDIMENTARY EXHALATIVE SULFIDES AND BLACK SHALE BASINS

Suggested volcanogenic processes associated with the Albertan black shales the Birch Mountains and the Property are presented in previous (and later) Sections of this report. There exists overwhelming evidence from all historic work over the Birch Mountains and the Property suggesting the local presence of exhalative venting as a likely source to the volcanogenic debris and bentonites in the Second White Speckled Shale. The foregoing also suggest that the exhalative venting to also be the source to the metals enriched in the Second White Speckled Shale, and that the Birch Mountains and the Property hold potential for hosting sedimentary exhalative - SEDEX style - sulfide mineralization.

In general terms, sedimentary exhalative - SEDEX style - sulfide deposits are known to accumulate in restricted basins or half grabens bounded by synsedimentary growth faults, with exhalative centers located along the faults or their junctions. The deposits are stratabound, tabular or lens shaped accumulations consisting of beds of sulfides and often barite, ranging from centimeters to tens of meters thick, which are stacked and have considerably greater lateral extent than vertical, often extending over tens of kilometers. Depositional environments variy from deep “starved” marine to shallow water restricted shelf settings, although the more common host rocks are those found in euxinic environments, namely black (carbonaceous) shales. (Briskey 1986, Large 1981)

SEDEX deposits are typically dominated by Zn-Pb-Ag-(Cu) and range in size worldwide from 15-150 million tonnes, typically grading 5-6% Zn, 2-3% Pb, 5-30g/t Ag, with subordinate Cu. By virtue of large size and extensive lateral dimensions, deposits near the surface are amenable to open pitting. The deposits have electromagnetic and magnetic signatures and might be so detectable when steeply dipping, though they are difficult to detect if flat-lying, or if the sulfide layers are fine and distributed over a thick stratigraphic column.

Geological, stratigraphic, lithogeochemical and metal distribution trends documented from the Property are characteristic of settings which would be conducive to hosting sedimentary exhalative - SEDEX style - sulfide mineralization within the black shales, providing a collateral deposit type as a secondary target for future exploration of the Property.

9. MINERALIZATION

The principal known metallic mineralization on the Property is hosted in black shales, as polymetallic Zones bounded by stratigraphic contacts. The principal metals of interest in the Zones are Mo, Ni, U, V, Zn, Cu, Co, Ag, and Au, though none of the metals is present in sufficient quantity in the shales to be considered the "pay" metal leading the anticipated value of any deposit identified. Intrinsic economic value of the metal zones will, accordingly, be based on effective recovery of the metals from the host rock on a combined basis.

Most of the metals, are believed to occur principally in the fine and coarser sulfides distributed throughout the shale, which can constitute as much as 20% of the shale matrix by volume, but typically range 5%-20%. Some of metals, notably V and Cu, are likely bi-popular and may be fractionated between clays, sulfides and organic components of the shale. Gold is believed to occur principally as high fineness gold in native form, which is possibly better concentrated in the upper and lower contacts of the shale, though its grade has not been definitively established due to nugget effect.

Only minimal orientation historic metallurgical and leaching testwork exist addressing metals recovery, though the available testwork indicates that at least Ni, Zn, and V can be collectively recovered by sulfuric acid leaching, that Au can be recovered by conventional carbon in leach cyanidation, and that heavy minerals and metals can be concentrated from the shale by gravity methods which also capture gold and some base metals. There is no information from the Property suggesting that the other metals of interest cannot also be similarly recovered. All prior work indicate that disaggregation of the shale's clay matrix will be crucial to enable recovery of metals from the shale.

There is no prior mineral characterization work establishing mineral and metal make-up of the shale. Given its very fine grain size it is likely that this work will partly have to be rely on electron microscopy. Exploration work to date, and inferences therefrom, are based entirely on geochemical data supported by heavy mineral concentration and related topical mineral examination studies.

The 20m-40m thick, flat-lying, Second White Speckled Shale Formation represents the primary polymetallic host targeted at the Property. It is the most metal enriched of the shales, is nearer the surface, and is locally exposed in river valley walls throughout the eastern one third of the Property. The thicker Shaftesbury Shale Formation, beneath the Speckled Shale Formation, is less well mineralized and metals distribution within it is less well known due to a lack of exposures.

Several suspected large buried metal enrichment targets have been identified by the historic work from extensive surface sampling, supported also by other coincident or associated stratigraphic and physical anomalies. Buried polymetallic enriched zones have been confirmed under two of the targets identified. The confirmed zones are open in three directions, and are envisaged to be tabular concentrations of metals hosted entirely in the flat-lying Second White Speckled Shale Formation constrained by the Shale's upper and lower contacts. The two Zones are extrapolated to extend over large areas measuring tens of square kilometers each based on historic drilling and on supporting information from adjacent surface and outcrops. Two large Potential Mineral Deposits (per NI-43-101) are proposed to exist under the two targets drilled.

Other metal mineralization proposed to exist on the Property is sedimentary exhalative - SEDEX style - sulfide mineralization associated with suspected (yet undiscovered) exhalative venting centers, which are also proposed to be the source to the metal enriched sediments and volcanic debris captured in the black shales hosting the polymetallic Zones. Should the foregoing proposal be proven by future drilling, coalescence among some of the envisaged shale hosted polymetallic zones buried beneath the anomalous areas identified would be a realistic expectation.

Polymetallic anomalous areas, zones and the proposed Potential Mineral Deposits contained in the Buckton and Asphalt Zones are discussed later in Section 19.4 of this Report.

10. EXPLORATION

Dumont has not commenced exploration work on its Property. Dumont concluded acquisition of the Property by submitting its final permit application to Alberta Energy on April 11, 2008 (permits granted on July 11, 2008, with a June 30, 2008, effective date). Dumont is in the process of consolidating third-party historic information from the Property and vicinity.

Historic work over the Property and vicinity, and results therefrom, have been summarized in Section 6 of this report. They collectively provide the only geological databases for the Property for Dumont to expand upon.

11. DRILLING

Dumont has not conducted any drilling on its Property. Dumont concluded acquisition of the Property by submitting its final permit application to Alberta Energy on April 11, 2008 (permits granted on July 11, 2008, with a June 30, 2008, effective date). Dumont is in the process of consolidating third-party historic information from the Property and vicinity.

12. SAMPLING METHOD AND APPROACH

Dumont has not conducted any sampling on its Property. Dumont concluded acquisition of the Property by submitting its final permit application to Alberta Energy on April 11, 2008 (permits granted on July 11, 2008, with a June 30, 2008, effective date). Dumont is in the process of consolidating third-party historic information from the Property and vicinity.

Sampling methods, sample preparation and analytical methods related to historic work referenced herein are summarized, to the extent available, in the respective chapters describing the historic work. It is of note, in the foregoing regard, that inordinate efforts were devoted by Tintina during planning and implementation of its exploration programs to develop and tailor exploration and sampling procedures to the region via numerous orientation surveys which collectively comprised a larger than normal component of the reconnaissance work completed in a region which had never previously been explored for metals. The data summarized herein from historic work by Tintina has, accordingly, been subjected to the rigors of checking, cross-checking, third-party verification and convergence tests, and as such conforms to high industry standards.

13. SAMPLE PREPARATION, ANALYSIS AND SECURITY

Dumont has not conducted any sampling on its Property. Dumont concluded acquisition of the Property by submitting its final permit application to Alberta Energy on April 11, 2008 (permits granted on July 11, 2008, with a June 30, 2008, effective date). Dumont is in the process of consolidating third-party historic information from the Property and vicinity.

Sample preparation, analytical and sample security related to historic work referenced herein are summarized, to the extent available, in the respective chapters describing the historic work.

14. DATA VERIFICATION

Dumont is in the process of consolidating third-party historic information from the Property and has not yet commenced exploration work thereupon. Dumont concluded acquisition of the Property by submitting its final permit application to Alberta Energy on April 11, 2008 (permits granted on July 11, 2008, with a June 30, 2008, effective date).

Considerable historic information has been presented herein in Section 6, much of which has been extracted from work carried by Tintina, all of which were carried out by, or under the supervision and direction of the author, who was also the author of work Reports prepared, and subsequently filed as

Alberta Mineral Assessment Reports, by Tintina and was directly responsible for review and verification of the information contained therein. To the foregoing extent, all historic information presented herein has been critically reviewed by the author, though he has not conducted additional site visits subsequent to the Tintina work programs, nor conducted any additional sampling on the Property since its acquisition by Dumont.

In addition to the above data reviews, some of the data presented herein have been subjected to convergence tests by the availability of corroborating results from independent sampling conducted by the AGS and the GSC in the course of their independent work on the Property and vicinity, many of which samples duplicate samples collected and reported by Tintina.

15. ADJACENT PROPERTIES

15.1 ADJACENT METAL EXPLORATION PROPERTIES

Historic exploration work conducted by Tintina in the Birch Mountains substantially represent the only exploration efforts in search for metals in the area. Together with work conducted by the AGS and the GSC, it forms the only baseline geoscience available from the area.

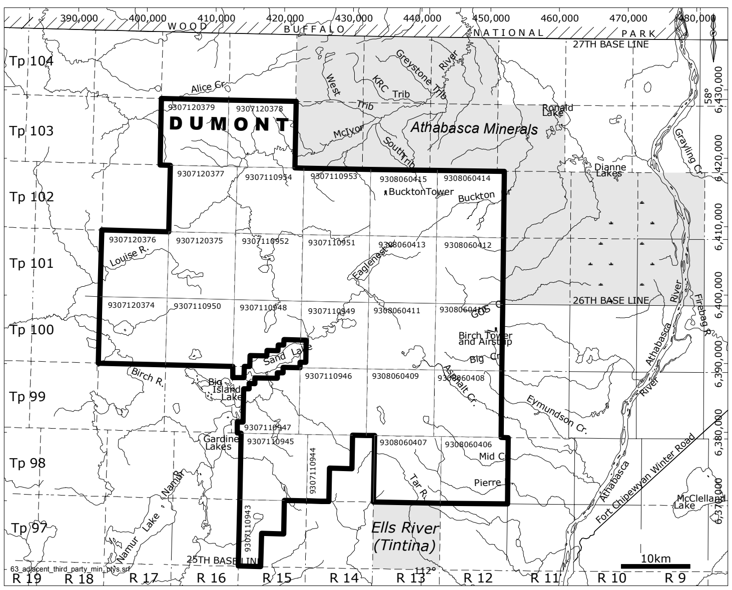


Figure 63: Sketch of third-party mineral properties adjacent to the Property.

There are currently only two metal exploration properties (Figure 63) adjacent to Dumont's Property: a property held by Athabasca Minerals Inc. adjacent to the north boundary of Dumont's Property, and a single township adjacent to the south boundary held by Ells River Resources Inc. under option to Tintina Mines Limited and NSR Resources Inc.

There is no record of ongoing activity nor recent work on the Ells River Property. Athabasca Minerals corporate filings, however, indicate that it has been actively pursuing diamond potential of its property over the McIvor River and related tributaries through reconnaissance field work and airborne geophysics.

15.2 ADJACENT OIL/GAS AND OIL SANDS EXPLORATION AND DEVELOPMENT PROPERTIES

Unlike metals exploration, there has been considerable exploration activity in and, especially, around the Birch Mountains during the past decade as many new oil sands extraction operations advance toward production. Oil Sand Leases and Oil/Gas Leases over and around Dumont's Property, and the Birch Mountains, are shown in Figures 4 and 5, in an earlier Section (Section 4.3) of this report. They are described below[20].

A series of new gas production wells are currently in operation over the southwestern quarter of Dumont's Property, serviced also by a network of pipelines.

[20] Summarized from various public corporate documents from the respective property owners, from the project operators and from considerable information available from Alberta Energy.

A number of pending, proposed and construction stage oil sands mines surround the eastern and southern erosional edge of the Birch Mountains (Figure 64), and are adjacent to the east and south boundaries of Dumont's Property as follows:

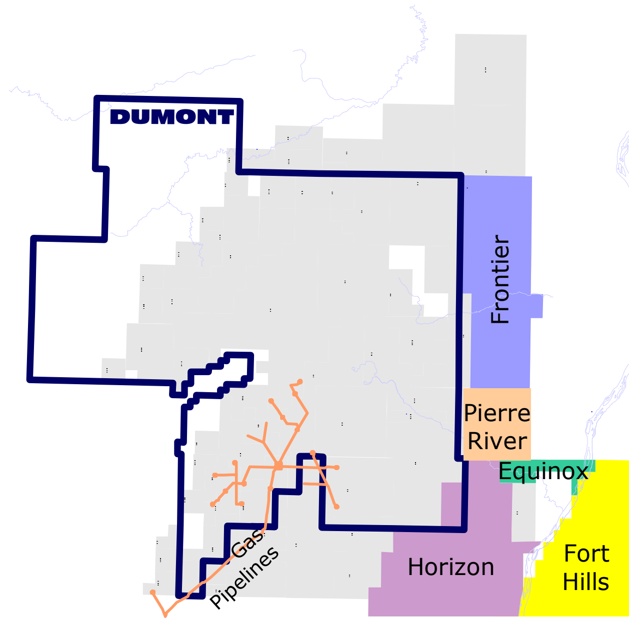


Figure 64: Sketch of third-party oil sands mines under construction, pending or planned adjacent to the Property.

- UTS Energy Corporation holds a number of Oil Sand Leases over, and adjacent to, the northern and northeastern portions of Dumont's Property, adjacent to their Frontier Project. UTS corporate documents indicate that the Leases are under active exploration in drilling stages.

- The Frontier Project, a joint venture between UTS Energy Corporation and Teck Cominco, roughly comprises a three township long property abutting the northern two-thirds of the east boundary of Dumont's Property. This Project is the site of the proposed Frontier Oil Sands Mine which is in its planning stages, with estimated resources of 1,051 million barrels of Discovered Petroleum Initially-In-Place of bitumen (Best Estimate; Low Estimate of 279 million barrels, High Estimate of 2,791 million barrels). Future plans are to construct a mine as well as bitumen extraction and processing facilities. Production is projected to start in 2015-2017 at a daily rate of 100,000bbl-160,000bbl. The Frontier project is adjacent to, and immediately downhill from, Dumont's Buckton Zone.

- The proposed Pierre River Mine property comprises oil sands leases held by Shell Canada Limited over a single township abutting against southern portion of Dumont's eastern property boundary. Proposed construction is scheduled to begin in 2010 toward planned production in 2018 at a projected daily rate of 200,000 bbl bitumen. This property is adjacent to the east boundary of Dumont' Property.

  Shell Canada plans to construct a bridge across the Athabasca River to provide access to the Pierre River oil sands mine. This will significantly enhance access to Dumont's Property, and the Asphalt Zone.

- The proposed Equinox Oil Sands Mine property is near the southern end of Dumont's eastern boundary. The property is under development as a joint venture between UTS Energy Corporation and Teck Cominco, with estimated resources of 350 million barrels of Discovered Petroleum Initially-In-Place of bitumen (Best Estimate; Low Estimate of 270 million barrels, High Estimate of 400 million barrels). The property is under active exploratory drilling to advance toward an operation with anticipated production rate of 50,000 bbl per day.

- The proposed Horizon Oil Sands Project, held by Canadian Natural Resources Ltd., is located approximately 10km to the south of Dumont's Property. Leases and properties comprising the project abut Dumont's south boundary. The $10 billion Horizon Project is expected to commence production in late 2008 at 100,000bbl per day, advancing toward a 232,000bbl per day peak production by 2012.

- The Fort Hills Oil Sand Mine under construction is a joint venture among UTS Energy Corporation, Teck Cominco and Petro-Can, and is located approximately 10km to the east of Dumont's Property. The $15 billion Mine (more recent estimate: $23 billion) represents the largest oil sands operation to date with an estimated 4 billion barrel resource, projected to come on stream in phases expanding output from 140,000 bbl per day to 300,000 bbl per day by 2012-2014.

The collective of oil sands mines under construction adjacent to the Property, and those which are operating nearby, provide useful and reliable comparative cost benchmarks to Dumont' planning. In addition, ongoing, planned and pending enhancements to road access and local infrastructure related to the above projects will considerably enhance access to the Property.

16. MINERAL PROCESSING AND METALLURGICAL TESTING

Dumont has not yet conducted any metallurgical nor ore processing tests on samples from the Property. Dumont concluded acquisition of the Property by submitting its final permit application to Alberta Energy on April 11, 2008 (permits granted on July 11, 2008, with a June 30, 2008, effective date). Dumont is in the process of consolidating third-party historic information from the Property and has not yet commenced exploration work.

Results from historic mineral processing, leaching and metallurgical testwork have been summarized in previous Sections of this report. Though the historic tests are preliminary and orientative, they collectively provide a good foundation to Dumont to expand upon with broader and more detailed additional testwork of its own.

17. MINERAL RESOURCES AND MINERAL RESERVE ESTIMATES

There are no mineral resources nor reserves on the Property.

Dumont concluded acquisition of the Property by submitting its final permit application to Alberta Energy on April 11, 2008 (permits granted on July 11, 2008, with a June 30, 2008, effective date). Dumont is in the process of consolidating third-party historic information from the Property and has not yet commenced exploration work.

18. OTHER RELEVANT INFORMATION

Other information is presented below which are materially relevant to any discussion of the merits of the polymetallic shales on the Property, and which support recommendations of carrying out considerable further work thereupon. The information, gathered from other projects elsewhere, serve also to highlight advantages which the Property's location offers to any contemplated future development.

18.1 BIOLEACHING

Biohydrometallurgy has quickly progressed during the past decade from laboratory investigations of applying biotechnology to metal recovery or pilot scale demonstrations to an industrial reality which is being applied on a large scale for the recovery of a variety of metals from sulfidic deposits (copper, gold, cobalt, nickel, zinc, manganese). This includes also recovery of metals from refractory ores (e.g Nevada) which were previously unrecoverable and lost to tailings.

Whereas traditional processing of many ores relies on smelting of concentrated material to recover the metals, many operations have opted for bioleaching as an alternative. The success of bioleaching lies in the efficiency of the process, its ability to extract much lower grades than otherwise extractable by traditional smelting, its low reagent consumption, its (considerably) lower energy and water requirements, and reduced environmental impact when compared to traditional methods. In simple terms, metals are dissolved from the ore by iron/sulfur consuming bacteria (e.g. thiobascilli), effluents are subsequently treated with a variety of conventional chemical and electrochemical methods for selective recovery of each of the metals, and the rest of the material is transformed into an inert waste. The reader is referred to C.Brierly (2008) or other publicly available literature for a detailed discussion of bioleaching[21].

The majority of current bioleaching operations comprise vat leaching of concentrates in stirred tanks (bioreactors). The Talvivaara nickel mine, which commenced production in October 2008, is the first large scale commercial bioheapleaching operation designed to recover a suite metals on a combined basis. The Talvivaara mine is applying bioleaching in conventional heap leach methods similar to cyanidation of heaps normally associated with some large gold mines (e.g Nevada). The Talvivaara mine will also be the first ever to bioheapleach in subarctic conditions, thanks to the exothermic nature of bioleaching reactions which produce sufficient heat to sustain ambient temperatures even during the Finnish subarctic winter.

By far the best organized and most focused recent (current) initiative to advance biohydrometallurgical processing of black shale ores is the EU Bioshale Project which was launched in 2004 as a three year initiative by a multidisciplinary partnership among eight countries and seven universities. The Project has successfully deployed considerable combined geoscientific expertise from the fields of Geology, Biotechnology and Mineral processing, toward evaluating biotechnologies for the safe, clean and viable beneficiation of black shale ores and at identifying and designing innovative mining and processing methodology for the industrial exploitation of black shale ores (discussed in Section 18.1 and 18.3).

Advances over the past decade in bioleaching applications provide renewed interest in metalliferous black shales as a long term source to metals. Metal recovery by bioleaching techniques may be applicable to the Alberta black shales, though there exists no testwork to support nor refute the proposal.

18.2 LOCAL SULFUR SUPPLIES - ATHABASCA REGION

Leaching processes which can be realistically expected to be applicable to recovery of metals from black shales will consume sulfur. The Property is located in a district with a local supply of considerable sulfur.

Oil is extracted from oil sands in the form of bitumen which contains up to 20% sand, clay, water and other minerals. The bitumen is upgraded by heating to 500 degrees C to recover synthetic crude oil (SCO) which typically makes up approximately 80% of the bitumen. Upgraders remove most of the sulfur from bitumen by converting it to elemental sulfur, and since sulfur may represent more than five percent of the bitumen, large volumes of by-product sulfur are produced from upgrading operations.

Bitumen from oil sands operations in the Athabasca region is either upgraded on site at an upgarder plant, or shipped by pipeline to upgraders in "upgrader alley" located to the north of Edmonton. Although sulfur is used in the manufacture of fertilizers, pharmaceuticals, and other products, much of the sulfur produced from oil sands operations is unsold and sulfur produced from many local upgraders is stockpiled at the upgarder at mine site. Throughout the Athabasca region sulfur is stored at surface in blocks stacked as pyramids.

There are currently an estimated 10 million tonnes of sulfur stockpiled in the region (Syncrude held 5.2 million tonnes of this as at 2005). Based on an estimated 1 tonne sulfur produced per 100 bbl of oil[22], an estimated 2 million tonnes of additional sulfur are projected to be produced annually from the oil sands operations (Syncrude and Suncor produced 542,696 and 300,323 metric tonnes of sulfur, respectively, in 2005). There is no sulfur mitigation plan for the region despite concerted efforts by some of the producers to explore novel and creative solutions to either store, bury or consume their waste sulfur.

Fort McMurray is substantially landlocked, with road access as the only means of shipping materials. Though transport logistics of shipping sulfur from Edmonton have improved over the past few years, shipping logistics from Fort McMurray to ultimate sulfur markets are difficult and costly as they entail transport first by truck from Fort McMurray to Lynton (Edmonton, 550km away) and then by rail. Typical

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[21] Additional information can be obtained from Japan Oil Gas & Mining Company, Mintek Laboratories, Ouototec, Newmont Mining, among others.

[22] Pembina 2008. Griffiths Mary, Dyer Simon, 2008. "Upgrader Alley, Oil Sands Fever Strikes Edmonton" The Pembina Institute, June 2008.

surface shipping costs were estimated to be in the order of $72 per tonne in 2005 (Fort McMurray-Lynton-Vancouver)[23], current costs are considerably higher. There are plans pending by CN Rail to rehabilitate historic rail service to Fort McMurray under long term shipping contracts with Suncor, OPTI Canada and Nexen Inc.

Despite astute environmental practices, Syncrude produces and stores a significant amount of elemental sulfur at its plant site, since its transport to sulfur markets is not economically feasible. Sulfur blocks are stored on surface and have become a serious and fast growing environmental concern within the region as the sulfur crumbling from the blocks due to the severe local climatic conditions produces considerable acid-drainage due to melt-water and rain seepage through cracks. Acidification of ground water is also a long term concern. Syncrude has been actively seeking remedies to the problem and has been funding considerable research to study the feasibility of soil capped storage and underground (burial) storage ($1.9 million committed to research in 2006).

Plate 9: Typical sulfur stockpiles and blocks from oil sands mining operations, Athabasca Region.

Though very recent strengthening of sulfur demand and markets might partly rationalize shipping costs, the difficulties of proper handling of otherwise friable sulfur stockpiles from oil sands stored on surface in blocks continues to present barriers. The immensity of stockpiles from prior year operations is also a daunting challenge. Some of the waste sulfur produced elsewhere in Alberta, and from upgraders near Edmonton, are being effectively marketed, especially if they are in a form which can be easily handled during shipping[24].

Syncrude estimates that surface storage costs range $5-$10 per tonne of sulfur stored[25], and the Alberta Sulfur Research Institute estimates that the annual cost of acid-off treatment from sulfur stored in blocks can be as much as $3.3 per tonne. These are sobering costs given the fast expanding oil sand production operations projected for the next decade (up to 80 operations), many of which operations will require local upgrading for their bitumen.

Based on the above figures, Syncrude’s estimated 5.2MM tonne stockpile alone represents a blocking and storage “sunk cost” of approximately $26MM-$52MM, an annual acid-drainage maintenance liability of approximately $17MM, and a liability of approximately $375MM if it is to be shipped. These figures provide strong incentives to support launch of a new long term sulfur consumption activity within the region.

Leaching processes which can be realistically expected to be applicable to recovery of metals from black shales will consume sulfur and, given the immense projected size of the metal zones, would do so over a long mine life. For example, reagent consumption for the Talvivaara Nickel bioheapleaching operations

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[23] Penta Sul Inc. Market Prospects for Sulphur Recovered from the Oilsands, Presentation to the Canadian Heavy Oil Association Meeting, April 2006, Calgary , AB.
[24] e.g. Shell Canada produces granulized sulfur at its Edmonton upgrader which reduces shipping cost to $40t FOB.
[25] Yu, Ronnie, 2005. “What are we going to do with all that Sulphur?” Ronnie Yu, University of Alberta School of Business, February 2005.

includes consumption of an estimated 18kg sulfuric acid[26] per tonne of ore processed, representing an estimated 270,000 tonnes consumed annually (over a 24 year mine life, at approximately 15MM tonne per year production rate to process approximately 330 million tonnes of ore. See Section 18.4). Sulfuric acid consumption of 40kg per tonne of material treated is reported by Continental Precious Minerals from leaching and extraction testwork to leach Uranium from samples of uraniferous black shale from its Viken Property in Sweden[27]. Other bioleaching operations consume upward to 100kg of acid per tonne of ore processed, and more traditional inorganic leaching processes might be expected to consume more.

It is clear from the above that there is considerable sulfur available in the region surrounding the Property, and that a new local use of sulfur would be well received both by industry and by the communities within the region, since it will import environmental benefits by converting what are currently waste "maintenance" activities to waste disposal and neutralization solutions.

18.3 OTHER CURRENT POLYMETALLIC BLACK SHALE PROJECTS

There are a handful of projects elsewhere in the world investigating the economic viability of developing known polymetallic black shale deposits:

- **Sweden: Continental Precious Minerals Inc**. (TSX:V-CZQ) has been actively exploring its MyrViken Project, Sweden, since 2006. The Project is currently in metallurgical testing stages advancing toward development. The Property contains immense Uranium resources hosted in the well known carbonaceous Alum shale which extends across much of Fennoscandia, considered a strategic resource of fossil fuel and Uranium by Sweden. Exploitation of the shales dates back to the 17th century, but has been sporadic, focusing initially on alum, then on oil and, more recently since the 1960's, on Uranium. The shales also contain vanadium, molybdenum and nickel. There are no known commercial large scale operations recovering co-metals from the shale. Continental's efforts represent the first ever efforts to recover uranium and metals, on a combined basis, from the shale.

  The MyrViken project consists of several exploration licenses covering approximately 9,800 hectares, located approximately 25 km southwest of the town of Osterlund in the central part of Sweden, approximately 650 km north-northwest of Stockholm. The MyrViken property is underlain by Middle and Upper Cambrian age black shales of the Alum Shale Formation. They occur as in-situ, and as fault detached, blocks. The Formation is typically a 20m-30m thick unit, whose uppermost 8m-10m sections carry the highest Uranium grades. On the MyrViken property the shale section is thickened up to 200m due to multiple tectonic over-thrusting. The Shale is metamorphosed and partly converted into anthracitic "coal".

  The MyrViken property mineralized zone is 1,000m wide, nearly 200m deep, and has been recognized over 3.2km, with the better grades aggregated within a 200m wide corridor in the zone. The property is reported to contain immense resources of U, Mo, V and Ni, hosted in an approximate 1.3 billion tonne zone[28]. Reported Indicated Resource are 13,708,000 tonnes, grading 0.019% U3O8 (0.38 lbs/st), 0.305% V2O5 (6.10 lbs/st), 0.040% MoO3 (0.80 lbs/st) 0.030% Ni (0.59 lbs/st). Inferred Resource 1,166,135,000 tonnes grade 0.017% U_3O_8 (0.33 lbs/st), 0.278% V_2O_5 (5.57 lbs/st), 0.035% MoO_3 (0.71 lbs/st), and 0.031% Ni (0.62 lbs/st). The foregoing figures represent an aggregate of 442,788,000 lbs U_3O_8, 7,239,167,000 lbs V_2O_5, 911,889,000 lbs MoO_3, 806,033,000 lbs Ni as gross in-situ metals contained in the zone (the author has not audited the foregoing resources and is relying entirely on corporate documents from Continental and on technical reports for the MyrViken property - Harron 2008). Continental's plans are to consider mining by conventional open pit.

[26] Sulfuric acid can be produced from sulfur by bioleaching. Various species of thiobacilli metabolize sulfur to produce Sulphur dioxide and hydrogen sulfide, both of which react with water to form sulfuric acid.
[27] Press release October 30, 2007. Metallurgical Report, Continental Precious Minerals Inc.
[28] Press Release - April 11, 2008, Second Update Of Inferred And Indicated Resource Estimates On Viken Mms License Continental Precious Minerals Inc.

Resources are in most part in the Inferred category[29], and estimated based on a nominal USD$7.5/tonne mining cut-off (based on industry survey listed costs: Process Cost USD$6.50/t, G&A Cost USD$1/t, Mining Cost USD$1.85/t, Overburden Stripping USD$1.25/t). Modeling was based on metal prices of Mo USD$55/lb; Ni USD$12/lb; U USD$55/lb; V USD$5/lb; at 15%, 66%, 90%, and 65% recoveries, respectively. Resource modeling relied on a drill hole spacing ranging 30m-380m, averaging 300m, and concluded that a 100mx100m grid drilling would be required to upgrade the resources.

Continental has reported results from initial leaching tests, reporting 95% Uranium extraction from simple 12 hour leaching in moderately acidic sulfuric acid solution at ambient temperature[30]. Sulfuric acid consumption was 40kg/t with addition of 2kg/t $NaClO_3$ as an oxidant. It also reported a recovery of 60% Uranium after 20 days from initial simulated heap leach tests which it believes can be improved.

- **Sweden: Aura Energy Ltd.** (ASX:AEE) holds a number of licenses in the MyrViken area, Sweden, underlain by Alum Shale Formation. Aura's properties are near those held by Continental Precious Metals described above, though the projects are in earlier stages of exploration. Geology and mineralization are similar to those over Continental's MyrViken project, though no detailed exploration has yet been completed by Aura, nor a resource identified at its property. Aura recently announced31 an AUS$460 million funding and sale option agreement with Sino King Enterprise Investment Limited to advance Aura's U-Mo-V alum shale Storsjon project forward toward resource definition.

- **Finland: Talvivaara Mining Company** (LSE:Talvivaara) is developing its Ni-Co-Zn-Cu Talvivaara Mine in Finland, hosted in carbonaceous schists (black schists). The Talvivaara open pit mine commenced production in October 2008, to produce Ni-Zn-Cu-Co-Mn on a combined basis from a +336 million tonne resource hosted in black schists, relying on bio-heapleaching for recovery of the metals on a combined basis. The Talvivaara deposit and mining operation are discussed in greater detail in Section 18.4.

- **The EU Bioshale Project** is a well organized and focused recent (current) initiative to advance processing of polymetallic black shale ores is the EU Bioshale Project which was launched in 2004 as a three year initiative by a multidisciplinary partnership among eight countries and seven universities[32]. Funded by the European Commission 6th Framework Program With an initial budget of EUR3.4MM, the Project has successfully deployed considerable combined geoscientific and mining expertise from the fields of Geology, Biotechnology and Mineral processing, toward its principal goal of evaluating biotechnologies for the safe, clean and viable beneficiation of black shale ores and at identifying and designing innovative mining and processing methodology for the industrial exploitation of black shale ores. The Bioshale Project is succeeded by the EUR17MM budget EU Biomine Project which comprising a consortium of 37 partners including 13 industry partners consisting of some of the largest international mining companies.

  The Bioshale Project was organized in recognition that European deposits of black shale ores contain immense quantities of base as well as valuable rare and precious metals (Cu, Ni, Zn, Pb, Ag, Zn, Co, Mo, Re, V, Se, Sn, Bi, Au, Pt, Pd, etc.) the long term supply of which is of strategic importance to the EU. The practical socio-economic benefits of the Project to Europe are

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[29] Harron G.A. PEng 2008. Second Updated Technical Report On Viken MMS License, Jämtland, Norbotten Kingdom of Sweden For Continental Precious Minerals Inc., April 11, 2008. G.A.Harron & Associates Inc., FHB Consulting Services Inc. and P & E Mining Consultants Inc., by G.A.Harron PEng, Fred H. Brown CPG PrSciNat and E.Puritch P. Eng.
[30] Press Release October, 30, 2007, Metallurgical Report, Continental Precious Minerals Inc.
[31] Aura Energy press release October 17, 2008. All figures in Australian dollars.
[32] BRGM-Project Leader (France), KGHM Cuprum Ltd. CBR (Poland), Wroclaw University of Technology (Poland), University of Opole (Poland), University of Warsaw (Poland), Faculty of Biology (Poland), Geological Survey of Finland (Finland), Helsinki University of Technology (Finland), Tecnicas Reunidas (Spain), University of Wales, Bangor (UK), Warwick University, Biological Science (UK), G.E.O.S. Freiberg, Ingenieurgesellschaft (Germany), University of Mining and Geology Saint Ivan, Riski (Bulgaria), Czech Geological Survey (Czech Republic), with collaboration from KGHM Polska Mied Ÿ S.A. (Poland) and Talvivaara Company (Finland).

considered to be (i) to extend mine life of many European mining sites, like the Lubin mine, Poland, and others in eastern European countries, (ii) to enable exploitation of vast new resources, such as the Talvivaara Ni deposit, Finland, and (iii) to formulate methodology for the treatment and remediation of vast volumes of black shale mine waste from prior mining operations across eastern Europe.

Three European black shale deposits were chosen by the Bioshale Project for study and research, including pilot demonstration activities as follows: (i) a deposit which has been discovered but whose development has previously met processing or economic challenges (Talvivaara Ni deposit, Finland), (ii) an existing mining operation which can benefit from recovery enhancements and eco-efficiency (Lubin Mine deposit, Poland), and (iii) an area with large amounts of black shale ore residues and mine waste from past production activities requiring remediation (Mansfeld, Germany).

R&D from the Bioshale Project have been instrumental in supporting fast-tracked advancement of the Talvivaara nickel deposit, Finland, from the advanced exploration stages to production within four years (Section 18.4). For additional information from the Bioshale Project, the reader is referred to considerable literature available from their website (http://bioshale.brgm.fr and http://biomine.brgm.fr).

18.4 SELECT RELEVANT BULK MINING EXAMPLES

Contemplation of metal production from the Alberta polymetallic black shales is a novel proposal and, as such, is, in the opinion of the author, challenged more by perceptual barriers than by technological hurdles. The challenges are in the form of considerable skepticism as to: (i) whether metals can indeed be produced from black shales in general, (ii) whether metals can be produced on a combined basis, and (iii) whether the overall low grades presented by the Alberta shales can be economically exploited.

This discussion would benefit from a review of bulk mining operations worldwide as context, but would benefit more specifically from a review of select deposits whose metrics share similarities with the Alberta shales. Three examples are summarized below which have relevance to various aspects of the Alberta shales. The discussions below are not presented as an economic, nor a scoping, analysis for the Alberta shales, but are rather intended solely as a conceptual framework and context to enable their discussion. The three examples share the commonality of representing deposits, and related mining operations, whose merits are rooted as much in their large size as their grade, or rooted in uniformity of their grade and their amenability to low cost bulk mining:

- Alberta Oil Sands mining operations adjacent to Dumont's Property provide by far the best analogue for bulk mining operations from the area. Though processing methods from these operations are different than those which would realistically be expected to be relevant to extraction of metals from black shales, mining methods by "ripping" of flat thin blanket of mineralized material are directly relevant to any future contemplated open pitting of the Alberta shales.
- The Paracatu Gold deposit, Brazil, provides a good analogue for bulk mining by "ripping" of poorly consolidated low grade ore, from a deposit characterized by remarkable continuity in grade and geology.
- The Talvivaara Ni-Co-Zn-Cu-Mn deposit, Finland, which commenced production in October 2008, provides a good analogue as a black shale multi-metal extraction operation, with the added benefit of providing an analogue of a heap bioleaching (bioheapleaching) operation in sub-arctic environment.

Alberta Oil Sands Deposits

Alberta Oil Sands Mining operations provide by far the best analogue for bulk mining operations in areas adjacent to Dumont's Property. There are currently five oil sands mines in various planning or construction stages adjacent to the Property, and many others within the immediate region (see also Section 15.2).

These mines provide good examples of operations which reflect local logistical criteria, and infrastructure required for the successful implementation in the region of large earth-moving operations to mine thin extensive flat-lying ore zones, combined with some form of ore beneficiation, extraction and ultimate land reclamation.

Oil Sands mining has been active in Alberta since the inception of Syncrude in the mid-1970's. There were two mines in operation in the mid 1990's, approximately 46 (mining and in-situ) operations are in planning or construction stages, and over 80 operations are anticipated within a few years. Many of these will be traditional open pit mining operations.

The Fort Hills oil sands mine, currently in its construction stage, is located 10km to the east of Dumont's Property on the east shores of the Athabasca River. The Fort Hills mine, a Petrocan-Teck-UTS joint venture, will be the largest oil sand mine in the region (estm 3.2 billion barrels SCO[33]) with a projected 60 year mine-life. The Frontier oil sands mine, adjacent to Dumont's east Property boundary (downslope from the Buckton Zone), is in its planning stages, as are the Equinox mine located to the east midway to Fort Hills and the Pierre River mine (downslope from the Asphalt Zone). The Horizon oil sands mine is located approximately 10km to the south of the Property, and is scheduled to commence operations in 2008.

Oil Sands deposits are hosted in the Lower Cretaceous McMurray Formation which is locally exposed throughout the Athabasca region, especially along valley walls of the Athabasca River to the north of Fort McMurray where Syncrude's and Suncor's original mines are located. This Formation extends under Dumont's Property and lies approximately 400m-450m below Dumont's polymetallic shale targets[34]. The oil (bitumen) bearing ore zones within the McMurray Formation oil sands are typically 40m-60m thick substantially flat blankets, and individual deposits extend over areas upward to 100 sq km or more. This geometry reflects the flat-lying layer-cake arrangement of Alberta sedimentary formations.

As a general guideline in the region, where buried under less than 75m of overburden cover, oil sand deposits are mined by traditional open pit by "ripping" with very large equipment. Mining strip ratios typically range 1.6:1 to 1.8:1, and two tonnes of ore are mined to produce one barrel of synthetic crude oil. Oil sands buried deeper than 75m are extracted by a variety of in-situ processes.

Oil is first mined from the oil sands ore zones in the form of bitumen, which contains sand, other minerals and water, and is upgraded to synthetic crude oil by heating to 500C and washing in upgarder plants. Upgrading is very energy intensive. Mining recoveries range 90%-95% for bitumen recovered, and approximately 0.8 bbl synthetic crude oil is recovered from each barrel of bitumen mined. These recoveries collectively translate into an overall recovery of 70%-75% for recovered crude oil.

Total supply cost per barrel of synthetic crude oil produced in the region ranges $22-$28 per barrel[35], representing the aggregate production cost, capital costs and a nominal rate of return for investors. Costs (excluding capital costs) range $12-$18 per barrel of synthetic crude for a typical integrated mining and upgrading operation, the difference reflecting the high capital costs associated with oil sands mining projects typically ranging $4-$8 billion ($15 billion for Fort Hills) substantive portion of which is attributed to upgarder construction costs. Total foregoing supply cost represents an operating cost ranging $11-$14 per tonne of ore mined and beneficiated ($6-$9 per tonne excluding capital costs).

Though there is variability in operational capacities from one mine to the next (range 50,000 bbl/day to 300,000 bbl/day), a 100,000-150,000 bbl/day operation can be regarded as a realistic representative average for a midrange operation, exploiting a typically 0.5-1 billion barrel resource (equivalent to 1-2 billion tonnes). At an average grade of 1bbl per 2 tonnes this is the equivalent of a 70-100 million tonne per year mining operation.

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[33] 4 billion barrels bitumen, UTS Energy Corporation Corporate Profile, April, 2008.
[34] Dumont has only metallic and industrial mineral rights over its Property, and has no rights to oil sands.
[35] Engelhardt R. and Todirescu M., 2005. An Introduction to Development in Alberta's Oil Sands, University of Alberta School of Business February, 2005. Canadian Oil Sands Trust (TSX-COS.UN) estimates $26/bbl for its 2008 budget.

Based on the above figures, in the simplest of terms, an average Alberta oil sands mining operation located in the Athabasca region can, on average, be envisaged as a 70-100 million tonne per year open pit mining operation with a 14-30 year mine life, focusing on the exploitation of a mineral resource grading ½ barrel synthetic crude oil per tonne, at a nominal 1.6-1.8 strip ratio.

Talvivaara Black Shale Hosted Polymetallic Deposit - Ni-Co-Zn-Cu-Mn, Finland

The Talvivaara Ni-Co-Zn-Cu-Mn deposit is located in eastern Finland. It is one of the largest known nickel sulfide deposits in Europe, and provides a good analogue as an open pit mining operation recovering combined metals from a large black shale hosted sulfide deposit by bioheapleaching in subarctic conditions. The Talvivaara mine represents a significant milestone and a breakthrough in the mining of polymetallic black shales and has had full support of European financial markets[36]. The mine commenced production in October 2008.

The property was originally held by Outokumpu, which carried out considerable exploration work in the late 1980's and early 1990's. The resource was found to be large but of too low grade to be economically viable using traditional metal extraction techniques. Outokumpu, as part of its strategic decision to withdraw from mining activities, sold exploration rights to the nickel deposits to Talvivaara Mining Company in 2004 (for EUR12 million). Talvivaara Mining Company ("TVK") also obtained the rights to use research relating to bioheapleaching developed by Outokumpu. The deposit has since quickly advanced during the past four years from the exploration stage to production.

The Talvivaara Nickel deposit is located in the Kainuu black schist zone in the southern part of the Kainuu belt. The deposit consists of two different polymetallic ore bodies; the Kuusilampi and the Kolmisoppi, which are polymetallic sulfide orebodies, dominated by low grade nickel, hosted in variably recrystallized carbon and sulfide rich "black" metasediments - black schists – which range in thickness from tens of metres to 100m. The Formation has been tectonically thickened in the Talvivaara area.

Combined JORC Code classified mineral resources for the deposit are 337 million tonnes at 0.26% Ni, 0.14% Cu, 0.02% Co and 0.55% Zn (in measured, indicated and inferred resource category, quoted at a 0% Ni cut off within a 0.15% Ni wire-frame model)[37]. The resources are based on a Ni price of EUR3.75/lb with 76.6% metal payment, Co price of EUR12.5/lb with 58.5% metal payment, Cu price of EUR2000/t with 55% metal payment and a Zn price of EUR1050/t with 65% metal payment. The author has not audited the foregoing resources and is relying entirely on corporate documents from Talvivaara Mining Company, and on the bankable feasibility technical report for the Talvivaara property (SRK 2006).

The two orebodies measure 2300x40-400x370; and 1500x30-350x300m (LengthxWidthxDepth). The average sulfide mineral content of the orebodies is 21wt%, dominated by pyrrhotite, pyrite, chalcopyrite, sphalerite and pentlandite. Organic Carbon content ranges up to 9wt%. Fine-grained dissemination, sulfide breccia and metacarbonate ore types have been recognized.

The deposits have a thin overburden, and are planned to be mined at a 1.5:1 strip ratio by open pit. Annual nickel output is estimated to be approximately 33,000 tonnes, in addition to zinc 60,000tpa, copper 10,000tpa and cobalt 1,200tpa as co-products. At peak production, anticipated for 2010, Talvivaara has the potential to provide 2.3% of the world's current annual production of primary nickel. The mine is anticipated to produce metals for a minimum of 24 years, at an approximate mining rate of 15 million tonnes per annum.

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[36] A first round of financing from institutional and strategic investors raised EUR7 million in Nov/2005, enabling completion of a bankable feasibility study, followed by a further EUR33 million in Oct/2006 to accelerate development. EUR300 million was secured through a going-public IPO (London Exchange) in mid 2007, an additional EUR90 million financed through a five year 5.25% debenture in early 2008. Talvivaara Mining Company has committed EUR 452 million to development of the deposit36 for development of the mine (TVK Interim Report, Jun/2007). The project has also a Ni(Co) product off-take agreement with Norilsk Nickel.

[37] Bankable Feasibility Report, SRK 2006. Mineral Experts Report On The Talvivaara Nickel Project In Finland, SRK Consulting, Cardiff, UK. SRK Project Number U2993. Report Compiled by: Dr.D.Pattinson, Reviewed by: Dr.M.Armitage. Included in IPO June, 2007, London Stock Exchange listing.

Crushing is done in three stages, followed by agglomeration with sulfuric acid to consolidate fines with coarser ore particles. Sulfuric acid consumption is estimated to be 269,582 tonnes annually, and 5,798,374 tonnes over life of the mine (16 kg/t - primary heap; 2 kg/t - secondary heap).

Talvivaara has demonstrated the viability of using bioheapleaching technology for the extraction of nickel in large on-site pilot trials in 2005-2006 using its ore. Mining, bioheapleaching and metals recovery techniques were tested in 17,000 tonnes of on-site demonstration trials which showed that the leaching process is heat generating and suitable for the sub-arctic climatic conditions of Eastern Finland. A pilot scale leaching trial was also carried out as part of the EU-sponsored Bioshale project, launched in 2004 to study processing and metals recovery from black schist ores. This trial run was started in subzero conditions at -20°C and successfully demonstrated the applicability of bioleaching under sub-arctic conditions (Plate 10).

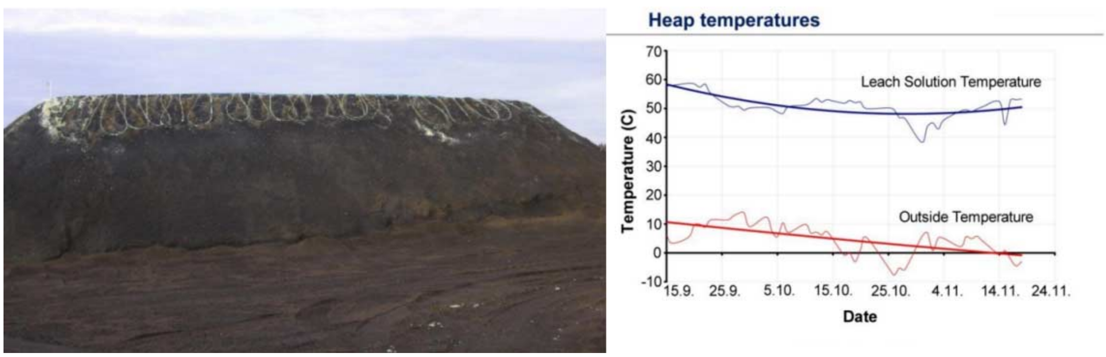

Plate 10: Talvivaara bioheapleach and heap temperatures profile. From Talvivaara 2005.

On average, bioleaching recoveries are projected to be as follows: Ni-85%, Zn-80%, Cu-50%, Co-50%. Talvivaara estimates that its metal recovery plant will recover approximately 98% of the metal contained in the pregnant leach solution relying on metals recovery procedures developed in collaboration with Norilsk Nickel. Talvivaara has recently commenced additional research, under a cooperation arrangement with Outokumpu Oyj, to evaluate feasibility of extracting also Manganese from the leach solution by electrowinning[38].

Operating cut-off cost is estimated to be EUR7.11/t ($11.4/t)[39], of which EUR6.6/t ($10.6/t) represents cost of ore processing. Ore mining and waste excavation costs are estimated to be EUR0.85/t ($1.4/t) and EUR0.34/t ($0.5/t), respectively. Aggregate gross revenues over the life of the mine are expected to be US$7,787 million, with nickel accounting for up to 75% of revenues (copper, cobalt and zinc attributing 6%, 5% and 16%, respectively). Aggregate operating costs are estimated to be US$3,933 million. Capital costs are estimated to be approximately US$830 million.

Talvivaara expects to have lower relative capital and operational cost than many other nickel mines. Costs are also expected to be considerably lower than traditional mines given reliance on bioheapleaching to extract the metals, since bioheapleaching has considerably more favourable capital and operational cost profiles, and cleaner favourable environmental profile compared to smelting.

The operation serves to demonstrate viability of bioheapleaching, and its application to the recovery of combined metals hosted in black shales, under subarctic temperatures similar to the northeast Alberta climate.

Paracatu Gold Deposit, Brazil

The Paracatu gold deposit, in production since 1988, is likely the world's lowest grade gold deposit with a historic grade ranging 0.4-0.5g/t gold. The deposit provides a good analogue as a bulk mineable operation

[38] Talvivaara Mining Company Press release June 23, 2008.

[39] Exchange Rate $CDN x 1.6.

which is afforded considerable economic latitude due to its enormity, the uniformity of its grade and the relative "softness" of the mineralized host rocks requiring no drilling nor blasting during open pitting. Mining operations at Paracatu have successfully weathered several commodity cycles during the past twenty years. The deposit is currently owned by Kinross Gold Corporation[40]. The Paracatu deposit has in the past also been referred to as the Brasilia deposit or the Morro do Ouro mine.

Kinross has been upgrading the mine to expand production from 18 million tpa to 60 million tpa by the installation of a new 41 million tpa treatment plant, designed to treat the harder sulfide ore being encountered as the mine goes deeper, and it has approximately $476 million committed, or spent, for the expansion. Paracatu is a large and consistent orebody with a projected mine life to 2040. This represents an approximate mine life of 60 years retroactive to its beginnings in 1988.

Proven & Probable reserves are estimated to be approximately 1.42 billion tonnes grading 0.39g/t gold, representing approximately 18 million ounces of gold; in addition to 267 million tonnes of measured and indicated resources averaging 0.32g/t representing 2.8 million ounces of gold[41]. Overall, the deposit represents nearly 21 million ounces of gold hosted in 1.7 billion tonnes of mineralized material representing an average grade of 0.38g/t. (the author has not audited the foregoing resources and is relying entirely on corporate documents from Kinross, and on the technical report for the Paracatu property - see Kinross 2006).

At its expanded capacity the mine is expected to produce approximately 305,000-335,000 ounces of gold annually at an average cost of approximately $390-$400 per ounce (equivalent to approximately $4.8 per tonne) and at a cash cost ranging $163-$175/oz (equivalent to approximately $2 per tonne: at average $169/oz cash cost). Recovery is approximately 76% by a combination of flotation and gravity methods.

The Paracatu deposit is a metamorphic gold system with finely disseminated gold mineralization hosted in the Morro do Ouro sequence, a series of phyllites that have been thrust and deformed. Anomalous gold and sulfides are hosted in a 120-140m thick zone which dips gently (20 degrees), is over 3km wide, and is traceable for over 6km.

Paracatu is a unique deposit with extraordinary lateral continuity, predictable grade distribution and recovery characteristics. Minimum drill hole spacing necessary to support a Measured and Indicated Resource classification at Paracatu has been established at a 200mx200m "five spot" pattern, resulting in an average nominal drill hole spacing of 140m. Grade variations within the deposit can be visually identified based on readily observable geologic features. Gold is closely associated with arsenopyrite and pyrite, predominantly as fine-grained free gold. Thin-section studies indicate 92% of the gold is free and grains typically range 50-150 microns in size.

Ore hardness - or rather its softness - has historically been recognized as key to the favourable economics of the Paracatu deposit. Though the deposit is mined by open pit, mining has not required drilling or blasting prior to excavation. Ore is ripped using by bulldozers, pushed to front-end loaders and loaded to a fleet of haul trucks for transport to the crusher (blasting harder portions of the deposit exposed in certain areas of the mine started In 2004). It is noteworthy that during the mid-late 1990's TVX Gold adopted Alberta oil sands mining and haulage methods to expand output and enhance operating efficiencies at the deposit.

The above collectively serve to reiterate the economic latitudes afforded to large deposits with good geological and grade uniformity which can be bulk mined by "ripping" requiring no drilling or blasting during mining operations.

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[40] Previously a TVX Gold - RTZ joint venture. Kinross purchased the remaining 51% interest in the deposit from Rio Tinto for $261 million in 2004. TVX merged with Kinross in 2003.

[41] Kinross corporate documents. Also see: Kinross 2006. Paracatu Mine Technical Report, Paracatu, Minas Gerais State, Brazil. R.D.Henderson, PEng, Acting Vice President, Technical Services, Kinross Gold Corporation, July 31, 2006.

19. Discussion, Interpretations and Conclusions

19.1 Conclusions – Geology, Mineralization, Processing and Recovery

To the extent that Dumont's Property is large (2,444 square kilometers) and includes several large historic properties of differing vintages, the known prospective metallic targets on the Property span the full spectrum of exploration and development status, ranging from a early-stage targets, through drill ready targets, to two drill confirmed metallic Zones (Asphalt and Buckton Zones) which have advanced to the resources definition grid drilling stage to upgrade Potential Mineral Deposits proposed to exist therein to classified resources. Considerable information has, accordingly, been necessarily incorporated into this Report from all historic exploration work over the Property to capture all results which would be relevant to various parts of the Property, and as such the Report includes extensive detailed reconnaissance exploration information in addition to results from advanced work in the metallurgical benchtesting stage.

The Property's large size is appropriate to the type and size of metal targets being sought by Dumont, comprising in most part laterally extensive tabular near-surface polymetallic zones (50-100 sq km each), occurring as near-surface open-pittable flat "blankets" hosted in the relatively flat stratigraphy. Six such target areas have been identified by the historic work which are reinterpreted herein and consolidated into four target areas. Two additional, early stage, target areas are also suggested by the author's current review of the historic work.

The only geological information available from the Birch Mountains, and from Dumont's Property, toward the exploration for metals consist substantially of results from historic work conducted by Tintina together with work conducted by the Alberta Geological Survey and the Geological Survey of Canada. The combined historic work provides detailed data coverage over the eastern two-thirds of Dumont's Property, whereas the western one third of the Property is unexplored.

The following salient conclusions can be made based on, and collated from, the collective information from all historic work:

- Metals enrichment on the Property is hosted in the Middle-Upper Cretaceous Second White Speckled Shale Formation, which is typically a 20m-40m thick flat-lying "blanket" of poorly consolidated black shale, gently block-faulted in several places. The Formation demonstrates the most conspicuous geochemical relief in the Birch Mountains, providing the only geochemical variations within an otherwise featureless and monotonous stratigraphic package. The Formation is 18.4m-26.2m thick at the Buckton Zone as demonstrated by historic drilling, and approximately 11m thick over the portion drilled at the Asphalt Zone.
- The Second White Speckled Shale, the overlying LaBiche and the underlying Belle Fourche (Shaftesbury) Shales, are bona fide "black shales". The Speckled Shale, furthermore, meets textural and compositional criteria to be classed a "metal enriched black shale". Metal enrichment in the Second White Speckled Shale is characterized by enrichment of Mo, Ni, U, V, Zn, Cu, Co, Cd, Ag and Au, and its metal contents typically vary x2 to x10 of its enveloping Formations.
- Metal enrichment and lithological patterns in the Speckled Shale are compatible with the Rift-Volcanic Type of metal enrichment style recognized from black shales worldwide, characterized by metal accumulation believed to have been controlled by hydrothermal-volcanogenic events (submarine exhalations) in the presence of organic matter. The Rift-Volcanic Type of deposits typically have modest polymetallic grade, are immense (300MM-1,000MM+ tonne range), are 20m-100m thick tabular "blankets" which extend over tens of square kilometers.
- The Second White Speckled Formation Shale exhibits different geochemical patterns when compared with most other shales in northern Alberta, including the underlying Shaftesbury Formation shale, suggesting different controls for metal concentration in the Speckled shale, than for other northern Alberta shales, especially over the Birch Mountains and the Property. The

Speckled Shale is also more enriched in metals over the Birch Mountains and the Property than elsewhere in northern Alberta.

- Samples of Cretaceous Formations from the Birch Mountains, independent of lithology, contain a significantly different shale-normalized REE profile when compared to samples elsewhere in northern Alberta. Most samples from the Birch Mountains, particularly those from the Second White Speckled Shale Formation, when reviewed in conjunction with their Ba enrichment, display trends suggesting influence of low temperature hydrothermal precipitates in the Birch Mountains.

- Overall conclusions from all historic work over the Birch Mountains Middle-Upper Cretaceous stratigraphic package, over Dumont's Property, overwhelmingly propose a nearby volcanogenic local source(s) to the metals discovered. The work suggests that metallic mineralization in the Birch Mountains are congregated around volcanic centers characterized by considerable exhalative activity, and supports speculation of the existence in the area of yet undiscovered sedimentary exhalative - SEDEX style - sulfides. A localized heat "budget" over the Birch Mountains is consistent with the recognized presence of considerable heat generation at the surface of the precambrian beneath it.

- Culmination of the Second White Speckled Shale Formation depositional cycle likely coincided with a significant increase in volcanism as evidenced by (i) the great volume and number of bentonites marking its upper contact and their general association with Ba enrichment (10,000ppm-30,000ppm); (ii) the presence of pristine pyroclastic material in a lag deposit often capping the Formation, suggesting also that at least some of the volcanism is localized in the Birch Mountains supported further by presence of thicker bentonite sections ranging 10cm-35cm near the top of the Formation, (iii) various lithogeochemical trends and the shale's trace elemental geochemistry. A close link between metal enrichment in the Shale with volcanic processes is also suggested by interelemental patterns.

- Bentonites within the Second White Speckled Shale exhibit conspicuous stratigraphic trends and may be diagnostic to identification of volcanic vents in the Birch Mountains. Contrasts between distribution, thickness and frequency of bentonites noted in historic drill holes from the Buckton and Asphalt Zones suggest a local proximal source for bentonites from the Asphalt Zone drilling, and a nearby northerly source for bentonites noted in the Buckton Zone drill core. The vicinities of the two Zones, accordingly, offer good candidate areas with demonstrable potential for hosting primary metal mineralization in vents or as SEDEX accumulations.

- The Second White Speckled Shale demonstrates good lateral geological and metal grade continuity between widely spaced historic holes drilled across an 8km cross-section of the Buckton Zone, with equally good lateral grade continuity compatible with variations documented from sampling of large outcrops in the area. In addition, remarkable grade similarity is demonstrated between drill results from the Buckton Zone and those from the Asphalt Zone located 30km away. Speculation that similarly good continuity can be expected from the Shale throughout the Birch Mountains would be reasonable and would be supported by the typically good lateral continuity demonstrated by historic mapping and sampling results across the Birch Mountains, and by comparable excellent lateral continuity typical of black shales worldwide.

- Vertical grade variations in the Second White Speckled Shale depict a well defined metal zonation for many of the base metals, with (overall) better concentration of Mo-Ni-U-(Zn) nearer the Formation's upper contact (dominated by intermixture of considerable bentonitic seams into the shale), and overall better concentration of V, Cu throughout its midsection. Metals enrichment within the upper sections of the Formation is also accompanied by Ba, S, Na and Corg enrichment, and by higher pyritic sulfide contents ranging upward to 20% by volume. Vertical grade zonation, or an ordered trend, is typical of back shales throughout the world. Metals accumulation in black shales is a virtually continuous process and is best regarded as a sedimentary record captured in vertical sedimentary section, extending from the onset of sedimentation through the entire history of any given deposit, to the end of sedimentation, reflecting changes in sedimentation processes, in weathering and hydrological history of the area and those of the sources to the shale. Whether the zonation patterns observed at the Buckton and Asphalt Zones are typical of what might be expected from other Zones which might be discovered on the Property is unknown, though is suspected.

- The Second White Speckled Shale contains fine and coarser sulfides which are dominated by many varieties of Fe-S species, and the higher metal grades therein are contained in its more bentonitic sections. Cu-sulfides, Ni-sulfides as well as native gold have been documented in mineral concentrates recovered from the Shale, though no systematic mineralogical work exists characterizing overall mineral make-up of the Shale.

- Metals in the Second White Speckled Shale are likely hosted in multiple carrier minerals some of which are sulfides and others are likely organic (or clay) forms, with a suggested grouping of the various metals into one group (Mo, Ni, Zn, Mo, $\pm$U) characterized by affinities for enrichment predominantly in, or as, inorganic minerals and another group (V, Cu) exhibiting affinities for enrichment in organic (or clay) species, some subpopulation overlaps, notwithstanding.

- Orientation historic leaching testwork demonstrates that at least Ni, Zn and V can be recovered from the Second White Speckled Shale on a combined basis by conventional sulfuric acid leaching with recoveries of 97%, 100% and 33%, respectively. There is no data in the historic records for leaching of other base metals. The historic testwork provides a favourable basis on which to expand with broader future work, with the additional benefit of metals recovery successes reported by others from their exploration of black shales from elsewhere (e.g. Uranium from Alum Shale; combined Ni-Co-Zn-Cu-(Mn) from Talvivaara deposit. See Sections 18.3 and 18.4).

- Preliminary historic bottle roll cyanidation tests demonstrate that gold can be leached from samples of Second White Speckled Shale by conventional carbon-in-leach cyanidation once the clay matrix is disaggregated by deflocculation, and that gold content of the Shale may be an order of magnitude higher than that documented from routine analysis of small, typically 30gm, samples by fire assay or INA. The discrepancy is attributed to nugget effect. Ultimate gold content of the Shale is, accordingly, currently unknown though expectations of subgram gold grades in the 0.1-0.4g/t range hosted in portions of the shale would not be unrealistic. The historic testwork provides a favourable basis on which to expand with broader and more rigorous future work. It is noteworthy that even modest grades of 0.1g/t gold can add considerable value to the Shale given the immense size of projected mineralized Zones, especially considering expectations that much of the gold occurs in particulate form rather than as dissolutions in other minerals (hence potentially amenable to gravity separation).

- Orientation heavy mineral concentration historic tests successfully collected native gold as well as sulfides by heavy liquids separation after disaggregating clay fraction of the Shale by deflocculation. The tests serve to demonstrate that metals can be concentrated from the Shale provided its clay content is disaggregated. This is consistent with considerable metal separation testwork conducted under the author's direct supervision on muddy alluvial sediments and freshly slumped outcrop detritus samples from the McIvor River, relying on deflocculation as a clay disaggregation pre-treatment followed by gravity concentration by Falcon concentrator (Sabag 2002).

- Historic orientation simple flotation tests failed to concentrate any minerals from the Shale, and the testwork was challenged by production of considerable slimes. It is puzzling that the historic testwork did not pre-treat the Shale samples nor attempt to disaggregate their clay fraction, given that sliming is known to be one of the major metallurgical challenges to effective treatment of black shales worldwide (sliming has been successfully addressed by others in their treatment of black shales from elsewhere either by clay disaggregation pre-treatment or by bioleaching).

- Based on the stratigraphic subsurface database for the Property, confirmed locally in outcrops and in the historic drilling at the Buckton and Asphalt Zones, the Second White Speckled Shale Formation is known to underlie all of Dumont's Property. The Shale is exposed along the eastern and southern erosional edge of the Birch Mountains (e.g Buckton and Asphalt Zones) and is elsewhere under typically 100m-150m of sedimentary and overburden cover (max 200m).

- Given proximity of the Speckled Shale Formation to the surface and its unconsolidated nature, it can be expected to be amenable to extraction by large scale bulk mining.
- The Second White Speckled Shale is poorly consolidated, its exposures, when wet, readily turn to fluid mudflows due to its high clay content. This physical characteristic suggests that the Shale might be amenable to slurrying and would certainly be amenable to mining by simple "ripping", much as oil sands or the Paracatu deposit are mined, hence requiring no drilling nor blasting during any contemplated open pit mining operation.
- Based on drilling results from the Buckton and Asphalt Zones, it can be concluded that while none of the metals is present in the Second White Speckled Shale at the two Zones in sufficiently high concentrations to be of economic merit by itself, the "pay" metals Mo, Ni, U, V, Zn, Cu, Co (and to some extent also Ag) collectively represent sufficient in-situ value on a combined basis to place the Second White Specks Formation shales within reach of economic viability provided the metals can be efficiently recovered on a combined basis. This is reinforced and supported by the low operating costs afforded to bulk mining and processing operations of similar unconsolidated material in the region surrounding the Property, and elsewhere in the world.
- To guide future work, based on broad extrapolations reinforced by its drilling results, Tintina proposed that should the surface and subsurface metallic anomalies identified at the Asphalt and Buckton Zones, and over the other large composite target areas identified, indeed reflect the true size of underlying mineralization, metals concentration zones in the Speckled Shale Formation can be projected to extend over areas measuring upward to approximately 5kmx5km each. In addition, based on an extrapolated average thickness of approximately 30m for the Formation, and an average specific gravity of 2.1, Tintina proposed that metal concentration zones can potentially represent approximately an estimated 60 million tonnes per 1km^2 of lateral extent, representing approximately 1,500 million tonnes per zone. Tintina's proposal is supported, at least at the Buckton Zone, by the drilling of a 8km long cross-section across the Zone, albeit at relatively wide spacing. The author agrees with Tintina's proposal and regards it to be a useful conceptual model to guide future exploration work. The author also regards the drill spacing to be adequate and appropriate for an initial "blocking out" of an area of interest in black shale hosted mineralization for additional in-fill drilling.
- Historic exploration work programs collectively demonstrate that stream geochemical and mineral sampling, and to a lesser extent lakes geochemical sampling surveys, are very effective exploration methods to identify general areas over or near metallic mineralization on the Property. The extensive databases from the work programs demonstrate that stream sediments directly reflect chemical and mineral composition of exposures immediately upslope from sample locations, lacking the broad dispersion trends commonly associated with stream sediment sampling, and as such provide excellent prospecting methods for locating mineralized exposures.
- The work programs demonstrate that soil geochemical surveys utilizing enzyme leaching analytical methods are particularly effective exploration methods to localize buried mineralization on the Property, to identify drill targets and to localize drill holes.

Based on all of the above, Second White Speckled Shale hosted metal zones which have been identified (Buckton and Asphalt Zones), or proposed to exist, under the Property are envisaged to be black shale hosted metal aggregations which can in general terms be expected to be large and laterally extensive, from which a metal concentrate can likely be prepared provided the Shale's clay content is disaggregated, from which at least Ni-Zn-V can be leached on a combined basis with good recoveries, which carry recoverable native gold, which might be amenable to slurry transport, portions of which would be accessible by open pit, and which would be amenable to extraction by bulk mining techniques by "ripping".

19.2 Proposed Geological Working Model

A general geological working model is overwhelmingly suggested by the collective historic work for the Birch Mountains, and the Property, attributing a central role to local Middle Cretaceous volcanism or exhalative venting as the source to sedimentary debris as well as metallic mineralization and metal enrichment captured in Second White Speckled Shale Formation discovered in the area. The historic work also demonstrates that the Birch Mountains are unique in the foregoing regard when compared to elsewhere in northeast Alberta, which is supported by its location above a basement "hot spot".

As a general geological working model, it is proposed that the Birch Mountains, and the Property, overlie considerable exhalative venting, that the Middle-Upper Cretaceous formations incorporate considerable material from nearby venting events into their sedimentary record, and that culmination of the Second White Speckled Shale Formation depositional cycle coincided with a significant increase in venting, also marking the inset of a hiatus of volcanic activity in the area.

It is also proposed that metallic mineralization in the Birch Mountains, and the Property, is congregated around several vents yet to be localized, which are characterized by considerable exhalative activity venting through select block-faults or their junctions, and that the Second White Speckled Shale Formation, at least at the Buckton and Asphalt Zones, incorporates exhalative debris and metals from nearby venting. Under this scheme, the Asphalt and Buckton Zones can be envisaged to represent "aprons" of their respective nearby vents, and both Zones support speculation of the nearby existence in the area of yet undiscovered sedimentary exhalative - SEDEX style – sulfide mineralization. (see also Section 20.4.6).

All of the available historic data support the above proposal, and there exist no data, to the author's knowledge, that constrain the model or refute the proposal. There has been no prior exploration for sulfide deposits in the Birch Mountains and on the Property, since the bulk of the historic work has focused on a formational fluid dependant redox model for the area which was disproved by the 1997 drilling. All work subsequent to the historic drilling focused entirely on evaluating metallic potential of the black shales themselves without any attention to their provenance.

19.3 Overview of Polymetallic Grades and Gross In-Situ Values

Discussions of polymetallic grades are always complicated by the challenges of describing juxtaposed trends among grades of the multiple metals in a simple communicable format. Description of lateral or vertical variations in polymetallic grades within any given deposit, or mineralized system, are especially complicated by the fact that the various metals are rarely simultaneously equally enriched in any part of the deposit, and enrichment in one metal can be accompanied by depletion in another, even though "on balance" the overall average remains constant over large volumes. The multivariate metal enrichment/depletion trends, often also exhibiting multi-directional divergent enrichment vectors, can introduce considerable challenges to any explorationist attempting to delimit the deposit or is working toward identifying its more prospective and more valuable portions for additional exploratory follow-up drilling and additional exploratory investment.

Discussions of polymetallic grades are particularly complicated for deposits which lack a single "pay" metal representing the bulk of intrinsic value, and whose economic worth can only be represented by the combined value of a number of the contained metals which can be recovered from the deposit. As such, demonstrating the merits and relevance of simultaneous grade variations among multiple metals with differing values and different enrichment trends is especially difficult to convey, without simplifying the multiple variables on some consolidated basis relying on a common currency among the metals to interrelate equivalence (e.g. metal equivalents or gross in-situ values).

Restatement of combined metals grades as a single metal equivalent grade is a popular simplification, though the procedure imports mineral processing and recovery implications best avoided unless it is known that all of the metals can indeed be recovered along with the metal which is selected as their common basis (often the dominant metal). Until a recovery method is identified for any given polymetallic "mix", restatement of grades as a grade-equivalent is, accordingly, meaningless and unjustified. Restatement of the multiple grades on combined basis as a gross in-situ value, based on a set of metal prices, has also been a simplification in use although the practice can be misleading and easily confused with actual value which it clearly is not, as it too is entirely dependant of metal recoverability and also mining costs. Restatement of grades as gross in-situ values is, furthermore, prohibited by TSX Venture Exchange's Mining Standards Guidelines and by NI-43-101.

In the absence of optimum method(s) yet to be identified for recovery of metals from the Speckled Shales, discussion of polymetallic grades variations within the Shales cannot rely on a common basis for the metals to re-state them in any grade-equivalent format. It is the opinion of the author that the only common currency which enables discussion of collective metal grade variations, to guide future exploration toward expanding the more worthy portions of the polymetallic Zones, is their relative respective in-situ value. Some of the discussions of metal enrichment trends in Sections following, accordingly, rely on converting metal grades to in-situ values and re-stating them as a multiple of the similarly calculated average in-situ value of all relevant data as a relative yardstick. Metal prices used for the conversions are those used by Dumont for its internal planning purposes (Mo $32/lb, Ni $12/lb, U $75/lb, V_2O_5 $5/lb, Zn $1.4/lb, Cu $3/lb, Co $40/lb, Ag $15/oz, USD$=CDN$), which substantially reflect, but are slightly lower than, average metal prices over the twelve month period Sept/2007-Aug/2008[42]. The figures attribute only partial value to V (approximately 40%) to give effect to results of historic orientative leaching tests suggesting lower recovery for V (Ni 97%, Zn 100%, V 33%), but assume 100% recovery for the other metals for which there is no recovery data. The figures attribute nil value to gold content of the shales since its grade has not been definitively established.

For the purposes of this Report, the relative metal prices provide an acceptable approximation of their respective relative exploration significance based on grade variations thereof, for the purposes of establishing trends to guide future work. The reader is reminded that given recent metal prices, their incorporation into interpretations can bias future exploration activities toward the preferential search for the higher priced metals Mo-Ni-U. The author considers this, however, to be a natural characteristic of polymetallic deposits in general whose value is represented by different metals at different stages during the mining lifetime of any given deposit. The reader is cautioned that there is no certainty, in the absence of advanced stage metallurgical tests, that the metals will be commercially recoverable from the shales on the Property, individually or on a combined basis, nor that they can be efficiently or economically recovered, nor that, if recoverable, metal prices at time of recovery will be as they are estimated herein.

19.4 Target Areas – "Sub-Properties"

The combined historic work provides data coverage over the eastern two-thirds of Dumont's Property. The work identified six separate target areas in 1996, extending over 100-200 sq km each, over composite surface and subsurface anomalies (see Section 6.2.11). Two of the areas were confirmed by 1997 historic drilling to indeed reflect polymetallic mineralization buried beneath the anomalies as suspected (see Section 7.1). The target areas offer the principal prospective targets for future follow-up on the Property. They are discussed individually in Sections following, but have been consolidated into four principal areas based on reinterpretation of historic results with the benefit of other historic work completed subsequent to their initial 1996 designations.

The northwestern one third of the Property is unexplored and lacks sufficient prior oil-gas drilling to provide any subsurface stratigraphic information. Historic LANDSAT remote imagery interpretation, however (see in Sections 6.2.2 and 6.2.3), identified conspicuous features over this area, two of which merit field follow-up since similar features similarly identified over the eastern two-thirds of the Property were demonstrated by historic field work to host metal enrichment or near-surface polymetallic zones.

Based on the above, Dumont's Property contains six large known target areas which merit further work to either investigate physical and geochemical surface anomalies interpreted/identified from reconnaissance field work, or to localize the source of surface metal anomalies discovered, or to confirm suspected buried metal enrichment beneath surface geochemical anomalies identified, or to advance mineralized Zones previously identified to a classified resource. The target areas typically measure 100-300sqkm each and are centered around circular, or closed, physical or stratigraphic features associated with metals enrichment in one form or another either over them or on their flanks. It is suggested that Dumont regard the areas as distinct properties in their own right, and to give consideration to re-naming them during future work. The target areas are presented in Figure 65, and are discussed in order of decreasing level of development from the most advanced to the least explored.

[42] As published by the Canadian Northern Miner, Sept/2007-Aug/2008: Mo USD$33.2, Ni USD$12.2/lb, U USD$76.7/lb, V2O5 USD$11.8/lb, Zn USD$1.1/lb, Cu USD$3.5/lb, Co USD$40.8/lb, Ag USD$16.1/lb.

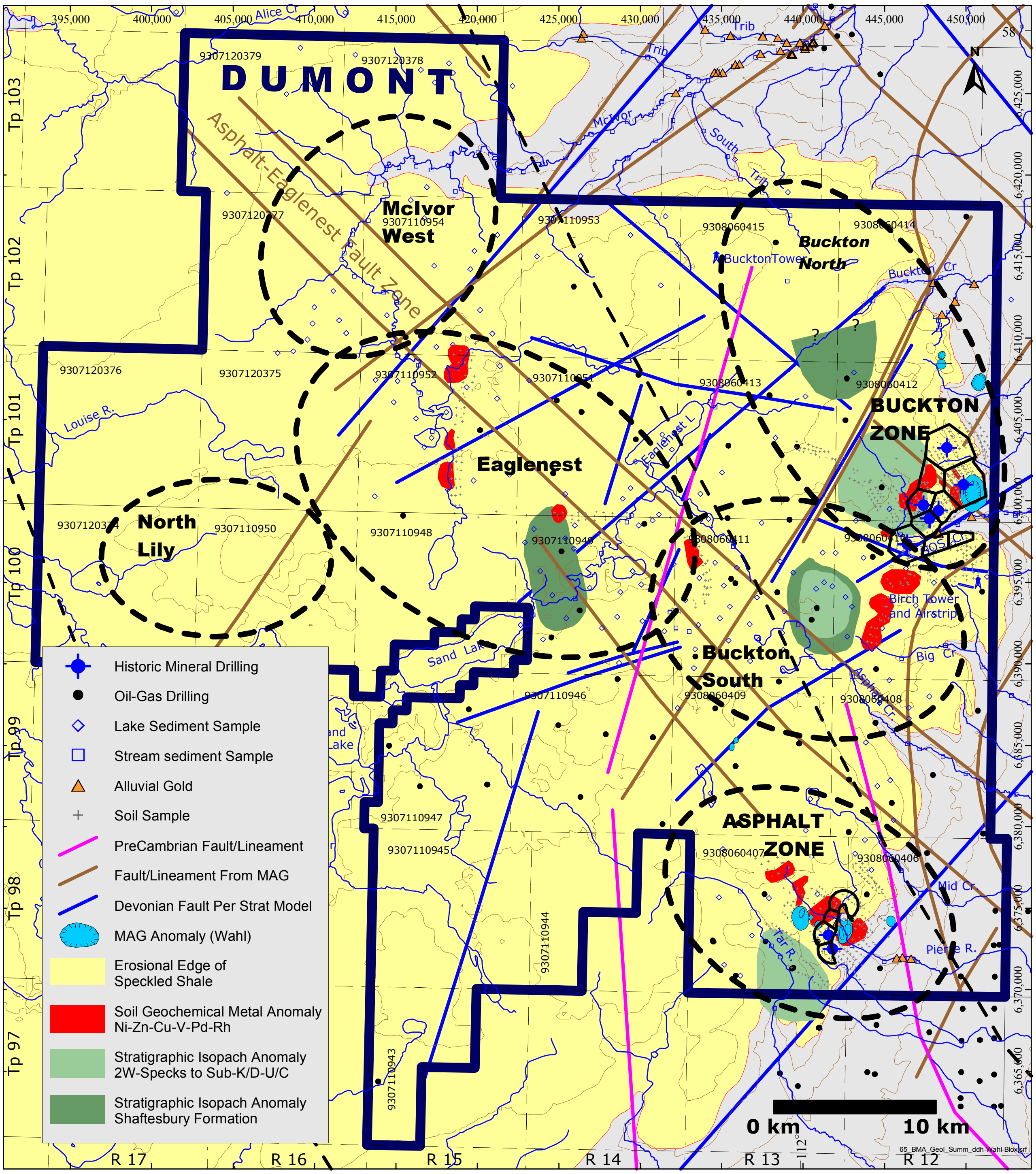


Figure 65: Summary compilation of all historic anomalies over the Property, showing also the composite target areas - "sub-properties" - comprising the principal exploration targets on the Property. The Buckton and Asphalt Potential Mineral Deposits are also shown. See also Figures 30-31 and 48-50 for aeromagnetic geophysical anomalies over the Property.

19.4.1 Buckton Zone, Projected Extensions and Potential Mineral Deposit

The Buckton polymetallic Zone was discovered in 1997 by historic drilling which was conducted to verify suspected metallic mineralization buried beneath a composite set of anomalies identified by extensive prior surface sampling over an approximate 50 sq km area (Figure 66). The Zone and its vicinity were previously designated as Composite Anomaly Area B-Mid by the historic work, and is located in S½ Twp101/R12 (see Section 6.2.11).

The Buckton Zone represents polymetallic enrichment in Mo-Ni-U-V-Zn-Cu-Co-Ag-Au, hosted in, and confined to, the Second White Speckled Shale Formation which is a substantially flat unit ranging 18m-26m in true thickness as intersected in the drilling. The Zone's thickness based on drilling is consistent with its exposures adjacent to the drilling along the north and south valley walls of Gos Creek at elevations ranging from 600m to 624m asl, although the exact position of the Formation is difficult to discern from the valley wall exposures alone due to considerable slumping locally "telescoping" its actual thickness to an apparent thickness exceeding 40m.

Based on the historic drilling, the Zone is approximately 8km-9km long and 2km-3km wide. It is open beyond the portion drilled to the north, to the west and to the south, but is eroded away to the east as it sits on the erosional edge of the Birch Mountains. Metal enriched exposures of the Second White Speckled Shale along valley walls as far away as 4km to the east of the Zone's southern extremity suggest it may be 2-3 times wider over its southern parts than demonstrated by the drilling. Other surface anomalies to its north and, especially the south, support speculations that it may be 2-3 three times longer than demonstrated by the drilling, although the areas to its south, previously designated as Composite Anomaly Area B-South by the historic work (see Figure 33, Section 6.2.11), may represent an altogether separate buried mineralized zone which has not yet been verified by drilling. Potential extensions are discussed later in this Section in the context of a potential mineral deposit contained in the Zone.

The Buckton Zone is located on the eastern flank of a 5km diameter subsurface stratigraphic isopach anomaly representing abnormal thickening in the stratigraphic pile above the sub-Cretaceous Unconformity (to base of Second White Specks) associated with faulting. Cross-sections across the anomaly indicate considerable structural complexity characterized by the junction of a multitude of faults converging toward the general southern portions of the isopach anomaly, defining an overall partial radial pattern. The isopach has been interpreted as a "closed" feature based on contouring of subsurface stratigraphic information from oil-gas well picks, although its interpreted shape may be an artifact of data noding, and it may well instead be a large fault block rather than a domed feature. Metal enrichment patterns in exposures sampled along the Gos Creek valley by the historic work suggest progressive enrichment nearer the isopach, as do a series of soil geochemical anomalies characterized by acute Ni-Cu diffusion accompanied by Te enrichment over areas straddling the flanks of the isopach.

The Zone is intermittently exposed along the north and south valley walls of Gos Creek. The GOS1 gossan, located in the north valley wall, represents by far the most continuous exposure of the Zone. The gossan comprises a nearly 1km ledge exposure of metals enriched Second White Specks Formation, lying over the eastern flank of this isopach feature. Mudflow sediments from the gossan drain directly into Gos Creek which is characterized by >90th pctl stream sediment geochemical anomalies in Ni±Zn±Hg, accompanied by alluvial gold in stream sediment HMCs. Native gold has been repeatedly recovered from the GOS1 gossan and from the Gos-C lithosection (in the south valleywall), both of which locations are uphill from stream samples reporting also native gold in Gos Creek. Metal enrichment over the western extremities of the GOS1 gossan are supported by Ni/Cu/Pd and halogens (Br/I) diffusion anomalies in overlying soils. The gossan can be regarded as a geochemical halo, related to broader metal accumulation nearby.

Outcrop exposures of sulfide bearing Speckled Shale adjacent to the Buckton Zone and the adjacent isopach anomaly are enriched in Mo-Ni-Cu-Zn-V-Co-Ag±Au±Pt±Pd,), especially over its upper portions and near its lower contact defined by the siliciclastic bone bed representing a marine extinction marker horizon. The siliciclastic bone bed is typically a few centimeters thick but is abnormally thickened upward to 1m nearer the isopach anomaly.

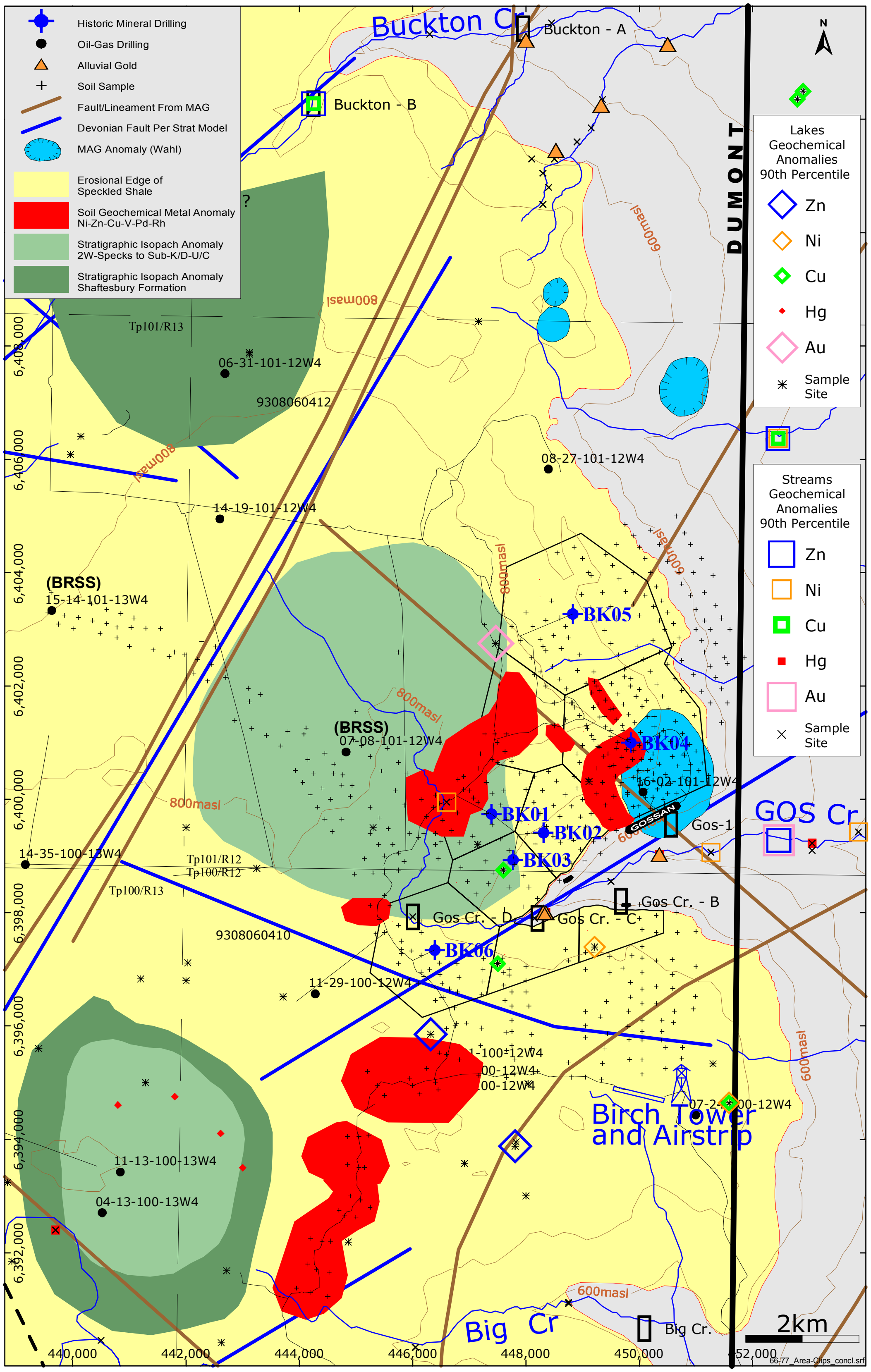


Figure 66: Summary of the Buckton Zone and vicinity, showing also historic anomalies and the Buckton Potential Mineral Deposit. See also Figures 30-31 and 48-50 for aeromagnetic anomalies over the Property. BRSS=Beaver River Sandstone.

Tintina's examination of available archived drill core and cuttings from two oil/gas wells in the area (07-08-101-12W4 and 15-14-101-13W4) reported the presence of abundant sulfides in some Cretaceous sections. The historic work also noted presence of Beaver River Sandstone immediately above the sub-Cretaceous unconformity, enveloped in altered shale with up 50% sulfides by volume immediately adjacent to its contacts (shown in Figure 66 as BRSS). This highly silicified sandstone also outcrops elsewhere in the region and is generally regarded as a hot springs alteration marker carrying ZrO in addition to gold, base metals, sulfides and iodides (Fenton and Ives 1982, 1984, 1990). Its presence in the Birch Mountains spatially associated with stratigraphic thickening and with metal enrichment zones can be considered to be diagnostic and suggestive of the localized presence in the area of broad alteration zones overlying nearby centers of hot springs or other metal bearing fluid venting activity (fumeroles?).

The Buckton Zone was discovered by six 3-inch diameter vertical holes (a total of 749.63m) drilled by Tintina in 1997 to verify suspected metallic mineralization buried beneath the anomalies described above which collectively represent a 5kmx8km composite anomalous target area (Area B-Mid). The holes were collared along an approximate 8km long fence as a cross-section over the southeast flank of the isopach anomaly. This fence can, alternatively, be regarded to comprise two separate parallel 4km to 5km long "staggered" cross-sections 1km-2km apart, which also radially parallel Gos Creek and its valley walls 1km-2km to the southeast. The fence is regarded as a cross-section for the purposes of this Report.

Drill holes spacing ranged 700m to 2400m. Four of the holes (BK06, BK02, BK04 and BK05) were spaced approximately 2km-2.4km apart, whereas the remaining two holes (BK01 and BK03) were collared within an approximate 700m radius of hole BK02 to assess local "on-section" and "off-section" variations. Hole depths varied 75m-150m to probe from surface (approximate elevation of 700m-750m asl) down to the base of the Second White Specks Formation (approximate elevation of 600m-630m asl). All holes reached their targets, with the exception of hole BK01 which was collared too high to reach the bottom contact of the Second White Speckled Shale. Drill core was sampled under geological control and sample intervals varied 4cm to 1.51m averaging 0.53cm. Details of the drilling were previously discussed in Section 6.2.12 of this Report.

Weighted average grades of select metals and elements across the entire thickness of the Second White Speckled Shale Formation are summarized in Table 15, arranged in sequence from southwest (BK06) to northeast (BK05) in the same order as they are positioned along the drilled fence. Results for individual drill intercepts were previously summarized in Table 4, Section 6.2.12.

Hole No.	From (m)	To (m)	Interval Thickness (m	Mo-ICP (ppm)	Ni-ICP (ppm)	U-INA (ppm)	V-ICP (ppm)	Zn-ICP (ppm)	Cu -ICP (ppm)	Co-INA (ppm)	Ag-ICP (ppm)	Corg-Leco (%)	Fe-INA (%)	S-Leco (%)
BK06	107.6	130.2	22.6	72	133	30	668	282	78	21	0.8	7.2	4.6	4.2
BK03	75.0	101.2	26.2	62	121	30	623	289	73	19	0.4	6.0	4.1	3.7
BK01*	133.0	154.3	21.3	86	160	37	776	360	83	21	0.4	7.1	4.0	4.2
BK02	60.8	79.2	18.4	66	126	34	648	305	70	21	0.5	6.0	4.5	3.8
BK04	120.6	141.7	21.1	67	129	27	645	282	73	23	0.3	7.2	4.7	3.9
BK05	76.8	95.2	18.4	77	152	25	722	318	77	24	0.7	7.6	5.0	4.3
Weighted Average			21.3	71	135	30	673	302	75	21	0.5	6.8	4.5	4.0

*Hole BK01 did not reach bottom of the Formation, EOH at 149.1m. Its thickness estimated to be 21.3m projected from adjacent holes

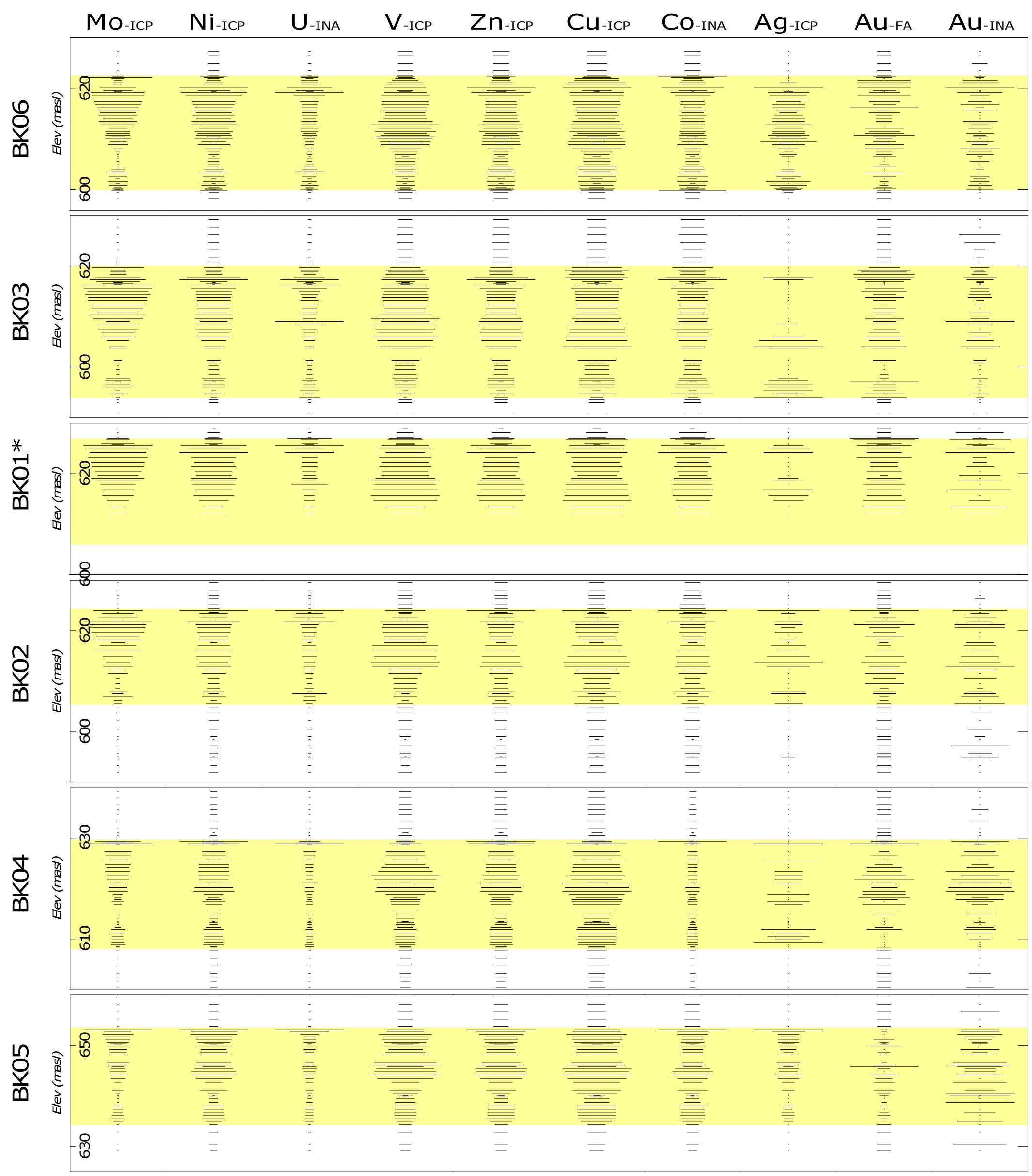
Hole No.	From (m)	To (m)	Interval Thickness (m	Mo-ICP (lb/st)	Ni-ICP (lb/st)	U-INA (lb/st)	V-ICP (lb/st)	Zn-ICP (lb/st)	Cu -ICP (lb/st)	Co-INA (lb/st)	Ag-ICP (g/t)
BK06	107.6	130.2	22.6	0.14	0.27	0.06	1.34	0.56	0.16	0.04	0.8
BK03	75.0	101.2	26.2	0.12	0.24	0.06	1.25	0.58	0.15	0.04	0.4
BK01*	133.0	154.3	21.3	0.17	0.32	0.07	1.55	0.72	0.17	0.04	0.4
BK02	60.8	79.2	18.4	0.13	0.25	0.07	1.30	0.61	0.14	0.04	0.5
BK04	120.6	141.7	21.1	0.13	0.26	0.05	1.29	0.56	0.15	0.05	0.3
BK05	76.8	95.2	18.4	0.15	0.30	0.05	1.44	0.64	0.15	0.05	0.7
Weighted Average			21.3	0.14	0.27	0.06	1.35	0.60	0.15	0.04	0.50

Table 15: Weighted average grades of select metals and elements across the entire thickness of the Second White Speckled Shale Formation, historic drilling, Buckton Zone, after Alberta Mineral Assessment Report MIN9802, Sabag 1998. For additional details see also Table 4, Section 6.2.12 of this Report.

There is good consistency in the average grades among the drill holes, especially when considering their wide spacing. This is typical of the lateral consistency displayed by black shales worldwide. There is, however, variability in grades vertically within the Shale as expected, depicting orderly trends, and such is also typical of black shales worldwide. The vertical trends are material to helping identify better grading portions within the Buckton Zone to guide future drilling toward identifying similar material.

Downhole metal grades are shown in Figure 67 for each of the holes, for a qualitative review (see Table 4, Section 6.2.12 for detailed data). Holes are sequenced in the Figure from the southwest (BK06) to the northeast (BK05) in the same order in which they are located in the drilled cross section. Metal grades are shown sequenced downhole for the drill intercepts from the top of the upper contact of the Shale Formation downward to its base.

The relative grade for each metal, ranging between its maximum and minimum, is represented by the size of the bar in the Figure. The progressive enrichment of Mo-Ni-U-(Ag) upstratigraphy is well defined in the Figure and is consistent with progressively more bentonitic sections seen in the drill core which carry more abundant sulfides. V-Zn-Cu-Co, however, exhibit mixed trends one of which is enrichment upstratigraphy and the other is enrichment midsection in the Formation, which is pronounced for V which is concentrated



*Drill hole BK01 did not reach bottom of Second White Specks Fm (estimated 21.3m per nearby holes)

Figure 67: Downhole grades for select metals across the thickness of the Second White Speckled Shale Formation (shaded), Buckton Zone historic drilling. Data from Alberta Mineral Assessment Report MIN9802, Sabag 1998.

mostly in the midsection. There is no discernible trend in Au grades, and no correlation between analyses from fire assay as compared to those by INA.

Downhole grades for single metals over the drilled cross-section, compared among the holes, are presented in Figure 68. Holes are sequenced in the Figure from the southwest (BK06) to the northeast (BK05) in the same order in which they are located in the cross section. Metal grades are shown sequenced downhole from the top of the upper contact of the Shale Formation downward to its base. The bars depicting grades for any given metal are sized in the Figure to a common scale for all of the holes to enable relative comparisons from one hole to the next and over the cross-section.

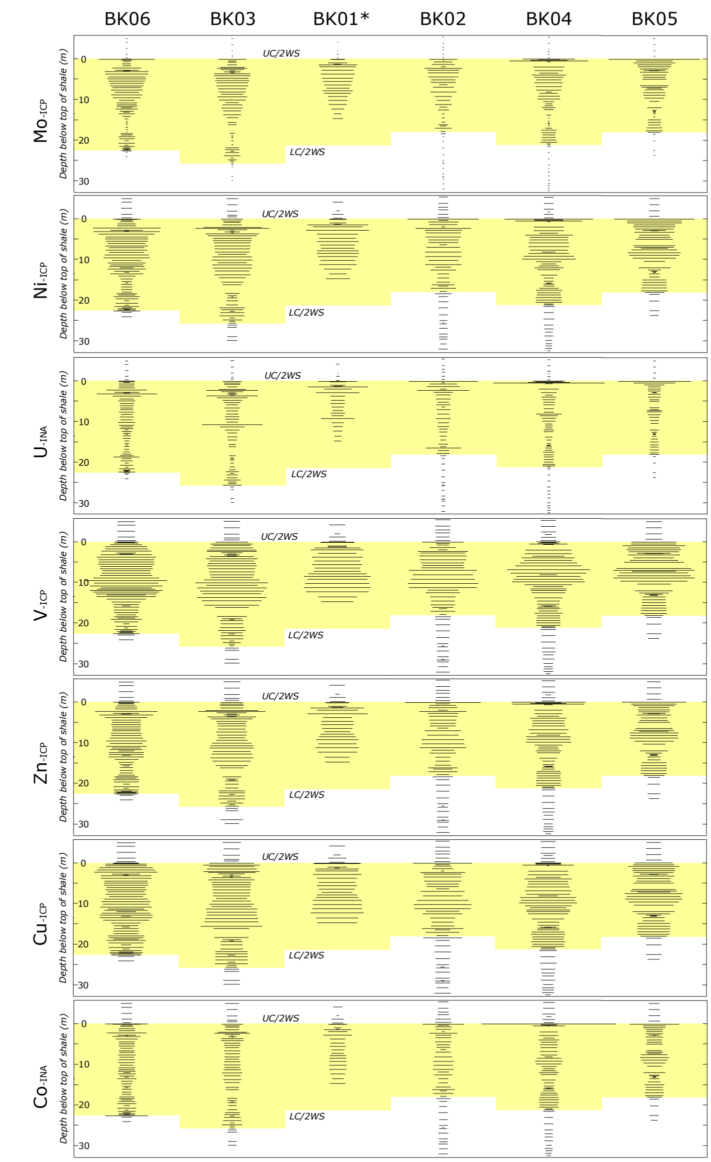


Figure 68: Downhole grades for select metals across the thickness of the Second White Speckled Shale Formation (shaded), Buckton Zone historic drilling. Data from Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Figure 68 shows consistency among downhole grades from one hole to the next over the length of the cross-section with a subtle progressive increase in U-Mo-Ni grade to the northeast in the uppermost sections of the holes in BK04 and BK05.

The above trends are very general and serve only to characterize bulk patterns within the Shale and across the Zone. The trends depict the data on an absolute basis taking no consideration of sample widths and drill interval weighting.

Downhole grades for the metals are shown for hole BK02 in Figure 69, weighted to drill sample interval (gradexthickness) and presented in the order of samples extending from the top of the Formation down to its base. While the profile in Figure 69(a) characterizes the polymetallic mineralization in the Shale as substantially a V-Zn system with lesser Mo-Ni, normalization of the gradexthickness profiles to relative metal prices[43] by multiplying the gradexthickness by the respective metal price as shown in Figure 69(b) bears out the true nature of mineralization at the Zone and characterizes it as a Mo-Ni-U-V polymetallic Zone with subordinate Zn-Cu-Co.

[43] Average metal prices for the year Sep/07-Aug/08; Mo ($35/lb), Ni ($12/lb), U ($75/lb), V_2O_5 ($5/lb), Zn ($1.4/lb), Cu ($3/lb), Co ($40/lb), Ag ($15/oz). V discounted to approximately 40%.

Overall metal grade weighted averages for the drill holes, normalized to metal prices, are summarized in pie charts of Figure 70, showing the relative in-situ value represented by each metal as a % of the total in-situ value of the combined metals. The Figure reiterates that the Buckton Zone is principally a Mo-Ni-U-V dominated polymetallic Zone with subordinate Zn-Cu-Co-Ag, and that it is characterized by remarkable consistency of proportionate grades among the various metals across the entire 8 km cross-section drilled.

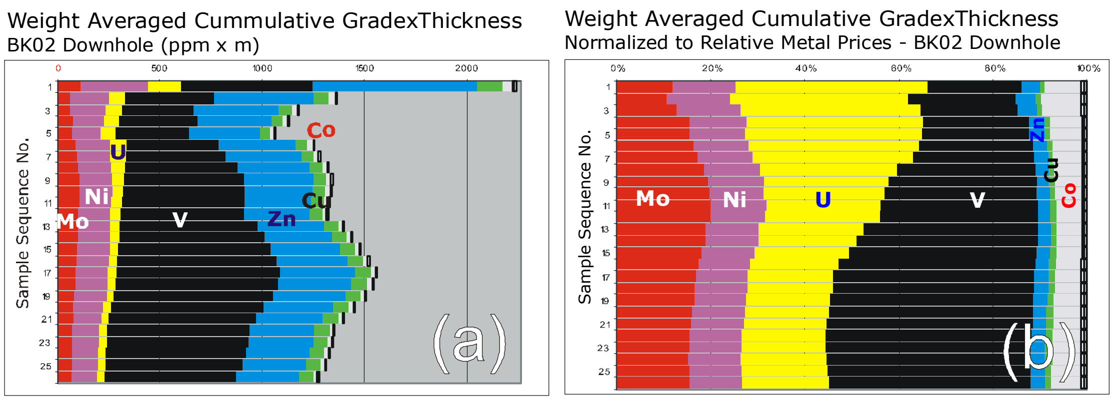


Figure 69: Downhole weighted cumulative average grade x thickness profiles (above) for select metals, and downhole weighted cumulative average grade x thickness normalized to relative metal prices (below), drill hole BK02, Buckton Zone historic drilling, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Lateral and vertical metal grade variations are best captured in downhole trends of metal grades restated as a multiple of the overall average of all of the holes. This is presented in Figure 71 showing the average downhole grade of various metals over progressive thicknesses of material beneath the upper contact of the Shale. Holes are sequenced in the Figure from the southwest (BK06) to the northeast (BK05) in the same order in which they are located in the cross section.

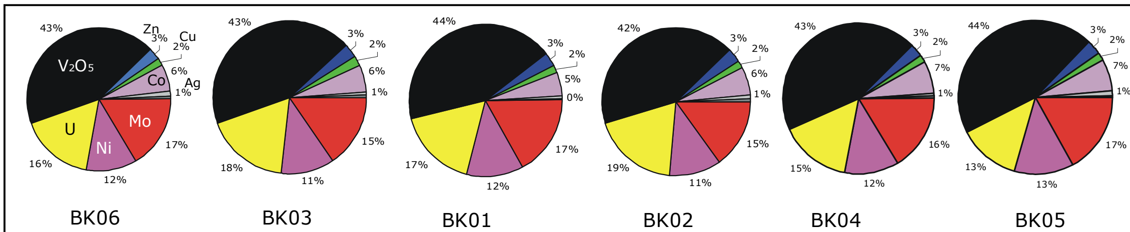


Figure 70: Pie Charts of relative in-situ value represented by select metals, Buckton Zone historic drilling, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Figure 71 shows better overall grades over the upper portions of the holes, typically representing x2 the average of all of the holes, progressively trending toward the average further downhole. Over the northeast portions of the drilled cross-section (BK02, BK04, BK05), however, the trends exhibit progressively better northeasterly increase in grades in the upper parts of the holes, accompanied also by progressive thickening of the better grading upper portions. This trend is clearly seen for U in BK01 which is nearly x3 the average in upper parts of the hole, but reaches x6 the average in BK05 where the enrichment is also accompanied by Mo (x5), Ni (x3), Co (x3) and Zn (x2). Interestingly, V contents are relatively constant throughout the downhole profiles showing no lateral (along-section) enrichment and reiterate that V enrichment is subdued and is substantially confined to the midsection in the holes as seen in previous figures.

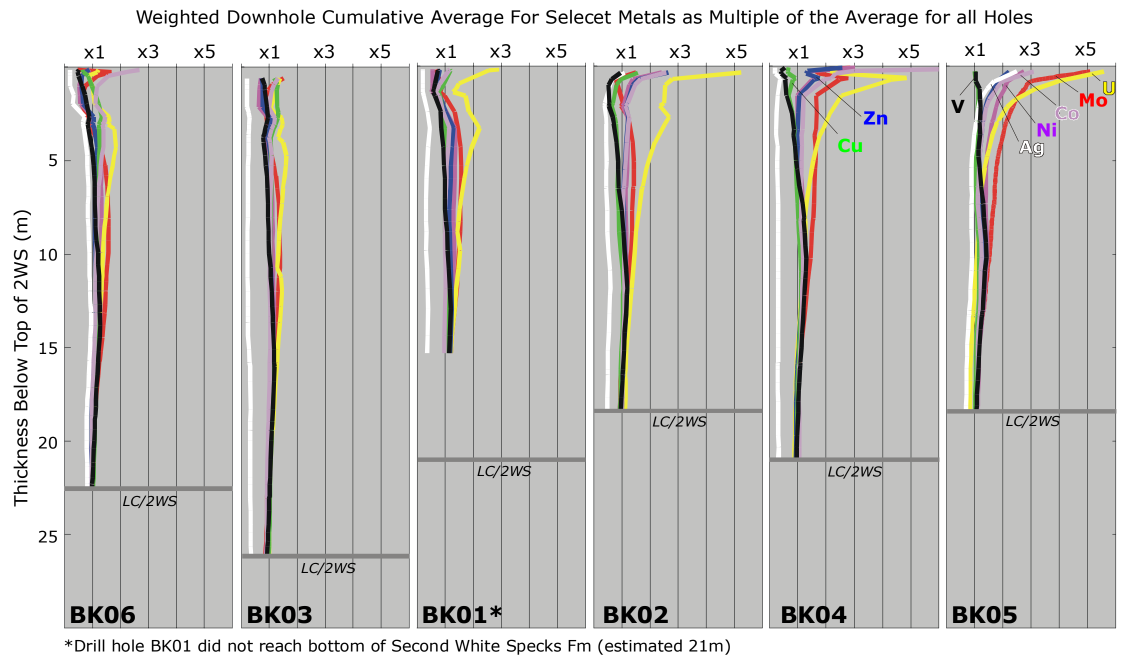


Figure 71: Weighted cownhole cumulative average metal grades,normalized to relative metal prices, as a multiple of the average for all holes, for progressive thicknesses of material below the upper contact of the Second White Speckled Shale Formation, Buckton Zone historic drilling. Data from Alberta Mineral Assessment Report MIN9802, Sabag 1998.

The metal enrichment trends in Figure 71 provide lateral enrichment vectors suggesting that future work should focus on the area to the north of the drilled cross-section for identification of better grading material which may also comprise thicker sections in the Formation northwards dominated by metals other than V. The trends are accompanied by Ba enrichment over the top of the Formation, and are also consistent with the progressive increase in frequency and size of bentonites in the upper sections of the drill core nearer the upper contact of the Second White Speckled Shale Formation, and also better development of thicker bentonite seams toward the northeast suggesting a nearby source to the northeast (discussed further later in this Section).

Should the above trends prove to be typical for the overall Property, they would serve to further characterize the true nature of metal mineralization in the Second White Speckled Shale and perhaps also the enveloping black shales across the Property as consisting of two separate juxtaposed trends: one which is predominantly a general basinal trend related to the shales' anoxic provenance and dominated by V-Cu(Zn), and another trend superimposed upon it which is dominated by Mo-Ni-U-Zn-Co enrichment, accompanied by bentonite development , related to localized volcanism and exhalative venting.

The above proposed scheme would be consistent with the overall V and Zn enrichment common to all of the black shales on the Property (LaBiche avg 243ppm V; 143ppm Zn), Belle Fourche avg 209ppm V; 132ppm Zn), even though the concentrations are notably higher in the Second White Speckled Shale (avg 680ppm V; 306ppm Zn). By contrast, the Speckled shale is considerably better enriched in Mo-Ni-U (avg 72ppm Mo, 137ppm Ni, 31ppm U) than its enveloping black shale Formations (LaBiche avg 2ppm Mo, 42ppm Ni, 5ppm U)(Belle Fourche avg 3ppm Mo, 42ppm Ni, 5ppm U).

In addition to the above, the trends in Figure 71 might also provide a general indication of the carrier mineralogy of the various metals, suggesting that Mo-Ni-U-Zn-Co are likely contained in forms or minerals (sulfides/oxides?) other than those which host the V-Cu(Zn) (likely organics and clays).

The downhole aggregate combined in-situ value of the metals is shown in Figure 72 as a multiple of the average combined in-situ value of all of the holes, for progressive thicknesses beneath the top of the Second White Speckled Shale.

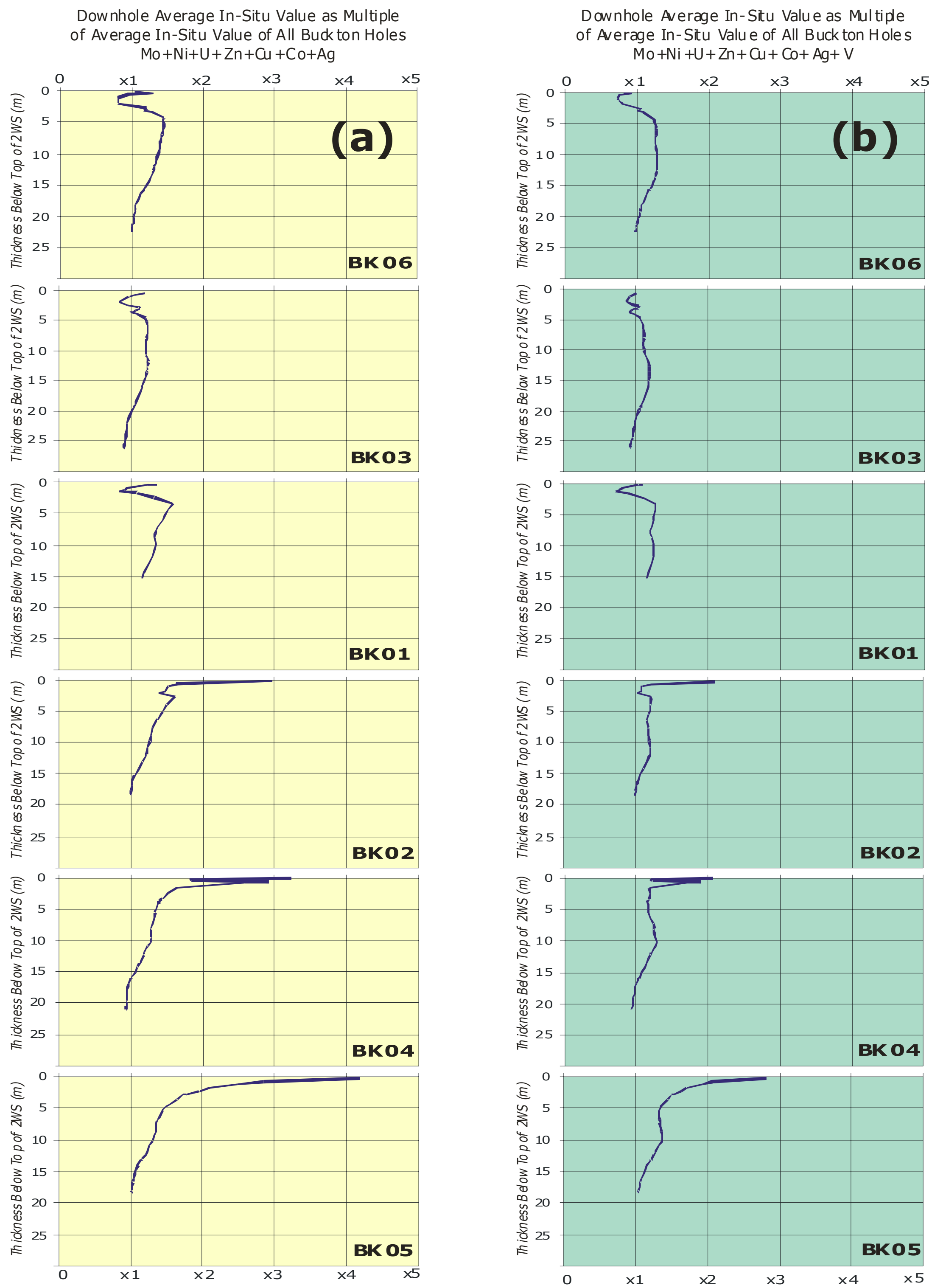


Figure 72: Downhole weighted average in-situ value of combined metals as a multiple of the average combined in-situ value of the metals for all of the Buckton holes, for progressive thicknesses of material below the upper contact of the Second White Speckled Shale Formation, Buckton Zone historic drilling. Graphs for suite of metals excluding-V (left) and including-V (right) shown for comparison. Data from Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Figure 72 shows trends for two groupings of metals, one including V and the other excluding it. The Figure reiterates the northerly thickening trend of the better grading material in the upper parts of the holes, but also reiterates the similar trend for the Mo-Ni-U-Zn-Cu-Co-Ag group which excludes V. This trends is relevant to future exploration toward expansion of the Buckton Zone, and also relevant to exploring the suggested potential of locating the source to metals in the shales (discussed further on this Section under Buckton North extension). The trends would also be relevant during any future resource study which will undoubtedly have to address blocking of volumes of mineralized material guided by economic parameters, but which will equally have to rely on a determination of which group of metals to block out for the purposes of the study.

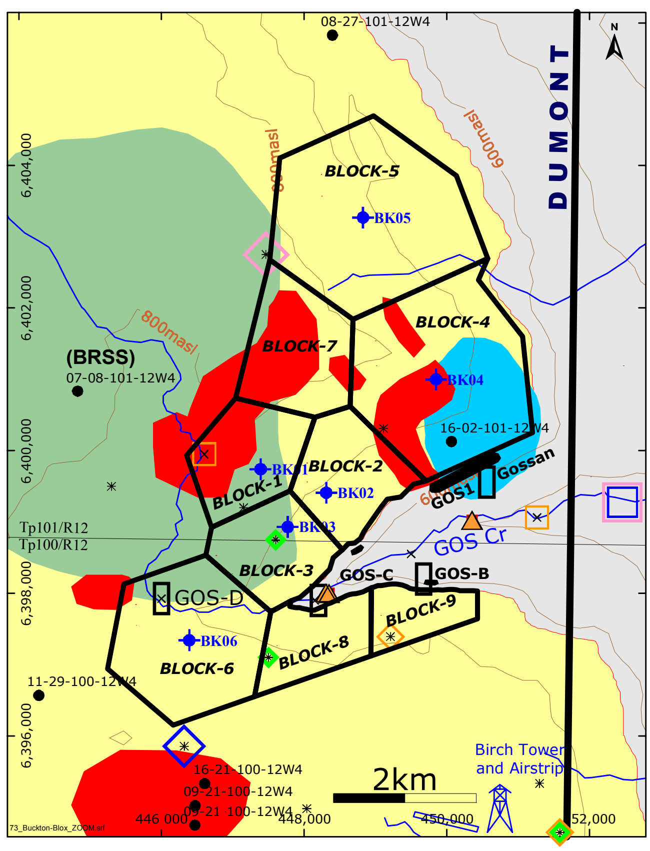


Figure 73: Buckton Potential Mineral Deposit area sketch, showing estimated mineralized blocks. Buckton Zone. See Figure 66 for legends.

Relying on the historic drilling results, reinforced also by results from a multitude of exposures of the Second White Speckled Shale Formation in valley walls near the drill-section and near the holes, and further reinforced by surface geochemical data and the remarkable lateral continuity in geology and orderly grades exhibited by the historic drilling, the author proposes that the Buckton Zone contains a Potential Mineral Deposit as understood under NI-43-101. The proposed Potential Mineral Deposit is conceptual in nature, and is intended solely to provide an indication of the overall potential of the Buckton Zone, and of the magnitude of mineral aggregations which the Zone might ultimately yield subject to confirmation by future in-fill grid drilling. The reader is reminded that there has been insufficient drilling conducted over the Zone to define a mineral resource, and that it is uncertain if further drilling will define a mineral resource over the Zone. Dumont plans to conduct the necessary drilling to test the resource potential of the Zone (discussed further in the Recommendations Section of this Report).

The proposed Potential Mineral Deposit comprises a volume of polymetallic material contained in nine polygonal blocks (Figure 73) whose size and distribution has been estimated predicated on the following:

- Considerable weight has been attributed to the historic drill data during preparation of the estimates, relying on results from surrounding areas to reinforce extrapolation of the polygons. The author considers the spacing of the historic drilling to be adequate for the blocking out of an area of interest in black shale hosted mineralization, as an area which is to be the subject of future in-fill drilling.

  In the above regard, during pre-development stages of the Frontier oil sands deposit near Dumont's Property, drill data based on 400m spacing (plus localized 200m tests) was considered to provide adequate confidence in a calculated resource to support decisions whether to proceed toward the $15 billion capital project. A 200m spacing was subsequently considered adequate to support preliminary feasibility study and preliminary mine planning (Burns et al 2001). Similarly, inferred resource modeling for the MyrViken Uraniferous Alum black shale deposit (Continental Precious Minerals) relied on a drill hole spacing ranging 30m-380m averaging 300m (Harron 2008), and minimum drill hole spacing necessary to support a Measured and Indicated Resource classification at the Paracatu gold deposit (Kinross) is a 200mx200m "five spot" pattern, resulting in an average nominal drill hole spacing of 140m (see Section 18.4). It is the author's opinion, based on his six years of mapping and sampling experience of the Second White Speckled Shale across the Birch Mountains, and over the Property, that the Shale exhibits sufficient lateral continuity of bulk grade and geology that a 400m-500m nominal drill spacing (with localized 200m tests) would be adequate to support estimation of inferred resources for the Buckton Zone, though 200m-400m would be preferable and may enable partial upgrading of the classification.

- Blocks 1 through 6 are centered around the historic drilling and are numbered per their respective drill holes. The blocks comprise simple polygons centered on Speckled Shale drill intercepts extending outward from each drill hole midway to the next adjacent hole. Blocks 4 and 5 were extended eastward to the 620m asl elevation contour which is the approximate elevation at which the Shale Formation is observed in exposures along the erosional edge of the Birch Mountains and at the GOS1 gossan. Volumes were estimated by multiplying the polygonal area by the thickness of the Formation as a range varying between the true thickness as measured in the drill hole at the centre of each block and the overall average of all of the holes. For some holes the average is lower than the true thickness of the Formation and for others it is higher.

- Block-1 is centered around drill hole BK01 which did not reach the bottom of the Second White Speckled Shale Formation. Thickness of the Formation is estimated to be 21.3m based on projections from adjacent holes (only 15.3m of Shale was cored in this hole).

- Blocks 3, 2 and 4 are adjacent to the north valley wall of the GOS Creek, and were extended southeast to the valley break marking the erosional edge of the Second White Speckled Shale Formation. These Blocks are reinforced by exposures of similarly mineralized intermittent exposures of the White Speckled Shale Formation sampled in the historic work along the 4km long valley walls, including extensive sampling of the 120m long mineralized exposure at the GOS1 Gossan which has occasionally also yielded free gold grains in heavy mineral concentrates. The GOS1 gossan and other exposures along the north wall are regarded as exposures of the Zone in the third dimension, and provide good corroboration of averaged grades though averaging of results from the exposures is complicated by considerable slumping the area.

- Block-7 overlies a large soil geochemical anomaly in an embayment surrounded by drill based Blocks 1, 2, 4 and 5. Similar soil anomalies overlie Blocks 1-6, and were demonstrated to reflect buried mineralized material, and Block-7 is proposed to similarly reflect buried mineralization. The average thickness per drill holes 1, 2, 4 and 5, was assigned as the thickness of Block-7, and its volume estimated based on the range of thickness varying between the estimated thickness and the overall average of all of the holes. Grade was estimated to be the range defined by the average grades from the drill holes.

- Blocks 7 and 8 were added to give effect to polymetallic outcrop exposures of the Second White Speckled Shale throughout the southern valley wall of the GOS Creek Valley which have been mapped and sampled in detail by the historic work in stratigraphic sections. These are regarded as exposures of the Zone in the third dimension, and comprise the GOS-C and GOS-B stratigraphic sections which have reported similar polymetallic grades as those from the drilling, although averaging of grades therefrom is complicated by uncertainties due to considerable slumping in the valley. GOS-C section has returned some of the highest gold assays ranging 20ppb-67ppb from routine fire assaying of exploration samples over the area. The average Formational thickness was assigned as the thickness of these blocks, and its grade is estimated to be the range defined by the average grades from the drill holes. The Blocks are extended to the valley break marking the erosional edge of the Shale.

- Tonnages were calculated at a specific gravity of 2.1 as calculated from drill sample weight records reported in the historic work.

- Grades for the various metals are based on the overall drill hole weighted average grades restated as a range varying between the lowest and the highest grade reported from the holes for any given metal as averaged over the entire thickness of the Second White Speckled Shale Formation intersected in the hole. No attempt has been made to exclude lower grading material from near the bottom of the Formation. Gold content has been assumed to be nil given discrepancies of an order of magnitude or more between grades reported by historic bottle roll cyanidation tests of 500gm samples (broadly ranging 0.1-0.4g/t grades) compared with mostly single digit ppb range grades reported from routine fire assays and INA analyses of approximately 30gm samples.

Based on the above scheme, the Potential Mineral Deposit which is proposed to be contained in the Buckton Zone extends over an approximate 3km x 8km area comprising approximately 26 square kilometers, with a thickness varying, on average, 20.5m to 21.9m, and represents an aggregate of approximately 1.2-1.3 billion short tons of mineralized material (1.1 to 1.2 billion tonnes). Block volume and tonnage estimates are summarized as ranges in Table 16. Estimated grades and gross contained metals are summarized as ranges in Table 17 rounded to the nearest million unit.

The reader is reminded again that the estimated Potential Mineral Deposit is conceptual in nature, that there has been insufficient drilling conducted over the Zone to define a mineral resource, and that it is uncertain if further drilling will define a mineral resource over the Zone. The estimates are intended solely as an indication of the overall potential of the Buckton Zone, and of the magnitude of mineral aggregations which the Zone might ultimately yield subject to future in-fill grid drilling. Dumont plans to conduct the necessary drilling to test the resource potential of the Zone (discussed further in the Recommendations Section of this Report).

Block Volumes and Tonnage Estimates: Potential Mineral Deposit - Buckton Zone

Block Name	Area (sq m)	Basic* Thickness	Thickness Estimate (m) Low	High	Volume Estimate (cu m) Low	High	Tonnage Estimates (tonnes) Low	High
Block-6	3,802,105	22.6	21.3	22.6	80,984,837	85,737,468	170,068,157	180,048,682
Block-3	1,897,788	26.2	21.3	26.2	40,422,884	49,722,046	84,888,057	104,416,296
Block-1	2,017,981	21.3	21.3	21.3	42,982,995	42,982,995	90,264,290	90,264,290
Block-2	2,061,096	18.4	18.4	21.3	37,862,334	43,901,345	79,510,900	92,192,824
Block-4	5,382,608	21.1	21.1	21.3	113,357,724	114,649,550	238,051,221	240,764,056
Block-5	5,749,675	18.4	18.4	21.3	105,736,523	122,468,078	222,046,699	257,182,963
Block-7	2,461,878	19.8	19.8	21.3	48,745,184	52,438,001	102,364,887	110,119,803
Block-8	1,526,739	21.3	21.3	21.0	32,519,541	32,061,519	68,291,035	67,329,190
Block-9	1,027,475	21.3	21.3	21.0	21,885,218	21,576,975	45,958,957	45,311,648
Totals	25,927,345				524,497,240	565,537,977	1,101,444,204	1,187,629,751
Averages		21.1	20.5	21.9				

* Thickness(m) as measured in drill hole, or as assigned or estimated for block. See report text

Table 16: Summary of estimated volumes and tonnages, Potential Mineral Deposit, Buckton Zone.

The reader is also reminded that while estimated Potential Mineral Deposits can be misleading if regarded as resources, which they clearly are not, they can also fail to capture the ultimate potential of any mineral zone given that the estimates are derived from bulk averaging of figures based on a broad range of grades, thickness and assumptions. In the latter respect, it is possible that estimation of a Potential Mineral Deposit which may exist over any given mineralized zone may understate the ultimate potential of the zone it attempts to characterize.

Grade Averages and Gross Metals Content: Potential Mineral Deposit - Buckton Zone				
	Grade Range (ppm)	Grade Range (lb/st)(opt)	Gross Metal/Oxide Content (lb) (oz) Low Estimate	High Estimate
Mo	62ppm-86ppm	0.12lb/st-0.17lb/st	150,000,000	225,000,000
[MoO3]		0.19lb/st-0.26lb/st	225,000,000	338,000,000
Ni	121ppm-160ppm	0.24lb/st-0.32lb/st	293,000,000	419,000,000
U	25ppm-37ppm	0.05lb/st-0.07lb/st	61,000,000	96,000,000
[U3O8]		0.06lb/st-0.09lb/st	72,000,000	113,000,000
V	623ppm-776ppm	1.25lb/st-1.55lb/st	1,511,000,000	2,027,000,000
[V2O5]		2.24lb/st-2.79lb/st	2,719,000,000	3,649,000,000
Zn	282ppm-360ppm	0.56lb/st-0.72lb/st	683,000,000	940,000,000
Cu	70ppm-83ppm	0.14lb/st-0.17lb/st	169,000,000	217,000,000
Co	19ppm-24ppm	0.04lb/st-0.05lb/st	46,000,000	63,000,000
Ag	0.3ppm-0.8ppm	0.01opt-0.026opt	12,000,000	34,000,000
Au	assumed nil	assumed nil	assumed nil	assumed nil

lb/st=lbs per short ton; opt=ounces per ton   Gross metal contents are rounded to nearest million units *

Table 17: Summary of grades and gross metal content estimates, Potential Mineral Deposit, Buckton Zone. All metals grades expressed in ppm and restated as lb/s.t. except Ag which is expressed also as opt; all gross metals contents are expressed in lbs except Ag which is expressed in oz. Mo, U and V are also re-stated in oxide equivalents.

In the above regard, the estimates presented herein do not selectively highlight the higher grading material (subzones) in the upper sections of the Potential Mineral Deposit, other than by bulk averaging them along with much lesser mineralized material over the entire volume. Fore example, based on the estimation procedures and assumptions presented above, a smaller volume of material with 15%-30% better overall average grade can be blocked out as a sub-zone confined to the uppermost 10m thickness of the Buckton Potential Mineral Deposit, equivalent to approximately 40%-50% of the overall tonnages estimated for the overall Potential Deposit (see Figure 72). Similarly, by focusing only on the northern portion of the drilling, an even smaller tonnage can be blocked out within the uppermost 10m of the Zone as yet another sub-zone, likely representing approximately 20%-30% of the Buckton Potential Mineral Deposit, wherein Mo-Ni-U-Zn-Co represent sufficient combined value to be of interest as a stand-alone mineralized volume. In the absence of metal recovery information, several iterations of a variety of subzones can be blocked out over different portions of the Buckton Zone, each one dominated by a different metals profile. This is typical for polymetallic deposits, and is an exercise best relegated to the rigors of a future resource study guided by definitive metals recovery information.

The proposed Buckton Potential Mineral Deposit is open in three directions - to the north, the south and the west - but it is eroded away to the east as it sits on the erosional edge of the Birch Mountains. Projected extensions are as follows:

Southern Extension (Buckton South): Based on historic results from surface sampling, the Potential Mineral Deposit could realistically be extended for an additional 6km to its south over a series of soil geochemical metal diffusion anomalies collectively occupying a 2km x 6km area. The soil geochemical anomalies are reinforced by other surface, subsurface stratigraphic and structural features, and by >90th pctl lake sediment geochemical anomalies comprising elevated Zn±Ni±Cu±Ag±Hg surrounding an interpreted fault swarm related to Zn diffusion anomalies in soils, associated also with localized zones of Te enrichment. The faulting is associated with a stratigraphic isopach anomaly (in Tp100/R13) comprising abnormal thickening in the stratigraphic pile above the sub-Cretaceous Unconformity (to base of Second White Specks) coincident with a similar thickening exhibited by the Fishscales-Second White Specks (Shaftesbury) isopach. The combined anomalies were previously designated by historic work as Composite Anomaly Area B-South (Figure 33, Section 6.2.11) which is re-named herein the Buckton South Target Area.

This area occupies the headwaters of Asphalt and Big Creeks, radially flowing downhill from it. Both Creeks have reported exceptionally good geochemical and heavy mineral anomalies in stream sediment samples from the historic work. The headwaters of the Creeks, and the vicinity of the soil anomalies, have also reported good >80^{th} percentile lake and stream geochemical anomalies. Asphalt Creek, additionally, represents one of the most sulfide rich drainages in the Birch Mountains, reflecting mineralogy and geochemistry from fresh sediments which can be seen slumping into the Creek from the adjacent steeply incisioned valley walls. A nearly complete section of the Second White Speckled Shale Formation is exposed in the lithosection at Asphalt-H, at the headwaters of Asphalt Creek, comprising a 10m vertical section with 67ppm Mo, 110ppm Ni, 35ppm U, 461ppm V, 254ppm Zn, 62ppm Cu, 19ppm Co and 1.1g/t Ag averaged over the lithosection as reported from historic sampling. To the extent that lithosections sampled in the historic work are “measured” true stratigraphic sections which were systematically, and substantially continuously, sampled, the lithosections reliably “proxy” as drill holes with better reliability than that represented by conventional reverse circulation holes.

Though the combined anomalies comprising the Buckton South Target Area are similar in characteristics to those over the Buckton Zone to its north (verified by drilling to reflect buried metal mineralization) it is uncertain whether the soil, and associated lakes and stream geochemical, anomalies reflect a southerly extension of the Buckton Zone, or whether they reflect an altogether separate Zone buried beneath them better associated with the coincident stratigraphic isopach anomaly nearby to their west. Should the exhalative venting geological working model proposed for the area be demonstrated to be valid (Section 19.2), overlap or coalescence between volcanic debris from adjacent vents would be a realistic expectation, as would be contrasts in geochemistry (and any metal content) of their respective ejecta material. Arbitrary extrapolation of the Buckton Zone to the south might, therefore, inadvertently mix different metal profiles from two different zones. No attempt is, accordingly, made to extrapolate the Buckton Zone to extend south over the Buckton South Target. Recommendations are made in a later section of the Report that drill testing of Buckton South be prioritized. This target is also discussed separately further in this Section.

Northern Extension (Buckton North): The Buckton Potential Mineral Deposit is open to the north for 5km-10km toward an isopach anomaly previously designated as the B-North Target Area by historic work, located in NW¼ Twp101/R12. This Area is dominated by an aeromagnetic "high" (see Figure 32, Section 6.2.11) flanked on its side by a series of 1km-2km diameter circular topographic features, separated by many creeks flowing into, and comprising the headwaters of, Buckton Creek. Other than native gold reported from Buckton Creek and its tributary from historic streams sediment sampling, and a coincident Zn-Cu >90th percentile stream geochemical anomaly at the headwaters of Buckton Creek, little is known about the Area other than the acute isopach anomaly which is one of the most conspicuous subsurface stratigraphic anomalies identified in the Birch Mountains by the historic work, comprising a 60m abnormal thickening in the Shaftesbury Formation beneath the Second White Speckled Shale Formation. Whether this isopach anomaly is also related to thickening in the Second White Speckled Shale Formation is unknown, although the creeks flowing eastward from it define a radial pattern and drain slumped shale exposures in the area.

A northerly trend of better drill grades in the upper portions of the Shale was discussed earlier in this Section, along with a general trend of northward thickening of the better grading drill sections. These trends present obvious guidelines suggesting that the Zone likely extends to the north and should be tested by additional drilling. In addition, these trends, when combined with observations of northerly increasing thickness, frequency and distribution of bentonites in the drill core, make strong arguments supporting the presence of a nearby source to the volcanic debris (and metallic mineralization) incorporated into the Buckton Zone Second White Speckled Shale. Relying on the proposed volcanogenic geological working model, it is proposed that the area to the north of the Buckton Zone also holds potential for hosting exhalative metalliferous venting possibly associated with SEDEX style (massive?) sulfide mineralization hosted within the Cretaceous stratigraphy.

Nearly all of the historic surface geochemical and mineral anomalies discovered to date on the Property are in structural zones interpreted based on stratigraphic disturbances (e.g. Asphalt-

Eaglenest Fault Zone), or are on the flanks of circular, or "closed", stratigraphic disturbances (e.g. Buckton and Asphalt polymetallic Zones). The "closed" shape of some of the stratigraphic, often isopach, anomalies may be an artifact of contour noding and it is possible that they reflect faulted blocks, even though the closed shapes have support from coincident roughly circular domed topographic relief features. Should the "closed" shaped stratigraphic anomalies ultimately be demonstrated to be faulted blocks (bounded by synsedimentary faults) rather than domes, considerable significance would be placed on fault junctions, and junctions among fault swarms, as potential conduits for any volcanic exhalative venting in the Birch Mountains and on the Property. Fault junctions, accordingly, present high priority future exploration targets for volcanic vent related exhalative mineralization which might exists on the Property, and to the north of the Buckton Zone. Several such targets are suggested and are shown in Figure 84 later in this Section.

Western Extension (Buckton West):

The Buckton Zone is open to the west toward, and across, the stratigraphic isopach anomaly on its western flank. There are no exposures to the west of the Zone, nor any information from the area other than a handful of lake and stream sediment geochemical anomalies. This area corresponds to area A-North designated by the historic work, and its southern parts overlap on the Buckton South Target Area discussed later in this Section.

There is no information from historic work to support or refute extension of the Buckton Zone to its west, and no information to provide any guidelines to how far the Zone might be expected to so extend. It is of note that any westward extension to the Zone would be under overburden cover, or under other overlying strata, ranging 150m-200m in thickness per the subsurface stratigraphic model for the Birch Mountains (see Figure 15, Section 6.2.5). To the extent that the Buckton Zone is being explored by Dumont as a potential bulk mineable target accessible by open pit, extensions of the Zone to the west beneath excessive cover may be moot.

It is evident from the above that the Buckton Zone, and the Potential Mineral Deposit proposed to exist therein, host metal mineralization with potential for delivering large quantities of metals from immense volumes which are partly exposed at, or are near, surface. The most attractive features of the Zone, and the Potential Mineral Deposit proposed to exist therein, are (i) the potentially immense size hence the potential as a long term source of metals, (ii) proximity to surface and unconsolidated nature hence likely amenability to extraction by low cost large scale bulk mining, and (iii) remarkable uniformity of metal grades as demonstrated by the drilling and other sampling over the large area represented by the Zone.

A simple discussion of potential overall grade for the Zone is complicated by the multiplicity of metals which will only collectively comprise the ultimate value represented by the mineralized material in the Zone. A discussion of in-situ value represented by the collective metals in the Zone is, however, beyond the scope of this Report[44] and would be more appropriate in the context of a future economic evaluation or scoping study of the Zone in conjunction with a resource classification study. It is the opinion of the author that the concentrations of Mo, Ni, U, V, Zn, Cu, Co (and to some extent also Ag) collectively represent sufficient in-situ value on a combined basis to place the Zone within economic reach provided the metals can be recovered on a combined basis, and provided high enough recoveries can be achieved. It is the further opinion of the author that effective recovery of the metals is the most significant question which needs to be addressed to advance further development of the Zone. The need to establish metals recoveries parameters cannot be overstated.

The historic information addressing metals recovery is encouraging, though fragmented, preliminary and orientative (discussed previously in Section 6.2.13). The available testwork results suggest that at least some of the metals can be recovered on a combined basis, that recoveries for same is acceptably high and is sufficiently high enough to merit further expanded testing. The available historic information provides some orientative guidelines for future work and is as follows:

[44] Also prohibited by NI-43-101 and TSX Venture Exchange Rules.

- Historic selective sequential leaching tests of ten select drill core samples from the historic Buckton Zone drilling suggested that many of the metals are likely contained in non-organic (sulfide and oxide) minerals rather than in organic (or clay) species;

- Good quality clean heavy minerals were collected by heavy oil separation in heavy mineral concentrates prepared for mineralogical examination. The concentrates successfully captured also metals and gold after disaggregation of the sample clay matrix by deflocculation, suggesting that a metal concentrate might be obtainable from the shale provided its clay fraction is properly disaggregated. The concentration tests were conducted simply to obtain heavy minerals for examination, hence information therefrom lacks sufficient quantitative data to support quantitative extrapolations. The tests serve, nonetheless, to demonstrate that metals can effectively be concentrated from the shale with minimal pre-treatment, and that definitive concentration parameters might be obtained by expanded and focused future testwork;

- Orientation leaching tests on a weighted composite sample of drill core samples of the Zone as intersected in holes BK02, BK04 and BK05, achieved extracted recoveries of 97% Nickel, 100% Zinc and 33% Vanadium by 6-hour long simple leaching in sulfuric acid. Though acid consumption was high during the tests, test conditions were not optimized and the potential exists that reagent consumption might be minimized during future, more thorough, tests, especially if clay content of the samples is disaggregated;

- Conventional bottle roll cyanidation tests on 500gm charges reported gold grades ranging 0.07g/t to 0.47g/t from deflocculated (de-slimed) carbon-in-leach tests. The cyanidation tests confirmed preg-robbing gold losses from carbon-in-pulp tests, and, overall, reported higher grades from samples which had been de-slimed. In addition, multiple duplicate fire assays from several samples reported a wide range of gold grades ranging nil to 1.17g/t, suggesting nugget effect.

- Though the presence of native gold in the Shale has been repeatedly confirmed by heavy mineral concentration, its overall grade remains unknown and has been a source of considerable frustration to date. The extensive historic check assaying work concluded that gold distribution in the shale is nuggetted, that the standard 30gm sample size routinely used during fire assaying and INA analyses is non-representative of the shale, and that gold content of the shales has likely been understated by the routine exploration results. Though many fire assay and cyanidation grades from the historic check assaying range upward to several g/t, it is the opinion of the author that while some sections of the Speckled Shale Formation likely contain gold grades exceeding 1g/t which are not reflected in the routine fire assays and INA analyses, its average over the entire thickness in the Zone will be lower and might range 0.05-0.1g/t. Given the immense size of a potential mineral deposit proposed to exist in the Zone, the envisaged low grades can, nonetheless, represent significant value (assumed nil in this report), especially since at least some of the gold is likely in particulate form and might be incidentally recovered in a gravity circuit or in leaching.

In addition to the above encouraging results from testing of samples from the Zone, there is considerable literature from other work by third parties from their exploration and development of black shale polymetallic deposits, supporting realistic expectations that metals can be recovered from the shales on a combined basis by traditional leaching (e.g. U and Mo extracted from Alum shale by sulfuric acid, MyrViken deposit, Section 18.4) or by bulk-rock bioleaching (e.g combined Ni-Co-Zn-Cu-Mn extracted by bioheapleaching, Talvivaara deposit, Section 18.4).

19.4.2 Buckton South Polymetallic Target

The Buckton South polymetallic target represents an approximate 300 square kilometer area located to the south of the Buckton Zone. It incorporates historic composite anomalous areas previously designated by the historic work as B-South and A-North (Figures 33 and 35, Section 6.2.11). This target area hosts a multitude of surface geochemical, lithogeochemical and mineral anomalies which are spatially associated with a composite stratigraphic isopach anomaly. Although the eastern half of the Buckton South target might host the southward extension of the Buckton Potential Mineral Deposit, it more likely hosts a buried mineral zone altogether separate from the Buckton Zone. This area is summarized in Figure 74

The Buckton South target area is substantially centered over a stratigraphic isopach anomaly comprising abnormal thickening in the stratigraphic pile above the sub-Cretaceous Unconformity (to base of Second White Specks) coincident with a similar thickening exhibited by the Fishscales-Second White Specks (Shaftesbury) isopach. A series of strong soil geochemical anomalies lie on the east flank of the isopach over a 2km x 6km area, dominated by Zn diffusion anomalies in soils associated also with localized zones of Te enrichment. The soil anomalies are reinforced by lake sediment geochemical anomalies comprising elevated (>80th pctl) Zn±Ni±Cu±Ag±Hg, and by stream geochemical and mineral anomalies in streams draining the area to the east and the south.

The isopach anomaly occupies the headwaters of Asphalt and Big Creeks, radially flowing downhill from it. Both Creeks have reported good geochemical and heavy mineral anomalies in stream sediment samples from the historic work. The headwaters of the two Creeks, and the vicinity of the soil anomalies, have also reported good >80^{th} percentile lake and stream geochemical anomalies. Asphalt Creek, additionally, represents one of the most sulfide rich drainages in the Birch Mountains, and on the Property, reflecting mineralogy and geochemistry from fresh sediments which can be seen slumping from the adjacent steeply incisioned valley walls. Exposures of various sections of the stratigraphy in the area are confined to the Asphalt and Big Creek valleys, and mostly comprise slump and mudflow slopes. The Asphalt and Big Creek valleys were extensively mapped and prospected by the author during the mid 1990's.

A nearly complete section of the Second White Speckled Shale Formation is exposed in the lithosection at Asphalt-H, at the headwaters of Asphalt Creek, comprising a 10m vertical section with 67ppm Mo, 110ppm Ni, 35ppm U, 461ppm V, 254ppm Zn, 62ppm Cu, 19ppm Co and 1.1g/t Ag averaged over the lithosection as reported from historic sampling. To the extent that lithosections sampled in the historic work are "measured" true stratigraphic sections which were systematically, and substantially continuously, sampled, the lithosections reliably "proxy" as drill holes with better reliability than would be represented by conventional reverse circulation drill holes.

The anomalies over the Buckton South target area have similar characteristics as those over the Buckton Zone to the north which were verified by drilling to reflect polymetallic mineralization buried beneath them hosted in the Second White Speckled Shale Formation. It is, accordingly, proposed that the east flank of the Buckton South isopach anomaly, especially portions with geochemically anomalous soils, also hosts yet undiscovered buried metallic mineralization hosted in Second White Speckled Shale Formation. Recommendations are made in a later section of the Report that drill testing of the eastern half of the Buckton South target be prioritized.

The west half of the Buckton South target area lies on the west flank of the subsurface stratigraphic isopach anomaly, and is in the Asphalt-Eaglenest fault corridor, a major structural feature across the Property which is coincident with many geochemical lake sediment anomalies throughout the area. There is no prior drilling in the area other than historic oil-gas exploratory wells. There are no exposures in the area and all information, and interpretations, therefrom are based on surface sampling of soil, lake and stream sediments, combined with subsurface information from the oil-gas wells. This part of the Buckton South target area was previously designated by historic work as the A-North Composite Anomaly.

The west half of the Buckton South target area is broadly characterized by lake sediment geochemical anomalies comprising elevated (>80th pctl) Zn±Ni±Cu±Ag±Hg surrounding an interpreted fault swarm associated with the coincident isopach anomalies. Notable features of the area include abundant sulfides documented from stream sediments in the headwaters of Asphalt Creek, on the west flank of the isopach anomaly, and a series of soil geochemical anomalies located in the NW$^{1}/_{4}$ Twp100/R13 characterized by strong Zn diffusion accompanied by elevated Pd-Rh(Ni). Spatial association of these features with faulting and the isopach anomaly has not been sufficiently resolved to enable targeting of drill holes to test the subsurface, and future initial drilling will necessarily test extrapolated, though justifiable, blind targets.

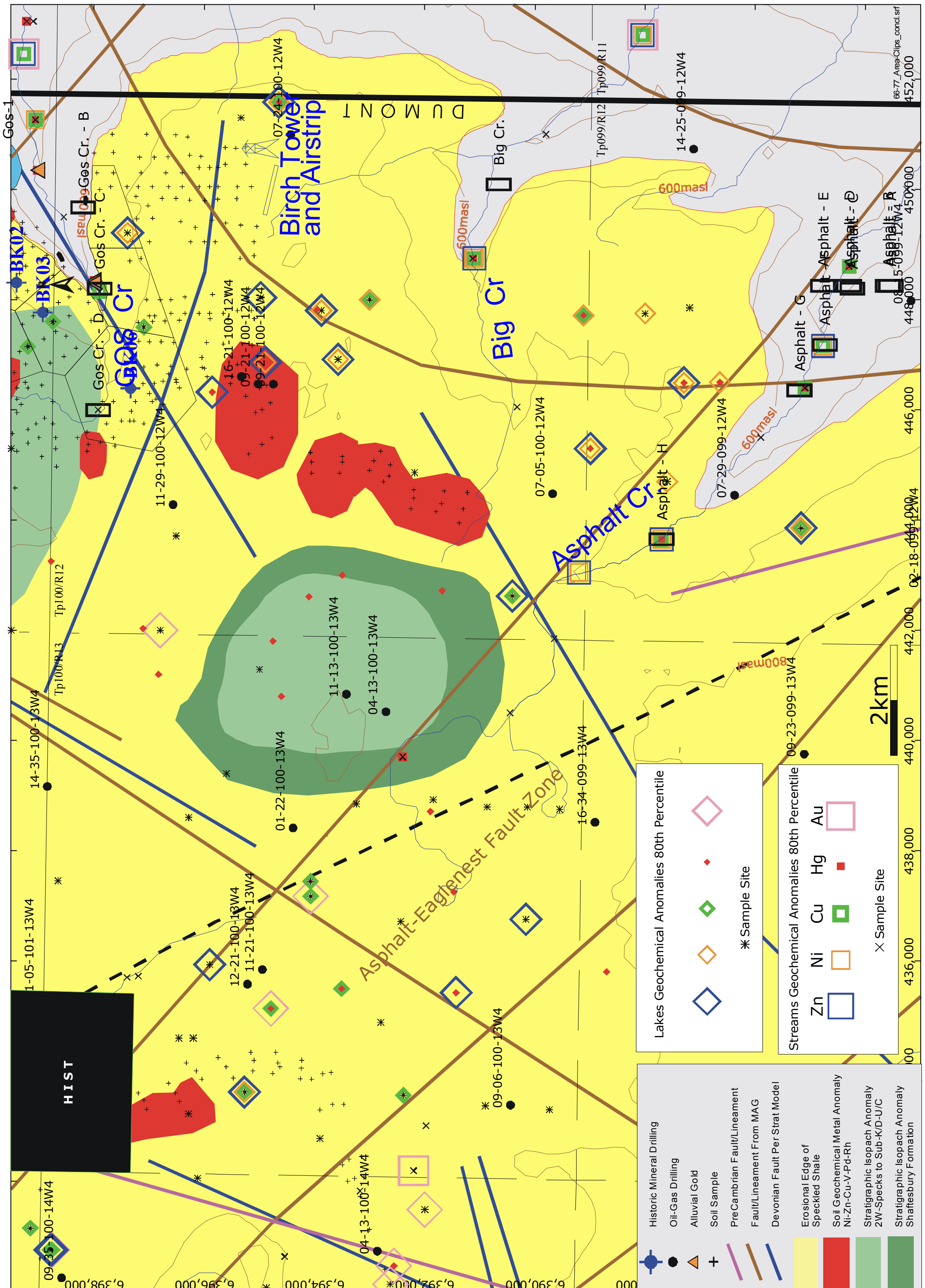


Figure 74: Buckton South Target Area, showing all historic anomalies.

19.4.3 Asphalt Zone, Projected Extensions and Potential Mineral Deposit

The Asphalt polymetallic Zone was discovered in 1997 by historic drilling which was conducted to verify suspected metallic mineralization buried beneath a composite set of anomalies identified by extensive prior surface sampling over an approximate 30 sq km area centered on the headwaters of Pierre River (Figure 75). The Zone and its vicinity were previously designated by the historic work as Composite Anomaly Area A-South located mostly in E½ Twp98/R13 straddling the boundary into Twp98/R12 (Figure 36, Section 6.2.11).

The Asphalt Zone represents polymetallic enrichment in Mo-Ni-U-V-Zn-Cu-Co-Ag-Au, hosted in, and confined to, the Second White Speckled Shale Formation which is a substantially flat unit approximately 11m thick as intersected in the drilling. The Zone is located on the eastern flank of a 4km diameter subsurface stratigraphic isopach anomaly representing abnormal thickening in the stratigraphic pile above the sub-Cretaceous Unconformity (to base of Second White Specks) associated with faulting. Northeasterly and northwesterly faults cross the area, and it is possible that the isopach anomaly closure is an artifact of noding during contouring of the subsurface stratigraphic model, and that the it in part reflects block faulting (bounded by synsedimentary faults) rather than doming.

The vicinity of the Asphalt Zone is characterized by stream sediment polymetallic geochemical anomalies dominated by Zn-Ni-Cu, especially from Pierre River and Mid Creek, associated also with alluvial gold in HMCs from Pierre River accompanied by cinnabar and base metal sulfides. Historic sampling from Pierre River and immediate vicinity has reported highly anomalous geochemistry and mineralogy which are supported also by equally anomalous geochemical anomalies in soils over the area dominated by Zn-Cu±Ni±V accompanied by Te enrichment overlying a pair of conspicuously circular aeromagnetic "high"s (see Figures 48 and 49).

Tintina's examination of available drill core and cuttings from two oil/gas wells in the area (16-21-098-13W4 and 04-08-098-12W4) noted the presence of a pink band of silicified sandstone in McMurray Formation immediately above the sub-Cretaceous unconformity (1ft thick in well 16-21-098-13W4). This sandstone, noted also in oil/gas well cuttings to the south of the Buckton Zone (at Buckton South), is identical to the Beaver River Sandstone generally regarded as a hot springs alteration marker. Its presence in the Birch Mountains spatially associated also with stratigraphic thickening as well as with metal enrichment zones is considered diagnostic and suggestive of the localized presence in the area of broad alteration zones overlying possible hot springs, or other metal bearing fluid, activity (fumeroles?).

The Asphalt Zone was discovered by two 3-inch diameter vertical holes (a total of 166.10m) drilled by Tintina in 1997 to verify suspected metallic mineralization buried beneath the above soil anomalies which, together with enforcing stream sediment geochemical anomalies in adjacent Pierre River and Mid Creek, collectively represent a 3kmx10km composite anomalous target area designated by the historic work as Area A-South. The holes are collared 900m apart and were to be part of a longer, 6km, cross-section extending eastward from the isopach anomaly, across the soil anomalies and Pierre River to Mid Creek. The drilling was, however, curtailed by logistical criteria.

Both Asphalt drill holes reached their targets, although hole AS01 was collared in the upper contact of the Second White Speckled Shale Formation which was unexpectedly encountered higher in the sequence than projected by the subsurface stratigraphic database and model. AS01 cored only lower sections of the Formation. The upper contact of the Formation in AS01 is in casing and only 7.22m were cored compared to 11.4m cored in AS02 (total thickness of the Formation estimated from drill logs to be 11.6m). Considering that only two holes were drilled, and one of the holes only partly cored the Formation, discussions of downhole geology for the Asphalt Zone relies heavily on observations made in hole AS02. Details of the drilling were previously summarized in Section 6.2.12 of this Report.

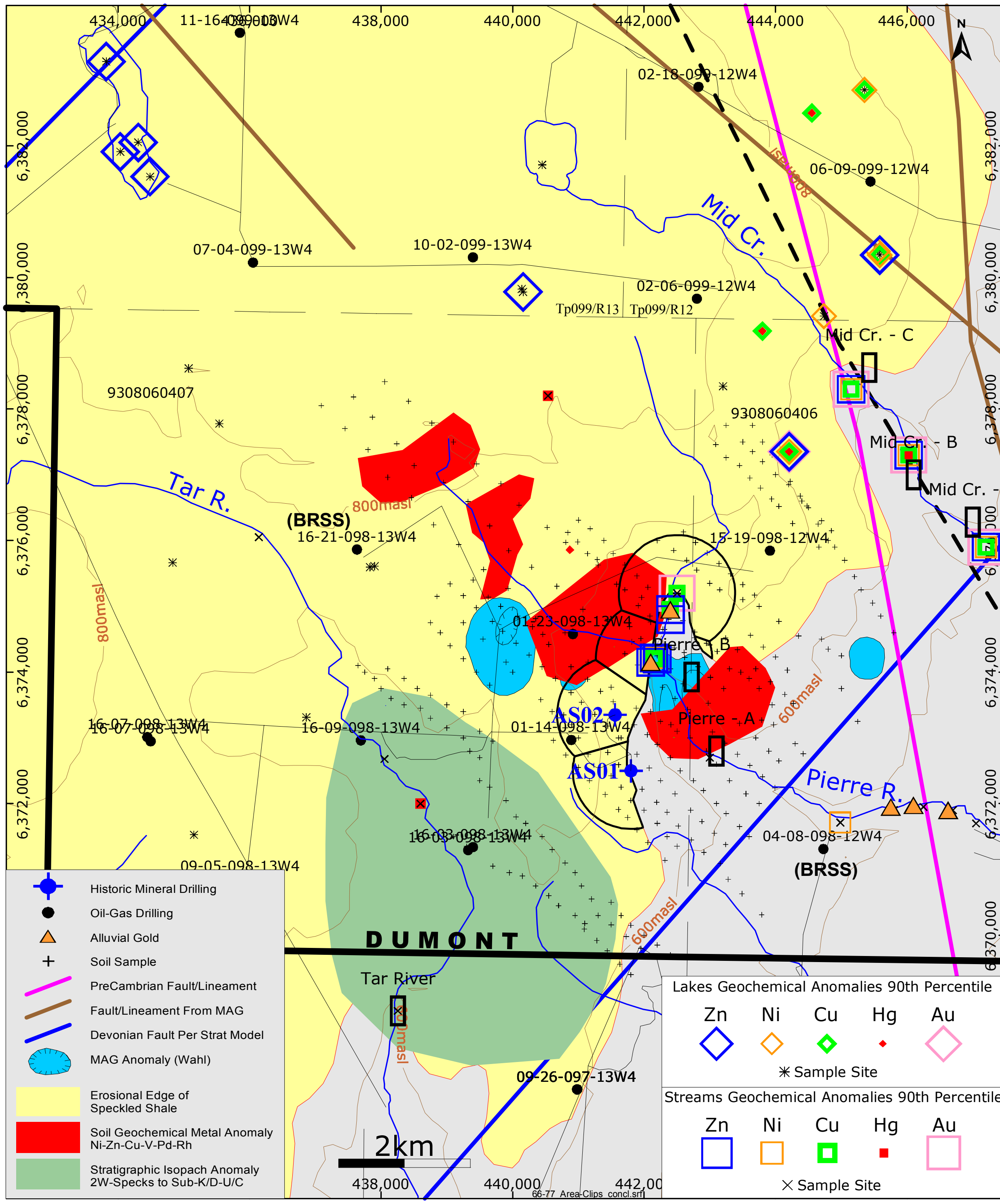


Figure 75: Summary of the Asphalt Zone and its vicinity, showing also all historic anomalies and the Asphalt Potential Mineral Deposit proposed herein. See also Figures 30-31 and 48-50 for aeromagnetic geophysical anomalies over the Property.

The drilling intersected a condensed stratigraphic section of Second White Speckled Shale Formation with gross similarities, but with some subtle contrasts, to that intersected at the Buckton Zone, although the shale is overall less sulfidic at Asphalt. The lower contact of the Formation at the Asphalt Zone is, however, complicated by various structures since sections of similar black shale with three bentonitic sections were noted approximately 5m-10m below the Formation's lower contact in the underlying Shaftesbury Formation. The structural complications were attributed by historic work to block movement in the area, or glacio-tectonic thrusting. Whether these features are responsible for apparent thinning of the Formation at the erosional edges of the Birch Mountains or whether the Formation is indeed thinner at Asphalt (than at Buckton) is unknown. For the purposes of this Report, the Second White Speckled Shale Formation is assumed to be 11.6m thick at the Asphalt Zone, of which 11.4m were cored and sampled in hole AS02.

Weighted average grades of select metals across the entire thickness of the Second White Speckled Shale Formation are summarized in Table 18. Results for individual drill intercepts were previously summarized in Table 4 and 5, Section 6.2.12.

Hole No.	From (m)	To (m)	Interval Thickness (m)	Mo-ICP (ppm)	Ni-ICP (ppm)	U-INA (ppm)	V-ICP (ppm)	Zn-ICP (ppm)	Cu -ICP (ppm)	Co-INA (ppm)	Ag-ICP (ppm)	Corg-Leco (%)	Fe-INA (%)	S-Leco (%)
AS01*	11.3	18.5	11.4*	73	144	47	690	376	89	20	0.3	5.9	4.4	4.1
AS02**	21.6	33.2	11.4**	63	122	31	664	282	89	20	0.3	7.0	4.5	3.5
Weighted Average Asphalt Holes				67	131	37	674	318	89	20	0.3	6.6	4.4	3.7
Weighted Average Buckton Zone				71	135	30	673	302	75	21	0.5	6.8	4.5	4.0

*Hole AS01 collared in Speckled Shale Formation, only 7.22m cored. Actual estimated to be 11.4 per projections from adjacent AS02

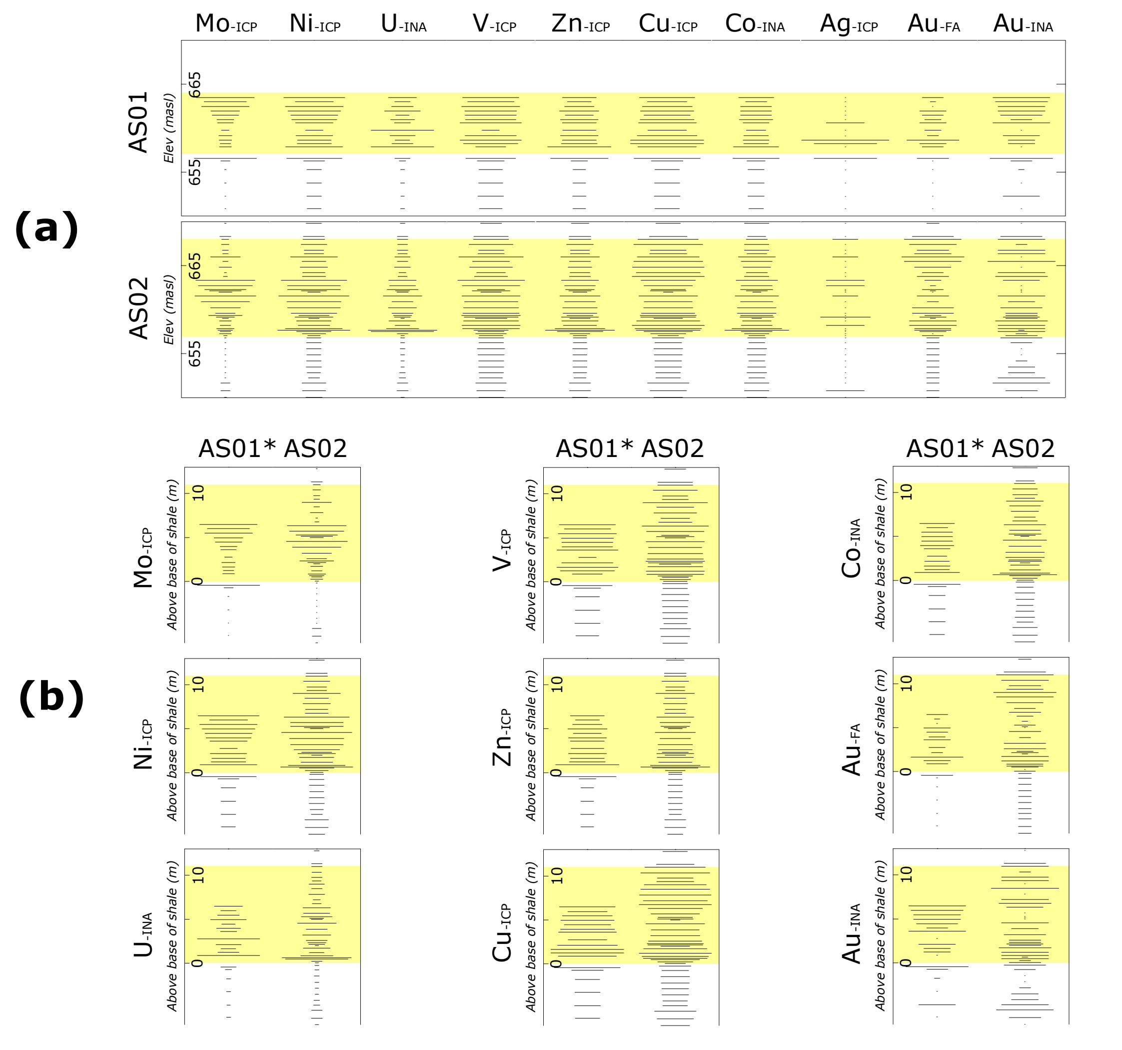
**Interval thickness is core interval recovered

Hole No.	From (m)	To (m)	Interval Thickness (m)	Mo-ICP (lb/st)	Ni-ICP (lb/st)	U-INA (lb/st)	V-ICP (lb/st)	Zn-ICP (lb/st)	Cu -ICP (lb/st)	Co-INA (lb/st)	Ag-ICP (g/t)
AS01*	11.3	18.5	11.4*	0.15	0.29	0.09	1.38	0.75	0.18	0.04	0.3
AS02	21.6	33.2	11.4	0.13	0.24	0.06	1.33	0.56	0.18	0.04	0.3
Weighted Average Asphalt Holes			11.4	0.13	0.26	0.07	1.35	0.64	0.18	0.04	0.30
Weighted Average Buckton Zone			20.3	0	0	0	1	1	0	0	0.5

Table 18: Weighted average grades of select metals and elements across the entire thickness of the Second White Speckled Shale Formation, historic drilling, Asphalt Zone. After Alberta Mineral Assessment Report MIN9802, Sabag 1998. For additional details see also Tables 4 and 5, Section 6.2.12 of this Report.

Even though only two holes were drilled at the Asphalt Zone, they nonetheless serve to broadly characterize the Second White Speckled Shale in the area. As noted in the Buckton Zone, the Asphalt holes also exhibit good consistency in the average grades between the holes, especially when considering their wide spacing. In addition, the average grades of the Asphalt holes are also consistent with the average grade of all historic drilling completed over the Buckton Zone located approximately 30km to the north of the Asphalt Zone. The consistency of grade is typical of the lateral consistency displayed by black shales worldwide. There is some variability in grades vertically within the Shale, as expected, although it is uncertain whether this is an inherent characteristic of the Asphalt Zone, or is an artifact of the short length of the holes, or any missing sections from the Formation due to faulting.

Downhole metal grades for the two holes are shown in Figure 75(a), for a qualitative review (see Table 4, Section 6.2.12 for detailed data). Metal grades are shown sequenced downhole for the drill intercepts from the top of the upper contact of the Shale Formation downward to its base. The relative grade for each metal, ranging between its maximum and minimum, is represented by the size of the bar in the Figure. General metal enrichment trends are partly similar to those observed at the Buckton Zone, namely, a progressive enrichment of Mo-Ni-U-(Ag) upstratigraphy, consistent with progressively more bentonitic sections seen in the drill core which carry more abundant sulfides. The abrupt truncation of the Mo-Ni enrichment trend up-hole, midway in AS02, is conspicuous and supports suggested faulting in the area. V-Zn-Cu-Co, exhibit mixed trends. There is no discernible trend in Au grades, and no correlation between by fire assays compared to analyses by INA.



*Note, drill hole AS01 was collared below the top of the 2WS

Figure 76: Downhole grades for select metals across the thickness of the Second White Speckled Shale Formation (shaded), Buckton Zone historic drilling. Data from Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Downhole grades for single metals, compared between the holes, are presented in Figure 75(b). Metal grades are shown sequenced downhole from the top of the upper contact of the Shale Formation downward to its base. The bars depicting grades for any given metal are sized in the Figure to a common scale for both holes to enable relative comparisons from one hole to the next. The Figure exhibits correspondence among downhole grades between the holes.

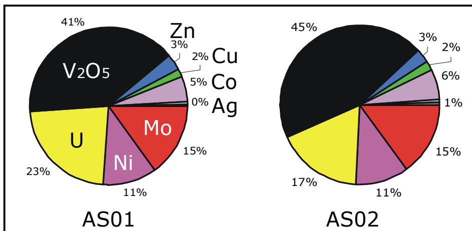


Figure 77: Pie Charts of relative in-situ value represented by select metals, Asphalt historic drilling. Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Weight averaged metal grades for the holes, normalized to metal prices, are summarized in pie charts of Figure 77, showing the relative in-situ value represented by each metal as a % of the total in-situ value of the combined metals. The Figure shows that the Asphalt Zone is principally a Mo-Ni-U-V dominated polymetallic Zone with subordinate Zn-Cu-Co-Ag, with consistency of proportionate grades between the holes. The charts also show good consistency of the Asphalt holes with the relative metal values from the Buckton Zone drilling 30km to the north, although U represents a greater relative

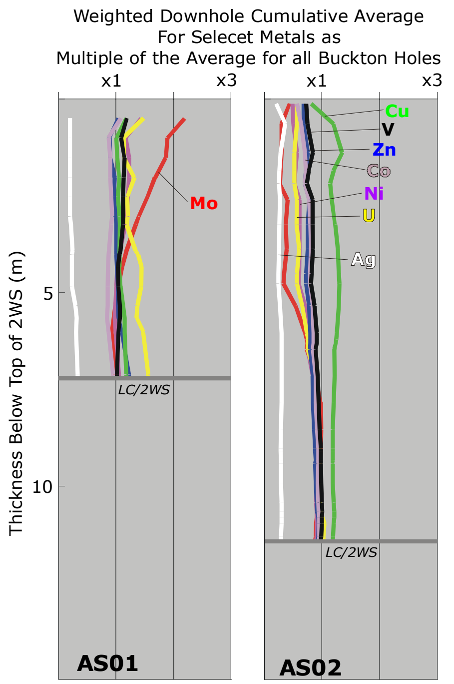


Figure 78: Weighted downhole cumulative average metal grades, normalized to relative metal prices, relative to the average of all Buckton holes, for progressive thicknesses of material below the upper contact of the Second White Speckled Shale Formation, Asphalt Zone, historic drilling. After data from Alberta Mineral Assessment Report MIN9802. Sabag 1998.

value for the Asphalt holes (17%-23%) than it does in the holes from the Buckton drilling (13%-15%) (see previous Figure 70).

Vertical metal grade variations are minimal, and are shown in Figure 78 as downhole trends of metal grades, restated as a multiple of the overall average of all of the holes from the Buckton Zone drilling. Data are presented downhole over progressive thicknesses of material beneath the upper contact of the Shale. Overall, metal grades for nearly all of the metals is similar to, or lower than, the average of Buckton drill holes with no significant downhole variations. Given that only two short holes were drilled at Asphalt, no additional trends can be discerned.

Relying on the historic drilling results, reinforced also by results from by surface geochemical data and the lateral continuity in geology and grades exhibited by the historic drilling, the author proposes that the Asphalt Zone represents a Potential Mineral Deposit as understood under NI-43-101. The reader is reminded that the proposed Potential Mineral Deposit is conceptual in nature, and is intended solely to demonstrate the potential of identifying mineralized material at the Asphalt Zone subject to future in-fill grid drilling. The reader is further reminded that there has been insufficient drilling conducted over the Asphalt Zone to define a mineral resource, and that it is uncertain if further drilling will define a mineral resource over the Zone. Dumont plans to conduct the necessary drilling to test the resource potential of the Zone (discussed further in the Recommendations Section of this Report).

The Asphalt proposed Potential Mineral Deposit comprises a volume of polymetallic material contained in five blocks (Figure 79) whose size and distribution has been estimated predicated on the following:

- Considerable weight has been attributed to the historic drill data during preparation of the estimates, relying on results from surrounding areas to reinforce extrapolation of mineralization away from the holes. The author considers the spacing of the historic drilling to be adequate for the blocking out of an area of interest in black shale hosted mineralization, as an area which is to be the subject of future in-fill drilling.

- Considerable weight has also been attributed to downstream geochemistry of stream sediments and heavy minerals documented from the Pierre River, adjacent to the drill holes, and their overall configuration of sulfides upstream followed further downstream by samples reporting alluvial gold. The Pierre River has been mapped and prospected by the author in considerable detail in the mid-late 1990’s, and can be regarded to be an active sediment recharge zone directly reflecting metal bearing slumped Speckled Shale exposures along its valley walls. The downstream heavy mineral pattern is considered diagnostic by the author for locating exposures of Second White Speckled Shale throughout the Property and the Birch Mountains in general.

- Supporting weight has also been attributed to stream sediment geochemistry and heavy mineral mineralogy documented from historic work from Mid Creek, located approximately 7km to the northeast of the drill holes. Similar supporting weight also attributed to a partial exposure of the Second White Speckled Shale in lithosection Mid-C, reporting Ni-U-V-Zn-Co-(Mo) enrichment.

- Blocks 1 and 2 are centered around the historic drill holes AS01 and AS02, respectively, and their area was estimated based on intersecting circles with 900m diameter supported by the 900m distance between the holes and continuity of grade and geology between them. The two blocks extend to the valley break of the Pierre River west valley-wall which also demarcates the eastern contact of the Second White Speckled Shale Formation. Thickness of the Zone over Block 1 has been estimated to range between the thicknesses logged in the two holes, being 11.6m for AS02 and 7.2m for AS01. Thickness of Block 2 is estimated to be the thickness of AS02.

- Blocks 3 and 4 are extrapolations based on many slumped shale exposures in the valley-wall of Pierre River, sediments from which can be sampled immediately downslope in the steam-bed. Proposed buried mineralization under these Blocks is reinforced by soil geochemical anomalies over the blocks which are similar to anomalies verified to reflect buried polymetallic mineralization at the Buckton Zone. An estimated 900m diameter has been utilized to project area size for Blocks 3 and 4, and Block 5 is a continuation of Block 3 on the east valley wall of Pierre River. Blocks 3 and 4 extend to the valley break of the Pierre River west valley-wall which also demarcates the eastern contact of the Second White Speckled Shale Formation. Block 5 extends westward to the valley break of the Pierre River east valley-wall which demarcates the western contact of the Second White Speckled Shale Formation. Thickness of the Zone assigned to Blocks 3, 4 and 5 is estimated to range between the maximum of 11.6m as logged in hole AS02 and the average thickness as logged in holes AS01 and AS02, being 9.4m.

- Tonnages were calculated by at a specific gravity of 2.1 as calculated from drill sample weight records reported in the historic work.

- Grades for the various metals are based on the overall drill hole weighted average grades restated as a range varying between the lowest and the highest grade for any given metal as averaged over the entire thickness of the Second White Speckled Shale Formation intersected in the two holes. Gold content has been assumed to be nil given discrepancies of an order of magnitude or more between grades reported by historic bottle roll cyanidation tests of 500gm samples (broadly ranging 0.1-0.4g/t grades) compared with mostly single digit ppb range grades reported from routine fire assays and INA analyses of 30gm samples.

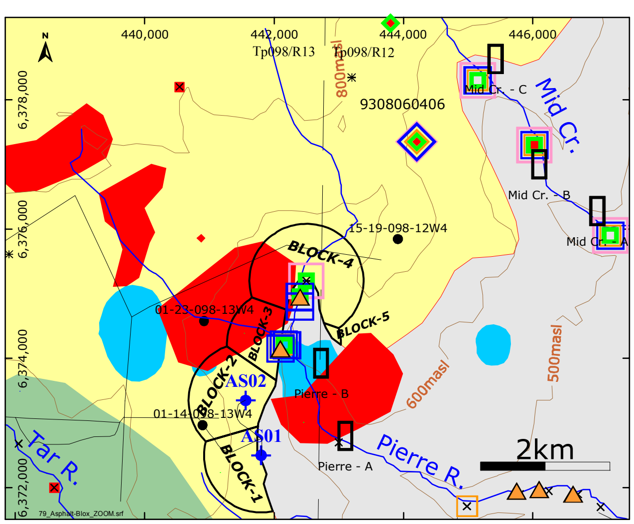


Figure 79: Asphalt Potential Mineral Deposit, showing estimated blocks and surrounding area. See Figure 75 for legends.

Based on the above scheme, it is proposed that the Asphalt Zone contains a Potential Mineral Deposit as understood under NI-43-101. The Asphalt Potential Mineral Deposit is proposed to extend over an approximate 1km x 4.5km area comprising approximately 4.5 square kilometers, with a thickness ranging 7.2m to 11.6m, and is estimated to represent an aggregate of approximately 109-132 million short tons of mineralized material (99-120 million tonnes). Block volume and tonnage estimates are summarized as ranges in Table 19. Grades and estimated gross contained metals are summarized as ranges in Table 20 rounded to the nearest million unit.

Block Volumes and Tonnage Estimates: Potential Mineral Deposit - Asphalt Zone

Block Name	Area (sq m)	Basic* Thickness	Thickness Estimate (m) Low	Thickness Estimate (m) High	Volume Estimate (cu m) Low	Volume Estimate (cu m) High	Tonnage Estimates (tonnes) Low	Tonnage Estimates (tonnes) High
Block-1	945,516	7.2	7.2	11.6	6,826,626	10,958,530	14,335,914	23,012,914
Block-2	1,337,681	11.6	11.6	11.6	15,503,723	15,503,723	32,557,818	32,557,818
Block-3	752,916	9.4	9.4	11.6	7,081,175	8,726,296	14,870,467	18,325,223
Block-4	1,859,037	9.4	9.4	11.6	17,484,243	21,546,239	36,716,910	45,247,102
Block-5	40,259	9.4	9.4	11.6	378,636	466,602	795,135	979,864
Totals	4,935,409				47,274,402	57,201,390	99,276,245	120,122,920
Averages		21.1	9.4	11.6				

* Thickness(m) as measured in drill hole, or as assigned or estimated for block. See report text

Table 19: Estimated volumes and tonnages, Potential Mineral Deposit, Asphalt Zone

The reader is reminded that the estimated Potential Mineral Deposit is conceptual in nature, that there has been insufficient drilling conducted over the Zone to define a mineral resource, and that it is uncertain if further drilling will define a mineral resource over the Zone, and that it is intended solely to demonstrate the potential of identifying mineralized material at the Asphalt Zone subject to future in-fill grid drilling. Dumont plans to conduct the necessary drilling to test the resource potential of the Zone.

Grade Averages and Gross Metals Content: Potential Mineral Deposit - Asphalt Zone

	Grade Range (ppm)	Grade Range (lb/st)(opt)	Gross Metal/Oxide Content (lb) (oz) Low Estimate	Gross Metal/Oxide Content (lb) (oz) High Estimate
Mo	63ppm-73ppm	0.13lb/st-0.15lb/st	14,000,000	19,000,000
[MoO3]		0.19lb/st-0.22lb/st	20,000,000	29,000,000
Ni	122ppm-144ppm	0.24lb/st-0.29lb/st	27,000,000	38,000,000
U	31ppm-47ppm	0.06lb/st-0.09lb/st	7,000,000	12,000,000
[U3O8]		0.07lb/st-0.11lb/st	8,000,000	15,000,000
V	664ppm-690ppm	1.33lb/st-1.38lb/st	145,000,000	182,000,000
[V2O5]		2.39lb/st-2.48lb/st	261,000,000	328,000,000
Zn	282ppm-376ppm	0.56lb/st-0.75lb/st	62,000,000	99,000,000
Cu	89ppm-89ppm	0.18lb/st-0.18lb/st	19,000,000	24,000,000
Co	20ppm-20ppm	0.04lb/st-0.04lb/st	4,000,000	5,000,000
Ag	0.3ppm-0.3ppm	0.01opt-0.01opt	1,000,000	1,000,000
Au	assumed nil	assumed nil	assumed nil	assumed nil

lb/st=lbs per short ton; opt=ounces per ton   Gross metal contents are rounded to nearest million units *

Table 20: Average grades and gross contained metal estimates, Potential Mineral Deposit, Asphalt Zone

It is the opinion of the author that the Asphalt Zone holds potential to deliver additional mineralized material from areas immediately to the northwest of the Potential Mineral Deposit over an additional distance of 5km-6km as reflected by soil geochemical diffusion anomalies identified by the historic work. The Zone also holds potential for expansion for an additional 6km northeasterly toward Mid Creek and closure of its valley at the 620m-650m elevation asl. The potential for a projected extension southward, toward and over the stratigraphic isopach anomaly located immediately to the southwest of the Potential Mineral Deposit, is unknown. There is, furthermore, no information to guide speculation of what the ultimate thickness of the Speckled Shale Formation might be over the proposed projected extensions of the Asphalt Potential Mineral Deposit. It would be reasonable to propose that thickness of the Formation might be at least the same as, or thicker than, that drilled at some distance away from the erosional edges of the Birch Mountains and away from active slump zones. There is no additional information which might support or refute the proposals made.

Incorporation of volcanogenic debris in the Second White Speckled Shale is suggested by considerable bentonitic material noted in the historic drilling. Though the thinner bentonite "seams" are attributed to distal sources within the overall sedimentary basin, the thicker bentonites measuring 8cm-10cm or more suggest nearby sources (similar to the Buckton drill holes). The historic work has concluded that there exists a nearby source(s) to the bentonites noted in the Asphalt drilling, although there is insufficient information from the work to resolve a directional vector to guide the search for the source. The author concurs with the historic conclusions and further suggests, relying on the proposed volcanogenic geological working model, that the immediate vicinity of the Asphalt Zone holds potential for hosting exhalative metalliferous venting possibly associated with SEDEX style sulfides hosted within the Cretaceous stratigraphy.

In the above regard, it is noteworthy that nearly all of the historic surface geochemical and mineral anomalies discovered to date on the Property are in structural zones interpreted based on stratigraphic disturbances (e.g. Asphalt-Eaglenest Fault Zone), or are on the flanks of circular (domed?) stratigraphic disturbances (e.g. Buckton and Asphalt polymetallic Zones). The "closed" shape of some of the stratigraphic, often isopach, anomalies may be an artifact of contour noding and it is possible that they reflect faulted blocks instead, bounded by synsedimentary faults, even though the shapes have support from coincident roughly circular domed topographic relief features. Should the "closed" shaped anomalies indeed be faulted blocks rather than domes, considerable significance would be placed on fault junctions, and junctions of fault swarms, as potential conduits for any volcanic exhalative venting in the Birch Mountains and on the Property. Fault junctions, accordingly, present high priority future exploration targets for volcanic vent related exhalative mineralization which might exists in the area. Several such possible targets are suggested as shown in Figure 84 in a later Section of this report.

A series of exposures on the valley walls of the Asphalt Creek also merit more detailed inspection, as they include bedded sulfides (FeS+?) and Fe-phosphates in slumping shale cliff exposures, which can also be seen in the Asphalt Creek valley floor as 1-2 inch thick sulfide rich (FeS±Ni) table-top sized slabs containing up to 75% sulfides by volume (Plate 11). Historic work reports Mo-Ni-Cu enrichment, in addition to 0.02-0.1g/t Au from samples of the "slabs" (Alberta Mineral Assessment Report MIN9613, Sabag 1996b).

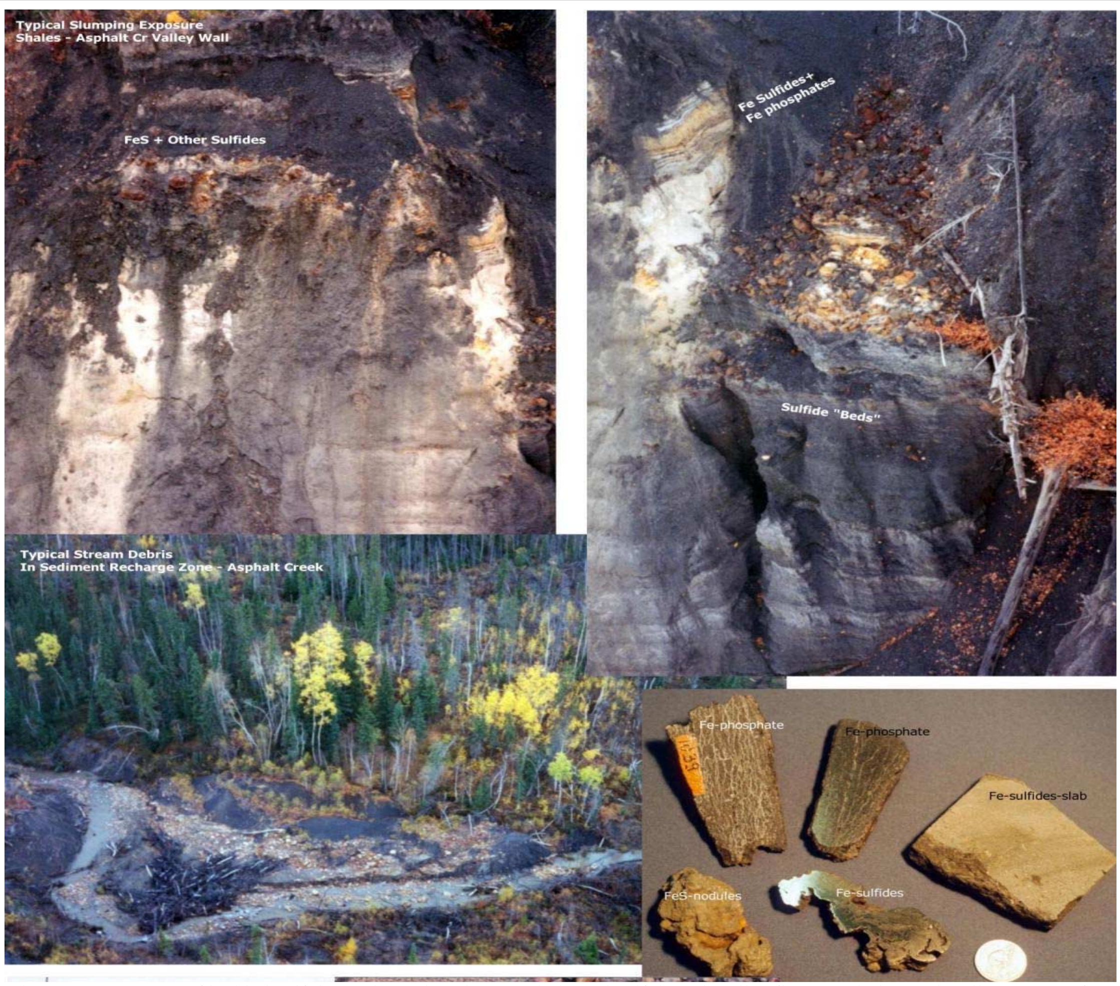


Plate 11: Exposures of bedded sulfides and Fe-phosphate in shale and sulfide rich valley float, Asphalt Creek valley. Images from Sabag 1994-1999.

19.4.4 Eaglenest Target Area

The Eaglenest Target Area comprises an approximate 300 sq km area extending west from Eaglenest Lake west to Michael Lake and south to Otasan Lake (Twp101-100/R14-15). Access to the area is best by helicopter, though it can also be effectively accessed for sampling via ATV during the summer months and by winter roads and trails. This area is summarized in Figure 80.

The area corresponds to the historic composite target area of the same name, which was designated by the historic work on the basis of coincident stratigraphic, remote sensing, lake sediment geochemical, stream sediment geochemical, soil geochemical, subsurface stratigraphic and interpreted structural anomalies (see Section 6.2.11). Principal anomalies over the Eaglenest Target Area comprise geochemical anomalies which are coincident with, or proximal to, the isopach stratigraphic anomaly over the southern part of the area, or with large interpreted structural features. The stratigraphic subsurface model for the area indicates that it is underlain by the Second White Specks Formation, and historic soil sampling results suggest that metal enrichment is buried beneath the surface. There has been no work over the area since the mid 1990's (Alberta Mineral Assessment Report MIN9612, Sabag 1996c).

The principal structure in the Eaglenest Target Area is the southeasterly Asphalt-Eaglenest Fault Zone across it. The Fault Zone is characterized by many vertical offsets based on the stratigraphic model for the area, and is also crossed by the northeasterly trending Sand-Eaglenest Lakes Fault Zone in Twp100/R14, representing a 3km-5km wide zone of considerable subsurface disturbance. This is a significant fault junction characterized by abnormal thickening of the Shaftesbury Formation reflected in the isopach for the base of Fishscales to base of Second White Specks (see also Figure 14, Section 6.2.4). Definitive resolution of individual faults within the two fault zones has not been possible due to the great number of offsets which can be seen in cross-sections from the area, though many of the vertical offsets interpreted in cross section correlate well with overlying or nearby lake sediment geochemical anomalies dominated by Zn-Ni-Ag±Au, the majority of which are located along the Asphalt-Eaglenest Fault Zone or over its southwest flank.

Soil anomalies identified by the historic work over the Eaglenest Target Area are similar to those identified over the Buckton and Asphalt Zones, though they are better dominated by Zn. Soil geochemical anomalies identified from localities overlying interpreted faults in Twp101/R15 (south of Bayard Lake) are characterized by strong Zn diffusion anomalies, all of which accompanied also by anomalous Pd-Rh, by subordinate Ni±Cu, and by zones of Te enrichment. In contrast to the predominance of soil geochemical Zn anomalies over the central and the southern portions of the Eaglenest Target Area, its northernmost parts, near Michael Lake, are better characterized by anomalous Cu-Ni diffusion in soils overlying faulting, accompanied by subordinate Zn-Pd-Rh.

The area is devoid of outcrops and has limited topographic relief, although a well defined circular topographic feature can be seen centered on Otasan Lake (Figure 7, Section 6.2.3). Dacitic debris of likely local provenance was incidentally reported by historic prospecting in the vicinity of Clear Lake over the southwest corner of Twp101/R13 and northwest corner Twp1001/R13 (southeast of Eaglenest Lake - see Figure 37). Stratigraphic subsurface data and model indicate that the Second White Speckled Shale is under 75m-100m of overburden cover throughout the area.

Future drill hole targeting over the Eaglenest Target Area will necessarily rely entirely on soil geochemistry to localize blind targets for the initial drilling phase.

Two small parts of this target area have access restrictions. They comprise (i) a portage over a stream flowing southeast from Eaglenest Lake and (ii) a site under historic management located immediately to its east, in the western parts of the Buckton South Target Area. Both areas are small and are not expected to interfere with any contemplated future exploration activity. The northwest one third of the Eaglenest Target Area is in a Caribou management zone and is subject to seasonal surface access restriction during the Spring calving months.

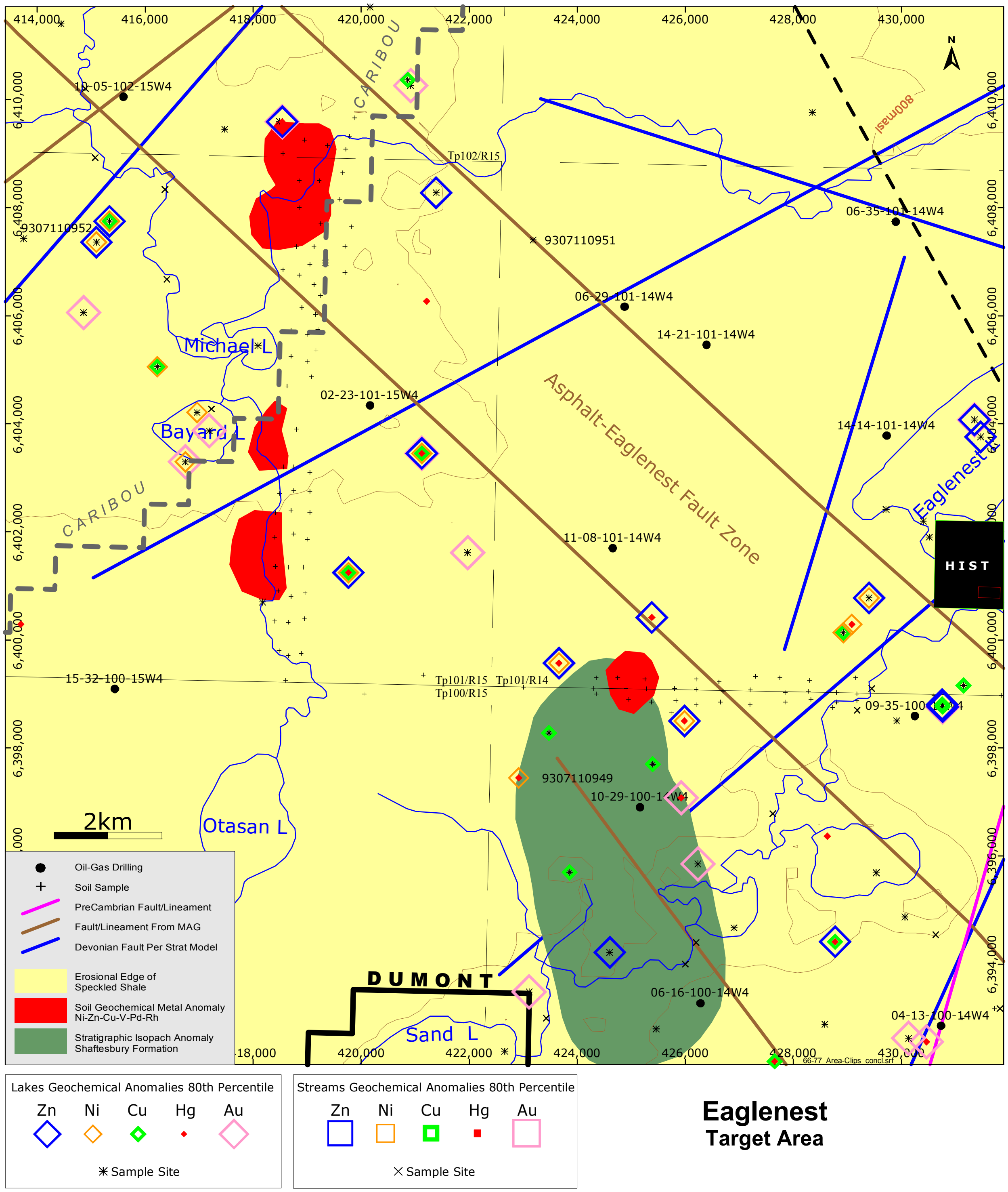


Figure 80: Summary of anomalies and targets over the Eaglenest Target Area. Showing also Caribou management area, and land use restricted area under historic management (HIST)

19.4.5 McIvor-West and North-Lily Anomalies

The McIvor-West and North-Lily Anomalies comprise two early stage reconnaissance stage targets located over the west parts of the Property in Twp102/R15 and Twp100/R16. The two areas can be discerned in structural interpretations of LANDSAT remote imagery from historic work (see Figure 9, Sections 6.2.3) which identified several conspicuous circular features which merit future field follow-up, since many similar features similarly identified over the eastern two-thirds of the Property were subsequently demonstrated by historic surface sampling, and locally by drilling, to host metal enrichment or buried near-surface polymetallic zones. The foregoing interpreted features are shown in Figure 81, along with available information from their vicinity. The two areas are shown in the context of all other anomalies identified by historic work over the Property in Figure 82.

The McIvor-West and North-Lily Anomalies are in their early reconnaissance grass roots exploration stages, and represent localities which have potential for hosting near-surface buried polymetallic mineralization in shales. They are as follows:

- **The McIvor-West Anomaly** consists of two 5km diameter, coalesced, circular features located at headwaters of the McIvor River, in Tp102-103/R15, which are dextrally offset along a 50km-70km long northeasterly structure (the McIvor Fault) which also demarcates the McIvor River valley. The McIvor-West Anomaly lies over the junction of the McIvor Fault with the northwesterly Asphalt-Eaglenest Fault Zone (see Figures 9 and 12, Section 6).

  Presence of Second White Speckled Shale under the Anomaly is suggested by (i) intermittent, though scarce, exposures of slumped shale along the south valley walls of the McIvor River to the north of the Anomaly, (ii) nearby historic oil-gas wells located 5km-10km to the southeast of the Anomaly, and (iii) surface geochemical anomalies over the Eaglenest Target Area immediately to the south of the Anomaly.

  A number of >80th percentile historic lakes and stream geochemical anomalies flank this area, notably Ni, Au and Zn, and its southeastern flank adjoins the northwest parts of the Eaglenest Target Area. Gold geochemical anomalies have been identified in lake and stream sediments over the centre of the Anomaly at two locations near the closure of the Second White Speckled Shale erosional edge in the headwaters of the McIvor Valley (Alberta Mineral Assessment Report MIN9611, Sabag 1996a). Historic work conducted by Tintina during 1994-1996 on its historic McIvor Property (subsequently also explored by Ateba Mines in 2001) is relevant to future exploration of the McIvor-West Anomaly, since material from it drain into the McIvor River to its north. (Alberta Mineral Assessment Reports MIN9610 and MIN200205, Sabag 1996d and 2002).

  The circular LANDSAT features which dominate the McIvor-West Anomaly have aeromagnetic expression (Figure 83) although they are in an area generally lacking any topographic relief.

  The McIvor West Anomaly is within a Caribou management zone subject to seasonal restricted surface access during the Spring calving season.

- **The North-Lily Anomaly** comprises a composite pair of 3km diameter, coalesced, isolated circular features located in Tp100/R16-17, to the west of the Eaglenest Target area. The North-Lily Anomaly is not located on ground previously held by Tintina and, as such, has never been explored for metals.

  Similarly to the McIvor West Anomaly, the circular LANDSAT features comprising the North-Lily Anomaly have some aeromagnetic expression though their significance in the absence of any surface work is unknown.

  The area is mostly within a Caribou management zone subject to surface access seasonal restrictions during the Spring calving season.

The merits of the McIvor-West and North-Lily Anomalies can easily be evaluated by a set of soil sampling transects across both areas, relying on analysis by enzyme leaching to identify any metals diffusion which might be associated with both anomalies.

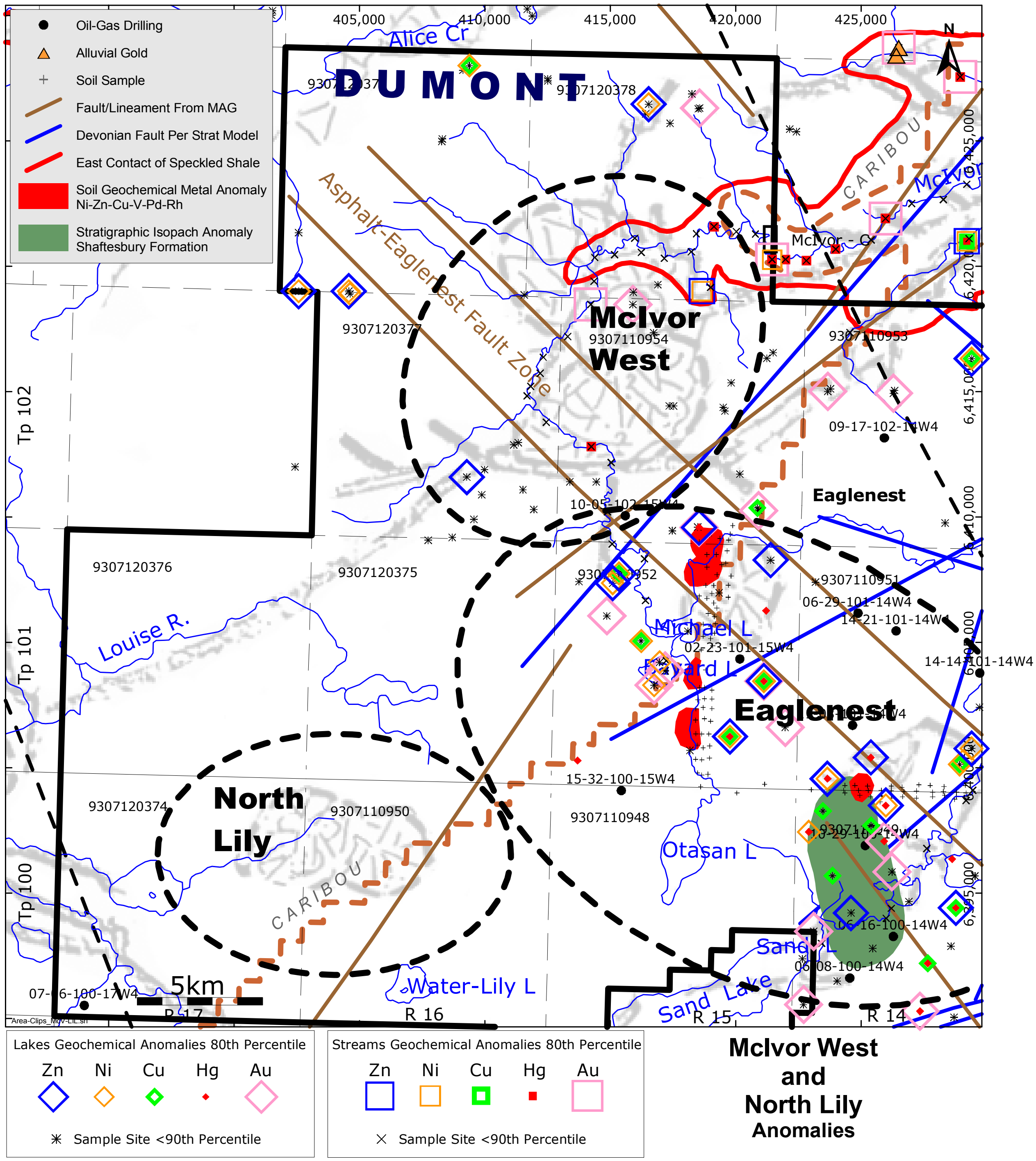


Figure 81: Summary of anomalies and features over the McIvor West and North-Lily Anomalies. Showing also extents of Caribou management area.

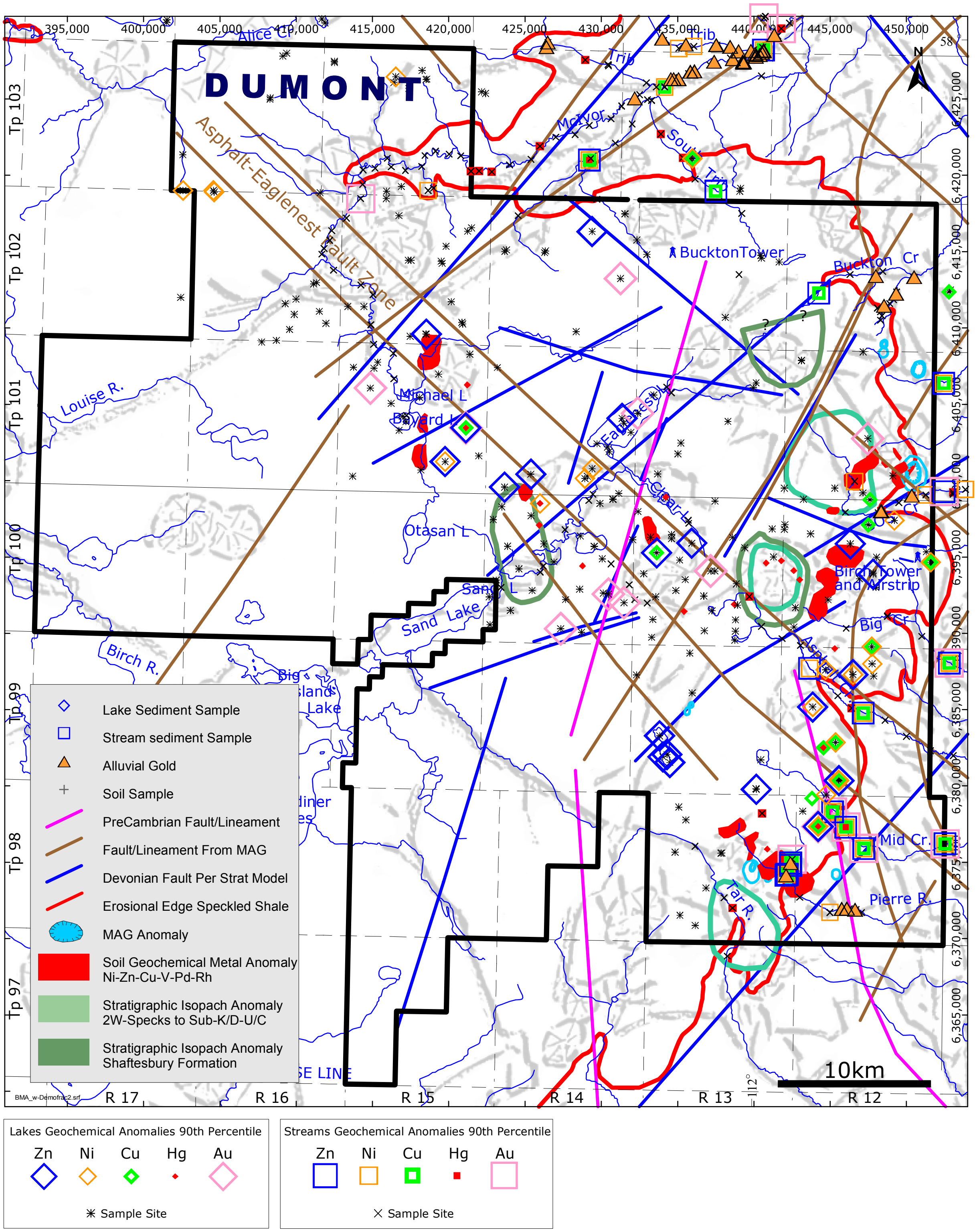


Figure 82: Remote sensing LANDSAT imagery anomalies over the Property, showing also all known metal anomalies and Zones on the Property. (See text for data sources and also Figure 9, Section 6 of this Report)

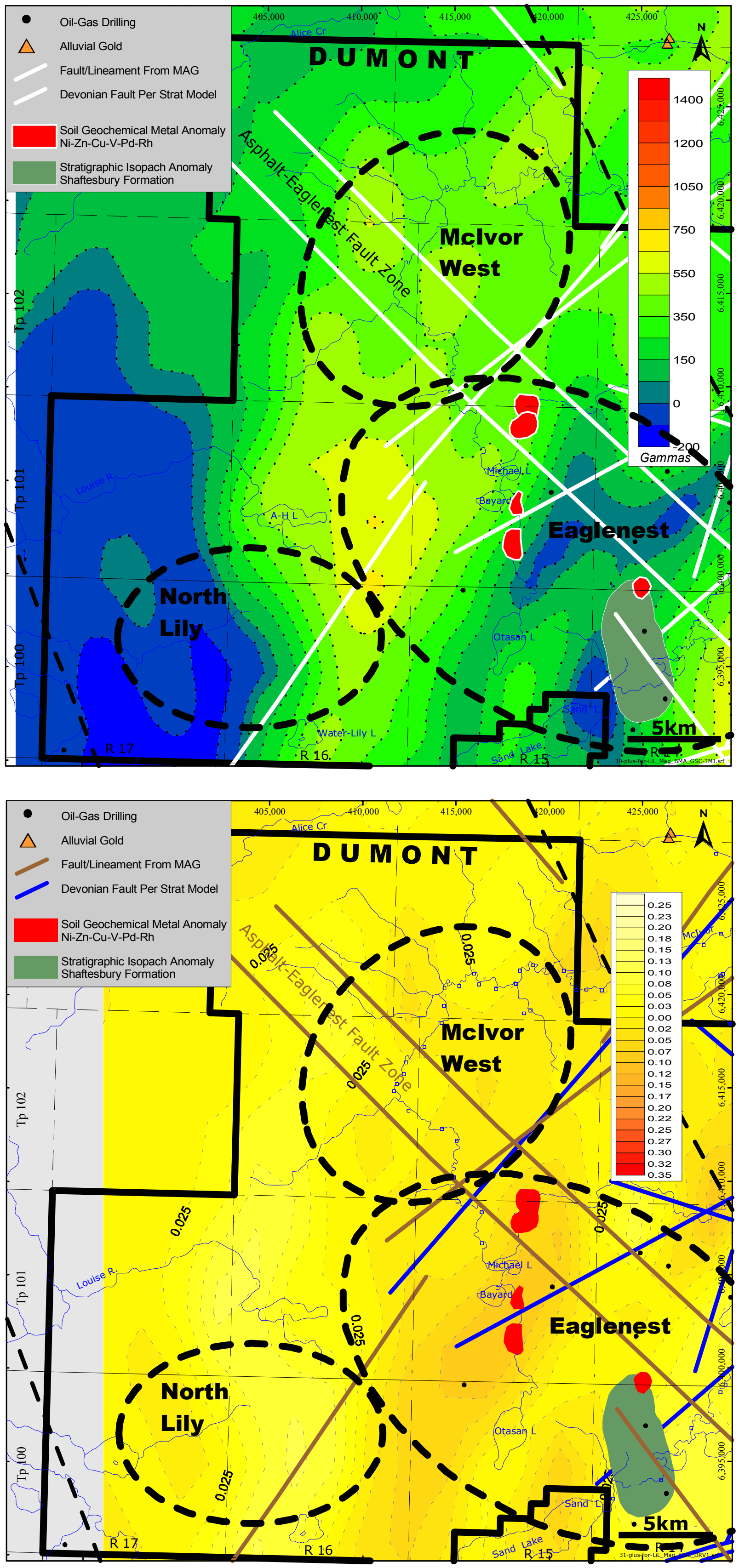


Figure 83: Total residual field (above) and First derivate (below) of total residual field aeromagnetic anomalies over and around the McIvor West and North-Lily Anomalies (See also Figures 30 and 31, Section 6.2.12 of this Report for aeromagnetic data details)

19.5 Concluding Summary

Based on all of the information presented in the preceding Sections of this report, it is clear that the Property has considerable exploration and development potential for hosting metals, and that in addition to polymetallic Potential Mineral Deposits proposed to exist over two of the target areas, it contains a number of targets which have excellent potential for hosting additional quantities of metals in immense near-surface black shale hosted zones. The Property also contains areas with potential for hosting metals in yet undiscovered, though suspected, sediment hosted exhalative - SEDEX style - sulfides.

In addition to its demonstrable geological merits, the Property's location in a mature mining district, within a well organized regulatory, jurisdictional and land use permitting framework tailored to the development of laterally extensive deposits, provides considerable logistical and infrastructural advantages. The local availability of sulfur as a waste product of surrounding oil sands operations, is an added benefit to any leaching methods which might ultimately be identified for the recovery of metals from the shale, and any such recovery operation would be a welcome waste sulfur mitigation activity in the region. In addition, the Property's east boundary, atop the erosional edge of the Birch Mountains, provides a nearly 500m substantially vertical relief with potential to be harnessed for generating local power, additionally minimizing carbon footprint of any future operations. These are, in the opinion of the author, significant intangibles which are difficult to quantify but are, nonetheless, material advantages which can only be expected to enhance the timely development of any deposit which might be discovered at the Property. It is the further opinion of the author that discussions of geological merits of the Property, or those of any other property for that matter, in isolation from consideration of similar logistical criteria would materially detract from a meaningful evaluation of the Property's merits.

20. Recommendations

20.1 Anomalies, Target Areas and Metal Zones as Sub-Properties

The Property has considerable exploration and development potential for hosting metals, and contains a number of targets which have excellent potential for hosting immense quantities of metals in near-surface black shale hosted zones. The Property also contains areas with potential for hosting metals in yet undiscovered, though suspected, sediment hosted exhalative - SEDEX style - sulfides. It is therefore recommended that additional work be carried out to explore and develop the various shale-hosted targets and to advance them toward their ultimate potential, while concurrently also conducting work to evaluate the potential of SEDEX style sulfide mineralization over several parts of the Property.

The Property consists of six contiguous sub-properties with similar characteristics, and which provide two different, though apparently related, types of prospective exploration and development targets, namely; (i) metal enriched polymetallic black shales and (ii) possible source(s) to metals therein, proposed herein to be nearby exhalative vents with potential to host sediment hosted exhalative volcanogenic sulfides. To the extent that many characteristics are shared among the sub-properties, this Section is intended to consolidate conclusions common to all to obviate repetition of same in separate Sections of this report.

The six sub-properties are in different stages of development, ranging from areas which have reconnaissance level anomalies which have not been explored, through drill-ready target areas, to Potential Mineral Deposits proposed herein to exist at two of the sub-properties. The sub-properties range in size 100-300sq.km. each and their size is appropriate for the principal type of polymetallic mineralization being sought by Dumont, namely, nominal 5kmx5km or larger zones of polymetallic enrichment in flatlying near-surface "blankets" of polymetallic black shale. The additional potential of the overall Property to host yet undiscovered exhalative sediment hosted sulfides has never been explored nor evaluated. The sub-properties consist of the following:

- Two of the sub-properties, designated herein as the McIvor West and North Lily Anomalies, comprise large 50-100 sq km anomalies selected based on interpretations of general information, and have not been investigated in the field in any measure of detail to determine if they host mineralization. They are in the reconnaissance stages.

- Two of the sub-properties, designated herein as the Buckton South and the Eaglenest Target Areas, comprise large areas which have undergone considerable prior historic surface work which has identified prospective targets to be tested by future drilling to probe for suspected buried polymetallic mineralized shale beneath the surface of each Target Area. It is the opinion of the author that additional field work will not substantially, nor materially, alter conclusions which have already been reached by the historic work suggesting considerable potential for both. Portions of both Target Areas also present reconnaissance level potential to prospect for the presence of exhalative vents. The Buckton South Target Area presents the additional potential of hosting southerly extension of the Buckton polymetallic Potential Mineral Deposit over a 6km distance, or an altogether separate polymetallic mineralized Zone.

- Two of the sub-properties, designated herein as the Asphalt and Buckton Zones, and respective Asphalt and Buckton Potential Mineral Deposits, represent near-surface (partly exposed) polymetallic zones which have been confirmed by widely spaced historic drilling and which are proposed herein to contain significant Potential Mineral Deposits to be upgraded to classified resources by in-fill drilling. Both Zones present additional targets with potential for locating suspected sources to their respective metallic mineralization, believed to be nearby exhalative venting, and historic work results from the Buckton Zone further provide metal enrichment vectors directing the search for exhalative venting to its north.

20.2 Recommended Target Prioritization Guidelines

Considering the large size of the six sub-properties comprising the Property, and the laterally extensive flat-lying metal enriched targets being sought by Dumont, some guidelines are needed, in conjunction with those geological, to prioritize targets, or portions thereof, for efficient and focused future follow-up exploration and drilling. While logistical criteria provide natural constraining guidelines, equally natural guidelines are presented by limitations imposed by overburden cover over the targets which are being sought by Dumont for their envisaged exploitation by open pit.

Depth of overburden cover above the base of the Second White Speckled Shale Formation, per the historic subsurface stratigraphic database, is presented in Figure 84(a), showing the depth of material above the base of the Formation. The erosional edge of the Second White Speckled Shale Formation marking the trace of its exposed portions is also shown. Relying on the accepted 75m average depth limiting open pitting in the adjacent region as a general guide, it is recommended that areas bounded by the erosional edge of the Formation and the 125m depth contour be prioritized during future drilling for identification of additional mineralized volumes, or for expansion of zones which are partly exposed. Assuming an overall average nominal thickness of 25m for the Formation, the 125m depth contour represents, on average, an approximate 50m nominal thickness of cover which would be the average of a thickness of cover varying 0m to 100m. The foregoing is intended as a general guideline to direct future drilling away from areas with deeper cover which cannot realistically be expected to be open-pittable. The reader is cautioned that the foregoing proposal is conceptual since the exact limiting depth of overburden viable for mining of the shales is presently unknown in the absence of an economic or feasibility study for the two Potential Mineral Deposits proposed herein. In addition, the depth contours per the subsurface stratigraphic database are based on relatively widely spaced oil-gas wells which are locally up to 10km apart and collectively provide only a generalized insight into the subsurface.

Based on the above general scheme, considerable areas to the north and south of the Asphalt and Buckton Potential Mineral Deposits, and the Buckton South Target Area, offer prospective areas under lesser overburden cover worthy of attention, especially nearer the Formation’s erosional edge. By contrast, the western parts of the Buckton South Target Area, and many parts of the Eaglenest Target Area can be classed as lower priority suggesting deferral of additional work thereupon until suitability of an in-situ mining method is tested[45] to exploit material which might be discovered under excessive cover.

[45] For example, borehole in-situ slurry mining, OGS 1983; Knoke et al 1980, 1982

Over areas away from the erosional edge of the Second White Speckled Shale Formation, in the interior of the Property, the 75m depth contour, to the base of the Formation, is proposed as a limiting guideline, representing on average a 50m thickness of cover above an assumed 25m nominal Formational thickness.

Based on logistical criteria, the east half of the Buckton South Target Area, the Buckton and the Asphalt Zones, all of which are located over the east part of the Property, present high priority locations which can be relatively easily explored given good access to the area, and equally good access throughout them via a series of old seismic lines and trails, especially in winter months. The foregoing include accessways previously identified, or utilized, during historic work over the area, including a network of winter roads built during 1997 historic drilling at the Buckton and Asphalt Zones. The Birch Mountain airstrip provides additional logistical enhancements, as do nearby sources of water which have been previously identified and documented in historic records to support any future drilling at the Asphalt and Buckton Zones.

20.3 Recommended Analytical and Sample Testing Guidelines

Considerable analytical and metal recovery testwork is recommended later in this Section, to comprise a significant portion of work required to advance exploration and development of the many polymetallic shale targets and Zones on the Property. This work will constitute by far the most crucial step toward evaluation of the ultimate merits of the shale hosted polymetallic mineralization, and its results will determine whether additional work to explore them further is warranted. It is, accordingly, recommended that all such work be conducted by professionals, and at facilities, with recognized prior experience with the analysis and handling of metalliferous black shales. It has been the author's experience that Canadian metallurgical testing facilities are ill equipped for the proper handling of carbonaceous ores during sample preparation, and lack the procedural and intellectual resources to reliably test metalliferous black shales. It is further recommended that the testwork be entrusted to any one of several credentialed facilities abroad[46] which routinely treat metalliferous carbonaceous materials and black shales, and which would also bring considerable expertise and practical insight to the recommended testwork.

It is also recommended that, until such time as the gold content of the shales has been definitively established from testing of larger samples, results from fire assaying and INA analyses for gold be regarded to be unreliable due to the limited (small) sample size which can be analyzed by the two methods, as compared to leaching procedures (e.g bottle roll cyanidation) which can accommodate treatment of considerably larger samples. In the foregoing regard, the author is familiar with the TSX Venture Exchange's rules[47] which require that communication of precious metal results from analyses by non-Canadian laboratories, or from analyses using any technique other than fire assay, contain also the results of fire assay check program from an independent Canadian laboratory. The regulations also stipulate that the Exchange might compel that results from fire assaying be provided alongside any other results communicated.

It is the opinion of the author that the fire assaying method is no better suited to the analysis of carbonaceous shales with up to 20wt% organic Carbon than it is to the assaying of crude oil or bitumen, without pre-treatment to remove the organic fraction by leaching, or its oxidation or "ashing". Such procedures are impractical, costly, and are furthermore deemed to be non-standard procedures by Canadian regulators. It is suggested that guidance be sought from Canadian regulators in the above regard since future metallurgical testwork results for gold from the black shales will most likely be from work completed by non-Canadian facilities and necessarily by methods other than fire assay.

In addition to the above, the analytical and metal recovery testwork recommended herein will necessarily involve some measure of pre-treatment to disaggregate the clay fraction of the shale prior to leaching or mineral concentration tests. It has been the experience of the author that there is tendency among facilities to utilize whatever reagent is on hand without due regard to tailoring reagents to proper disaggregation of black shales. Calgon has often been a popular choice though it has proven to be a poor substitute for a deflocculant or wetting reagent, as has also sodium-hexametaphosphate which has proven only marginally acceptable as a deflocculant inferior to other available deflocculating re-agents.

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[46] For example, Outotec; Mintek; JOGMEC in-house facilities, to name a few.
[47] TSX Venture Exchange, Corporate Finance Manual, Appendix 3D.

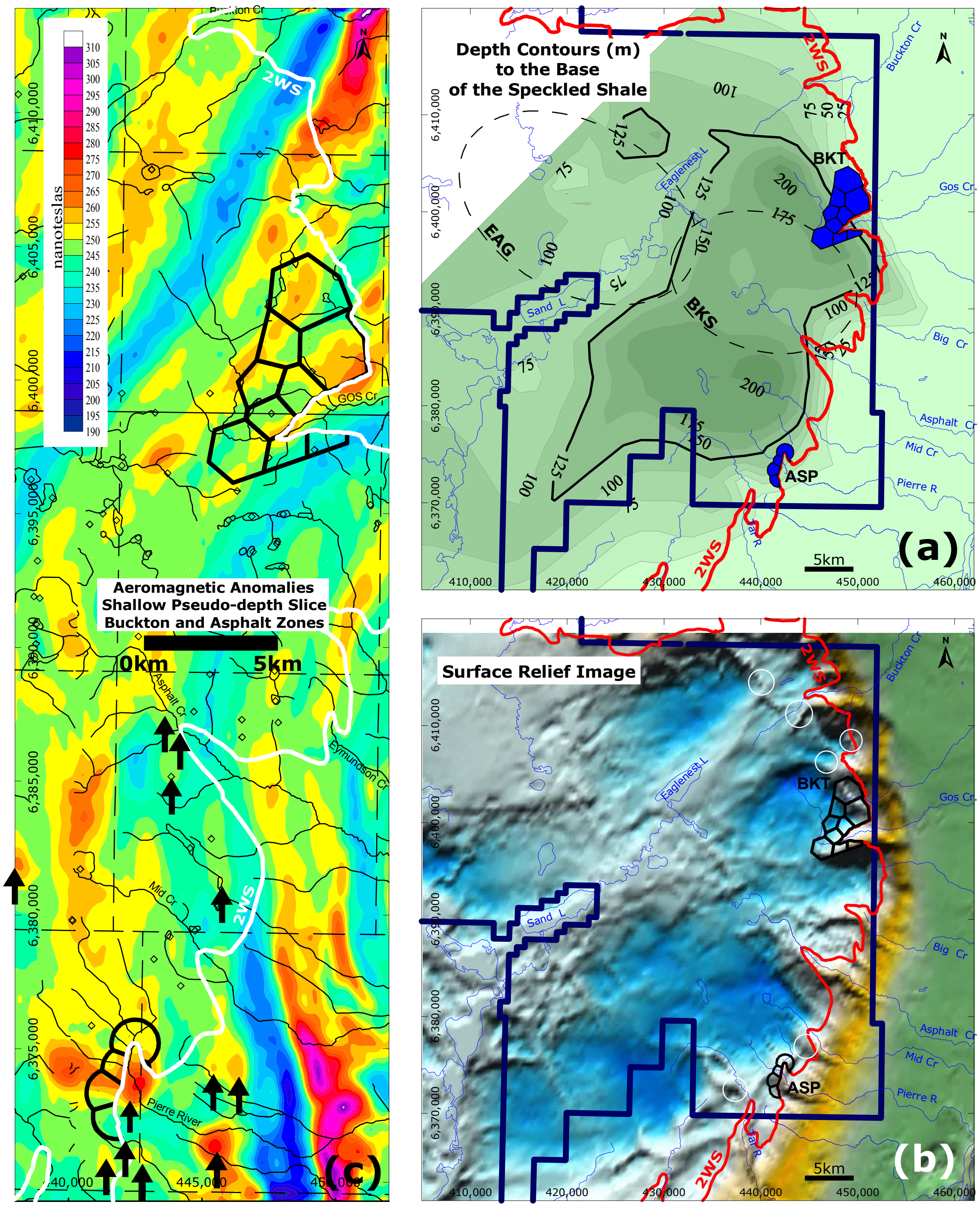

Figure 84: Summary of suggested prioritization criteria for future work. Figure 84(a): Depth to the base of the Second White Speckled Shale Formation across the east half of the Property, showing the Buckton (BKT) and Asphalt (ASP) Potential Mineral Deposits. The Buckton South (BKS) and Eaglenest (EAG) Target Areas, and the erosional edge of the Second White Speckled Shale Formation (2WS) also shown. (after previous Figure 7). Figure 84(b): Topographic relief over the eastern part of the Property showing the Buckton (BKT) and Asphalt (ASP) Potential Mineral Deposits, in relation to adjacent circular topographic features, lineaments and possible exhalative vent targets (circles). (after previous Figure 15). Figure 84(c): Aeromagnetic pseudo-depth slice anomalies over the Asphalt and Buckton Potential Mineral Deposits, and the Buckton South Target Area (after previous Figure 49), showing additional possible exhalative vent targets (arrows).

20.4 RECOMMENDED WORK PROGRAMS

The six sub-properties, and work required to advance each, are summarized below, ordered from the least explored to the most.

20.4.1 McIvor West and North Lily Anomalies

Both of these Anomalies are early stage anomalies which merit reconnaissance investigation and can be effectively evaluated by soil geochemical sampling along a set of traverses (transects) intended to determine the presence or the absence of diffusion anomalies over them, or on their flanks, which might suggest buried mineralized shales beneath their surface.

Both Anomalies are relatively remote and work thereupon will necessarily be helicopter supported. Work over the North Lily Anomaly will be subject to seasonal surface use restrictions during Caribou calving season. The author has not visited the North Lily Anomaly, though he has conducted incidental heli-borne reconnaissance over the McIvor West Anomaly and vicinity during the mid 1990's and in 2000, in connection with work over the McIvor River to the north and the east.

Though both targets hold potential for hosting buried polymetallic shale and merit further work, it is recommended that work thereupon be held in abeyance until such time as encouraging metal recovery results are obtained from testing of the metalliferous shales from the Asphalt and Buckton Zones.

20.4.2 Eaglenest Target Area

The Eaglenest Target Area represents a prospective target with coincident composite surface geochemical, stratigraphic, and other interpreted anomalies which collectively are similar to surface anomalies over the Buckton and Asphalt Zones, and likely represent similar shale hosted metal zones buried beneath the surface.

The Target Area offers several well defined metal diffusion anomalies in soils which provide realistic targets for testing by future drilling intended to determine the presence or absence of a suspected buried metal mineralized system of appropriate dimensions ranging 50sq to 100 sq km. Though considerable additional science can be practiced over the Target Area with additional surveys, it is the opinion of the author that a handful of holes located on anomalies across the Area's western flank would be a preferable definitive test, and would suffice to definitively confirm or refute presence of a mineralized system of the dimensions and characteristics being sought by Dumont.

The Target Area is in the interior of the Birch Mountains, at the centre of the Property, and lacks any outcrop exposures, although the Second White Speckled Shale is known to exist under all of its surface and is projected to be under 75m-100m cover per the subsurface stratigraphic database. The Area's demonstrable exploration potential lies in its potential to contain suspected polymetallic black shale hosted mineralization similar to that discovered at the Buckton and Asphalt Zones, although the significance of such mineralization under 75m-100m of cover is presently unknown given the absence of any economic guidelines from similar mineralization at the Buckton and Asphalt Zones which are also partly exposed.

There is no information from prior work to guide speculations of whether grades which might be encountered in any buried polymetallic mineralized system beneath the Area will be higher or lower than those from the Buckton and the Asphalt Zones. It is the opinion of the author, however, that grades will, on balance, likely be similar to those from the Asphalt and Buckton Zones, given the remarkable consistency of grade documented across the Birch Mountains from the Shale, and the consistency of grades between the Asphalt and Buckton Zones drill holes which are located approximately 30km apart.

Considering all of the above, a definitive recommendation to proceed with a search for polymetallic black shale hosted mineralization beneath the Eaglenest Target Area, or whether to forego same, cannot be made until economic parameters are better established for similar mineralization at the Asphalt and Buckton Zones. It is recommended that work on the Eaglenest Target, at least as it relates to the exploration for mineralized shale, be held in abeyance until such time as encouraging metal recovery results are obtained from testing of the metalliferous shales from the Asphalt and Buckton Zones.

Of collateral interest in the Eaglenest Target Area is the incidental discovery of relatively "fresh" dacite float, during historic reconnaissance field work (1994-1995), in the vicinity of Clear Lake, located to the south of Eaglenest Lake, in the eastern extremity of the Target Area where it overlaps the western extremity of the Buckton South Target Area. It is recommended that this locality be re-visited from the perspective of searching for possible exhalative venting with the benefit of results and conclusions from considerable work post-dating its discovery.

The author has conducted extensive heli-borne reconnaissance over the Eaglenest Target Area and vicinity during the mid-late 1990's, especially over its eastern half, in connection with field work over the eastern half of the Birch Mountains.

20.4.3 Buckton South Target Area

The Buckton South Target Area represents a prospective target with many well defined coincident composite geochemical, stratigraphic, and other interpreted anomalies which collectively are similar to surface anomalies over the Buckton and Asphalt Zones, and likely represent buried metal zones beneath their surface, as has been demonstrated under similar anomalies over the Buckton and Asphalt Zones. The eastern parts of the Buckton South Target Area are accessible by a variety of winter roads, by seismic lines via ATV and also by air utilizing the Birch Mountain Airstrip. The author has extensively explored the east part of the Area on foot, and has prospected and mapped along all river valleys flowing from it.

The east half of the Target Area hosts a series of soil and other surface anomalies on trend from the Buckton Potential Mineral Deposit located immediately to its north. These anomalies, lying on the east flank of the isopach stratigraphic anomaly, are reinforced by exposures of mineralized shale along the Asphalt Creek valley to the east, and most likely represent buried mineralized shale either as the southerly extension of the Buckton Potential Mineral Deposit for an additional distance of 6km, or as an altogether separate mineralized system.

A portion of the east half of the Buckton South Target Area, equivalent to nearly double the surface area of the Buckton Potential Mineral Deposit, is within an acceptable thickness of overburden cover based on the subsurface stratigraphic database. This portion is bounded by the erosional edge of the Second White Speckled Shale Formation to its east and the 125m depth contour to the base of the Formation to its west. The anomalies over the east half of the Buckton South Target Area, accordingly, represent high priority targets for the delineation of a shale hosted polymetallic Zone under the area of similar size as the Buckton Potential Mineral Deposit, or an extension to the Buckton Potential Mineral Deposit.

A definitive recommendation to proceed with additional work to define volumes of polymetallic black shale hosted mineralization over the Buckton South Target Area, or whether to forego same, cannot be realistically made until economic parameters are established for similar mineralization at the Asphalt and Buckton Zones. It is recommended that work on the Buckton South Target, at least as it relates to the exploration for mineralized shale, be held in abeyance until such time as encouraging metal recovery results are obtained from testing of the metalliferous shales from the Asphalt and Buckton Zones.

The western half of the Buckton South Target Area presents prospective metal diffusion anomalies in soil which support speculation of presence of buried mineralization beneath the surface. The Second White Speckled Shale in the area is, however, under cover exceeding 125m thickness and, in the opinion of the author, any mineralized volumes which might be discovered therein cannot realistically be considered prospective for exploitation by open pit. No work can be recommended over the west half of the Buckton South Target Area at this time until an in-situ mining method has been tested.

20.4.4 Buckton Zone and Potential Mineral Deposit

The Buckton polymetallic Zone hosts the Buckton Potential Mineral Deposit which extends over an approximate 3km x 8km area comprising approximately 26 square kilometers. The Deposit has an estimated thickness varying, on average, 20.5m to 21.9m, and represents an aggregate of approximately 1.2-1.3 billion short tons of mineralized material (1.1 to 1.2 billion tonnes) hosted in the Second White

Speckled Shale Formation. The polymetallic mineralization consists of Mo-Ni-U-V-Zn-Cu-Co-Ag in addition to gold whose average grade has not yet been definitively established over the Zone and is treated as nil in this report.

The Buckton Potential Mineral Deposit has good lateral continuity and is vertically zoned, containing generally better grading material within its uppermost 10m, and progressively better grades northward in the upper parts of the drill holes, accompanied also by progressive thickening of the better grading sections. Subzones can be blocked within the Potential Mineral Deposit which are either of better grade than the entire volume (e.g 15%-30% better grades over upper half of the volume being the uppermost 10m), or which are dominated by different groupings of metals, especially over its northern portion where its uppermost sections are progressively better mineralized with Mo-Ni-U-Zn-Co. This upper subsidiary northern subzone, occupying the northern half of the uppermost 10m of the Potential Mineral Deposit and representing approximately 20%-30% of the Buckton Potential Mineral Deposit, is better enriched in Mo-Ni-U-Zn-Co which collectively represent sufficient combined value to be of interest as a metal group. The foregoing northerly enrichment trend serves to prioritize exploration of the subsidiary northern subzone as a stand-alone mineralized volume.

The Buckton Potential Mineral Deposit is open in three directions: to the south, the west and to the north. To the west it is open across the isopach anomaly, though any westward extensions it might have would be under overburden cover exceeding the suggested 125m depth limiting parameter. The Zone's southern tip is under an estimated 150m-175m of cover per the subsurface stratigraphic model, although drill holes over that part indicate depths to the base of the Second White Speckled Shale Formation ranging 130m-150m (ie:110m-130m to the top of the Formation). Potential extensions of the Zone eastward and to the southeast are projected to be under lesser overburden nearer its erosional edge where the shale is also exposed at surface and in valley walls.

Unlike its southern and western projected extensions, the Buckton Potential Mineral Deposit is open to the north over large areas generally characterized by lesser overburden cover. Combined with a trend of better grades northward in the upper parts of the Deposit, accompanied also by progressive thickening of the better grading sections, expansion of the Zone northward by future drilling is a clear priority, as opposed to expanding it to the south or the west.

Considerable information is available from the historic work supporting anticipations that the Buckton Potential Mineral Deposit can be expanded by additional drilling. There is scant information, however, concerning recovery of the metals, their mode of occurrence, and their amenability to various available recovery methods. It is the opinion of the author that efforts directed toward addressing metal recovery would considerably better enhance the Buckton Potential Mineral Deposit and better advance it toward development than would the definition of additional mineralized volumes. It is, accordingly, recommended that the next stage of work over the Buckton Zone consist entirely of metallurgical testwork to evaluate recoverability of the metals and their recovery on a combined basis, and that such tests address chemical (leaching) as well as physical (concentration) recoveries. It is also recommended that concurrent leaching tests of larger samples also be conducted to definitively establish gold content of the shale.

It is the opinion of the author that recent interest in polymetallic black shales worldwide is not a response to strengthened metal prices but is rather the direct result of break-through advances in the application of bioleaching to the efficient recovery of metals from black shales in general, enabling the recovery of lower grades with considerably higher efficiencies than previously possible by traditional methods (smelting). It is, accordingly, recommended that metallurgical testwork include significant efforts to evaluate suitability of bioleaching to the extraction of metals on a combined basis from the Second White Speckled Shale. Such efforts would likely entail an initial series of orientative tests as precursors to broader testwork which might include column test simulations of heap-leaching.

Archived historic samples and drill core from the historic drilling over the Buckton Zone provide a useful inventory of ready material for initializing some of the suggested testwork, though it would be desirable to combine same with some comparative fresh sample material from the Second White Speckled Shale

Formation to evaluate any vagaries which oxidation of the archived samples might introduce into the testwork. Fresh sample material can be collected relatively easily, without mechanical tools (hence without extensive delays for land use permitting), from any one of a number of exposures of the Shale which are readily accessible by helicopter. In this regard, the GOS1 gossan and Asphalt-H lithosection are suggested as suitable locations, among others, and it is recommended that approximately 2000lbs-3000lbs of such sample material be collected prior to the winter.

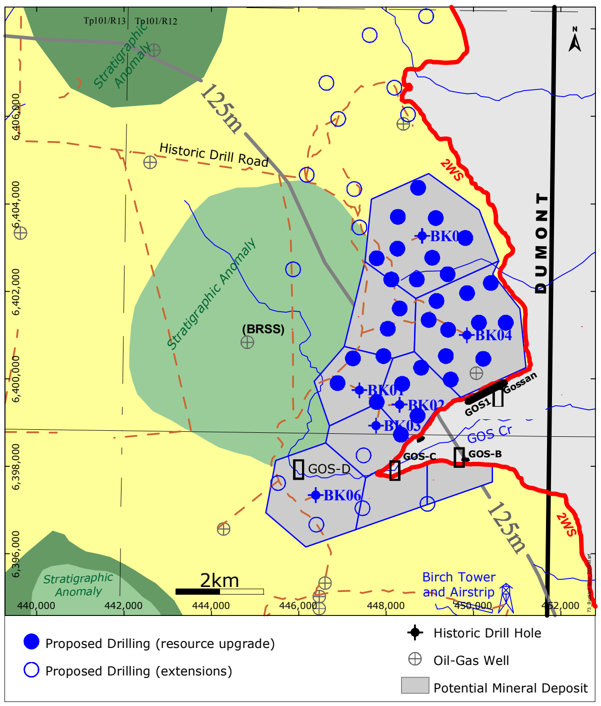

Figure 85: Recommended drilling, Buckton Potential Mineral Deposit. Trace of the 125m depth contour to the base of the Second White Speckled Shale and its erosional edge (2WS) also shown. See Figure 66 for legend.

Subject to obtaining encouraging results from the recommended metal recovery testwork, a 4,500m drilling program is recommended over the central and northern portions of the Buckton Potential Mineral Deposit to classify a portion of it to a resource, to also enable initiating a preliminary economic analysis to establish general guideline criteria which might also be applicable to other potential shale hosted polymetallic mineralization elsewhere on the Property.

A program of approximately 30 vertical holes averaging 100m deep, spaced approximately 400m apart, with local tests at 200m spacing, is recommended to upgrade the central and northern portions of the Buckton Potential Mineral Deposit to a classified resource, to be implemented only if metal recovery test results are encouraging. The suggested program will suffice to classify a volume to the inferred resource category, although given that the bulk of drilling costs are logistical overheads, costs of permitting and costs of mobilization, Dumont might consider expanding the program, or enhance drill spacing (to 200m), to capture as much mineralized material into a higher resource category as permissible by scheduling and budgets.

An additional 15 similar, though wider spaced holes (800m-1000m), are also recommended to test the northern projected extension of the Buckton Potential Mineral Deposit, and over select portions to its south and east. It is envisaged that drilling of some of the sites might be deferred and that others might be prioritized based on logistical criteria, or that some might be drilled as discretionary in-fill holes.

A schematic suggested drill pattern is shown in Figure 85 which will undoubtedly be modified based on logistical criteria. The drill program can utilize many of the historic drill roads for access, and will require minimal road building to access the northern parts of the Buckton Potential Mineral Deposit. The Figure also shows, for reference, the erosional edge of the Second White Speckled Shale Formation, and the approximate trace of the 125m depth contour to its base.

The northward better grades and thickening of the better grading sections noted in the historic Buckton drilling, combined with observations of northerly increasing thickness, frequency and distribution of bentonites in the drill core, support the presence of a yet undiscovered nearby source to the volcanic debris (and metallic mineralization) incorporated into the Buckton Zone Second White Speckled Shale. The envisaged metalliferous exhalative venting proposed to be this source would also hold potential for associated sedimentary exhalative - SEDEX style - sulfide mineralization and merits concerted attention.

In addition to the above, historic work has suggested a northerly or northeasterly source to bentonites and debris noted in the Buckton drill core. The author further envisages that such a source, if it exists, would be proximal to the holes with the thicker bentonite accumulations, and that anticipation of locating same within 2km-5km of the northernmost Buckton holes would be realistic.

Though all parties who have mapped the Birch Mountains have noted potential for the discovery of SEDEX style sulfide mineralization on the Property, there is no historic work focusing on same. There is considerable information in the historic records, however, which can be applied as an initial step to initiate exploration for SEDEX mineralization in the area, and a number of localities to the north of the Buckton drilling which present suitable structural environments for vented conduits. These are, in most part fault junctions and strong lineaments which are discernible in surface features, or may equally as likely be features which manifest as stratigraphic disturbances interpreted from the subsurface stratigraphic model, or as block movements which can be seen in cross sections. The isopach anomaly to the north of the Buckton drilling presents a realistic target in the foregoing regard as do a number of fault junctions which are noted in Figure 84 based on topographic lineaments which are supported by general observations from limited field prospecting by the author in their vicinities.

20.4.5 Asphalt Zone and Potential Mineral Deposit

The Asphalt polymetallic Zone hosts the Asphalt Potential Mineral Deposit which extends over an approximate 1km x 4.5km area comprising approximately 4.5 square kilometers, with an estimated thickness ranging 7.2m to 11.6m, and represents an aggregate of approximately 109-132 million short tons of mineralized material (99-120 million tonnes).

Prior drilling over the Asphalt Zone consists of only two holes, 900m apart, which exhibit good consistency of grade and geology between them. Of special note is the consistency of grade between the average metal grades of the Asphalt holes with the average grades of the all historic drilling completed over the Buckton Zone located approximately 30km to the north of the Asphalt Zone.

The Asphalt Potential Mineral Deposit is open to the northwest over an additional distance of 5km-6km as reflected by soil geochemical diffusion anomalies identified by the historic work, and to the northeast for a distance of an additional 6km toward Mid Creek and closure of its valley. Whereas projected northwesterly extension of the Potential Mineral Deposit would be partly under overburden cover exceeding 125m based on the subsurface stratigraphic database, its northeasterly projected extension is under thinner cover and is, accordingly, prioritized. The potential of a projected extension southward over the stratigraphic isopach anomaly immediately to the south of the Potential Mineral Deposit is unknown. There is no information to guide speculation of what the ultimate thickness of the Second White Speckled Shale Formation might be over the areas proposed as extensions to the Asphalt Potential Mineral Deposit. It would be reasonable to propose that thickness of the Formation might be at least the same or thicker than that seen in the drilling at a distance away from the erosional edges of the Birch Mountains and away from active slump zones.

Though the historic work results support anticipations that the Asphalt Potential Mineral Deposit can be expanded by additional drilling, there is scant information, concerning recovery of the metals, their mode of occurrence, and their amenability to various available recovery methods. As previously discussed for the Buckton Zone, it is the opinion of the author that efforts directed toward addressing metal recovery would considerably better enhance the Asphalt Potential Mineral Deposit and better advance it toward development than would the definition of additional mineralized volumes. It is, accordingly, recommended that the next stage of work over the Asphalt Zone consist entirely of metallurgical testwork to evaluate recoverability of the metals and their recovery on a combined basis, and that such tests address chemical (leaching) as well as physical (concentration) recoveries. It is also recommended that concurrent leaching tests of larger samples also be conducted to establish gold content of the shale.

As previously also recommended for the Buckton Zone, it is further recommended that metallurgical testwork include significant efforts to evaluate suitability of bioleaching to the extraction of metals from the Shale and their extraction on a combined basis. Such efforts would likely entail an initial orientative tests as precursors to broader testwork which might include column test simulations of heap-leaching.

Archived historic drill core from the historic drilling over the Asphalt Zone provide a useful inventory of ready material for initializing some of the suggested testwork, though it would be desirable to combine same with some comparative fresh sample material from the Second White Speckled Shale Formation to evaluate any vagaries which oxidation of the archived samples might introduce into the testwork. Fresh sample material can be collected relatively easily, without mechanical tools (hence without extensive delays for land use permitting), from a number of exposures of the Shale in Mid Creek and Pierre River, which are readily accessible by helicopter. In this regard, it is recommended that approximately 2000lbs-3000lbs of sample material be collected prior to the winter.

Subject to receiving encouraging results from the metal recovery testwork, a 2600m drilling program is recommended over the Asphalt Potential Mineral Deposit, and over its projected northeastern and western extension, partly as a first step toward classifying a resource therein, but mostly to probe for extensions of the Zone away from its erosional edge. A program entailing 26 vertical holes averaging 100m deep, spaced approximately 400m apart, with local tests at 200m spacing, is recommended to upgrade a portion of the Potential Mineral Deposit to a classified resource, to be implemented only if metal recovery test results are encouraging. The suggested program will suffice to classify a part of the Potential Mineral Deposit to the inferred resource category, although given that the bulk of drilling costs are logistical overheads, costs of permitting and costs of mobilization, Dumont might consider expanding the program, or enhance the drill spacing (to 200m), to capture as much mineralized material into a higher resource category as permissible by scheduling and budgets. Wider spaced holes, typically 1km-2km apart, are also recommended, to investigate projected northeastern and western extensions. A suggested schematic drill pattern is shown in Figure 86 which will undoubtedly be modified based on logistical criteria. The drill program can partly utilize historic drill roads for access.

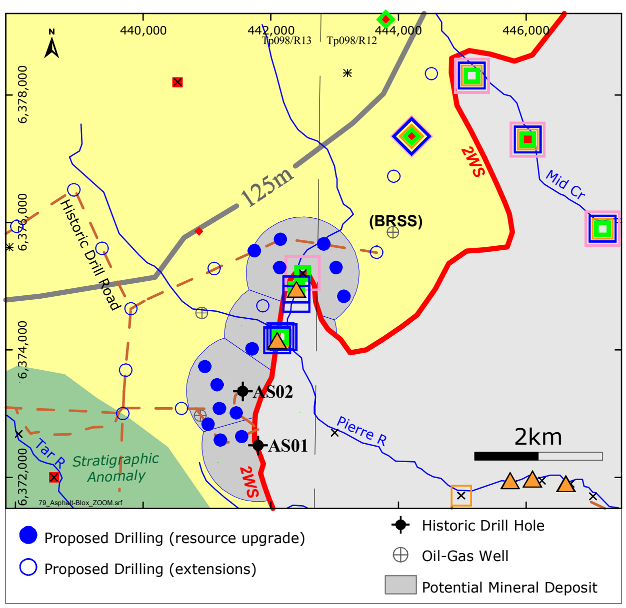

Figure 86: Recommended drilling, Asphalt Potential Mineral Deposit, Trace of the 125m depth contour to the base of the Second White Speckled Shale and its erosional edge(2WS) also shown. See Figure 75 for legend, and also Figure 79.

In addition to the above, historic work has suggested a nearby source to bentonites and volcanogenic debris noted in the Asphalt drill core, although unlike the Buckton drill holes, no directional vectors can be concluded from the limited Asphalt drilling to guide future work in the search for suggested potential sources. The author envisages that such a source, if it exists, would be proximal to the holes, and that anticipation of locating same within 2km-5km of the Asphalt drill holes would be realistic.

Though all parties who have mapped the Birch Mountains have noted potential for discovery of SEDEX style sulfide mineralization on the Property, there is no historic work focusing on same. There is considerable information in the historic records, however, which can be applied, as an initial step, toward exploring for SEDEX mineralization in the area, and a number of localities surrounding the Asphalt drilling which present suitable structural environments for vented conduits. These are, in most part fault junctions and strong lineaments which are discernible in surface features, or may equally as likely be features which manifest as stratigraphic disturbances interpreted from the subsurface stratigraphic model, or as block movements which can be seen in cross sections. Some suggested fault junctions are noted in Figure 84(b) based on topographic lineaments, all of which are supported by field prospecting in their vicinities by the author.

In addition to the above, a number of prospective locations with potential for hosting venting were also identified by historic work in the course of exploring for potential kimberlites in the vicinity of the Asphalt Zone (Section 6.3), based on considerable resampling and mineral concentration, relying also on reinterpretation of magnetic anomalies over the area. Historic resampling of some of these locations reported good indicator mineralogy indicative of nearby venting of kimberlitic or other similar material. These are summarized in Figure 84(c), juxtaposed on magnetic anomalies some of which are too conspicuous to ignore (e.g. Pierre River, downslope from the Asphalt Potential Mineral Deposit). Bedded sulfides (FeS±Ni), interlayered with Fe-phosphate, discovered in shales in the Asphalt Creek valley walls and as float therefrom in the Creek, offer additional targets worthy of more detailed examination.

20.4.6 Sedimentary Exhalative - SEDEX style - Sulfide Targets

In general terms, sedimentary exhalative sulfide deposits are known to accumulate in restricted basins or half grabens bounded by synsedimentary growth faults, with exhalative centers located along the faults or their junctions. Depositional environments vary from deep "starved" marine to shallow water restricted shelf settings, although the more common host rocks are those found in euxinic environments, namely black (carbonaceous) shales. The deposits have electromagnetic and magnetic signatures and might be detected when steeply dipping though are difficult to detect if flat-lying, or if the sulfide layers are fine and distributed over a thick stratigraphic column.

Geological, stratigraphic, lithogeochemical and metal distribution trends documented from the Property are characteristic of settings which would be highly conducive to hosting sedimentary exhalative - SEDEX style - sulfide mineralization within the black shales, providing a collateral deposit type with potential to exist on the Property. It is recommended that a consolidated effort be made to explore for sedimentary exhalative sulfides on the Property.

Several localities have been identified in the above Sections of this report on four of the six sub-properties, as targets which have potential for hosting exhalative venting with potential also for related sedimentary exhalative sulfides. The foregoing targets merit additional investigation in the field, and are prospective initial locations to be explored as part of a broader evaluation of the Property for hosting sedimentary exhalative - SEDEX style - sulfides. The targets were selected: based on (i) their location on conspicuous large faults across the Property, or on their junctions, (ii) their spatial association with conspicuous "closed" magnetic anomalies associated also with nearby kimberlite indicator minerals, (iii) bentonite development and metal enrichment vectors interpreted from drill core and surface exposures, and (iv) bedded sulfides documented from lithosections. The targets are:

- Buckton north - selected based on bentonite development and metal enrichment vectors interpreted from the Buckton drill holes;
- the westernmost parts of the Buckton South Target Area and the overlapping the easternmost parts of the Eaglenest Anomaly, in the vicinity of Clear Lake - selected based on discovery of dacite float in the area within the Asphalt-Eaglenest Fault Corridor, and the many surface geochemical anomalies nearby;
- the immediate area surrounding the Asphalt Potential Mineral Deposit, over conspicuous circular magnetic features, as well as over several locations identified in the course of exploration for kimberlitic venting on the Property;
- bedded sulfides (FeS) and Fe-phosphates documented from historic prospecting along the Asphalt Creek, and possibly also elsewhere whose significance was not recognized at the time.

It is recommended that the above targets be examined in the field, and that historic heavy mineral and geophysical databases from the Property be re-examined to identify additional prospective targets for field verification. Several initial possible targets were also suggested earlier in Figure 84.

In addition, nearly all of the historic surface geochemical and mineral anomalies discovered to date on the Property are in structural zones interpreted based on stratigraphic disturbances (e.g. Asphalt-Eaglenest Fault Zone), or are on the flanks of circular (domed?) stratigraphic disturbances (e.g. Buckton and Asphalt polymetallic Zones), but there is a general conspicuous lack of anomalies directly overtop the circular features. It is proposed that, the "closed" shape of some of the stratigraphic, often isopach, anomalies may well be an artifact of contour noding and that they might reflect faulted blocks instead, even though the shapes generally coincide with roughly circular domed topographic relief features (see Figure 7).

Should the "closed" shapes indeed represent faulted blocks rather than domes, considerable significance would be placed on the bounding faults (and junctions) as potential conduits for any volcanic exhalative activity venting into the Birch Mountains and on the Property, especially in the context of geologic models for SEDEX style mineralization. Equal significance would also be placed on at least some of faults bounding the thickened blocks (ie: isopach anomalies), recognizing them as synsedimentary re-activation zones. The foregoing would be supported by identification of an unexpected 4-6 million year sedimentation gap above the top of the Second White Specks Formation in Buckton drill holes BK01 and BK02, suggesting a period of significant uplift and erosion, suggesting also that the Formation overlying the Speckled Shale in the area is in fact the Lea Park Formation rather the LaBiche Formation.

It is recommended that the stratigraphic database be expanded, populated with additional oil-gas well information, and be re-interpreted in detailed cross-sectional rather than plan view, focusing on all isopach anomalies identified by the historic work, to assess whether they might be better re-interpreted as faulted blocks bounded by synsedimentary faults. The presence of extensive block faulting across the Property, and the greater Birch Mountains, would be consistent with the general acceptance of episodic re-activation along many faults in northeast Alberta, although there have to date been no specific efforts to identify the individual suspected blocks.

It is further recommended that exploration for sedimentary exhalative sulfides on the Property be conducted on a consolidated basis over the entire Property as a single exploration campaign rather than on an area-by-area basis, since the endeavor will in most part initially be at a reconnaissance level and findings from one area will likely be applicable and useful to exploration of another.

20.5 Recommended Work Programs and Budgets

Exploration programs are recommended herein to address the two prospective opportunities and target types presented by the Property, namely; (i) exploration and development of known and suspected Shale hosted polymetallic deposits; and (ii) reconnaissance level exploration for SEDEX type sulfide mineralization as the suspected source to the metals and exhalative debris hosted in the shales.

Although six separate geographically focused programs can be recommended to advance the polymetallic shale potential of the six sub-properties, their ultimate potential is dependant on whether metals can be effectively recovered from the shales. It is, accordingly, recommended that work intended to identify additional volumes of shale hosted polymetallic mineralization over the Property, or intended to expand the two proposed Potential Mineral Deposits, be held in abeyance until such time as encouraging results are in hand from metal recovery testwork on the shale. A two phased program is recommended in the foregoing regard to evaluate the polymetallic potential of the Second White Speckled Shale, such program to consist of an initial phase (Phase-1) comprising substantially only metallurgical testwork to be conducted to determine recovery of the metals from the shale relying on samples from the Asphalt and Buckton Zones; and a second phase (Phase-2 Contingent), to proceed only upon obtaining encouraging results from the metallurgical testwork, to consist of additional drilling and related work over the Asphalt and Buckton Potential Mineral Deposits to classify portions thereof to a resource and to expand the two Deposits by testing their projected extensions.

In addition to the above, a concurrent single phased program is also recommended, incorporated into Phase-1, to explore for sedimentary exhalative sulfides on the Property, on a consolidated basis over the entire Property rather than on an area-by-area basis, since findings from one area will likely be applicable and useful to exploration of another.

A number of other recommendations are also made below, incorporated in Phase-1, for work intended to enhance certain databases and general knowledge over the Property, and which would be equally applicable to exploration for both target types on the Property and is "shared" among the programs.

Specific recommendations are presented below:

Recommended Work - General "Shared" Work

It is recommended as follows:

- that Dumont continue its detailed review and consolidation of historic information from the Property;
- that the historic subsurface stratigraphic database and model be updated, and be populated with additional data from oil-gas drilling in the area which post-date the database (1995) to compile all such available information to pick the top as well as the bottom of the Second White Speckled Shale; and that the undertaking also consolidate all available downhole logs including gamma logs and all available geochemical information from the wells;
- that all available drill cuttings from oil-gas wells included in the expanded/updated subsurface stratigraphic database be reviewed with special attention to any evidence of exhalative venting;
- that Dumont commence dialogue, sooner rather than later, as a precursor to formal submissions, with the local community and the various permitting agencies which will ultimately be responsible for issuance of land use permits for drilling and other field work over the area;

Recommended Work - SEDEX Exploration Program

It is recommended as follows:

- that during its continuing review and consolidation of historic information from the Property Dumont identify and extract data relevant to the exploration for SEDEX mineralization on the Property;
- that the historic geophysical databases from the Property be reviewed in detail with a view to identifying features which would evidence possible exhalative venting targets for field verification; and that historic heavy mineral and diamond indicator databases be similarly reviewed in detail with a view to consolidating information which would be diagnostic to locating exhalative venting;
- that a geophysical method be identified which might be suited to identification of exhalative venting in the area, and that a pilot test be conducted over areas selected based on the available historic information;
- that reconnaissance level field prospecting be conducted over areas to the north of the Buckton Zone, over Clear Lake and vicinity, and over the area surrounding the Asphalt Zone, to include the Pierre River drainage, focusing on the search for evidence in connection with exhalative venting in the areas. Some of this work might be carried out over the Buckton North extension and general vicinity prior to first-snow as a preliminary orientation.

Recommended Work - Shale Hosted Polymetallic Targets & Zones

It is recommended as follows:

- that work over the Eaglenest and Buckton South Target Areas, and work over McIvor West and North Lily Anomalies, be held in abeyance pending obtaining favourable results from metals recovery testwork recommended herein on samples from the Buckton and Asphalt Zones.
- that existing archived drill core from the Buckton and Asphalt Zones be relogged, and that all Second White Speckled Shale intercepts be re-sampled on a 1m interval and re-analyzed to establish a comparative benchmark against historic databases. It is recommended that the

samples be analyzed by multielement analysis, in addition to S, C-organic and all other Carbon species. It is further recommended that none of the samples be analyzed by fire assay method.

- that approximately 2,000lbs-3,000lbs of fresh, reliable, sample material of the second White Speckled Shale be collected prior to winter, by hand trenching, from a reliable and representative lithosection of the Shale, from a location near the Buckton or Asphalt Zones for use during some of the testwork. It is further recommended that the sampling be carried out by a professional who is familiar with the Shale and its exposures in the Birch Mountains;
- that representative composite samples be constructed from the drill core re-sampling to be analyzed by carbon-in-leach bottle roll cyanidation, following deflocculation, to evaluate gold content of the shales. It is also recommended that composite samples of the fresh surface re-sampling also be similarly analyzed;
- that considerable attention be paid during sample preparation to mitigate excessive sample losses during pulverization of core and shale samples;
- that a focused mineralogical study be undertaken, which may also entail mineral concentration, to establish mineralogical characteristics of the Second White Speckled Shale with special focus on metallic species. It is further recommended that the foregoing work be conducted at facilities and by professionals with recognized prior experience with black shales, and black shale hosted metals;
- that a series of inorganic bulk leaching procedures be formulated and tested to investigate recovery of all of the "pay" metals on a combined basis, the tests to include focused efforts on clay disaggregation as a pre-treatment to the leaching. It is further recommended that the foregoing work be conducted at facilities and by professionals with recognized prior experience with the handling and analysis of black shales;
- that tests be formulated and conducted to evaluate viability of preparing a metal concentrate from the shale, relying on deflocculated samples. It is further recommended that the foregoing work be conducted at facilities and by professionals with recognized prior experience with black shales, and black shale hosted metals;
- that a series of orientative bioleaching tests be formulated and conducted under the supervision of professionals with expertise in bioleaching to investigate amenability of the metals hosted in the shale to bioleaching, to establish general and specific guidelines as a precursor to broader bioleaching testwork to follow;

Subject to receiving encouraging results from the above metals recovery testwork, it is recommended that the Asphalt and Buckton Potential Mineral Deposits be better defined by in-fill drilling programs to classify portions thereof to a classified resource, and that drilling also be initiated to commence delineation of their projected extensions. In the foregoing regard, it is recommended as follows:

- that an in-fill drilling program be carried out at a nominal spacing of 400m over the Buckton Potential Mineral Deposit to enable classification of the central and northern portions of the Potential Deposit, or a portion thereof, to a resource, said drilling to include also localized tests with closer spaced holes at a nominal 200m spacing to evaluate local variations. It is also recommended that the drilling include wider spaced holes to test projected extensions of the Buckton Potential Deposit to the north. An aggregate of 4,500m of drilling is recommended. It is further recommended that suitable drill equipment be utilized to achieve good recoveries and that the drilling be conducted under the supervision of professional who are familiar with the Second White Speckled Shale and the Birch Mountains.
- that an in-fill drilling program be carried out at a nominal spacing of 400m over the Asphalt Potential Mineral Deposit to enable its classification, or a portion thereof, to a resource, said drilling to include also localized tests with closer spaced holes at a nominal 200m spacing to evaluate local variations. It is also recommended that the drilling include holes partly over its projected extensions to the northeast and the west. An aggregate of 2,600m of drilling are recommended. It is further recommended that suitable drill equipment be utilized to achieve

good recoveries and that the drilling be conducted under the supervision of professionals who are familiar with the Shale and the Birch Mountains.

- that resource studies be initiated over the Buckton and Asphalt Potential Mineral Deposits based on the above drilling.

The above recommended Phase-2 contingent drill programs represent modest initial steps toward better delineation of the two Potential Mineral Deposits, both of which will clearly require extensive additional drilling to expand and upgrade them toward reserves if metallurgical testing results indicate favourable recoveries for metals therefrom. Similarly, favourable metals recovery results would also pave the way to commence drilling to test the other four sub-properties which are proposed to overlie suspected buried shale hosted polymetallic mineralization, of which sub-properties the Buckton South Target Area holds promise for hosting a mineralized volume of similar size as that identified at the Buckton Potential Mineral Deposit.

Recommended budget for the above work programs is summarized in Table 21.

Recommended Budget - SBH Property - Phase-1 and Phase-2(Contingent) Work Programs

Phase and Related Program Work Item		Phase-1		Phase-2 (Contingent)
Phase-1: General Work (Shared Projects)				
Ongoing Data Consolidation		$ 50,000		
Stratigraphic Subsurface Model & Database - Update & Expand		$ 50,000		
Oil-Gas Wells Cuttings Review		$ 25,000		
Preliminary Permitting & Community Consultation Dialogue		$ 25,000		
	STTL	$ 150,000		
Phase-1: SEDEX Exploration Program				
Geophysical Databases Review & Reinterpretation		$ 25,000		
Tectonic & Stratigraphic Blocks Re-Interpreation Study		$ 25,000		
Geophysical Pilot Test		$ 50,000		
Initial Field Prospecting		$ 50,000		
Detailed Field Follow-Up		$ 150,000		
Detailed Follow-Up Analytical		$ 50,000		
Data Interpretation & Reporting		$ 50,000		
	STTL	$ 400,000		
Phase-1: Shale Hosted Polymetallic Targets & Zones Exploration Program				
Re-Log and Re-Sample Extsiting Archived Drill Core		$ 25,000		
New Sample Collection (o/c)		$ 25,000		
Re-Assay Existing Bkt-Asp Drill Core - 300 samples @ $30		$ 10,000		
Incidental Analytical		$ 20,000		
Cyanide Leaching Testwork (20 samples @ $2,000ea)		$ 40,000		
Clay Disaggregation Testwork		$ 50,000		
Metal & Mineral Concentration Testwork		$ 100,000		
Inorganic Leaching Testwork		$ 100,000		$ 25,000
Bioleaching Testwork		$ 150,000		$ 200,000
Mineralogical Study		$ 75,000		$ -
Project Monitoring & Reporting		$ 100,000		$ 50,000
	STTL	$ 695,000	*STTL*	$ 275,000
Phase-2 (Contingent): Shale Hosted Polymetallic Targets & Zones Program				
Buckton Drill Program (45 holes, avg 100m, 4500m @ $300/m)				$ 1,350,000
Analytical (75% assayed; apprx 4500 samples @$50)				$ 200,000
Supervision & Reporting				$ 100,000
Permitting & Reclamation				$ 75,000
Buckton Resource Study				$ 125,000
Asphalt Drill Program (26 holes, avg 100m, 2,600m @ $300/m)				$ 900,000
Analytical (75% assayed; apprx 2600 samples @$50)				$ 125,000
Supervision & Reporting				$ 100,000
Permitting & Reclamation				$ 50,000
Asphalt Resource Study				$ 75,000
			STTL	$ 3,100,000
Subtotals All Programs		$ 1,245,000		$ 3,375,000
Contingencies (approx 15%)		$ 155,000		$ 525,000
Totals - All Programs		$ 1,400,000		$ 3,900,000
Subtotal: Phase-1		$ 1,400,000		
Subtotal: Phase-2 Contingent Program				$ 3,900,000
Total: Aggregate Programs				$ 5,300,000

Notes:
Drilling costs estimated @ $300/m all-inclusive of coring, mobe/demobe, consumables, fuel, transport and drill geologist
Assaying costs include sample preparation and 15% allotment to blanks, duplicates and standards
Metallurgical testwork costs include third-party professional fees

Table 21: Recommended Budget.

21. REFERENCES

Agra Monenco 1999. Processing of Polymetallic Sulfide Ores, Tintina Project BKT0327; Agra Monenco Project TML109774, February 1999

AGS 2001. The Geological And Geochemical Setting Of The Mid-Cretaceous Shaftesbury Formation And Other Colorado Group Sedimentary Units In Northern Alberta. Dufresne M.B., Eccles D.R., and Leckie D.A. Alberta Geological Survey, Special Report 09.

Allen, R.L., 1997. Setting of Zn-Cu-Au-Ag Massive sulfide deposits in the evolution and facies architecture of a 1.9Ga marine volcanic, arc, Skellefte District, Sweden. Econ.Geol vol91, pp1022-1053.

Andersson, A., Dahlman, B. & Gee, D.G., 1983. Kerogen and uranium resources in the Cambrian alum shales of the Billingen-Falbygden and Narke areas, Sweden. - Geologiska Foreningens i Stockholm Forhandlingar 104.

Armands, G., 1972. Geochemical studies of uranium, molybdenum and vanadium in a Swedish alum shale. - Stockholm Contr. Geol. 27.

Attalla 1995. Stratigraphic Compilation and Modeling, Subsurface Database Report, Northwest Sector. Attalla Soft Rox 1995. In Appendix D, MIN19960011

Babcock, E.A., 1975. Fracture phenomena in the waterways and McMurray formations, Athabasca oil sands region, northeastern Alberta. Bulletin of Canadian Petroleum Geology, Volume 23.

Babcock, E.A. and Sheldon, L.G., 1976. Structural significance of lineaments visible on aerial photos of the Athabasca oil sands area near Fort MacKay, Alberta. Bulletin of Canadian Petroleum Geology, Vol.24, No.3.

Bachu, S., 1992. Basement heat flow in the Western Canada Sedimentary Basin. Tectonophysics, 222.

Bachu, S. and Underschultz, J.R., 1993. Hydrogeology of formation waters, northeastern Alberta basin. The American Association of Petroleum Geologists Bulletin, Vol.77, No. 10.

Bachu, S. 1994. Distribution of Transitional Elements In Formation Waters in Northeastern Alberta, Bachu S., July 1994, Alberta Geological Survey, Alberta Research Council. Special Study Commissioned by Tintina Mines, included in Appendix A in Alberta Mineral Assessment report MIN9611, Sabag 1996a.

Ballantyne, J.M. 1993. Hydrocarbon-associated, sediment-hosted gold deposits: a genetic model. Extending the Reach of Exploration, 1993 AAPG-SEPM-EMD-DEG, Rocky Mountain Section, Salt Lake City, Utah, September, 1993.

Ballantyne, S.B. and Harris, D.C., 1994. Alberta Orientation: The Big Picture. Proceedings, Calgary Mining Forum, April 1995.

Ballantyne, S.B, Harris D.C., Panteleyev A., Sabag S.F., 1995 "Definitely not pollution": Canadian geologic settings for native element assemblages of endogenic and exogenic origins, Proceedings and Abstracts pp5, Geological Survey of Canada, Forum 1995, January 16-18.

Ballantyne, S.B., Harris D.C., Sabag S.F., 1995. Mineralogical results from insoluble residues obtained from cold HF digestion of precious metal bearing strata, Fort MacKay, Alberta., Proceedings and Abstracts pp21, Geological Survey of Canada, Forum 1995, January 16-18, 1995.

Ballantyne, S.B., Harris D.C., Walker D., Sabag S.F. 1995. Mineralogical Data from Northeast Alberta rocks and Streams, Abstract, Cordilleran Geology and Exploration Roundup, February 1995, GSC Poster #50

Brierly C.L. 2008. Biomining, Extracting Metals With Bio-organisms, Brierly Consultancy LLC, Highland Ranch, Colorado, USA. Internal Paper.

Bloch, J., Shroder-Adams C., Leckie D.A., McIntyre D.J., Craig J. and Stanland M. 1993. Revised stratigraphy of the lower Colorado Group (Albian to Turonian), Western Canada, Bulletin of Canadian Petroleum Geology, V.41, No.3 p.325-348, 1993.

Bloomstein, E.I. and Clark, J.B., 1990. Geochemistry of the Ordovician High-Calcium Black Shales Hosting Major Gold Deposits of the Getchell Trend in Nevada. Metalliferous black shales and related ore deposits-Proceedings, 1989 meeting of the US working group of the International Geological Correlation Program Project 254.

Briskey, J.A. 1986. Descriptive Models of Sedimentary Exhalative Zn-Pb; in Mineral Deposit Models, Cox, D.P. and Singer, D.A., editors, USGS Bulletin 1693.

Buryak, V.A. and Perestoronin, A.Ye, 1994. A New Type of Gold-Pyrite Ore Mineralization in Volcanic Belts of Continental Margins. Translated from Doklady R.A.N. 1992, vol 325, no1, pp113-118.

Buryak, V.A., 1976. Volcanic, Sedimentary and Hydrothermal Minerogenesis as a factor in the deposition of gold ore in black shale (carbonaceous) formations. Doklady A.N., vol 226, no4, pp907-910.

Burns Cheadle B., MacFarlane P. and Odegaard V., 2001. From the Ground Down - Developing a Geological Vision for the Fort Hills Oil Sands Project, Koch Petroleum Canada LP, Rock the Foundation Convention, June 18-22, 2001, Canadian Society of Petroleum Geologists

CAPP 2007. Canadian Association of Petroleum Producers. "Canadian Oil Sands Outlook", Presentation to Energy Information Administration 2007 Annual Energy Outlook, March 2007

Clark, J.R., 1992. Detection of Bedrock-related geochemical anomalies at the surface of transported Overburden. Explore, No.76, 1992. (Also: Enzyme-induced leaching of B-Horizon soils for Mineral Exploration in Areas of Glacial Overburden. Unpublished series of papers, Activation Laboratories)

Consorminex 1995. Report on Tabling Testwork, HMC Sampling 1994. Consorminex Inc. March 1995. Appendix C5, Alberta Mineral Assessment Report MIN9611 (Sabag 1996)

Consorminex 1995b. Summary Report on reconcentration of 1994 panned HMCs. Consorminex Inc. June 1995. Appendix C5, Alberta Mineral Assessment Report MIN9611 (Sabag 1996)

Coveney, R.M. and Chen, N. 1991. Ni-Mo-PGE-Au rich ores in Chinese black shales and speculations on possible analogues in the United States. Mineral. Depos. 26, pp83-88.

Coveney, R.M., Murowchick J.B., Grauch R.I., Nansheng C. and Glascock M.D. 1992. Field Relations, Origins, and Resource Implications for Platiniferous Molybdenum-Nickel Ores in Black Shales of South China, Explor. Mining Geology. Vol.1, No.1, pp. 21-28, 1992.

Coveney, R.M., Murowchick, J.B., Grauch, R.I., Glascock, M.D. and Denison, J.R., 1992. Gold and Platiunum in shales with evidence against extraterrestrial sources of metals. Chemical Geology, 99, pp.101-114.

Delian, F., Jie, Y. and Tiebing, L., 1992. Black Shale Series-Hosted Silver-Vanadium Deposits of the Upper Sinian Doushantuo Formation, Western Hubei Province, China. Explor. Mining Geol., Vol.1 No.1, pp.29-38.

Demofrac 1994. Geologic Structural Interpretation of Satellite Imagery For Mineral Exploring Using Demofrac System, Athabasca Region, Northeast Alberta. Demofrac Geo-System International, 1994. In Appendix B, MIN9611, Sabag 1996a.

Dufresne, M.B. Olson R.A., Schmitt D.R., McKinstry B., Eccles D.R., Fenton M.M., Pawlowicz J.G., Edwards W.A.D and Richardson R.J.H., 1994. The Diamond Potential of Alberta: A Regional Synthesis of the Structural and Stratigraphic Setting, and Other Preliminary Indications of Diamond Potential, MDA Project M93-04-037, Alberta Research Council Open File Report 1994-10.

Engelhardt and Todirescu, 2005. An Introduction to Development in Alberta's Oil Sands, University of Alberta School of Business February, 2005. Engelhardt R. and Todirescu M., Canadian Oil Sands Trust (TSX-COS.UN) estimates $26/bbl for its 2008 budget.

Feng, R. and Abercrombie, H.J., 1994. Disseminated Au-Ag-Cu mineralization in the western Canadian sedimentary basin, Fort MacKay, northeast Alberta. Canadian Institute of Mining Convention, Toronto, Ontario. May, 1994.

Fenton, M. and Ives, J.W., 1982. Preliminary observations on the geological origins of Beaver River Sandstone. Archaeology in Alberta 1981, Archaeological Survey of Alberta Occasional Paper No. 19, 1982.

Fenton, M. and Ives, J.W., 1984. The stratigraphic position of Beaver River Sandstone. Archaeology in Alberta 1983. Archaeological Survey of Alberta Occasional Paper No. 23, 1984.

Fenton, M. and Ives, J.W., 1990. Geoarcheological studies of the Beaver River Sandstone, northeastern Alberta. Archaeological geology of North America, Geological Society of America Centennial Special Volume 4.

Fenton, M.M. and Pawlowicz, J.G., 1993. Reconnaissance mineral and geochemical survey with emphasis on northern Alberta. Canada-Alberta MDA Project M92-04-006, Alberta Research Council Open File Report 1993-16.

Fenton, M.M., Pawlowicz J.G. and Dufresne M.B. 1994. Reconnaissance Mineral and Geochemical Survey with Emphasis on northern Alberta, MDA Project Number, M92-04-006, Alberta Research Council Open File Report: 1994-21

Friske, P.W.B., McCurdy, M.W., Day, S.J., Gorss, H., Balma, R.G., Lynch, J.J. and Durham, C.C. 1994. Regional Lake Sediment And Water Geochemical Data, Northeastern Alberta, GSC OFR 2856 (Parts of NTS 74E, 74L and 74M).

Gee, D.G. & Snall, S. 1981. Alunskifferprojektet - Fjallen. Analyser - metodik och resultat - Sveriges Geologiska Undersokning. Rapport till NSG. BRAP 81512. Unpublished report. 35pp.

Goodfellow, W.D., 1990. Processes of metal accumulation in Paleozoic basinal shales, North American Passive Margin, Canadian Cordillera (Yukon): IAGOD Symposium, 8th, Ottawa, Canada, Aug12-18/90, Program with Abstracts, p.A109.

Green, R., Mellon, G.B. and Carrigy, M.A., 1970. Bedrock Geology of Northern Alberta (1:500,000 map). Research Council of Alberta.

Hackbarth, D.A. and Nastasa, N., 1979. The hydrogeology of the Athabasca oil sands area, Alberta. Joint project of Alberta Energy and Natural Resources and Alberta Research Council, Bulletin 38.

Harron G.A. PEng 2008. Second Updated Technical Report On Viken MMS License, Jämtland, Norbotten Kingdom of Sweden For Continental Precious Minerals Inc., April 11, 2008. G.A.Harron & Associates Inc., FHB Consulting Services Inc. and P & E Mining Consultants Inc., by G.A.Harron PEng, Fred H. Brown CPG PrSciNat and E.Puritch P. Eng.

Hulbert, L.J., Gregoire D.C., Paktunc D. 1992. Sedimentary Nickel, Zinc, and Platinum-group-element Mineralization in Devonian Black Shales at the Nick Property, Yukon, Canada: A New Deposit Type, Explor. Mining Geology., Vol.1, No.1, pp.39-62, 1992

Huyck, H.L.O., 1988. When is a Metalliferous Black Shale Not a Black Shale? Metalliferous black shales and related ore deposits, Programs and Abstracts, 1988 meeting of the US working group of the IGCP Project 254. U.S.G.S. circular 1037.

Kinross 2006. Paracatu Mine Technical Report, Paracatu, Minas Gerais State, Brazil. Henderson R.D., PEng, Acting Vice President, Technical Services, Kinross Gold Corporation, July 31, 2006

Knoke, G.S. and Archibald, W.R., 1980. Borehole Mining: An Environmentally Compatible Method for Mining Oil Sands. Flow Industries Inc., U.S. Bureau of Mines, One File Report 50-81.

Knoke, G.S., Scott, L.E. and Archibald, W.R., 1982. Hydraulic Borehole Mining for Pitching Coal Seams. Flow Industries, Inc., Research & Technology Division Report., U.S. Department of Energy (DE83001405).

Krauskopf, K.B, 1955. Sedimentary deposits of rare metals. Econ. Geol. 50th Annual Vol 1905-1955, pp411-463.

Krauskopf, K.B. 1956. Factors controlling the concentration of thirteen rare elements in sea water. Geochim Cosmochim Acta v9, pp1-32.

Kucha, H., 1982. Platinum-group metals in the Zechstein copper deposits, Poland. Economic Geology, Volume 77.

Kucha, H., 1983. Precious metal bearing shale from Zechstein copper deposits, Lower Silesia, Poland. Trans. Institution of Mining and Metallurgy (Section B: Applied Earth Sciences).

Langenberg, W., 1993. Maturation history of the Rocky Mountain front ranges, foothills and plains, west-central Alberta, Canada. SEG, IGC (S10): Organics and Ore Deposits (Part 1), Session 2, A-20, Abstracts with programs, 1993.

Large, D.E., 1981. Sediment-hosted Submarine Exhalative Deposits - a Review of their Geological Charactreistics and Genesis; in Handbook of Stratabound and Stratiform Ore Deposits, Wolfe, K.E., editor, Geological Association of Canada Vol9.

Leckie, D.A., Singh C., Bloch J., Wilson M. and Wall J. 1992. An anoxic event at the Albian-Cenomanian boundary: the Fish Scale Marker Bed, northern Alberta, Canada. Paleogeography, Paleoclimatology, Paleoecology, v92, pp.139-166.

Leckie D.A. 1997. Rock Eval Analyses and Preliminary Micropaleontology Report, drill holes BK01 and BK02, Buckton Property, D.A.Leckie, March 1997, Geological Survey of Canada. Included as Appendix D5.1 in Alberta Mineral Assessment report MIN9802, Sabag 1998.

Lourim 1995. Binocular Microscope Analysis of Batae HMC NW Sector, Northeastern Alberta. J.Lourim, July 1995. Appendix C5, Alberta Mineral Assessment Report MIN9611 (Sabag 1996).

Loukola-Ruskeeniemi, K. and Heino, T., 1996. Geochemistry and Genesis of the Black Shale-Hosted Ni-Cu-Zn Deposit at Talvivaara, Finland. Economic Geology, Vol.91, pp.80-110.

Martin, R. and Jamin, F.G.S., 1963. Paleogeomorphology of the buried Devonian landscape in northeastern Alberta. K.A. Clark Volume, Research Council of Alberta Information Series 45.

Martin, R. and Jamin, F.G.S., 1963. Paleogeomorphology of the buried Devonian landscape, Athabasca bituminous sands area and adjacent parts of Alberta. Oil in Canada, Volume 15, No. 48.

McPhee, D.A. and Wightman, D.M., 1991. Timing of the dissolution of Middle Devonian Elk Point Group evaporites - Townships 47 to 103 and Ranges 15 W3M to 20 W4M. Opportunities for the Nineties, CSPG Convention, Calgary, Alberta, June 1991.

Meyer, F.M., Robb, L.J. 1996. The Geochemistry of Black Shales from the Chuniespoort Group, Transvaal Sequence, Eastern Transvaal, South Africa. Economic Geology, Vol. 91, 1996.

Mollard 1995. Report: Remote Sensing and Geoscience Data Integration Study. J.D.Mollard and Associates Limited, 1995. In Appendix B, MIN9611, Sabag 1996a.

Mossop, G.D. and Shetsen, I (comp.), 1994. Geological atlas of the Western Canada Sedimentary Basin; the Canadian Society of Petroleum Geologists and the Alberta Research Council, ARC-AGS 1994.

OGS 1983. Ontario Geological Survey, Open File Report 5427. Derry, Michener, Booth, Wahl and IMD Laboratories Ltd., 1983; Bore Hole Mining of Silica Sand and Kaolinite Clay ion the James Bay Lowlands, Ontario; Feasibility and Cost Analysis.

Olson, R.A. Dufresne, M.B., Freemen, M.E., Eccles, D.R. and Richardson R.J.H., 1994. Reconnaissance metallogenic evaluation of Alberta. The Calgary Mining Forum, Calgary, February 10-11, 1994.

Olson, R.A., Dufresne, M.B., Freemen, M.E., Eccles, D.R. and Richardson R.J.H., 1994 Regional Metallogenic Evaluation of Alberta, Open File Report 1994-8.

Pasava, J., 1993. Anoxic sediments - an important environment for PGE. an overview. Ore Geology Reviews, No.8.

Pasava, J., 1993. Rift-related marine black shales, an important source of PGE. Current Research in Geology Applied to Ore Deposits, Fenoll Hach, 1993. pp.535-541

Pasava, J. Hladikova, J. and Dobes, P., 1996. Origin of Proterozoic Metal-Rich Black Shales from the Bohemian Massif, Czech Republic. Economic Geology, Vol.91, pp.63-79.

Pembina 2008. Griffiths Mary, Dyer Simon, 2008. "Upgrader Alley, Oil Sands Fever Strikes Edmonton" The Pembina Institute, June 2008.

Penta Sul 2006. Market Prospects for Sulphur Recovered from the Oilsands, Penta Sul Inc. Presentation to the Canadian Heavy Oil Association Meeting, April 2006, Calgary , AB.

Quinby-Hunt, M.S. and Wilde, P., 1996. Chemical Depositional Environments of Calcic Marine Black Shales. Economic Geology, Vol.91, pp.4-13.

Quinby-Hunt, M.S., Wilde, P., Orth, C.J. and Berry, W.B.N., 1988. Elemental Geochemistry of Black shales - Statistical comparison of low-calcic shales with other shales. Metalliferous black shales and related ore deposits, Programs and Abstracts, 1988 meeting of the US working group of the IGCP Project 254. U.S.G.S. circular 1037.

Ross, G.M., Parrish R.R., Villineuve M.E. and Bowring S.A., 1991. Geophysics and Geochronology of the crystalline basement of the Alberta Basin, western Canada, Canadian Journal of Earth Sciences, V.28, p.512-522, 1991.

Sabag S.F., 1994-1999. Miscellaneous lectures and abstracts in conference proceedings on Alberta metallic mineral discoveries and non-hydrocarbon minerals exploration potential: SEG - University of Toronto, Toronto, February 23, 1995; "Coexisting Precious Metals and Sulfides: New Discoveries, Northeast Alberta", abstract in Proceedings of the Calgary Mineral Exploration Forum, Calgary, April 7, 1995; CIM Oil Sands Branch, Fort McMurray, April 11, 1995; CIM Calgary Branch Luncheon Lecture Series, Calgary, April 1995; Toronto Geological Discussion Group, Toronto, November 14, 1994; Edmonton Geological Society, Edmonton, November 16, 1994; Alberta Chamber of Resources, Edmonton, November 17, 1994; "Mineral Development Life Cycle", Alberta Chamber of Resources, Alberta Energy Utilities Board and Alberta Department of Resource Development interdepartmental joint Workshop - Mineral Strategy For Alberta, November 8, 1999.

Sabag S.F., 1996a: Buckton Property, Northeast Alberta, Summary report for exploration programs 1993-1995 and work in progress 1996, Tintina Mines Limited, Mineral Assessment Report MIN9611.

Sabag S.F., 1996b: Asphalt Property, Northeast Alberta, Summary report for exploration programs 1993-1995 and work in progress 1996, Tintina Mines Limited, Mineral Assessment Report MIN9613.

Sabag S.F., 1996c: Eaglenest Property, Northeast Alberta, Summary report for exploration programs 1993-1995 and work in progress 1996, Tintina Mines Limited, Mineral Assessment Report Sabag MIN9612.

Sabag S.F., 1996d: McIvor Property, Northeast Alberta, Summary report for exploration programs 1993-1995 and work in progress 1996, Tintina Mines Limited, Mineral Assessment Report MIN9610

Sabag S.F., 1996e: Alice Property, Northeast Alberta, Summary report for exploration programs 1993-1995 and work in progress 1996, Tintina Mines Limited, Mineral Assessment Report MIN9609

Sabag S.F., 1998: Report on Exploration Programs 1996-1997, Asphalt and Buckton Properties, Tintina Mines Limited, Mineral Assessment Report MIN9802.

Sabag S.F., 1999: Diamond exploration of the Asphalt and Buckton Properties in the Birch Mountains Area, Tintina Mines Limited, Mineral Assessment Report, MIN9928.

Sabag S.F., 2002: Alluvial Sampling and Mineral Testwork for the McIvor Property, Northeast Alberta, Ateba Mines Limited, Mineral Assessment Report MIN20020005.

SRK 2006. Bankable Feasibility Report, SRK 2006. Mineral Experts Report On The Talvivaara Nickel Project In Finland, SRK Consulting, Cardiff, UK. SRK Project Number U2993. Report Compiled by: Dr.D.Pattinson, Reviewed by: Dr.M.Armitage. Included in IPO June, 2007, London Stock Exchange listing.

Strathcona Minerals 1999. Audit of Drill Core Samples, Northeast Alberta Project, Tintina Mines Limited - NSR Resources Inc., R.Von Guttenberg, Strathcona Mineral Services Limited, July 15, 1999. In Appendix D4, Alberta Mineral Assessment Report MIN9928, Sabag 1999.

Talvivaara 2005. Talvivaara Mine Project. General Presentation. Talvivaara Mining Company corporate presentation December 2, 2005

Vine, J.D. and Tourtelot, E.B., 1970. Geochemistry of black shales deposits - A summary report. Econ Geol 65, pp253-273.

Yu, R., 2005. "What are we going to do with all that Sulphur?" Ronnie Yu, University of Alberta School of Business, February 2005.

203 Pages (incl Cover & TOC)
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22. CERTIFICATION

CERTIFICATE OF THE AUTHOR

I, Shahé F.Sabag, of 134 Albertus Avenue, Toronto, Ontario, Canada, M4R 1J7, hereby certify that I am responsible for the overall preparation of this report entitled "*Technical Report On The Polymetallic Black Shale SBH Property, Birch Mountains, Athabasca Region, Alberta, Canada; prepared for Dumont Nickel Inc.*", dated October 28, 2008 (the "Technical Report"), and that:

- I am a graduate of the University of Toronto with Honours Geology B.Sc degree (1974) and Specialist Geology M.Sc. degree (1979);
- I have actively practiced my profession since 1974 and have been involved in mineral exploration for base and precious metals, industrial minerals and uranium throughout North America (notably Ontario, Quebec, Alberta, Saskatchewan, NWT, Utah, Nevada and Arizona) during which time I have implemented, directed, managed and evaluated regional and local exploration programs, including underground and open-pit exploratory and pre-development work;
- I am a member of the Association of Professional Geoscientists of Ontario (APGO Member #250), the Canadian Institute of Mining and Metallurgy, the Prospectors and Developers Association, the Utah Mining Association and the Alberta Chamber of Resources;
- I have visited, actively mapped and sampled over, the Property, and surrounding areas, on countless occasions during the period 1993-1999; and that much of the historic information summarized herein was collected under my direction or supervision, or by me, while Vice President of Tintina Mines Limited and NSR Resources Inc. during the same period; and that all of the foregoing historic information are public and publicly available;
- I expect to receive no remuneration from Dumont Nickel Inc. other than payment of fees and disbursements for services rendered in connection with preparation of this report;
- I am President and CEO, and a director, of Dumont Nickel Inc. ("Dumont"), and that I am, accordingly, not independent of Dumont; and that I hold securities of Dumont including stock options granted to me under Dumont's Stock Option Plan;
- I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI-43-101") and certify that by reason of my education, my licensure from a professional association as defined in NI-43-101, and my past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI-43-101. That I, furthermore, certify that I am the designated Qualified Person for Dumont Nickel Inc. in connection with the Property;
- I acknowledge that as of the date of the certificate, and to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading. I have read NI-43-101 and Form 43-101F1, and confirm that the Technical Report has been prepared in compliance with the foregoing instrument and form;
- I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including its electronic publication in the public company files or on their websites accessible by the public.

Executed this 28th day of October, 2008, in the City of Toronto, Ontario, Canada.

[Seal]
APGO#250

Shahé F.Sabag MSc PGeo