MINERAL INDUSTRY

Yukon Mining, Development and Exploration Overview, 2002

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Yukon Placer Mining Overview, 2002

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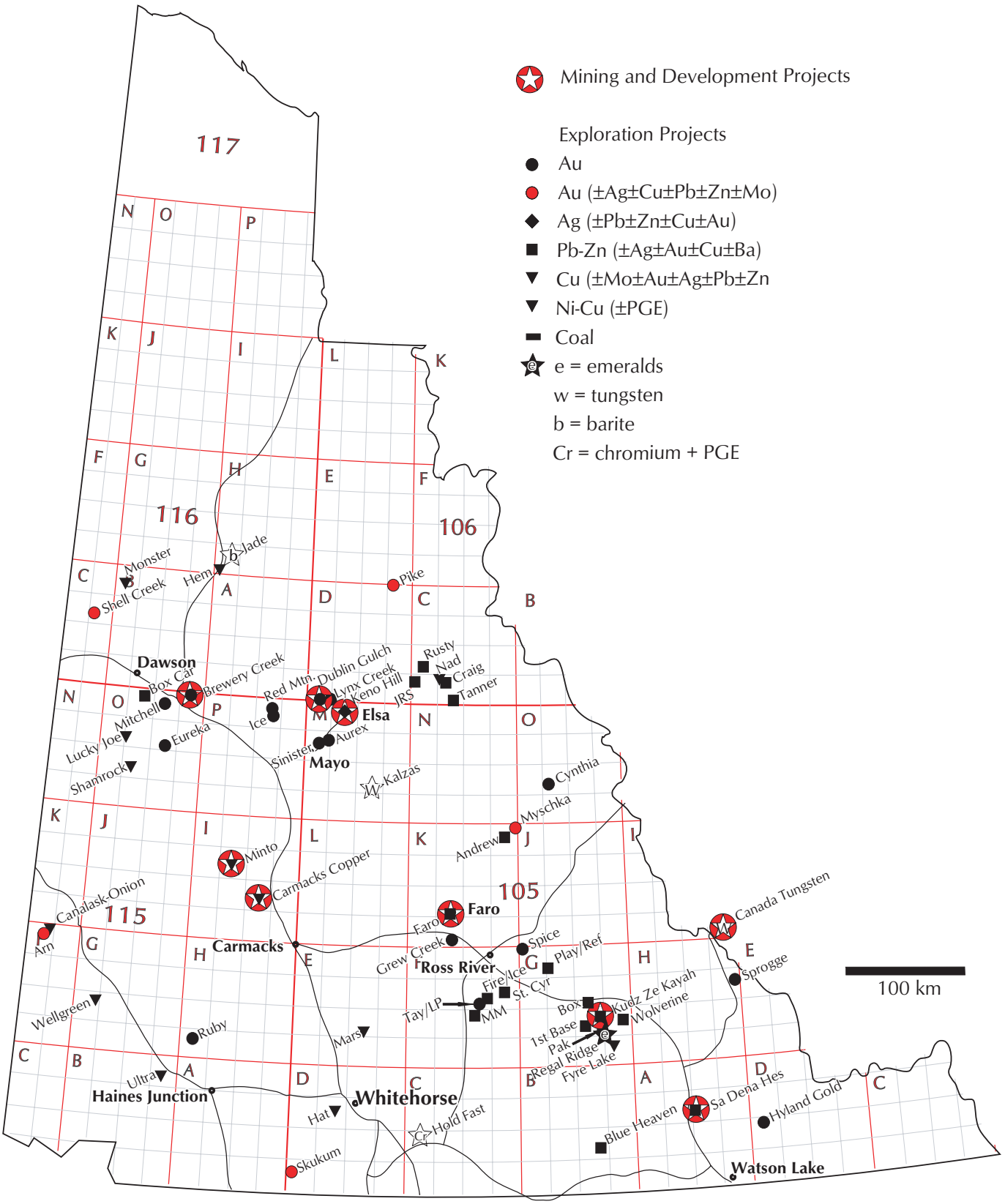

Figure 1. *Location of Yukon mines, development projects (permitted or undergoing permitting), and exploration projects in 2002. Not all projects are shown on the map. Background of the map shows the National Topographic System (NTS) grid.*

Yukon Mining, Development and Exploration Overview, 2002

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Yukon Geology Program

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ABSTRACT

Mineral exploration continues to suffer from the effects of low commodity prices and the extreme difficulty of companies to raise venture capital on the stock markets. Despite these adverse conditions many companies continued to explore Yukon for a wide range of deposit types and commodities. Several new discoveries of significant gold and base metal occurrences were made in 2002. The number and size of drilling programs decreased slightly from 2001. This is reflected in the $6.9 million estimate of exploration expenditures for 2002, a small decrease from the $7.2 million spent in 2001. Claim staking has been robust in 2002 with 4080 claims staked to the end of December, a significant increase over the 1702 claims staked in 2001. The number of claims was bolstered by the late season staking of prospective emerald targets in the Finlayson Lake area near the Regal Ridge emerald discovery, and geophysical targets similar to the Lucky Joe copper-gold occurrence near Dawson City.

Yukon, unfortunately, had no operating hard rock mines in 2002. The Brewery Creek mine did recover some gold during rinsing of the heap leach pad, however, Viceroy Resources' efforts were directed at the reclamation of the mine site. The company received the 2002 Robert E. Leckie Award for their outstanding reclamation practices. Mine development at the Minto copper-gold-silver project is currently on hold due to low copper prices while A.M.T. Canada continues to maintain the Keno Hill and Elsa silver mines, with a goal of resuming production in 2003.

RÉSUMÉ

L'exploration minière continue de subir les contrecoups de la faiblesse des prix des minéraux et la très grande difficulté des sociétés de réunir des capitaux de risque sur les marchés boursiers. Malgré les conditions défavorables, de nombreuses sociétés ont poursuivi leurs activités d'exploration au Yukon à la recherche de gisements et de minéraux très variés. En 2002 on a découvert plusieurs occurrences importantes d'or et de métaux communs. Par rapport à 2001, les programmes de forage ont légèrement fléchi en nombre et en importance. Les dépenses d'exploration ont en effet diminué, passant de 7,2 millions de dollars en 2001 à 6,9 millions de dollars en 2002. Les jalonnements ont été nombreux en 2002, atteignant 4080 à la fin de décembre, une hausse marquée par rapport à 2001 alors que le nombre de claims n'a pas dépassé 1702. Le nombre de jalonnement de claims a été augmenté par les jalonnements de fin de saison effectués sur des cibles susceptibles de receler des émeraudes aux environs du gîte d'émeraudes de Regal Ridge dans la région de Finlayson Lake et sur des cibles offrant des caractéristiques géophysiques semblables à celles de l'occurrence de cuivre-or de Lucky Joe près de Dawson City.

En 2002, il n'y avait malheureusement aucune mine en production au Yukon. Même si on a récupéré de l'or par rinçage de la base de lixiviation en tas, la Viceroy Resources a axé ses efforts sur la restauration du site minier à Brewery Creek. Elle a d'ailleurs reçu en 2002 le prix Robert E. Leckie pour la qualité de ses méthodes de restauration. Les travaux de mise en valeur de la mine de cuivre-or-argent Minto ont été interrompus à cause de la faiblesse des prix du cuivre. La société A.M.T Canada, pour sa part, prévoit reprendre la production en 2003 à ses mines d'argent de Keno Hill et Elsa.

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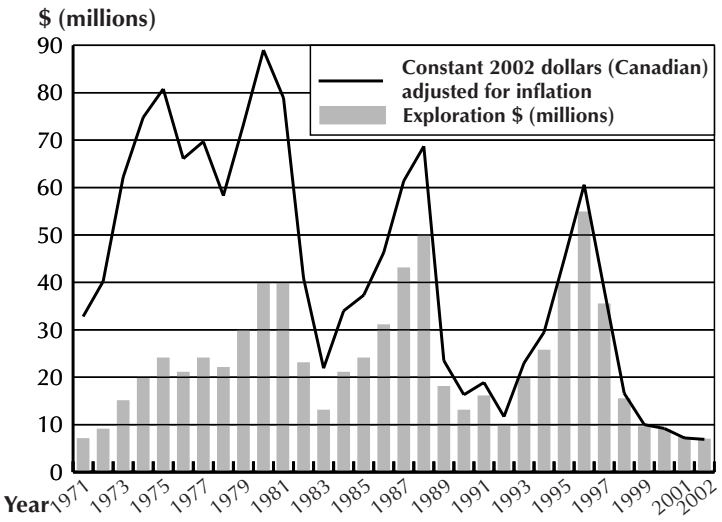
INTRODUCTION

Exploration continued in 2002 for many different commodities and deposit types within the Yukon (Fig. 1). Gold was the main target of explorationists in Yukon, with 60% of exploration dollars directed towards the precious yellow metal. Although preliminary estimates indicate a drop in exploration spending to $6.9 million (Fig. 2), the increase in claim staking and the high number of significant new discoveries made in 2002 bode well for the coming exploration season. New gold discoveries include an intrusive-hosted gold system intersected by drilling at ASC Industries' Ice property; sediment-hosted intrusive-related gold mineralization in drill core not previously analysed for gold at Expatriate Resources' Lynx Creek project; Klad Enterprises' extensive new intrusive-related gold systems on the Cynthia and Myschka claims (Soloviev et al., this volume); Atac Resources' high-grade gold-copper skarn intersected in drilling on their Arn property; and an extensive gold- and copper-mineralized quartz-carbonate vein associated with an Algoma-type iron formation on Shawn Ryans' Shell Creek property. Base metal discoveries include a regionally extensive copper-gold-mineralized horizon on the Lucky Joe property of Copper Ridge Exploration; high-grade zinc-lead in a carbonate-quartz breccia drilled by Noranda on the Andrew property of Ron Berdahl; a new sedimentary-exhalative system intersected in drilling on Manson Creek Resources' Tanner project and volcanogenic massive sulphide (VMS) mineralization on their JRS claims; and a new VMS occurrence on the Box claims of Expatriate Resources in the Finlayson Lake district. True North Gems announced the discovery of additional areas of emerald mineralization on their Regal Ridge property.

The Yukon government continued to support and encourage the mining industry in Yukon by increasing funding of the Yukon Mining Incentive Program to $850 000. The function of the program is to provide a portion of the risk capital required to locate and explore for mineral deposits in Yukon. The Yukon government also supports the industry through the Yukon Mineral Exploration Tax Credit, which provides a 25% tax refund on eligible exploration expenditures until March 31, 2003. Eight of fourteen Yukon First Nations have settled their land claims; four of the remaining six First Nations have a Memorandum of Understanding with the Government of Canada and Yukon that negotiations are complete. After a legal and technical review these First Nations are anticipated to ratify their claims by April 1, 2003.

Figure 2. *Yukon exploration expenditures: 1971-2002.*



Mine development expenditures were incurred at both the Minto copper deposit and the Keno Hill silver mine. Minto Explorations conducted only a minor amount of work at the Minto site, as the project is currently on hold due to low copper prices. A.M.T. Canada Inc. purchased the historic Keno Hill silver mine in central Yukon in October of 2001. The company is currently maintaining the site and, pending permitting of the project, plans to begin reprocessing tailings in 2003.

MINING AND DEVELOPMENT

Production from the **Brewery Creek** gold mine (Yukon MINFILE 2002, 116B 160) declined significantly, triggering the company to begin their detoxification and heap stabilization program in the second quarter of 2002. The company also continued with significant reclamation and revegetation of pits, dumps and mine site roads (Fig. 3). In recognition of their work, they received the 2002 Robert E. Leckie Award for outstanding reclamation practices. Approximately 2 million tonnes of capacity remain on the heap leach pad, and Viceroy has been actively evaluating areas near the mine for additional reserves. Remaining resources at the mine site could also be placed on the pad, with a sufficient rise in the price of gold.

Mine development expenditures were incurred at the **Minto** copper-gold-silver deposit (Yukon MINFILE 2002, 115I 021, 022) of Minto Exploration and by A.M.T. Canada at the **Keno Hill** silver mine (Yukon MINFILE, 2002, 105M 001).

The Minto project is currently on hold due to low copper prices. The project, located 240 km northwest of Whitehorse, is being developed as a conventional open pit mine and milling operation. The in-situ geological reserve for the deposit, above a cut-off grade of 0.50% Cu, is 8.818 million tonnes with grades of 1.73% Cu, 0.48 g/t Au (0.014 oz/ton) and 7.5 g/t Ag (0.22 oz/ton). This reserve contains 179 million kg (336 million lbs) of copper, 4.37 million grams (140,500 ounces) of gold and 67.68 million grams (2.176 million ounces) of silver. The ore that will be mined as per the current mine design is 6.51 million tonnes with grades of 2.13% Cu, 0.62 g/t Au (0.018 oz/ton) and 9.3 g/t Ag (0.27 oz/ton) with an overall stripping ratio of 4.9:1.0. Minto Exploration incurred minor expenditures in road and site maintenance at the project in 2002 and conducted geological mapping and sampling outside the deposit area.

A.M.T. Canada Inc. continued to maintain the historic **Elsa** properties (Yukon MINFILE 2002, 105M 001) at the Keno Hill silver mine in central Yukon. The company is planning on using proprietary technology to reprocess tailings at the mine site. The mine has produced over 200 million ounces of silver at a historic camp grade of 1370 g/t Ag (40 oz/ton Ag) from vein deposits within the Mississippian Keno Hill Quartzite. A.M.T. Canada also proposes to restart underground mining. Proven and probable underground reserves at the property are 415 000 tonnes grading 1145 g/t Ag, 7.5% Pb and 5.6% Zn.

The **Cantung** mine of North American Tungsten Corporation entered into commercial production in 2002. Yukon companies supply the bulk of the supplies and services to the mine, which is accessed through Yukon but is located in the Northwest Territories. The mine also provides high-quality employment for many Yukoners.

Figure 3. *Recontoured open pits at the Brewery Creek minesite. Photo from Karen Pelletier.*

EXPLORATION

Exploration in Yukon is typically divided equally between the search for base and precious metals, with slight variations from year to year. Approximately 60% of the $6.9 million spent on exploration in 2002 was directed towards the search for precious metals, mainly gold (Appendix 1). The bulk of exploration was conducted by junior mining companies and prospectors, which accounted for 90% of total Yukon exploration expenditures. Companies continued to be faced with the inability to quickly raise funds to achieve exploration success. A return to healthy exploration levels in Yukon will continue to be hampered by the lack of investment in the junior mining sector. Despite this, several significant discoveries were made in 2002, mainly by prospecting, but more significantly in drill holes. A change may be in the air, as True North Gems had no difficulty in raising funds for continued exploration on the Regal Ridge emerald property in the Finlayson Lake area. The company successfully completed their Initial Public Offering in late November to raise $1.23 million and captured the attention of the market and other junior mining companies.

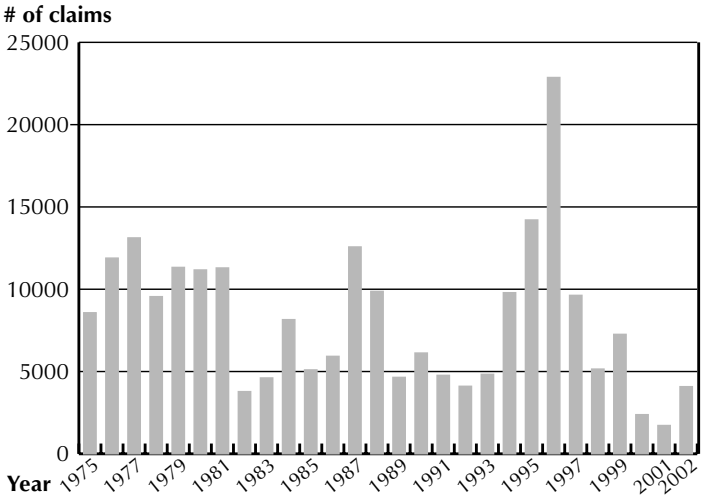


Figure 4. *Quartz claims staked: 1975-2002.*

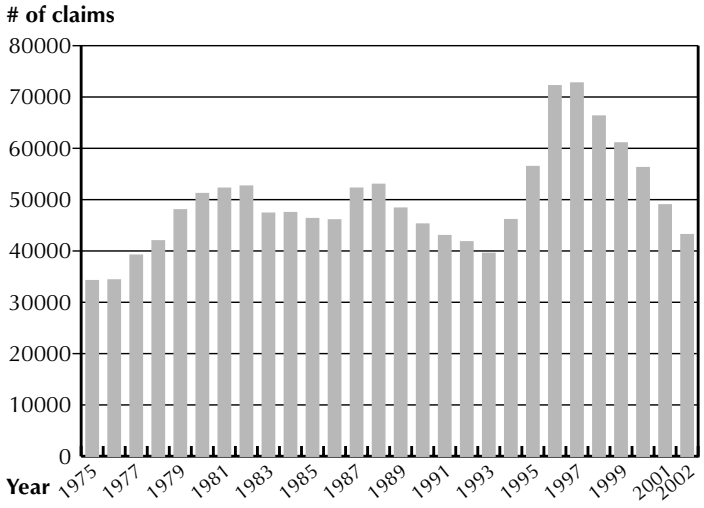


Figure 5. *Quartz claims in good standing: 1975-2002.*

Claim staking has mounted a significant comeback with a total of 4080 (Fig. 4,5) claims recorded in 2002, more than doubling the 1702 claims staked the previous year. Although the number of drilling programs remained the same as in 2001, the total footage drilled decreased to 11 205 (3415.3 m), a decrease of 13% from 2001 (Appendix 2). The total number of exploration projects has increased over 2001, buffering the decrease in exploration expenditures despite the decline in drilling.

This overview highlights a number of exploration projects conducted in Yukon during the 2002 field season and is by no means a comprehensive review of all exploration conducted. Several projects have not been included because of restrictions on disclosure for publicly traded companies, and for competitive reasons, when companies and individuals choose to not openly share exploration results.

PRECIOUS METALS

Regent Ventures performed a program of induced polarization geophysics, geochemistry and detailed geological mapping followed by 949 m of diamond drilling in six holes on their **Red Mountain** property (Yukon MINFILE 2002, 115P 006). In conjunction with the geological work, a compilation of all available exploration data since 1993 was performed (Fig. 6). Gold mineralization in the Saddle zone, where most of the work has concentrated, is hosted within a swarm of Cretaceous Tombstone Suite biotite-quartz monzonite dykes cutting adjacent sandstones of the Neoproterozoic to Lower Cambrian Hyland Group,

and in flat-lying quartz-tourmaline and quartz-tourmaline-sulphide mineral breccias. The dykes are truncated by a shallowly dipping structure, but the drilling (i.e., DD02-35) demonstrated that gold mineralization continues into the sedimentary rocks and breccia zones below the structure. Diamond drill hole DD02-35 intersected 13.24 g/t Au over 2.0 m in a quartz-tourmaline breccia. The compilation work demonstrated that the Saddle zone is a large low-grade mineralized system with many drilling intervals in the 500- to 1000-ppm-Au range over tens of metres. Higher grade intersections of up to 46.1 g/t Au over 1.0 m (DD01-28) occur within the low-grade zones. Further work, including down-hole surveying of historical drilling, will be done to refine the geological model of the zone and direct future drilling. Several other targets have also been identified on the property, including the 50/50 zone, which is a prominent fault zone visible on surface. The zone exhibits the highest multi-element geochemical response on the claims. Historical drilling has targeted the 50/50 zone, but all holes were abandoned before successfully penetrating the structure.

Figure 6. *Anna Fonseca, geologist, examining drill core at Regent Ventures' Red Mountain project.*

ASC Industries Ltd. explored the **Ice** property, which adjoins Regent Ventures' claims to the north. They conducted a program of geophysics (induced polarization and magnetic surveys), geochemical sampling and geological mapping, followed by diamond (Fig. 7) and reverse circulation drilling. Reverse circulation drilling successfully intersected the Red Mountain stock, which was shown to be a sill-like body with the following selected assays: RC02-04 returned 4.6 m grading 0.85 g/t Au and 4.6 m grading 0.84 g/t Au; RC02-05 intersected 5.1 m of 1.07 g/t Au and 1.53 m of 4.35 g/t Au at the bottom of the hole; RC02-06 intersected 12.19 m grading 1.47 g/t Au, including 2.35 g/t Au over 6.1 m; RC02-09 assayed 0.91 g/t Au over 15.24 m, including 3.83 and 3.12 g/t Au over 1.53 m, respectively. All holes intersected zones of anomalous gold within the intrusive rock. Diamond drilling targeted the higher

Figure 7. *Diamond drilling on the Ice property of ASC Industries.*

grade Treadwell vein where surface samples assayed up to 14.2 g/t Au. Drilling intersected anomalous gold values associated with quartz-sulphide mineral veins.

Expatriate acquired the **Len** claims (Yukon MINFILE 2002, 106D 020) located 8 km east of the Dublin Gulch deposit and expanded the property, now renamed Lynx Creek. The claims were previously explored for gold mineralization hosted in a quartz-sulphide mineral vein system within a small Cretaceous Tombstone Plutonic Suite granodiorite intrusion. Drilling in 1997 outlined a quartz-sulphide mineral vein over a 300-m strike length with intersections including hole 97-1 in a narrow high-grade zone grading 15.5 g/t Au over 1.83 m, and a wider zone of 4.23 g/t Au over 6.1 m in hole 97-3. Hole 97-6 was drilled 100 m along strike of the vein system and intersected pyrite-arsenopyrite veinlets in quartzite proximal to the intrusion. Unsplit core in hole 97-6 was sampled by Expatriate and assayed 0.79 g/t Au over its entire 59.1-m length, including 1.23 g/t Au over 27.1 m. Soil sampling, using a power auger, was completed to better define soil anomalies located proximal to the granodiorite.

Klad Enterprises Ltd. conducted detailed geological and structural mapping, and rock and soil sampling on a number of properties north of Ross River in the eastern portion of the Cretaceous Tombstone Plutonic Suite. The **Myschka** property (Yukon MINFILE 2002, 105K 090) is underlain by a quartz diorite stock that intrudes Road River cherts and minor shale. Extensional faulting has resulted in at least four east-trending breccia and alteration zones that crosscut and surround the quartz diorite stock (Soloviev et al., this volume). The breccia zones are extensively leached and altered. Leached material returned anomalous gold values in the 100 to 200 ppb range; sulphide samples returned values up to 550 ppb Au, 57.2 g/t Ag and 6.9% Pb. A detailed description of the property is contained in Soloviev et al. (2003a, this volume).

The **Cynthia** property (Yukon MINFILE 2002, 105O 007) of Klad Enterprises Ltd. is characterized by two large Cretaceous Tombstone Suite quartz-monzonite stocks that cut Cambro-Ordivician Road River Group chert, shale and minor limestone. Three structurally controlled zones — Ted, Garry and Intersection — were explored in the 2002 program. The gold grades within the mineralized structures are commonly in the range of 200 ppb to 2.0-3.0 g/t, with higher (up to 16 g/t Au) values attributed to the fault intersection area (Fig. 8). A detailed description of the property geology and exploration results is presented in Soloviev et al. (2003b, this volume).

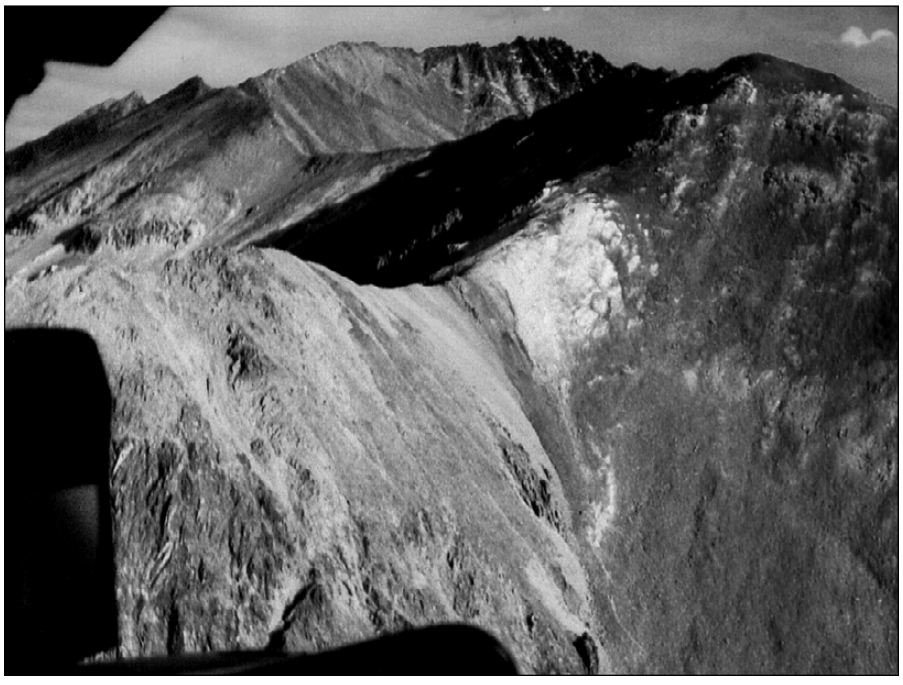


Figure 8. *Aerial view of the Intersection zone on Klad Enterprises' Cynthia property. The zone is the area of white alteration in the foreground. Photo by Klad Enterprises.*

Southeastern Yukon contains a number of intrusive-related gold occurrences associated with the mid-Cretaceous Selwyn Plutonic Suite. Properties include the **Hit** claims (Yukon MINFILE 2002, 105H 036) of Hudson Bay Exploration and Development Ltd.; the **Fer** claims (Yukon MINFILE 2002, 105H 102) of Rimfire Minerals Corporation/Boliden Ltd.; the **Hy** claims (Yukon MINFILE 2002, 105H 102) optioned by Athlone Minerals Ltd. from Phelps Dodge; the **Justin** claims (Yukon MINFILE 2002, 105H 035) of Eagle Plains Resources; and NovaGold Resources' **Sprogge** claims (Yukon MINFILE 2002, 105H 035). The various properties occupy a northwest-trending structural corridor, which hosts various styles of distal and proximal intrusive-related gold mineralization in Neoproterozoic to Lower Cambrian Hyland Group sedimentary rocks of the Selwyn Basin. The belt has been subjected to mostly reconnaissance-type exploration with only minor drilling conducted on the Hit property in 1999 and on the Sprogge claims in 2000. Eagle Plains was the only company to conduct any activity on their claims in 2002. They conducted a small program of geological mapping, geochemistry and detailed sampling in the area of the Confluence zone (Fig. 9), which hosts chalcedonic veining within coarse clastic rocks. Previous continuous chip-sampling in Confluence zone trenches returned 4.24 g/t Au over 4.5 metres; individual veins within this interval returned geochemical analyses of up to 59 250 ppb (approximately 59 g/t) Au. At the Discovery zone, gold-bearing pyritic mineralization occurs within a quartz monzonite dyke and adjacent calcareous siltstone. Chip sampling across this zone has returned 2.38 g/t Au over 22.5 m. Results of the 2002 program have not been released.

Ross River Minerals Inc. conducted a program of geologic mapping, prospecting, excavator trenching and diamond drilling on their **Tay-LP** property (Yukon MINFILE 2002, 105F 121) in south-central Yukon. The claims cover the western portion of the Ketza-Seagull Arch, a domal uplift created by the intrusion of one or more buried Cretaceous intrusions (Abbott, 1986). Small plugs of biotite-quartz monzonite have been mapped on the property and are interpreted from geophysics to form larger bodies at depth. The quartz monzonites intrude folded and faulted Lower Cambrian to Devonian metamorphosed calcareous sedimentary rocks. Semi-massive to massive sulphide mineralization consists of replacement-type pyrrhotite ± pyrite, arsenopyrite and chalcopyrite in calcareous metasedimentary rocks; and similarly mineralized quartz-sulphide mineral vein float is found over much of the 20-km length of the

Figure 9. *Bernie Kreft, prospector, on the Justin claims optioned by Eagle Plains Resources. Photo by Eagle Plains Resources.*

Figure 10. *Robin Tolbert (right) examining drill core with Lee Pigage of the Yukon Geology Program on the Tay-LP property of Ross River Minerals.*

claims. Outcrop on the property is sparse due to widespread glacially deposited material. Ross River Minerals completed seven diamond drill holes totalling 568 m on the Tay-LP claims (Fig. 10) and an additional four holes totalling 343 m on the adjacent Ram claims optioned from Almaden Minerals. Drilling intersected significant mineralization in four of the holes drilled on the Tay-LP claims. Hole TLP02-03 intersected 3.00 m grading 2.24 g/t Au, TLP02-04 intersected 1.57 m grading 2.73 g/t Au, TLP02-06 intersected 1.45 m grading 1.45 g/t Au, and TLP02-07 intersected 31.81 m grading 1.35 g/t Au, including 14.06 m of 2.58 g/t Au and 3.56 m of 8.99 g/t Au. The higher grade intersection in hole TLP02-07 consisted of a massive quartz-pyrrhotite vein crosscutting a thick zone of pyrrhotite replacement in calcareous metasedimentary rocks. Drilling by previous operators intersected mineralization with >1 g/t Au in drill holes over a 7.5 km length of the property, outlining a mineralized system of significant size. Ross River Minerals' program in 2002 continued to define the controls on the gold-bearing phase of mineralization within the extensive sulphide mineralized system.

Tagish Lake Gold Corp. continued to advance the **Skukum** gold-silver property towards their goal of resuming production. The property consists of a land package of greater than 1000 claims which encompasses three known gold-silver mineral deposits: **Skukum Creek** (Yukon MINFILE 2002, 105D 022), **Mt. Skukum** mine (Yukon MINFILE 2002, 105D 158) and **Goddell gully** (Yukon MINFILE 2002, 105D 025), as well as numerous exploration targets. The Skukum Creek deposit is a polymetallic, shear-hosted gold-silver vein within mid-Cretaceous granodiorite of the Coast Plutonic Complex and is the main exploration target of Tagish Lake Gold. Mt. Skukum mine consists of epithermal gold-silver veins and breccias hosted in the Eocene Mt. Skukum Volcanic Complex. The Mt. Skukum mine was in production from 1986 to 1988 and produced 2419 kg (77 790 troy ounces) of gold from 233 400 tonnes of ore. Goddell gully consists of gold-bearing polymetallic veins hosted in the Goddell shear zone within mid-Cretaceous granite of the Coast Plutonic Complex. Prior to the 2002 drilling, the three gold-silver mineral deposits on the Skukum property had estimated geological resources of 1 072 000 tonnes grading 9.63 g/t Au and 175.21 g/t Ag, or 10 323 kg (332 000 ounces) of gold and 187 834 kg (6 039 000 ounces) of silver. Tagish Lake Gold acquired the properties by amalgamating Omni Resources and Trumpeter Yukon Gold, resulting in the consolidation of all three deposits under a single company.

Figure 11. *Underground drill at the Skukum Creek deposit.*

In 2002, Tagish Lake Gold rehabilitated the underground workings at Skukum Creek and conducted a 15-hole underground diamond-drilling program (Fig. 11), totalling 2502 m, to test the deposit at depth. The program proved that the deposit continues at depth, with similar grades to that encountered in previous drilling (Table 1).

A detailed field and petrographic examination of structure and alteration at Skukum Creek was also conducted and is summarized in Lang et al. (this volume). The company has announced its intentions to begin the next phase of exploration early in the new year, which will consist of deepening the underground workings to allow continued drilling of the Rainbow zone extension. Drilling of the Ridge zone, which was intersected by surface drilling in 2001, will also be feasible from the underground extension.

Viceroy Resources Corporation optioned the **Eureka** claims (Yukon MINFILE 2002, 115O 057) from Expatriate Resources and Strategic Metals. The Eureka claims are located in the southern portion of the Klondike goldfields at the headwaters of Eureka Creek. Intensely oxidized, altered and silicified quartzite of the Devonian

Table 1. *Skukum Creek drill results.*

Hole #	From (m)	To (m)	Interval (m)	Au (g/t)	Ag (g/t)
Rainbow Zone					
SC02-05	143.06	143.75	0.69	4.65	125.1
SC02-06	185.01	187.82	2.81	4.68	167.3
including	186.92	187.36	0.44	10.08	423.9
SC02-07	81.35	88.45	7.10	10.04	504.7
including	81.35	84.16	2.81	19.57	778.0
SC02-08	65.80	66.40	0.60	4.80	125.1
SC02-09	102.50	103.80	1.30	4.96	173.9
SC02-10	161.40	162.59	1.19	8.78	267.6
and	166.03	175.77	9.74	3.61	246.4
including	166.03	167.67	1.64	14.72	1226.6
SC02-11	98.35	104.03	5.68	7.76	129.7
including	102.37	103.52	1.15	30.84	550.7
and	113.29	116.43	3.14	3.02	53.2
including	115.21	116.43	1.22	6.07	90.9
and	119.62	123.20	3.58	4.72	579.7
including	119.62	120.82	1.20	10.61	1626.5
SC02-12	179.30	191.34	12.04	6.52	164.6
including	180.32	185.44	5.12	10.46	260.7
SC02-13	104.24	104.84	0.60	3.92	260.8
and	182.87	183.02	0.15	5.55	307.4
and	191.67	191.85	0.18	10.94	163.3
and	195.05	196.96	1.91	3.11	65.9
SC02-14	141.39	155.02	13.63	6.85	78.5
including	146.86	149.14	2.28	19.82	112.7
and	159.81	162.21	2.40	33.48	265.0
SC02-15	116.75	121.20	4.45	3.95	62.3
including	116.75	118.35	1.60	7.54	86.9
and	124.48	125.50	1.02	4.56	54.8
and	127.30	128.56	1.26	16.23	240.8
SC02-17	122.91	125.15	2.73	8.79	109.1
SC02-18	118.50	121.49	2.99	13.45	144.2
Sterling Zone					
SC02-16	131.43	132.74	1.31	1.53	11.4
Kuhn Zone					
SC02-16	204.05	206.96	2.91	8.32	69.2
SC02-19	168.35	168.70	0.35	1.78	38.5

Figure 12. *Rick Diment with Viceroy Resources examining a rock chip from reverse circulation drilling on the Eureka property.*

to Mississippian Nasina Assemblage of the Yukon-Tanana Terrane have returned values up to 15 g/t Au from surface trenching. Viceroy conducted additional surface excavator trenching, and drilled four reverse circulation holes for a total of 390 m (Fig. 12). No results have been released from the program.

In the southwestern Yukon, Atac Resources explored the **Arn** property (Yukon MINFILE 2002, 115F 048) with geological mapping, prospecting and drilling (Fig. 13) of the first four diamond drill holes ever drilled on the claims. The property is located within 6 km of the Alaska Highway. Garnet-epidote skarn and magnetite skarn with pyrrhotite, pyrite and chalcopyrite formed in the Triassic Nikolai Greenstone, which consists of mainly volcanic rocks with minor limestone beds that have been intruded by Cretaceous diorite dykes. Bedrock exposure on the claims is very poor. Previous work identified three skarn horizons with high-grade gold and copper mineralization in hand trenches and float boulders. Drilling was conducted to gain a better understanding of the poorly exposed geology and test the high-grade gold mineralization. The drilling successfully intersected high-grade gold skarn mineralization associated with a steeply dipping structural zone containing three faults. Hole Arn-3 intersected 1.01 m of 11.29 g/t Au and 0.02% Cu; hole Arn-4 intersected 12.67 m grading 11.92 g/t Au and 0.22% Cu, which includes 1.98 m averaging 64.42 g/t Au with 1.16% Cu and 5.95 m grading 1.05 g/t Au and 0.43% Cu. Additional prospecting conducted along the trend of the structural zone identified a new zone 3 km from the discovery drill holes. Assays up to 14.7 g/t Au were collected from skarn and vein mineralization, mainly in float boulders in a recessive weathering zone over a 1400 by 300 m area along the fault trace. The drill remains on site to continue testing this exciting new discovery in 2003.

Figure 13. *A helicopter gently moving the drill into place on the Arn claims. Note the small area affected by this method of drilling. Photo by Atac Resources.*

Al Carlos of Whitehorse drilled six holes totalling 415 m on his **Grew Creek** (Yukon MINFILE 2002,

105K 009) property, an Eocene epithermal gold-silver deposit near Faro. The deposit hosts a drill-indicated geological resource of 773 012 tonnes grading 8.9 g/t Au and 33.6 g/t Ag (Christie, 1992). Al has been conducting extensive compilation work on the property, and in 2000 conducted a geochemical survey utilizing the Enzyme Leach process on targets outside of the main Grew Creek deposit. Several anomalies were outlined with the survey and supported by historical airborne and ground geophysical data, conventional geochemistry and prospecting. Carlos drilled 191 m in four holes in 2001, and conducted this year's exploration program on one of these anomalies. Results for the 2002 drilling have not been released.

The **Spice** claims (NTS 105G/13), optioned by Atac Resources from Tanana Exploration Inc., were subjected to a small geological mapping and auger sampling program. The claims were initially staked as a follow-up to a highly anomalous till geochemical sample released by Jeff Bond (Bond, 2001) of the Yukon Geology Program. The analyses of the till show a well developed, down-ice dispersion train with anomalous values for gold (50 to 4460 ppb), arsenic (100 to 546 ppm) and mercury (5 to 52 ppm). The anomalous sample sites are commonly associated with cherty rhyolite or porphyritic rhyolite rock fragments. The anomalous area has only been partially outlined but appears to truncate up-ice along a prominent, northerly trending lineament. The geochemical response of the occurrence is similar to that of the Grew Creek epithermal gold-silver deposit located approximately 50 km to the west.

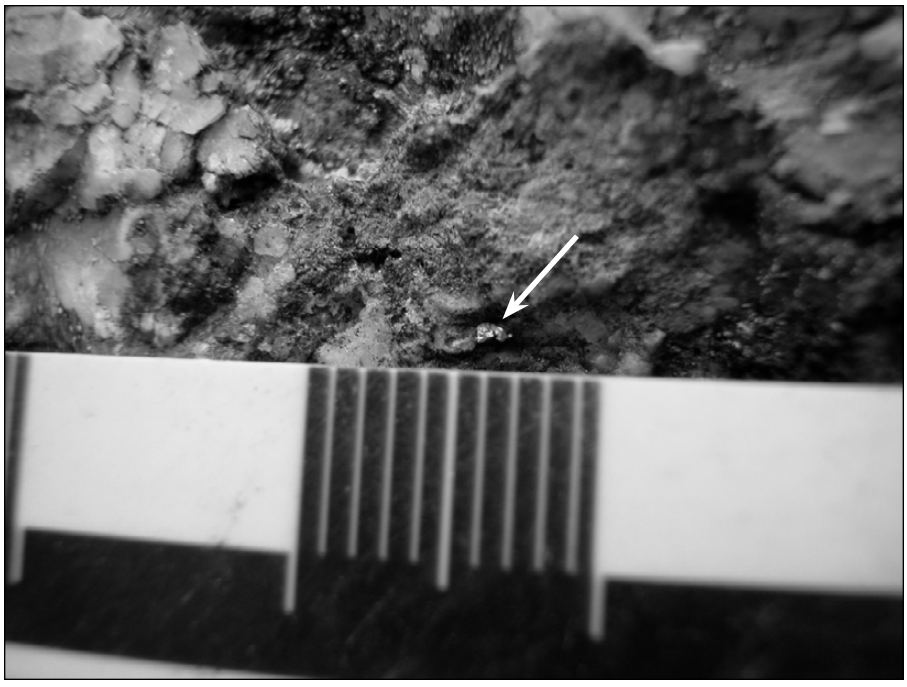
Exploration on the **Ruby Range** property (Yukon MINFILE 2002, 115H 047; Fig. 14) by Cash Minerals examined several areas of greater than 30 g/t Au related to an extensive system of mesothermal gold-bearing quartz-carbonate veins occurring in biotite and muscovite schist of the Kluane Metamorphic Assemblage, which is intruded by the Eocene Ruby Range Plutonic Suite. A program of prospecting and hand trenching traced one of the main vein systems (Rikus) over a total distance of 800 m. Earlier work on this target included surface chip sampling of two parallel veins and adjacent wall rock over a strike length of 60 m that yielded weighted average grades of 4.30 and 3.94 g/t Au across 3.20 and 3.65 m, respectively. Float occurrences elsewhere on the property have returned numerous high gold assays including 193, 122 and 102 g/t from three areas located approximately 1500 m apart along linear structures similar to the Rikus vein. Work in 2002 defined a number of promising targets at or near the junctions of veins, or where the veins are cut by cross-faults.

Figure 14. *Hot coffee on a wet day at Cash Minerals' Ruby project.*

The **Pike** claims (Yukon MINFILE 2002, 106E 040) optioned by War Eagle Mining from Strategic Metals Ltd. cover a Proterozoic Wernecke Breccia body containing iron oxide, copper, gold and uranium mineralization. Exploration targets include (a) an area in the breccia body with a 960 by 300 m gold-in-soil anomaly ranging from 25 ppb to 950 ppb with a partially coincident 700 by 300 m copper-in-soil anomaly ranging from 200 ppm to 7800 ppm, and (b) two parallel float trains of gold mineralization on a steep talus-covered slope downhill from the breccia body. The gold float trains are 65 m apart, 5- to 20-m-wide and each about 100 m long. Gold in the float trains consists of scattered fist- to fingertip-size fragments containing native gold in flakes, wires and rosettes in brecciated, hematite-stained, quartz-bearing rock, commonly within or adjacent to pitchblende or brannerite. Assays have ranged from less than 30 g/t Au (1 oz/ton) up to 64 652 g/t Au (2078.6 oz/ton).

Shawn Ryan staked the **Simba** claims to cover a known Algoma-type banded iron formation (Yukon MINFILE 2002, 116C 029) located on Shell Creek approximately 70 km northwest of Dawson City. The iron-formation is composed of two principal types of material, a black magnetite-grey chert facies and a thin-banded grey chert containing pyrite and pyrrhotite. The iron formation is intimately associated with epidote-altered volcanic tuffs and breccias, reportedly of the Cambrian to Silurian Marmot Formation. It forms part of a tightly folded group of rocks composed of various schists, argillite, slate, buff-brown gritty quartzite, and black maroon and green shales, all of Precambrian and/or Cambrian age. Ryan was investigating the possibility of gold associated with the iron formation based on anomalous regional geochemical surveys, geological modeling and anecdotal reports of placer gold in Shell Creek. Prospecting discovered a sporadically exposed quartz-carbonate vein(s) hosted within the volcanic rocks approximately 30 m stratigraphically above the magnetite iron formation. The vein(s) has(have) been traced intermittently by outcrop and float boulders over a 7-km strike length. The width of the vein is undetermined but some of the float boulders examined were approximately 2 m wide. The quartz-carbonate veins are weakly mineralized with malachite and chalcocite (?), and rarely with galena; and visible gold (Fig. 15) has been found in three locations over approximately 2 km. Ryan completed reconnaissance and grid soil and rock sampling, and geophysical surveys (magnetics) on the claims this season.

Figure 15. *A flake of visible gold approximately 1 mm across associated with malachite from the Shell Creek property.*



Uravan Minerals Inc. drilled two holes totaling 495 m (Fig. 16) on the **Canalask/Onion** property (Yukon MINFILE 2002, 115K 077). The property covers the Triassic White River Intrusive Complex, the second largest mafic-ultramafic body located in the Kluane Mafic-Ultramafic Belt (Hulbert, 1997). Uravan targeted Ni-Cu-platinum group element (PGE) mineralization in marginal gabbros in

the basal section of the Discovery-Onion and Sax-Cessna areas. Geophysics identified two strong horizontal-loop electromagnetic (HLEM) anomalies with coincident induced polarization (IP) chargeability-resistivity anomalies that were the targets of this year's drilling. Very broad areas of highly anomalous Ni-PGE mineralization were found hosted in the White River ultramafic sill, and broad areas of anomalous gold and copper mineralization were discovered in the footwall quartz-carbonate alteration zone and underlying sedimentary and volcanic rocks. Preliminary assay results indicate no economic mineralization was intersected in either hole. The broad areas of Ni-PGE mineralization hosted in ultramafic rocks (clinopyroxenite) occurred in zones of net-textured and disseminated magnetite plus ferro-chromite and sulphide minerals. Intersections ranged in grade from about 1100 ppm to 3100 ppm Ni, and 90 ppb to 634 ppb Pt, plus Pd over intervals greater than 20 m wide in both drill holes.

Figure 16. *Larry Lahusen of Uravan Minerals examining core from the Canalask/Onion property.*

Prospector Gord McLeod of Whitehorse restaked a chromite occurrence located approximately 50 km south of Whitehorse as the **HFA claims** (Yukon MINFILE 2002, 105C 012). The chromite (Fig. 17) has a layered appearance, but exhibits textures that indicate it was formed during a late mineralizing event. The host dunite is part of a larger layered ultramafic sequence. The showing is poorly exposed and the relationship of the dunite with the layered ultramafic rock is unclear. Additional mapping is required to determine if it is part of the layered sequence or a later dyke. McLeod conducted sulphide fusion assays on the chromite, which returned values of up to 159 ppb Pt, 5 ppb Pd, 417 ppb Ir, 406 ppb Os, 70 ppb Rh and 683 ppb Ru.

Figure 17. *Chromite (dark) in dunite at the Hold Fast property of Gordon McLeod.*

BASE METALS

Iron-oxide-associated copper-gold occurrences in Proterozoic 'Wernecke Breccia' continue to be an attractive exploration target in Yukon. Copper Ridge Exploration optioned the **Hem** claims (Yukon MINFILE 2002, 116G 082) from Shawn Ryan and explored the breccia occurrence with ground-based magnetometer and gravity surveys. The Hem claims cover a hematitic Wernecke Breccia cut by intermediate (Fig. 18) dykes exposed in a small window of Proterozoic clastic rocks. The Hem claims and the breccia body are bisected by the Dempster Highway where the road-cut provides a nice exposure of the breccia, mineralized with disseminated chalcopyrite. The property has since been renamed the Yukon Olympic. The hematitic breccia can be found in a continuous exposure along a creek on the east side of the Blackstone River for over 1.5 km. The geophysical surveys outlined a +4.5 mGal gravity anomaly 8 km long and 1 km wide with three distinct peaks that lie below the Paleozoic sedimentary rocks, which unconformably overlie the Proterozoic clastic rocks. The magnetometer survey outlined a magnetic anomaly, which is slightly offset from two of the gravity anomaly peaks. Late in the season, Copper Ridge optioned the property to Canadian Empire Exploration who conducted a two-hole diamond drilling program in November. The first hole was collared on the westernmost gravity anomaly, which was the lowest priority target but offered easy access from the Dempster Highway. The hole YO-1 was drilled to 563 m depth before being abandoned, however, the casing was left in the hole. The hole is reported to have intersected some breccia and minor sulphide mineralization, and results are pending. The second hole was drilled alongside the Dempster Highway on the road-cut showing, and results from that hole are also pending. Drill testing of the higher priority gravity targets are scheduled for 2003.

Figure 18. *Chalcopyrite and bornite mineralization in an intermediate dyke on the Yukon Olympic (Hem) property.*

Monster Copper Resources optioned the **Monster** property (Yukon MINFILE 2002, 116B 103) to Orezone Resources Inc. The Monster property covers a number of occurrences of 'Wernecke Breccia' with copper and gold mineralization within the Coal Creek Inlier, an oval-shaped east-trending window of Middle and Late Proterozoic clastic rocks. Drilling has not adequately tested any of the occurrences in the Inlier. A program of ground geophysics, geological mapping and prospecting was conducted in 2002.

Commander Resources also has significant claim holdings in the Coal Creek Inlier covering the **Rob** and **Lala** breccia occurrences (Yukon MINFILE 2002, 116B 099,113). The claims were last explored during the 1996 and 1997 field seasons with helicopter-borne magnetic and radiometric, ground-based magnetic and gradient induced polarization

surveys, and geological mapping and sampling, followed by diamond drilling of 2672 m in 11 holes.

The **Lucky Joe** copper-gold occurrence (Yukon MINFILE 2002, 115 051) is located 50 km south of Dawson City in west-central Yukon. The property was staked by prospector Shawn Ryan in 2001 after the release of the Stewart River Multisensor Airborne Geophysical Survey flown by the Yukon Geology Program and Geological Survey of Canada as part of the Targeted Geoscience Initiative. Geological mapping based on the airborne geophysics is ongoing as part of the Stewart River component of the Ancient Pacific Margin NATMAP project. Shawn recognized a distinct, regionally significant geophysical signature in the airborne magnetic survey that was associated with the Lucky Joe occurrence. Reconnaissance soil surveying by Ryan demonstrated the Cu-Au-Mo metal signature associated with the Lucky Joe was also associated with the geophysical target. Copper Ridge Exploration optioned the property in 2002 and conducted additional claim staking, ground magnetic surveys, grid and reconnaissance soil sampling, and hand trenching. The claims are underlain by metamorphic rocks of the Paleozoic Yukon-Tanana Terrane. Magnetite-bearing amphibolite is underlain by quartz-muscovite and biotite-muscovite schist, quartzite and orthogneiss. Copper-gold-molybdenum mineralization is found in the upper 50 m of a blanket-like pyritic layer up to 300 m thick in schist and orthogneiss immediately below the amphibolite unit. Drilling on the Lucky Joe occurrence (Fig. 19) in the mid-1970s intersected broad zones of mineralization with values up to 0.95% Cu over 5.2 m. The work in 2002 outlined two areas of anomalous soil response approximately 7.5 km apart. The Bear Cub anomaly is an area 1500 m by 1000 m that returned greater than 250 ppm Cu and 10 ppm Mo, with peak values to 4300 ppm Cu, 76 ppm Mo and 573 ppb Au. The Ryan's Creek anomaly is over 3500 m long, up to 500 m wide and returned greater than 60 ppm Cu. The work clearly demonstrated the regional extent and significance of the mineralization in this area. Copper Ridge acquired the Shamrock

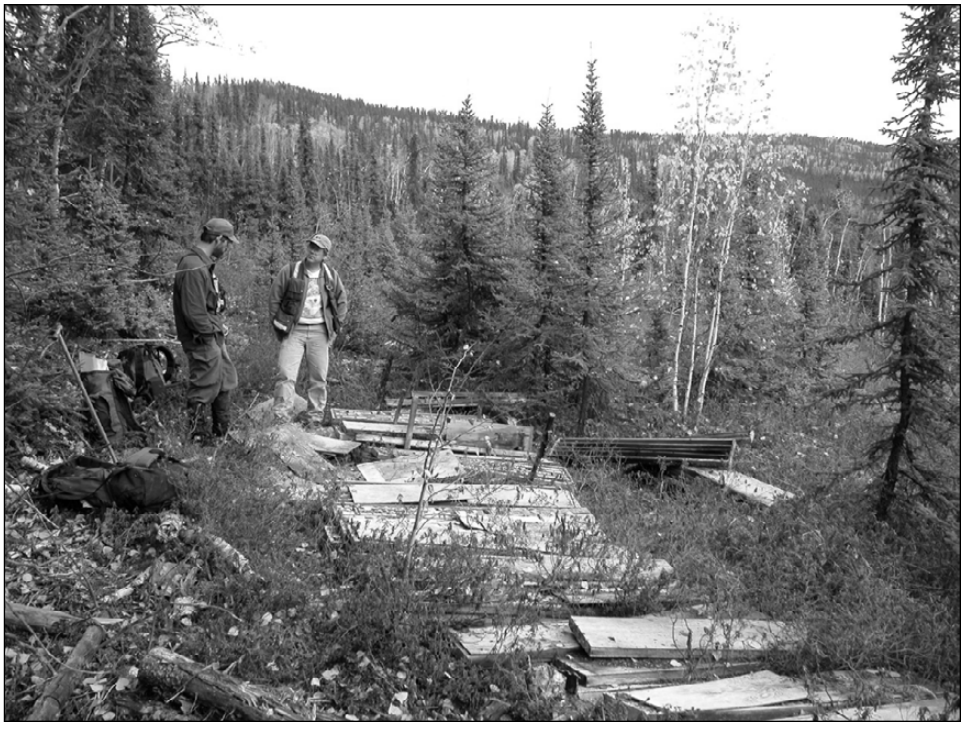


Figure 19. *Prospector Shawn Ryan (left) and Ken Galambos, Mineral Development geologist with the Yukon Geology Program, examine old drill core on the Lucky Joe property.*

Figure 20. *Leached and gossanous kill zone on the newly staked Box claims of Expatriate Resources. Photo by Expatriate Resources.*

property, consisting of 338 claims immediately south of Lucky Joe, based on a similar geophysical and geochemical signature.

Shawn Ryan conducted grid geochemistry, magnetic and very low frequency (VLF) geophysical surveys on his **Box Car** property (Yukon MINFILE 2002, 115O 071) in the Dawson area. The property is underlain by pale green- to tan-weathering quartz-muscovite-chlorite schist of the Permian Klondike Schist of the Yukon-Tanana Terrane. Soil sampling returned anomalous values up to 9 ppm Mo, 3000 ppm Pb, 700 ppm Zn, 250 ppm Cu and 65 ppb Au. The property is host to a known copper-lead-zinc-silver-gold vein, but Shawn is evaluating the claims for their volcanogenic massive sulphide (VMS) potential.

In the Finlayson Lake district, Expatriate Resources conducted regional reconnaissance work on some of their many properties in the area. Expatriate also staked additional claims based on recent mapping as part of the Finlayson Lake Targeted Geoscience Initiative, which identified a new belt of Kudz Ze Kayah-equivalent felsic volcanic rocks. The **Box** claims (NTS 105G/10; Fig. 20) cover a prominent leached and gossanous zone, where previous sampling in 1996 by Expatriate had identified anomalous multi-element soil geochemistry. Expatriate's field work, based on the geologic framework provided by recent government mapping, has identified new target areas in favourable Kudz Ze Kayah stratigraphy on the Pak (Yukon MINFILE 2002, 105G 032), Play and Ref (Yukon MINFILE 2002, 105G 051) claims.

Figure 21. *Eagle Plains Resources staking the MM occurrence in the Pelly Mountain volcanic belt. Photo by Eagle Plains Resources.*

Eagle Plains Resources performed regional reconnaissance in the vicinity of their large claim holdings in the Pelly Mountain volcanic belt (Hunt, 2002). Eagle Plains staked additional claims based on their program of detailed regional stream sediment sampling, prospecting and geological mapping. They also acquired, by staking (Fig. 21), the **MM** deposit (Yukon MINFILE 2002, 105F 012). Mineralization on the MM consists of stratiform lenses of barite-pyrite with associated silver, copper, lead and zinc sulphides that appear to be restricted to approximately the same stratigraphic horizon, and occur over a strike length of at least 3750 m. Modally, the lenses range from nearly pure barite to nearly pure pyrite.

Figure 22. *Bedded pyrite in black shales from the Tanner property of Manson Creek Resources.*

Mineralized drill intersections range from 0.9 m to 15.7 m in width, with grades of up to 5.9% Zn, 3.0% Pb and 55 g/t Ag (1.6 oz/t) over 7.2 m reported from hole 76-MM-02; and 13.5% Zn, 7.8% Pb, 1.3% Cu and 110 g/t Ag (3.5 oz/t) over 2.7 m reported from hole 77-MM-03.

Manson Creek Resources conducted three small helicopter-supported diamond drilling programs on the **Tanner**, **JRS** and **Rusty** (NTS 106C/3; 106C/4; 106C/5) properties, in 2002, exploring for sedimentary-exhalative (SEDEX) and VMS deposits. On the Tanner property, recent mapping by Manson Creek has identified prospective Devono-Mississippian Earn Group stratigraphy. Two holes totalling 306 m were drilled to test a 750-m portion of a 4.4-km airborne conductivity anomaly. Bedded barite and pyrite (Fig. 22), and pyritic synsedimentary breccias were intersected. Drilling returned values up to 1370 ppm Zn, 3.8 g/t Ag and 0.15 g/t Au over 1 m, and 20 m of 26.9% BaO. Manson Creek expanded the property to encompass the Tell occurrence (Yukon MINFILE 2002, 106C 091) where previous work returned up to 10% Zn.

Three holes drilled on the JRS property intersected narrow syngenetic pyritic massive sulphide horizons in Devono-Mississipian Earn Group stratigraphy similar to that hosting the **Marg** deposit (Yukon MINFILE 2002, 106D 009) located 50 km to the east. Mafic volcanic rocks, bedded barite, and chert of possible exhalative origin were intersected by drilling. Assays up to 2600 ppm Zn, 2760 ppm Cu, 27.6 g/t Ag and 0.38 g/t Au were obtained from bedded pyrite. A quartz-barite vein with pyrite and arsenopyrite in black shale was intersected in hole JRS01-02, and returned 0.30 g/t Au over 0.45 m. The mineralization is similar to a showing in another area of the claims discovered last season, which has assayed up to 4.27 g/t Au in grab samples.

On the **Nad** Claims (NTS 106C/3) Manson Creek Resources continued to explore for ultramafic-associated Ni-Cu mineralization in heavily serpentinized ultramafic flows and high-grade gold in associated listwaenites (Jutras, this volume). Grab

Figure 23. *Sphalerite-galena mineralization in calcite-quartz breccia on Noranda's Andrew property.*

samples from a pyrite-chalcopyrite lens in listwaenite assayed up to 20.37 g/t Au, 6.8 g/t Ag, 6.85% Cu, 0.56% Ni and 0.16% Co.

Noranda Exploration drilled eight holes totaling 1800 m on the **Andrew** property (Yukon MINFILE 2002, 105K 089) in central Yukon. Noranda optioned the claims from prospector Ron Berdahl in 2000, and conducted an airborne electromagnetic and magnetic survey in early 2001. This was followed by geologic mapping, prospecting, geochemistry, ground-based magnetic and gravity surveys over selected targets, and a 15-hole 2789-m helicopter-supported diamond drilling program. Drilling on the Andrew showing in 2001 and 2002 targeted an east-striking extensional fault zone within interbedded quartzites, shales and limestones of the Neoproterozoic to Lower Cambrian Hyland Group. Sphalerite-galena mineralization is hosted in a calcite-quartz breccia (Fig. 23). Significant intersections from the 2001 drilling are presented in Table 2.

Table 2. *Significant results from 2001 Andrew property drilling.*

Drill hole	From (m)	To (m)	Interval (m)	% Pb	% Zn	g/t Ag
AN-01-04	96.6	103.4	6.8	0.01	10.78	0.6
	110.10	137.60	27.50	0.12	12.84	1.8
AN-01-11	89.00	107.50	18.50	3.12	14.89	12.6
AN-01-12	151.15	163.15	12.00	0.01	5.25	0.8
	167.00	173.20	6.2	0.01	6.13	0.7
	214.7	255.60	40.9	.090	1.13	2.2
includes	214.70	221.50	6.80	0.01	2.61	0.5
and	251.15	255.60	4.45	6.32	2.40	12.5
AN-01-14	123.35	127.90	4.55	24.52	6.59	64.3
AN-01-15	141.20	143.75	2.55	22.63	3.59	60.9
	153.60	162.00	8.40	18.84	9.52	67.9
	185.85	196.10	10.25	20.16	10.98	45.7

The drill holes intersected mineralization over a 200-m strike length and approximately 150 m down-dip. Results from the 2002 drilling are not yet available and the property has since been returned to the vendor. Mr. Berdahl, the vendor, is awaiting a complete set of exploration data from Noranda, which can be made available for companies interested in optioning this significant new discovery.

GEMSTONES

True North Gems explored their **Regal Ridge** property (Yukon MINFILE 2002, 105G 147) for emeralds with prospecting, geological mapping, excavator trenching, bulk sampling and diamond drilling in 2002. They were very successful in recovering a large bulk sample of emerald-bearing material, discovering new emerald occurrences, and acquiring a much better understanding of the geological setting of the emerald deposit. Neufeld et al. present a preliminary paper on emerald mineralization at Regal Ridge in this volume. True North conducted a bulk-sampling program that recovered 120.34 tonnes of emerald-bearing material from seven different zones that was processed on site to yield 65 kg of emerald concentrate. The concentrate was transported to the True North laboratory facility in Vancouver, B.C., where the material was further processed. Emerald-bearing material was first sorted into three categories: gem quality, near-gem quality and non-gem quality. In general, the gem quality material is transparent and considered usable for faceting; the near-gem material is translucent and considered usable for cabachons; the non-gem material is opaque and could potentially be used for beads or other products. The various gem classification categories were defined by a consulting gemologist, William Rohtert, G.G. and an experienced facetor, Bernard Gaboury, MSc, PEng, President of True North. Microscopic examination of gem quality material showed it to be medium green with good saturation and transparency with some fractures, and no foreign inclusions. The near-gem quality material is also medium green with good saturation, but contains light to moderate fractures, some pits, and a few inclusions.

Detailed tables showing the gem, near-gem and non-gem yields (in grams) from each zone, plus the yield (in grams) and number of stones based on four size categories obtained using diamond sieves (+4.5, 3.9-4.5, 2.9-3.9, 1.9-2.9 mm), were presented in a December 12, 2002 news release available on the True North website at *www.truenorthgems.com*. The most impressive yield was obtained from Southwest zone (Fig. 24) where a 6.36 t bulk sample yielded 11.59 kg of emerald concentrate. From this, 121.42 g of gem quality and 587.33 g of near-gem quality stones were recovered for a yield of 19.09 g/t gem quality and 92.35 g/t near-gem quality emeralds. The sample produced 1092 gem quality stones with 284 in the +4.5mm size category, and 1903 near-gem quality stones with 714 in the +4.5mm range. The stones are currently being stabilized, cut and polished after which they will be evaluated by an independent qualified gemologist.

Figure 24. *Emerald concentrate from the Southwest #1 vein at Regal Ridge. Photo by True North Gems.*

Recent mapping by the Yukon Geology Program and Geological Survey of Canada as part of the Targeted Geoscience Initiative in the Finlayson Lake area (Murphy, 2001) has provided

an excellent geologic framework in the emerald discovery area. This, combined with details of the geologic setting of the emeralds provided by True North Gems, has demonstrated that the Finlayson Lake area has many unique geological characteristics required for emerald formation (W.R. Rohtert and J.H. Montgomery, 2002 field activity report, on website at *www.sedar.com*). This has resulted in the staking of many new properties that have the potential for emerald mineralization, and the re-evaluation of many existing claims for their emerald potential. Expatriate Resources Ltd. has entered into an agreement with YK Group to explore its extensive claim holdings in the Finlayson Lake district for emeralds. Pacific Ridge Exploration has re-examined their exploration database of geological information in the Fyre Lake area immediately south of Regal Ridge and has identified several emerald targets. Firestone Ventures Inc. is earning an interest in a 118-claim property from True North Gems. Hinterland Metals has optioned the **Gleam** property and International Arimex Resources, the **Glitter** property, both from True North Gems. Claim staking in the area is continuing.

Additionally, the coloured gemstone potential of the Yukon and the northern Cordillera is now being recognized, and exploration for gemstones is expected to increase in the coming years. A one-day seminar on northern gems at the annual Yukon Geoscience Forum attracted over 100 participants. The "Yukon Diamond Rumour Map" that was released at the seminar is available online at *www.emr.gov.yk.ca*.

ACKNOWLEDGEMENTS

This report is based on public information gathered from a variety of sources. It also includes information provided by companies through press releases and information from property summaries provided to the department by companies and from property visits conducted in the 2002 field season. The cooperation of companies in providing information as well as their hospitality and access to properties during field tours is gratefully acknowledged. Editing by Lara Lewis and Diane Emond is greatly appreciated.

REFERENCES

Abbott, J.G., 1986. Epigenetic mineral deposits of the Ketza-Seagull district, Yukon. *In:* Yukon Geology, Vol. 1, J.A. Morin and D.S. Emond (eds.), Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, p. 56-66.

Bond, J.D., 2001b. Surficial geology and till geochemistry of Weasel Lake map area (105G/13), east-central Yukon. *In:* Yukon Exploration and Geology 2000, D.S. Emond and L.H. Weston (eds.), Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, p. 73-96.

Christie, A.R., 1992. Grew Creek epithermal gold-silver deposit, Tintina Trench, Yukon. *In:* Yukon Geology, Volume 3, T.J. Bremner (ed.), Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, p. 223-359.

Hulbert, L.J., 1997. Geology and Metallogeny of the Kluane Mafic-Ultramafic Belt, Yukon Territory, Canada: Eastern Wrangellia – A New Ni-Cu-PGE Metallogenic Terrane. Geological Survey of Canada, Bulletin 506, 265 p.

Hunt, J.A., 2002. Vocanic-associated massive sulphide (VMS) mineralization in the Yukon-Tanana Terrane and coeval strata of the North American miogeocline, in the Yukon and adjacent areas. Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, Bulletin 12, 107 p.

Jutras, J.P., 2003 (this volume). Ultramafic nickel-bearing magmas of the Nadaleen River map area (106C/3) and associated listwaenites: New exploration targets in the Mayo Mining District, Yukon. *In:* Yukon Exploration and Geology 2002, D.S. Emond and L.L. Lewis (eds.), Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, p. 261-266.

Lang, J., Rhys, D. and Naas, C., 2003 (this volume). Structure and alteration related to gold-silver veins at the Skukum Creek deposit, southern Yukon. *In:* Yukon Exploration and Geology 2002, D.S. Emond and L.L. Lewis (eds.), Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, p. 267-280.

Murphy, D.C., Colpron, M., Gordey, S.P., Roots, C.F., Abbott, G. and Lipovsky, P.S., 2001. Preliminary bedrock geological map of northern Finlayson Lake area (NTS 105G), Yukon Territory (1:100 000 scale). Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, Open File 2001-33.

Neufeld, H.L.D., Groat, L.A. and Mortensen, J.K., 2003 (this volume). Preliminary investigations of emerald mineralization in the Regal Ridge area, Finlayson Lake district, southeastern Yukon. *In:* Yukon Exploration and Geology 2002, D.S. Emond and L.L. Lewis (eds.), Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, p. 281-284.

Soloviev, S.G., Schulze, C.M. and Baklyukov, O.E., 2003a. Structural settings and geochemistry of the Myschka gold prospect, Tintina Gold Belt, Mt. Selous area (105K/16, 105N/1), Yukon. *In:* Yukon Exploration and Geology 2002, D.S. Emond and L.L. Lewis (eds.), Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, p. 295-306.

Soloviev, S.G., Schulze, C.M. and Baklyukov, O.E., 2003b (this volume). Structural settings and geochemistry of the Cynthia gold prospect, Tintina Gold Belt, Hess River area (105O/6), Yukon. *In:* Yukon Exploration and Geology 2002, D.S. Emond and L.L. Lewis (eds.), Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, p. 285-294.

APPENDIX 1: 2002 EXPLORATION PROJECTS

PROPERTY	COMPANY/OWNER	MINING DISTRICT	MINFILE # or (1:50 000 NTS)	WORK TYPE	COMMODITY
1st Base	Arcturus Ventures	Watson Lake	105G-031	G,GC	Cu-Pb-Zn-Ag-Au
Andrew	Noranda Exploration	Whitehorse	105K-089	G,GC, DD	Zn-Pb-Ag
Arn	Atac Resources	Whitehorse	115F-048	G,GC,P,DD	Au-Cu
Brewery Creek	Viceroy Resources	Dawson	116B-160	Reclamation	Au
Blue Heaven	Strategic Metals	Watson Lake	105B-020	G	Ag-Pb-Zn-Cu
Box	Expatriate Resources	Watson Lake	(105G/10)	G,GC	Cu-Pb-Zn-Ag-Au
Box Car	Shawn Ryan	Dawson	115N-071	GC,GP,T	Cu-Pb-Ag-Au
Canalask	Uravan Minerals/ Expatriate Resources	Whitehorse	115K-077	DD	Ni-Cu-PGE
Cynthia	Klad Resources	Mayo	105O-007	G,GC,T	Au
Eureka	Viceroy Resources/ Expatriate Resources	Dawson	115O-057	G,T,RC	Au
Fyre Lake	Rock Resources/ Pacific Ridge Exploration	Watson Lake	105G-034	G	Cu-Co-Au
Grew Creek	Al Carlos	Whitehorse	105K-009	DD	Au-Ag
Hat	Kluane Drilling/ Norwest	Whitehorse	105D-053	G,DD	Cu-Au-Ag
Hem (Canadian Olympic)	Copper Ridge Exploration/ Canadian Empire	Dawson	116G-082	G,GC,GP,DD	Cu-Au
Hold Fast	Gordon McLeod	Whitehorse	105C-012	G,GC	Cr-PGE
Hyland Gold	Expatriate Resources/ Cash Minerals	Watson Lake	95D-011	G,GC	Au
Ice	ASC Industries Ltd.	Mayo	115P-006	G,GC,GP,DD,RC	Au
Kalzas	Copper Ridge Exploration	Mayo	105M-066	G,GC	WO_3
Keno Hill	A.M.T. Canada	Mayo	105M-001	D	Ag-Pb-Zn
Lucky Joe	Copper Ridge Exploration	Dawson	115O-051	G,GC,T	
Lynx Creek	Expatriate Resources	Mayo	106D-020	G,GC	Au
Mars	Saturn Ventures Inc.	Whitehorse	105E-002	G,GC	Cu-Au
Minto	Minto Resources	Whitehorse	115I-021,022	D	Cu-Ag-Au
Mitchell	JAE Resources	Dawson	115O-068	T	Au
MM	Eagle Plains Resources	Watson Lake	105F-012	G,GC	Cu-Pb-Zn-Ag
Monster	Monster Copper Resources/ Orezone Resources	Dawson	116B-103	G,GC,P,GP	Cu-Au
Myschka	Klad Resources	Mayo	105K-090	G,GC,T	Au
Pak	Expatriate Resources	Watson Lake	105G-032	G,GC	Cu-Pb-Zn-Ag-Au

continued...

APPENDIX 1 (continued): 2002 EXPLORATION PROJECTS

PROPERTY	COMPANY/OWNER	MINING DISTRICT	MINFILE # or (1:50 000 NTS)	WORK TYPE	COMMODITY
Pelly Mtn Project (Fire/Ice/St. Cyr)	Eagle Plains Resources	Watson Lake	105F-071,073	G,GC	Pb-Zn-Ag
Pike	Strategic Metals War Eagle Mining	Mayo	106E-040	G,GC,T	Au
Play/Ref	Expatriate Resources	Watson Lake	105G-051	G,GC	Cu-Pb-Zn-Ag-Au
Red Mountain	Regent Ventures	Mayo	115P-006	G,GC,GP,DD	Au
Regal Ridge	True North Gems/ Expatriate Resources	Watson Lake	105G-147	G,GC,T,DD,BS	Emeralds
Ruby Range	Cash Minerals Ltd.	Whitehorse	115H-047	G,GC,T	Au
Rusty/JRS/Tanner	Manson Creek Resources	Mayo	(106C/5,C/4,D/3)	G,GC,DD	Zn-Pb-Ag
Shamrock	Copper Ridge Exploration	Dawson	(115O/6)	GC	Cu-Au
Simba (Shell Creek)	Shawn Ryan	Dawson	116C-029	GC,GP	Au, Cu
Skukum	Tagish Lake Gold	Whitehorse	105D-22,25,158	G,GC,DD	Au-Ag
Spice	Atac/Tanana Exploration	Watson Lake	(105G/13)	G,GC,T	Au
Sprogge	Eagle Plains Resources	Watson Lake	105H-035	G,GC	Au
Tay/LP	Ross River Minerals	Whitehorse	105F-121	G,GC,T,DD	Au
Ultra	Tom Morgan	Whitehorse	115B-008	G,GC	Ni-Cu-PGE; Zn-Cu-Au-Ag
Wellgreen	Northern Platinum	Whitehorse	115G-024	G,GC	Ni-Cu-PGE

BS – bulk sample
D – development
DD – diamond drilling
ES – environmental studies
F – feasibility
G – geology
GC – geochemistry
GP – geophysics
M – mining
PD – percussion drilling
PF – prefeasibility
R – reconnaissance
T – trenching
U/GD – underground development

APPENDIX 2: 2002 DRILLING STATISTICS

		DIAMOND DRILL		RC/PERCUSSION DRILL	
PROPERTY	**COMPANY**	**metres**	**# holes**	**metres**	**# holes**
Andrew	Noranda Exploration/ Ron Berdahl	1800	8		
Arn	Atac Resources	182	4		
Canalask/Onion	Uravan Minerals/ Expatriate Resources	495	2		
Eureka	Viceroy Resources/ Expatriate Resources			390	4
Grew Creek	Al Carlos	414	6		
Ice	ASC Industries	422	2	604	10
Ram	Ross River Minerals/Almaden	343	4		
Red Mountain	Regent Ventures	949	6		
Regal Ridge	True North Gems	400	6		
Skukum Creek	Tagish Lake Gold	2502	15		
Tanner/JRS	Manson Creek Resources	791	6		
Tay-LP	Ross River Minerals	568	7		
Whse Cu (Hat)	Coyne and Sons	567	4		
Yukon Olympic	Canadian Empire/Copper Ridge Exploration	773	2		
TOTAL		10 209		994	

YUKON PLACER MINING OVERVIEW, 2002

***William LeBarge*[1]**
Yukon Geology Program

LeBarge, W., 2003. Yukon Placer Mining Overview, 2002. *In:* Yukon Exploration and Geology 2002, D.S. Emond and L.L. Lewis (eds.), Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, p. 27-29.

Placer mining in the Yukon continued to be an important industry in 2002. A total of 115 mines were operating, with approximately 400 people directly employed in the industry. This represents a 7% decrease in the number of operating mines from the 2001 mining season, and an 18% decrease over the last two years. However, there were an estimated 600 additional jobs generated in 2002 in related service and hospitality industries. The effects of these economic benefits are especially felt in the small communities of Dawson and Mayo. As usual, the majority of active mining operations were in the Dawson Mining District (73) followed by the Whitehorse Mining District (30) and the Mayo Mining District (12).

For 2002, over 90% of the Yukon's placer gold was produced in the Dawson Mining District, which includes the unglaciated drainages of Klondike River, Indian River, west Yukon (Fortymile and Sixtymile rivers, and the Moosehorn Range) and lower Stewart River. The remaining gold came from glaciated regions, including Mayo, the Dawson Range, Kluane and Livingstone Creek.

Relative to 2001, placer gold production from Indian River drainages remained relatively unchanged. Klondike area drainages were higher overall, with less gold produced from Last Chance Creek and more gold produced on Gold Bottom Creek. West Yukon (Sixtymile, Fortymile, and Moosehorn) drainages produced more gold overall due to increases in the Moosehorn Range, but the Sixtymile area saw a decrease. Lower Stewart drainages produced less gold overall, but more was produced on Thistle Creek. No gold was reported from Clear Creek area this year. In the Dawson Range, placer gold production was much lower, due to cessation of mining operations on both Nansen and Canadian creeks. Mayo area drainages had increased gold production with the largest amount coming from Lightning Creek. In the Kluane area, much less gold was produced due to an absence of mining on Burwash Creek and

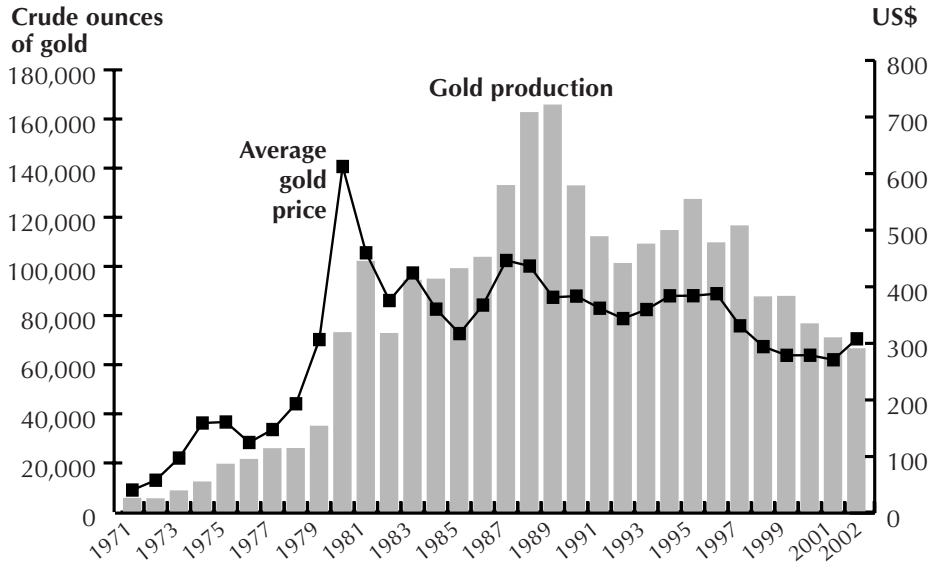


Figure 1. *Yearly gold production figures and average US gold price for the Yukon, 1971-2002.*

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decreased production from both Fourth of July and Gladstone creeks. In the Livingstone area, reported gold production was higher due to gold royalties reported from Little Violet Creek. In Whitehorse South drainages, no placer gold production has occurred since 1993, but interest in several creeks has continued with small-scale testing occurring on Evelyn, Iron and several other creeks.

Total placer gold production for 2002 was 66,353 crude ounces (2 063 800 g) worth $25.8 million (Canadian funds) compared to 70,819 crude ounces (2 202 719 g) in 2001, which represents a 6.1% decrease. Since 1999, placer gold production has dropped 25% to its lowest level since 1979. However, due to a steady rise in the world market price of gold throughout 2002, the drop in gold production was offset considerably by an increase in value. The total dollar value of Yukon placer gold produced in 2002 was approximately $26 million, up slightly from the $23 million generated in 2001. This, combined with an overall decrease in fuel prices from 2001, resulted in a somewhat more profitable year for many Yukon placer miners.

SURVOL DE L'EXPLOITATION DE PLACERS AU YUKON EN 2002

L'exploitation de placers a continué d'être une importante industrie au Yukon en 2002. Au total, on a exploité 115 mines qui ont donné un emploi direct à environ 400 personnes. Ce chiffre représente une diminution de 7 % pour le nombre de mines exploitées par rapport à l'an 2001 et une régression de 18 % au cours des deux dernières années. Toutefois, on estime à 600 le nombre d'emplois additionnels créés en 2002 dans les industries des services et du tourisme d'accueil. Ce sont les petites agglomérations de Dawson et Mayo qui ont le plus profité de ces avantages. Comme dans le passé, la majorité des exploitations minières étaient situées dans le district minier de Dawson (73), suivi des districts de Whitehorse (30) et de Mayo (12).

En 2002, plus de 90 % de l'or placérien a été extrait dans le district de Dawson, soit dans les réseaux de drainage non englacées de la rivière Klondike, dans l'ouest du

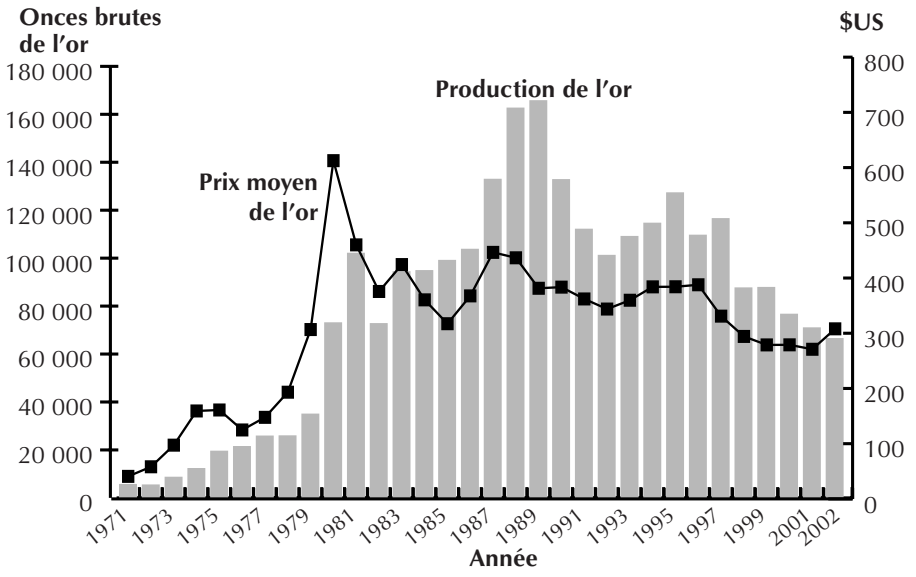

Figure 1. *Production annuelle d'or et prix moyen américain de l'or au Yukon pour la période de 1971 à 2002.*

Yukon (les rivières Fortymile et Sixtymile et le chaînon Moosehorn) et dans le cours inférieur de la rivière Stewart. Le reste de l'or provenait de régions englacées, incluant Mayo, le chaînon Dawson, Kluane et le ruisseau Livingstone.

Par rapport à 2001, la production d'or placérien dans le réseau de drainage de la rivière Indian est demeurée relativement au même niveau. Les gîtes du réseau de drainage de Klondike ont été plus productifs dans l'ensemble; la production a été moins élevée au ruisseau Last Chance et plus élevée au ruisseau Gold Bottom. Dans l'ouest du Yukon (Sixtymile, Fortymile et Moosehorn), la production d'or a été plus élevée dans l'ensemble grâce aux augmentations enregistrées dans le chaînon Moosehorn même si la région de Sixtymile a connu un recul. La partie aval du réseau de drainage de la rivière Stewart a, pour sa part, produit moins d'or dans l'ensemble bien que le ruisseau Thistle en a produit plus. Le ruisseau Clear n'a pas produit cette année. Dans le chaînon Dawson, la production d'or placérien a beaucoup fléchi, et ce, à cause de l'interruption de l'exploitation sur les ruisseaux Nansen et Canadian. La région de Mayo a enregistré un accroissement de la production d'or, la grande partie provenant du ruisseau Lightning. Dans la région de Kluane, la baisse de la production est principalement due à une interruption de l'exploitation dans le ruisseau Burwash et à une diminution de la production dans les ruisseaux Fourth of July et Gladstone. Dans la région de Livingstone, la production d'or a été plus élevée si l'on base sur les redevances enregistrées au ruisseau Little Violet. Dans le réseau de drainage de Whitehorse Sud, il n'y a pas eu de production d'or placérien depuis 1993, mais plusieurs ruisseaux ont continué de susciter de l'intérêt si l'on se fonde sur les essais à petite échelle réalisés sur plusieurs d'entre eux, dont les ruisseaux Evelyn et Iron.

La production d'or placérien pour l'année 2002 a totalisé 66 353 d'onces brutes (2 063 800 g) qui vaut $25,8 million (en argent canadien), comparativement à 70 819 onces brutes (2 202 719 g) en 2001, une chute de 6,1 %. Depuis 1999, la production d'or placérien a dégringolé de 26 %, pour s'établir à son plus bas niveau depuis 1979. Cependant, la hausse constante des prix mondiaux de l'or tout au long de 2002 a contrebalancé le fléchissement de la production. En 2002, la valeur monétaire totale de l'or placérien produit au Yukon a atteint quelque 26 millions de dollars, comparativement à 23 millions de dollars en 2001. Si l'on combine ces résultats à la baisse globale des prix des carburants en 2001, l'année a été un peu plus profitable pour de nombreux exploitants de placers au Yukon.