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Yukon **Placer Mining** Industry

2003 to 2006

Yukon Geological Survey

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Yukon Energy, Mines and Resources

Yukon **Placer Mining** Industry

2003 to 2006

Compiled by W.P. LeBarge and C.S. Welsh
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Front cover: *Bardusan Placers operation on Lightning Creek, Mayo Mining District, August, 2006.*
Back cover: *Gold mined from Last Chance Creek (a tributary of Hunker Creek), Dawson Mining District.*
Both photos by W.P. LeBarge, Yukon Geological Survey.

Preface

The Yukon Geological Survey and Client Services and Inspections, Energy, Mines and Resources, Government of Yukon, are pleased to present the placer industry report for the years 2003 to 2006. This is the first industry report to be published since the responsibilities for Yukon's mineral, water and land resources were devolved from the Government of Canada to Government of Yukon in April, 2003.

Since the publication of the last industry report, Yukon has undergone significant change: mineral prices have increased dramatically, with a corresponding boom in economic activity, mineral exploration, mine development, housing prices and employment. In contrast with the hard-rock sector, however, the placer industry has only just begun to share in these prosperous times — fuel prices have remained high and major regulatory changes have occurred. The implementation in 2005 of new socio-economic screening standards for placer and quartz mining projects under YESAA (*Yukon Environmental and Socio-Economic Assessment Act*), and the formation of the Yukon Placer Secretariat, with their responsibility for consultation and implementation of a new regime for placer mining, have become new considerations for the industry while they contemplate development and exploitation of their deposits. Still, we've seen a willingness to conduct exploration and develop new areas to mine, as demonstrated by recent extensive staking in drainages which have seen little prior activity.

We hope that the research and information that the Yukon Geological Survey provides to the placer industry will encourage exploration and development of new placer mines in upcoming years. We also trust that Client Services and Inspections' continuing role in educating and encouraging compliance with water and land use standards will ensure an industry-friendly, seamless transition to the new placer regime and all future standards as they are developed.

We hope you find this book interesting and informative, and we encourage future submissions from miners to maintain and improve the quality of this publication.

Préface

La Commission géologique du Yukon et la division des Services aux clients et des Inspections du ministère de l'Énergie, des Mines et des Ressources du gouvernement du Yukon ont le plaisir de présenter le rapport sur l'industrie des placers pour la période 2003-2006. Il s'agit du premier rapport industriel publié depuis que les responsabilités concernant les ressources minérales, hydriques et terrestres du Yukon ont été transférées du gouvernement du Canada au gouvernement du Yukon en avril 2003.

Le Yukon a beaucoup changé depuis la publication du dernier rapport industriel : le prix des minéraux ont augmenté de façon spectaculaire et on a assisté à une expansion de l'activité économique, du marché de l'emploi, de l'exploration et du développement miniers ainsi qu'à une hausse des prix du logement. Contrairement au secteur de l'exploitation minière en roche dure, cependant, l'industrie des placers commence juste à bénéficier de cette période de prospérité — le prix des carburants est resté élevé et des changements importants ont été apportés à la réglementation. La mise en œuvre en 2005 de nouvelles normes socioéconomiques pour les projets de placers et d'exploitation du quartz en vertu de la LEESY (*Loi sur l'évaluation environnementale et socioéconomique au Yukon*) et la mise sur pied du Secrétariat des placers du Yukon responsable de la consultation et de la mise en œuvre d'un nouveau régime d'exploitation des placers doivent dorénavant être prises en comptes par les industries qui désirent exploiter leurs gisements. Nous observons néanmoins un désir renouvelé d'effectuer des explorations et de développer de nouveaux secteurs miniers, comme le montrent les opérations intensives de jalonnement dans des drainages qui ne faisaient jusqu'alors pas l'objet d'une grande activité.

Nous espérons que le soutien apporté à l'industrie des placers par la Commission géologique du Yukon en matière de recherche, d'information et d'éducation encouragera l'exploration et le développement de nouveaux placers dans les années à venir. Nous espérons également que les activités de sensibilisation et d'encouragement à la conformité aux normes d'utilisation de l'eau et des terres menées par la division des Services aux clients et des Inspections permettra une transition sans heurts de l'industrie vers le nouveau régime des placers et facilitera l'application de toutes les nouvelles normes.

Nous sommes sûrs que vous trouverez ce livre intéressant et informatif et nous encourageons les professionnels du secteur à nous faire part de leurs commentaires afin que nous puissions mettre à jour et améliorer continuellement la qualité de cet ouvrage.

William LeBarge
Placer Geologist • Géologue spécialiste des placers
Yukon Geological Survey • Commission géologique du Yukon

Lorraine Millar
Chief Mining Inspector •Inspectrice en chef des mines
Client Services and Inspections • Services aux clients et Inspections

Energy Mines and Resources • Énergie, Mines et Ressources
Government of Yukon • Gouvernement du Yukon

Acknowledgements

Sincere thanks are due to the placer miners for their submissions, photographs and articles, as well as the knowledge and information about their deposits which are generously given during our field visits. This compilation would not be possible without them. Other authors are also thanked for their written submissions.

Executive editorial guidance was generously provided by Diane Emond, Acting Head of Technical Services for the Yukon Geological Survey. Leyla Weston of Yukon Geological Survey also helped to edit many of the operation summaries.

The Natural Resources Officers (Mining) at Client Services and Inspections, Energy, Mines and Resources contributed information and photographs, which were used in the operation summaries. This includes Lorraine Millar (Chief Mining Inspector); Josef Hanrath, Steve Colp and Kevin Ristau (Whitehorse and Watson Lake Mining Districts); Bill Leary (Mayo Mining District); and Al Rothwell, Marion Dejean, Jim Leary and Rob Savard (Dawson Mining District).

Catherine Welsh was of tremendous assistance in generating the digital placer district maps in ArcGIS format, assembling and verifying the locations of placer operations, and inputting information into the Placer Database, which was then used to create the individual summaries of operations.

Aubrey Sicotte, Geological Spatial Database Administrator, Yukon Geological Survey, facilitated the transfer of information from the Placer Database into a publishable format.

Others who helped to collect information used in this compilation include Patricia Backlund, Angela Johnson and Keddy Adams.

Layout of this publication was carefully and thoughtfully completed by Peter Long and Wynne Krangle of K-L Services.

Remerciements

Nous remercions très sincèrement les exploitants de placers pour les commentaires, les photographies et les articles qu'ils nous ont transmis, ainsi que les informations sur leurs gisements qu'ils nous ont généreusement confiées durant nos visites sur le terrain. La présente synthèse n'aurait pas été possible sans cet apport. Nous remercions également les autres auteurs qui nous ont transmis leurs commentaires.

Diane Emond, chef intérimaire des Services techniques et directrice des publications pour la Commission géologique du Yukon a généreusement offert son aide pour la révision de cet ouvrage. Leyla Weston, de la Commission géologique du Yukon, a également aidé à la révision d'un grand nombre des résumés d'opération.

Les agents des ressources naturelles de la division des Services aux clients et des Inspections (ministère de l'Énergie, des Mines et des Ressources) ont tous apporté des informations et des photographies qui ont été utilisées dans les résumés d'opération. On peut notamment citer Lorraine Millar (inspectrice en chef des mines); Josef Hanrath, Steve Colp, Kevin Ristau (districts miniers de Whitehorse et de Watson Lake); Bill Leary (district minier de Mayo); et Al Rothwell, Marion Dejean, Jim Leary et Rob Savard (district minier de Dawson).

Catherine Welsh a apporté une aide inestimable pour la préparation des cartes numériques des districts placériens au format ArcGIS en assemblant et en vérifiant l'emplacement des placers et en entrant les informations dans la base de données des placers qui a ensuite été utilisée pour créer chaque résumé d'opération.

Aubrey Sicotte, administrateur de la base de données géologiques spatiales, Commission géologique du Yukon, a facilité la conversion des informations de la base de données des placers dans un format publiable.

Parmi les autres personnes qui ont contribué à la collecte des informations utilisées dans cette compilation, il faut citer Patricia Backlund, Angela Johnson et Keddy Adams.

Peter Long et Wynne Krangle de K-L Services Ltd. se sont chargés de la mise en page.

Introduction

There are two main parts to this publication — the first section contains a series of articles of interest to the placer industry, while the second section contains summaries of placer mining operations which were active between 2003 and 2006. The bulk of this report was generated from the latest update of the Yukon Placer Database, a digital compilation of information about the geology and mining activity of placer occurrences in Yukon, which includes all previous Yukon Placer Mining Industry reports. The maps were generated from an ArcGIS digital compilation, which was converted into a publishable format through Adobe Illustrator.

Information about the active placer operations and related geology was derived from a number of sources. These include survey forms which were completed by placer miners, as well as information submitted informally by the miners. A large part of the information used in this compilation was derived from field visits by William LeBarge of the Yukon Geological Survey and the Natural Resources Officers (Mining) of Client Services and Inspections, including Lorraine Millar, Josef Hanrath, Steve Colp, Kevin Ristau, Bill Leary, Al Rothwell, Marion Dejean, Jim Leary and Rob Savard. Most photographs of operations were taken by the above workers during these field visits, and some were submitted by placer miners.

Although we have made our best efforts to include all active operations and to be as accurate as possible, there may be some omissions and errors and we apologize for those.

The summaries are arranged in sections by placer area, with corresponding maps and photos included. Each summary includes the creek name and its parent stream, the operator, water license numbers and year of expiry, and the geographic coordinates of the operation. Many measurements were originally provided in imperial units, and we have converted these to metric where appropriate (commonly in parentheses); however, equipment specifications have mostly been left in imperial units due to current conventions in the mining industry. A conversion table is provided at the end of this book.

Introduction

Cette publication est divisée en deux grandes parties – la première contient une série d'articles sur l'industrie des placers, la seconde regroupe des résumés sur les opérations des placers actifs entre 2003 et 2006. Ce rapport est principalement basé sur les informations mises à jour de la base de données des placers du Yukon, une compilation numérique d'informations concernant les activités géologiques et minières des placers au Yukon, incluant notamment de tous les rapports industriels antérieurs publiés sur les placers du Yukon. Les cartes ont été préparées à partir d'une compilation de données numériques ArcGIS converties dans un format publiable à l'aide d'Adobe Illustrator.

Les informations concernant les opérations des placers actifs et la géologie connexe ont été extraites d'un certain nombre de sources. On a notamment utilisé des formulaires de sondage remplis par les exploitants de placers, ainsi que des informations communiquées de manière informelle par ceux-ci. Une grande partie des informations ont été recueillies lors de visites sur le terrain par W.P. LeBarge, de la Commission géologique du Yukon et des agents des ressources naturelles (mines) de la division des Services aux clients et des Inspections, notamment Lorraine Millar, Josef Hanrath, Steve Colp, Kevin Ristau, Bill Leary, Al Rothwell, Marion Dejean, Jim Leary et Rob Savard. La plupart des photographies montrant les exploitations ont été prises par les personnes susmentionnées au cours des visites sur le terrain tandis que d'autres ont été communiquées par des exploitants de placers.

Bien que nous nous soyons efforcés d'inclure toutes les exploitations en activité et d'être le plus précis possible, nous nous excusons d'avance pour toute omission ou erreur qui aurait pu échapper à notre attention.

Les résumés sont classés par bassin hydrographique, avec la carte correspondante et les photographies. Chaque résumé inclut le nom du cours d'eau et sa source, le nom de l'exploitant, le numéro du permis d'exploitation hydraulique et son année d'expiration ainsi que les coordonnées géographiques de l'exploitation. De nombreuses mesures ayant été enregistrées dans le système d'unités de mesure anglo-saxonnes, nous les avons converties dans le système métrique lorsque nécessaire (habituellement citées entre parenthèses); cependant, les spécifications relatives aux équipements ont la plupart du temps été laissées en unités de mesure anglo-saxonnes pour tenir compte des conventions actuellement en vigueur dans l'industrie des mines.

William LeBarge
Placer Geologist • Géologue spécialiste des placers
Yukon Geological Survey • Commission géologique du Yukon
Energy Mines and Resources • Énergie, Mines et Ressources
Government of Yukon • Gouvernement du Yukon

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Yukon Placer Mining Industry, 2003-2006

An overview of placer activity and production

by William LeBarge[1]
Yukon Geological Survey

Even prior to the arrival of European explorers to the Yukon (in the 1700s), placer mining had been conducted by First Nations people, who recovered native copper nuggets from the White River area in southwestern Yukon (Wright, 1976). Explorers from the Hudson Bay Company first reported fine gold on the banks of the Pelly River around 1850. In 1874, coarse gold was discovered on a tributary of the Liard River, and in 1885, significant quantities of gold were found on river bars of the Stewart. Gold was discovered in the Fortymile area on both sides of the border the following year, and by 1893, active mining was taking place on Miller and Glacier creeks in the Sixtymile district.

On August 17, 1896, the discovery of nugget gold on Rabbit Creek (renamed Bonanza) set off the Klondike Gold Rush. By 1900, over a million ounces (30 million grams) was being mined in a season, at that time, completely by hand. Later years saw the arrival of large-scale mining with dredges and heavy equipment.

Today, over 100 years later, placer mining is still an important sector in the Yukon's economy (Yukon Placer Database, LeBarge (comp.), 2007). Over 16.6 million crude ounces (518 tonnes) of placer gold have been produced to date in the Yukon — at today's prices, that would be worth more than $9 billion (CDN).

Staking activity

Placer staking activity remained flat through most of this reporting period (2003 to 2006) until an increase, which started in 2005 (Fig. 1), ballooned into a huge increase in 2006.

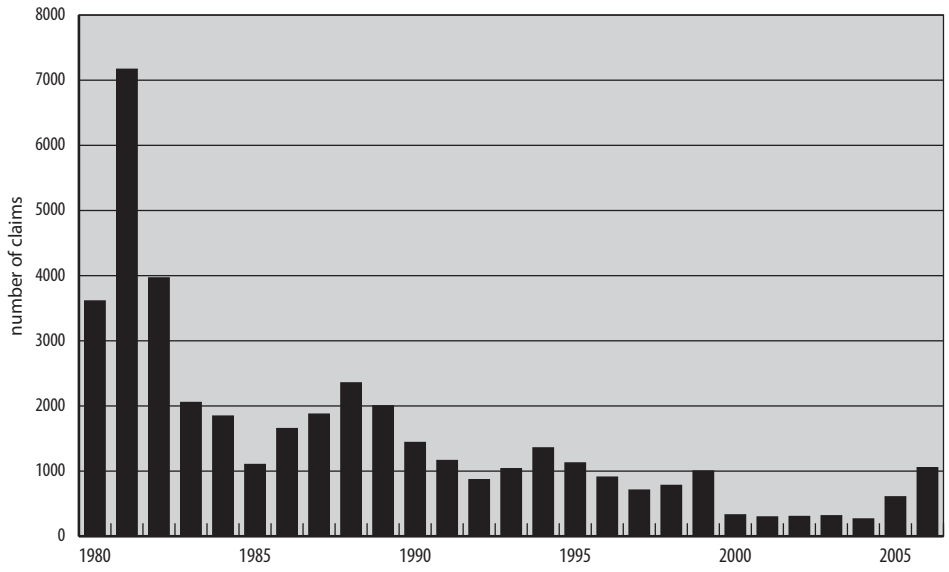


Figure 1. *Yukon placer claims staked, 1980–2006.*

[1]*bill.lebarge@gov.yk.ca*

Figure 2. *Yukon placer leases staked, 1980–2006.*

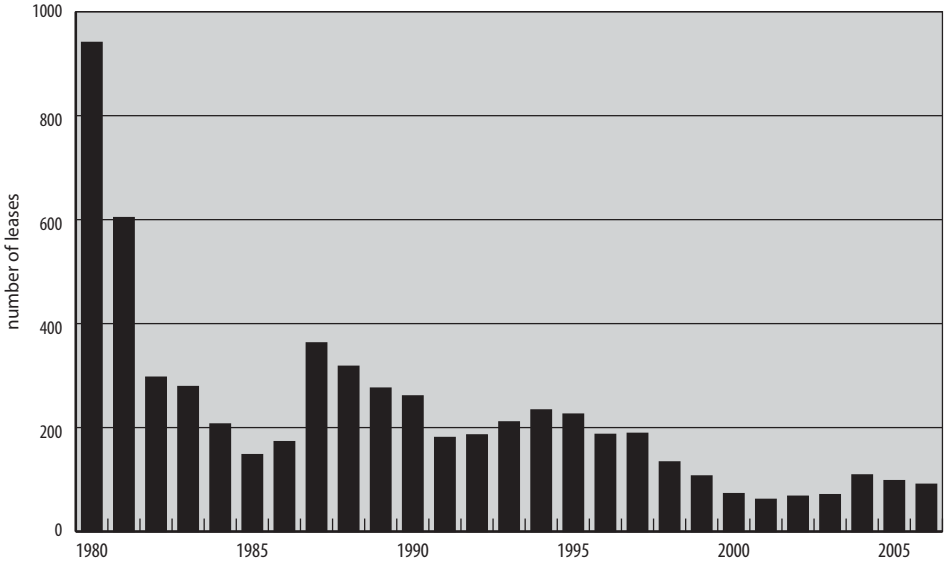


Figure 3. *Yukon placer claims in good standing, 1980–2006.*

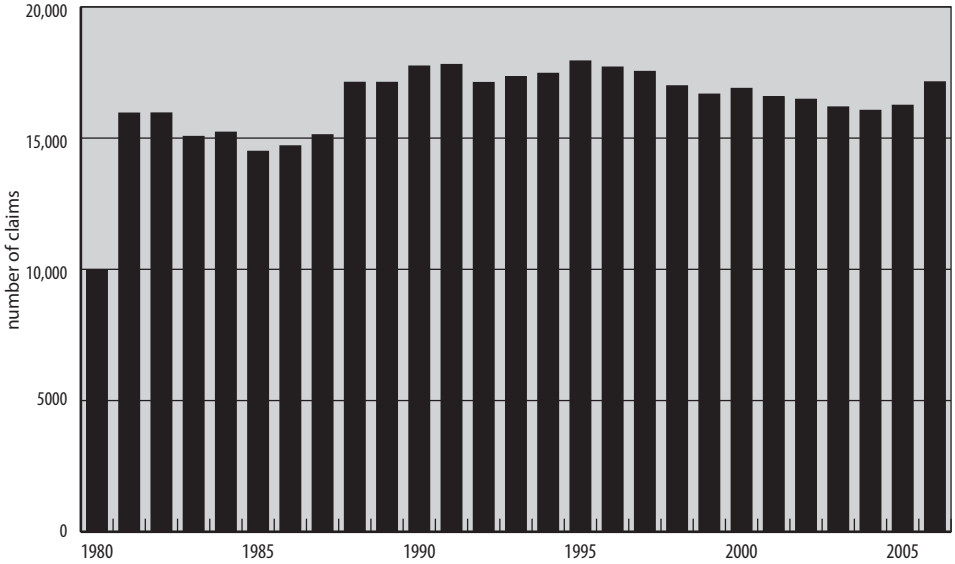
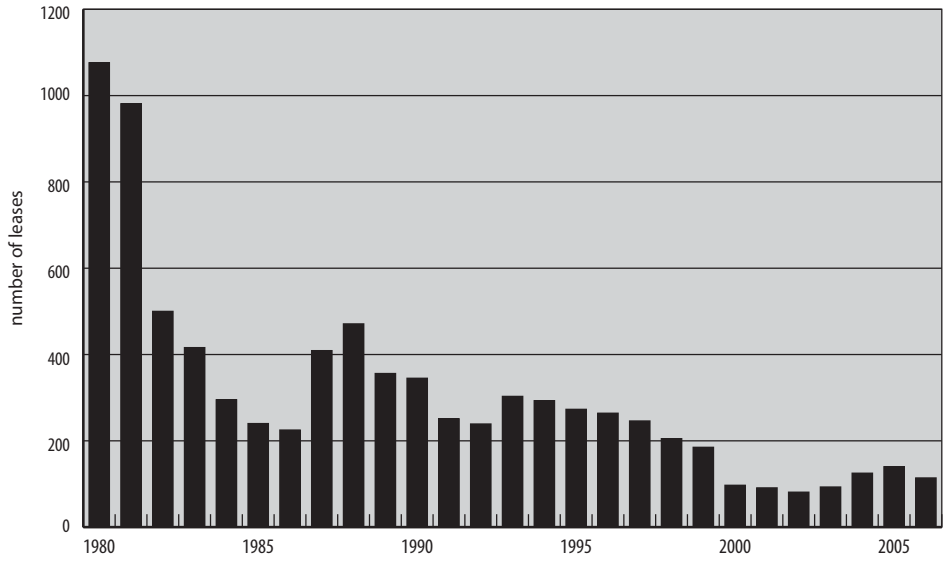


Figure 4. *Yukon placer leases in good standing, 1980–2006.*



Placer leases staked in the 2003-2006 time period showed a moderate increase, in contrast to the decline seen in previous years (Fig. 2). The highest number of leases staked was in 2004. There has been a recent trend in the industry to stake placer claims directly, rather than to initially stake placer leases and later convert them to claims, which may account for the relatively flat activity in leases relative to the dramatic increase in claim staking for the reporting period.

A moderate decrease in placer claims in good standing bottomed in 2004, and since then there has been a moderate increase, although the total amount since 1988 has remained relatively unchanged (Fig. 3).

Placer leases in good standing steadily declined in previous years with the lowest number bottoming out in 2002. Since that time, a steady increase has been seen except for a small drop in 2006 (Fig. 4).

The total amount of ground held in placer claims and leases has generally followed the trend of the US dollar world gold price, however, only a moderate increase in ground held was seen from 2003 to 2006, despite a dramatic rise in the US dollar world gold price. This moderation may be in part due to the buffering effect of an increasingly valuable Canadian dollar (Figs. 5 and 6).

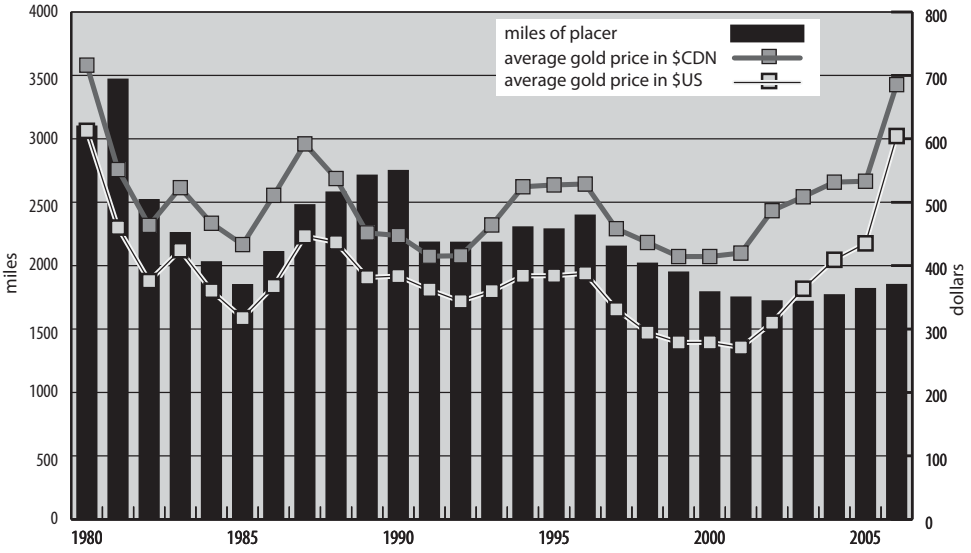


***Figure 5**. Miles of Yukon placer ground held versus world gold price in U.S. and Canadian dollars.*

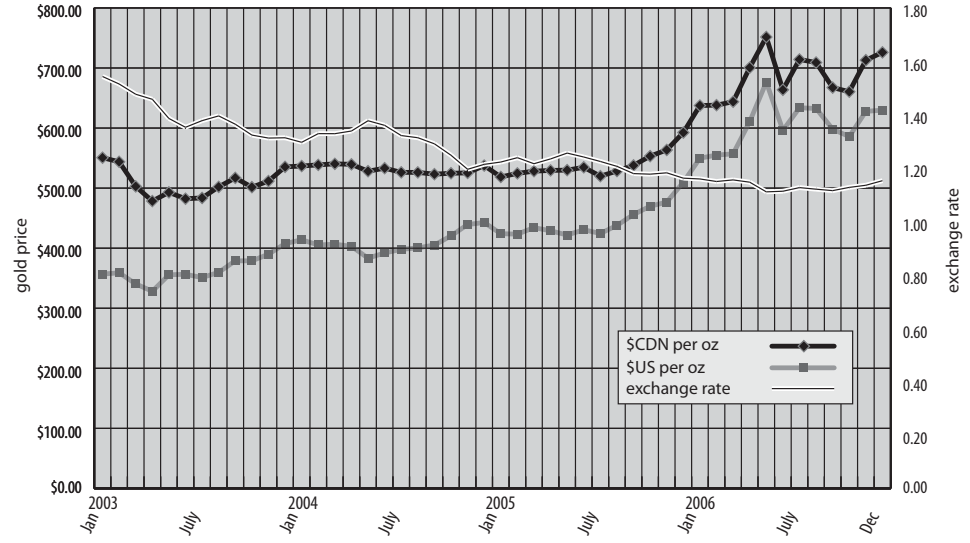


***Figure 6**. Average monthly gold price in US and Canadian dollars, and US/CDN exchange rate, 2003-2006.*

World market gold price

Throughout the reporting period, after a small initial drop, world gold prices in US dollars rose steadily. In Canadian dollars however, the gold price remained flat for much of 2004 and 2005, as the Canadian dollar rose in value against the US dollar (Fig. 6). The highest monthly average price for gold was seen in May, 2006, when the price peaked at $676 US/oz ($751 CDN). The lowest price during the reporting period was in April, 2003, when it was $328 US/oz ($478 CDN). The average world gold price from 2003 to 2006 was $455 US/oz or $566 CDN/oz.

Active and exploratory placer operations

In 2003, there were 135 active mining and 11 exploratory placer operations. Active mining operations decreased in 2004 to 118, while there were 12 exploratory operations.

A small decrease was seen in 2005, when there were 116 active mining operations, however, exploratory operations increased to 15. In 2006, the number of active mining operations again declined, totalling only 106 while exploratory operations also decreased, totalling only 9.

Yukon placer gold production

All of the following production figures are based on royalty records submitted to the Yukon Mining Recorder, Energy, Mines and Resources, Government of Yukon. Under the territorial *Placer Mining Act*, royalties must be reported and paid on Yukon placer gold if it is exported out of the Yukon.

In general, Yukon placer gold production, as reported in royalties, decreased over the reporting period, despite a steadily rising world gold price (Fig. 7).

In 2003, the placer industry produced 77,226 crude ounces (2402 kg) of gold, approximately the equivalent of 61,780 fine ounces (1922 kg) valued at $31.41 million (CDN).

In 2004, a total of 76,757 crude ounces (2387 kg) of gold were produced, the equivalent of 61,406 fine ounces (1910 kg) valued at $32.64 million (CDN).

A total of 70,322 crude ounces (2187 kg) were reported as royalties in the 2005 season, the equivalent of 56,258 fine ounces (1750 kg) valued at $29.99 million (CDN).

In 2006, reported production of gold dropped considerably to 58,294 crude ounces (1813 kg), roughly equivalent to 46,635 fine ounces (1450 kg) valued at $31.96 million (CDN).

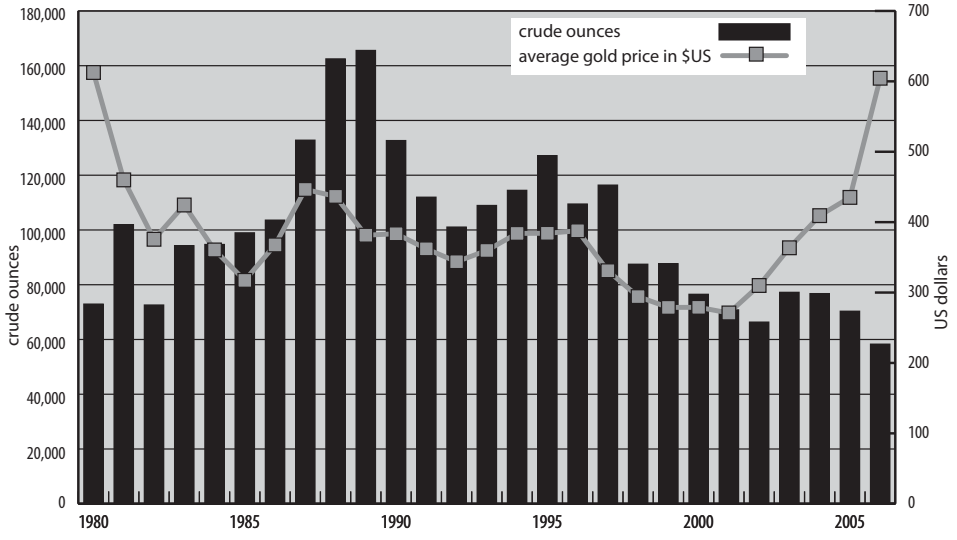


***Figure 7**. Yukon placer gold production vs US gold price, 1980-2006.*

The total Yukon placer gold production, from 2003 to 2006, for each placer district is shown on Figure 8. More than 87% of the total Yukon production came from the unglaciated districts; as in past years, the Indian River drainage was the highest producing area followed by Klondike, West Yukon (Sixtymile, Fortymile and Moosehorn Range) and Lower Stewart. The remaining 13% of placer gold came from

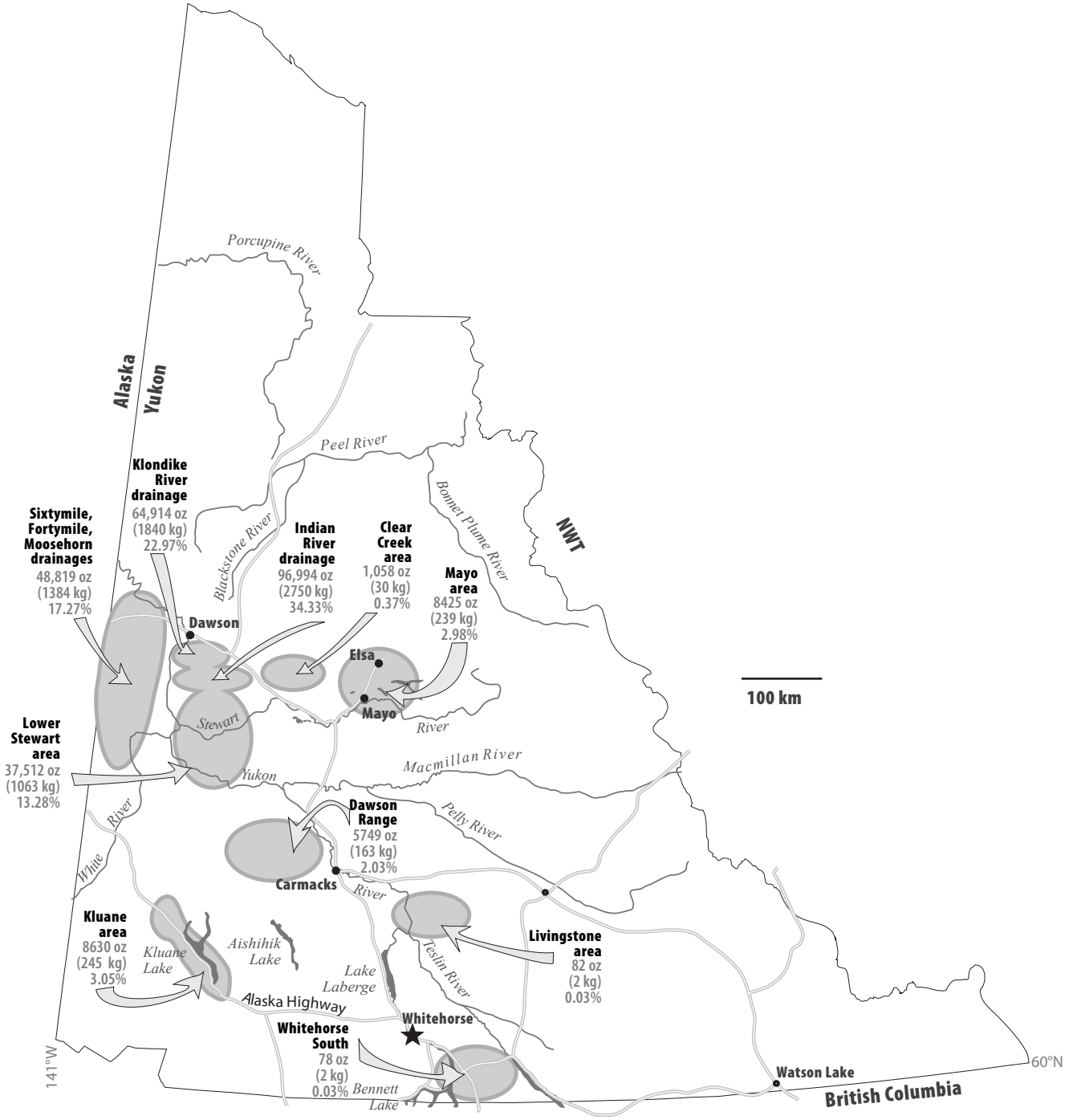


***Figure 8**. Map of Yukon placer gold production, 2003-2006. Total recorded placer gold production 2003-2006 was 282,600 crude ounces. Numbers include recorded production and percentage of Yukon production.*

the glaciated districts of Mayo, Clear Creek, Dawson Range, Kluane, Livingstone and Whitehorse South. The relative contributions of each placer district to the total Yukon production was similar for each year from 2003 to 2006, with the exception of 2006, when Indian River drainages experienced a 7% decrease, and Klondike River drainages increased their contribution by 7%. This was a result of lower production from Sulphur, Gold Run and Dominion creeks and higher production from Klondike River, Last Chance Creek and Paradise Hill.

Table 1 shows the 25 most productive streams for each year from 2003 to 2006. Dominion Creek was the dominant producer for all of the reported years, followed in various orders by Sixtymile River, Hunker, Thistle and Last Chance creeks, and Indian River.

Placer exploration

Although it is usually unreported, exploration on placer mining properties has been a part of the process for many miners since they began to mine. Traditional methods of sampling and exploration include auger, reverse circulation and churn drilling, and geophysics, including seismic surveys, ground-penetrating radar and magnetometer surveys. Trenching and bulk sampling also continue to be well used methods of testing placer ground.

An upsurge of placer exploration in 2004 was due, to a large extent, to activity by a single joint venture. Boulder Mining Corporation, a Vancouver-based company, began exploration of a prospect in the Indian River area south of Dawson City, along with Western Prospector Group. The property was discovered by long-time prospector and miner, Pete Risby, and consists of a large-volume bench deposit which lies above the modern valley of Indian River. Generalized stratigraphy consists of a Tertiary-age, 'White Channel' gold-bearing gravel on a bedrock terrace, which is in part overlain by glaciofluvial and glaciolacustrine sediments deposited during the earliest pre-Reid glaciation. Exploration on this property consisted of an extensive program of auger drilling, rotosonic drilling, ground-penetrating radar, bulk sampling and geological mapping. In 2005, two pits on the property were mined and 436 crude ounces (13 561 g) were recovered.

Klondike Star Mineral Corporation conducted a program of auger drilling and test mining in the Indian River valley in 2005 and 2006. Its target was also the White Channel gravel, as well as the underlying Cretaceous conglomerate which may be a paleoplacer deposit.

Several large mining operations relocated to new ground in 2006, the result of both favourable exploration results in new areas and diminishing or exhausted reserves in extensively mined areas. This appears to have had a negative effect on the amount of gold produced, as operators expended time, effort and money towards setting up new mines instead of sluicing gravel at established properties.

One of the exploration highlights in 2006 was the extensive development of the lower Sixtymile River between the mouth of Ten Mile Creek and the confluence of Sixtymile and Yukon rivers. In addition to testing and mining of several areas in the main valley and adjacent benches, several kilometres of road and an airstrip were constructed. This improved access is favourable for increased development and testing of nearby drainages such as Twenty Mile Creek and Thirteen Mile Creek, as well as the upstream reaches of the Sixtymile River.

The long-term health of the Yukon's placer mining industry requires that new placer gold reserves be discovered as traditional mining areas become depleted. With the application of new placer exploration and research techniques, and new ideas, additional placer gold reserves will continue to be found in non-traditional, more complex geological settings.

Table 1. *The 25 most productive drainages in Yukon, 2003-2006.*

2003 rank	Drainage	crude ounces	crude grams
1	Dominion	15,134	470 712
2	Sixtymile	10,476	325 838
3	Last Chance	9603	298 691
4	Hunker	8344	259 531
5	Thistle	4814	149 739
6	Gold Run	3637	113 125
7	Indian	3268	101 636
8	Bonanza	3109	96 696
9	Black Hills	2016	62 692
10	Sulphur	1500	46 644
11	Gladstone	1436	44 668
12	Lightning	1009	31 382
13	Scroggie	864	26 863
14	Quartz	862	26 811
15	Nansen	855	26 603
16	Henry Gulch	854	26 550
17	Kate	702	21 831
18	Hattie Gulch	503	15 643
19	Kirkman	474	14 748
20	Matson	454	14 123
21	Clear	357	11 095
22	Back	319	9908
23	Henderson	302	9383
24	Upper Bonanza	274	8531
25	Duncan	235	7324

2004 rank	Drainage	crude ounces	crude grams
1	Dominion	17,953	558 392
2	Sixtymile	12,247	380 933
3	Thistle	6166	191 796
4	Last Chance	5994	186 441
5	Hunker	4157	129 309
6	Indian	3510	109 187
7	Gold Run	2744	85 354
8	Sulphur	2058	64 004
9	Gladstone	1922	59 779
10	Black Hills	1747	54 334
11	Bonanza	1678	52 189
12	Kirkman	1263	39 272
13	Matson	1228	38 203
14	Scroggie	1185	36 849
15	Henderson	1136	35 333
16	Duncan	1112	34 577
17	Nansen	864	26 884
18	Ten Mile	828	25 751
19	Hattie Gulch	627	19 503
20	Eldorado	552	17 169
21	Owl	550	17 108
22	Lightning	538	16 734
23	Eureka	537	16 694
24	Kate	476	14 790
25	Quartz	469	14 579

2005 rank	Drainage	crude ounces	crude grams
1	Dominion	16,559	515 050
2	Sixtymile	10,436	324 609
3	Hunker	6053	188 284
4	Indian	5379	167 294
5	Thistle	5359	166 675
6	Bonanza	2998	93 247
7	Gladstone	2601	80 913
8	Gold Run	2142	66 614
9	Last Chance	1986	61 784
10	Black Hills	1469	45 679
11	Sulphur	1263	39 294
12	Scroggie	1047	32 555
13	Kirkman	1019	31 679
14	Lightning	751	23 357
15	Quartz	726	22 581
16	Matson	701	21 796
17	Kate	693	21 544
18	Henderson	680	21 148
19	Nansen	648	20 168
20	Upper Bonanza	565	17 571
21	Paradise Hill	528	16 424
22	Back	461	14 342
23	Duncan	440	13 700
24	Eureka	386	12 016
25	Mechanic	382	11 892

2006 rank	Drainage	crude ounces	crude grams
1	Dominion	10,715	333 289
2	Sixtymile	6964	216 610
3	Hunker	5684	176 786
4	Thistle	4775	148 516
5	Indian	2867	89 162
6	Last Chance	2596	80 744
7	Gold Run	2309	71 817
8	Gladstone	2202	68 498
9	Bonanza	2015	62 679
10	Paradise Hill	1586	49 343
11	Henderson	1384	43 045
12	Klondike	1145	35 602
13	Matson	1070	33 296
14	Scroggie	860	26 747
15	Quartz	807	25 111
16	Kirkman	790	24 559
17	Ten Mile	785	24 403
18	Lightning	731	22 739
19	Jackson Hill	696	21 636
20	Upper Bonanza	661	20 554
21	Sulphur	520	16 180
22	Duncan	506	15 724
23	Kate	418	12 998
24	Green Gulch	371	11 526
25	Eureka	369	11 463

Acknowledgements

Thanks are due to Catherine Welsh for her diligent compilation of many of the statistics used in this paper. The paper also benefited from a review by Diane Emond, Acting Head of Technical Services, Yukon Geological Survey. World gold prices were obtained from Kitco (www.kitco.com) and US/Canadian dollar exchange rates were obtained from Oanda (www.oanda.com).

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A new system for managing placer mining activity under the *Fisheries Act* in the Yukon

by Robert Thomson[1]
Executive Director, Yukon Placer Secretariat

The Yukon Placer Authorization (YPA) underwent a mandatory review in 2001, and the Yukon Placer Committee submitted its report to the Minister of Fisheries and Oceans (DFO) in June, 2002. In December, 2002, Minister Thibeault announced his decision to phase out the YPA and manage placer mining activity in the Yukon differently.

In May, 2003, the Yukon government, DFO and the Council of Yukon First Nations signed a Record of Agreement (RoA) that set out a process for developing a new management system for Yukon placer mining. The RoA described two management objectives: conservation and protection of fish and fish habitat supporting fisheries; and a sustainable placer mining industry. The agreement specified that the YPA must be replaced by 2007.

The Record of Agreement also contained a set of expected outcomes. The new regime must:

- be achievable and science-based
- incorporate experience and traditional knowledge
- include a schedule for implementation
- be a harmonized, efficient and timely approach, and
- be fair and understandable to industry

In May, 2005, the committees established by the RoA submitted a report entitled "An Integrated Regulatory Regime for Yukon Placer Mining" to the Minister of Fisheries and Oceans. This report was endorsed by all parties to the RoA, and the consultation and implementation phase of the process was initiated.

Why is placer mining governed by the Fisheries Act?

Placer gold deposits are generally found in valley bottoms or on riverside benches, and the methods used to mine them may affect fish and fish habitat in several ways. Under the federal *Fisheries Act*, it is an offence to deposit a deleterious substance into waters frequented by fish or to harmfully alter, disrupt or destroy fish habitat. The Minister of Fisheries and Oceans, however, may authorize the harmful alteration, disruption or destruction (HADD) under strictly specified conditions. The YPA is an Authorization under Section 35(2) of the *Fisheries Act* that applies to the entire Yukon.

Basic habitat management principles

Even where the HADD is authorized, DFO's approach to habitat management is centred on a policy of 'no net loss'. First, every effort must be made to avoid the HADD by redesigning or relocating a project, or through the application of mitigative measures. If harmful effects can be completely avoided, no HADD occurs, and there is no requirement for authorization under the *Fisheries Act*.

When the HADD is authorized, an operator is required to provide compensation. For Yukon placer mining, compensation means restoring or replacing any habitat that is compromised, in compliance with the 'no net loss' policy.

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What is the new regime?

The new system for managing Yukon placer mining under the *Fisheries Act* is based on a Risk Management Framework and a watershed health approach, and includes a set of watershed-based authorizations, habitat suitability classification maps, a compliance monitoring and enforcement program, and an 'Adaptive Management Framework'.

Risk Management Framework

The Risk Management Framework has two key components: the Pathway of Effects (PoE) and the Fish Habitat Risk Assessment Matrix (Fig. 1). The PoE is a simple model which links specific industrial activities to their potentially adverse aquatic effects. The model is employed to break the link between an activity and an effect as early in the process as possible. This is accomplished by relocating or redesigning a project, or through the application of mitigative measures. Any effects that can not be entirely eliminated through the application of mitigation measures (residual effects) are evaluated using the Fish Habitat Risk Assessment Matrix (Fig. 2).

This two-dimensional model maps the sensitivity of fish habitat against the potential severity of negative effect from a proposed activity. In general terms, habitat is categorized as rare or highly sensitive, moderately sensitive, or of low sensitivity; while severity is considered high, medium, or low. The likely regulatory response can be predicted by reading the contents of the cells where each column and row intersects. In general, the rules for activities proposed in habitats of higher sensitivity will be more restrictive than the rules for a similar activity in habitats of lower sensitivity.

For the new regime, matrices have been prepared for stream channel diversions, water acquisition, and instream works. Using these matrices, miners, environmental

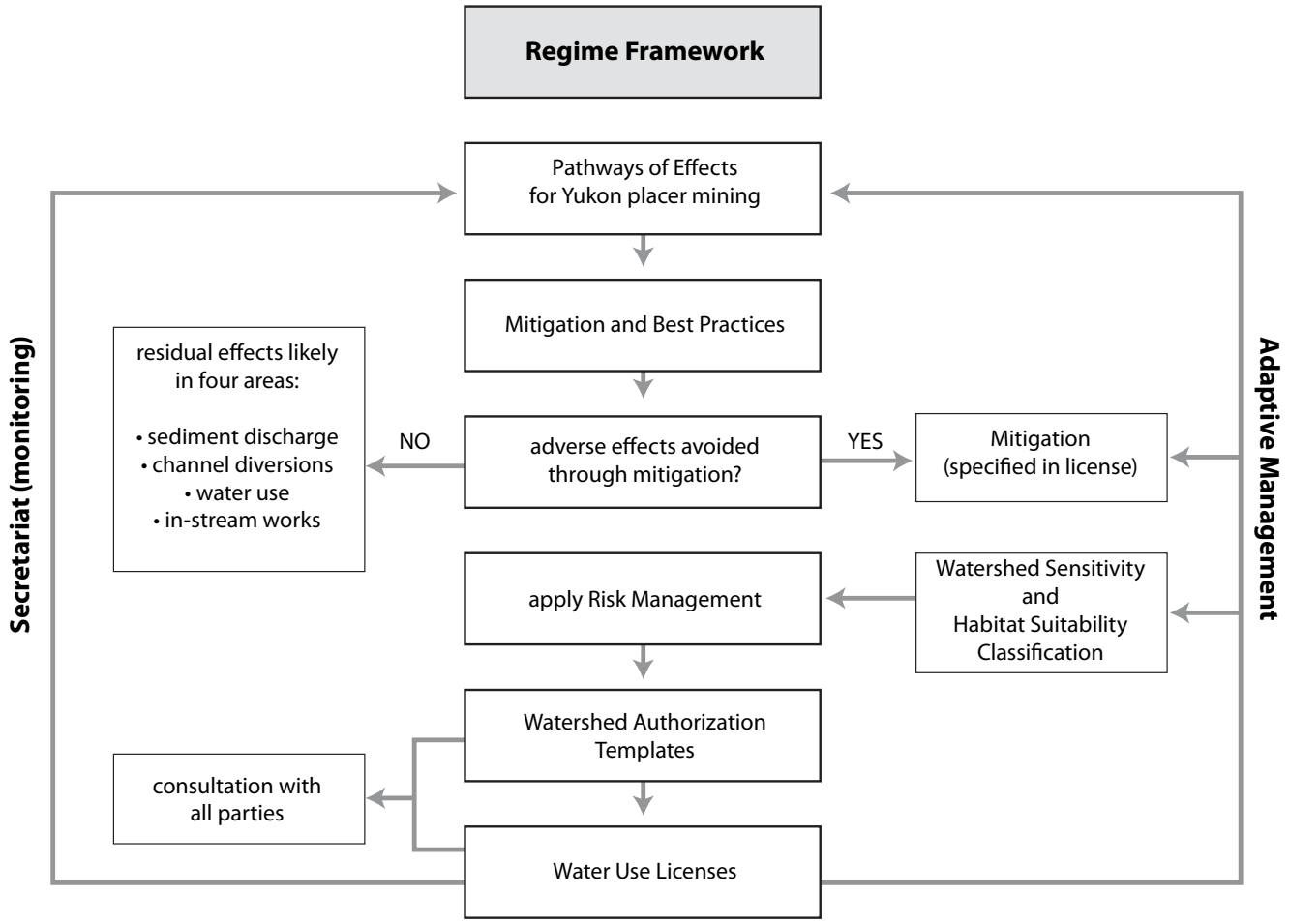

***Figure 1**. Schematic diagram of regime framework.*

assessment officers, water licensing officers, habitat technicians, inspectors, or any other interested party can determine what activities are governed by a watershed-based authorization, or what activities may require site-specific review and authorization in each watershed.

Watershed health approach

A two-step classification process has been developed to identify and assess selected environmental and ecological components of aquatic areas. The process involves the classification of both watersheds and fish habitat through the evaluation of physical, biological, environmental and cultural values.

The sensitivity of a watershed is classified into one of two possible categories, based on an assessment of both physical and biological characteristics. Watersheds are designated as either more likely, or less likely to display an ecological response to placer mining activities.

The habitat suitability designation categorizes fish habitat areas based on sensitivity and ecological significance. The resulting classification of fish habitat is structured to mesh with the Risk Management Framework. The ecological importance of habitat is identified through a habitat suitability evaluation which considers both physical and biological indicators. The output of these analyses allows for the ranking of individual fish habitat areas based on relative suitability.

Watershed-based authorizations

The YPA governs placer mining in the entire Yukon. It will be replaced by a set of separate authorizations, each governing placer mining in a specific watershed. Each authorization will contain the habitat suitability classification map for that basin; risk management decision matrices for water acquisition, diversion channels, and in-stream works; and a schedule of sediment discharge standards and water quality objectives.

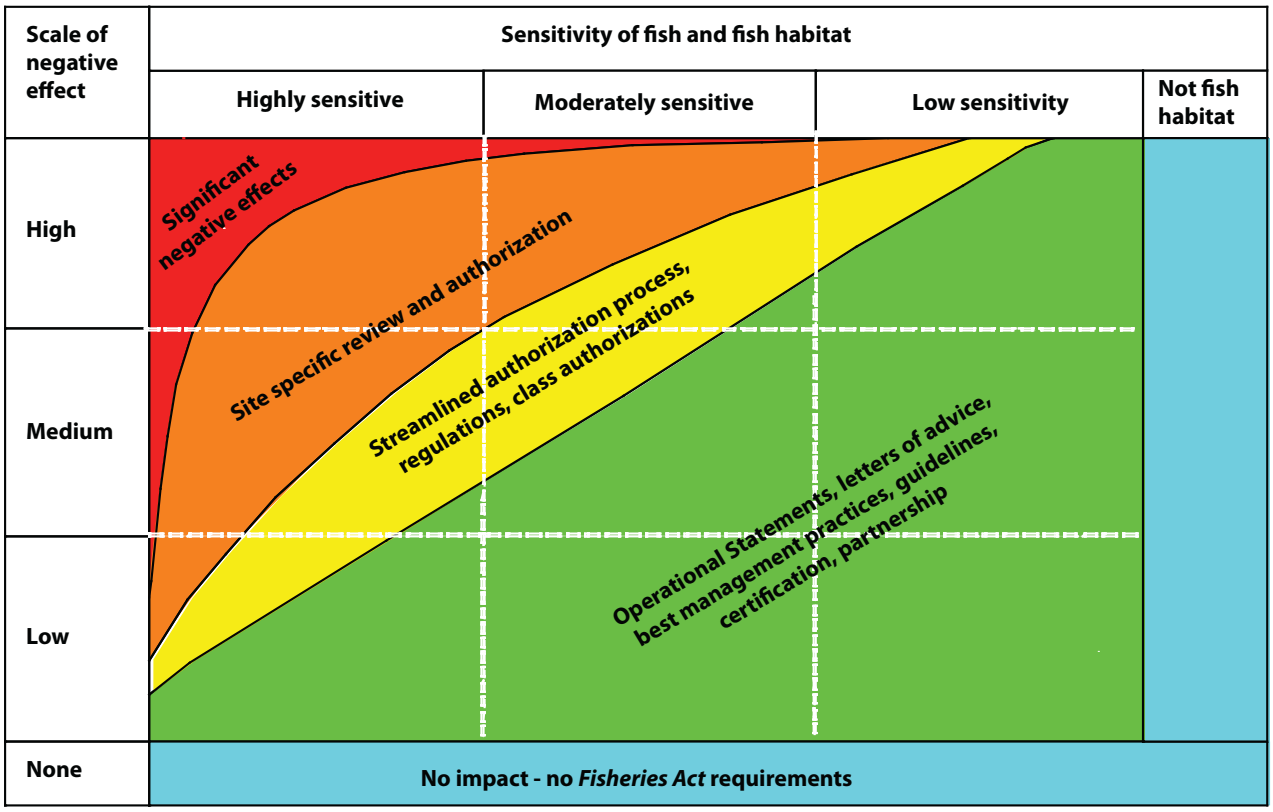

***Figure 2**. Fish Habitat Risk Assessment Matrix.*

Mining activities may be proposed in locations that were not anticipated when the watershed-based authorizations were developed, or that are not necessarily suited for some habitats. This will be evident from the authorizations, and in these cases DFO will perform a site-specific review of the proposal, and a site-specific authorization may be the management response.

Compliance monitoring and enforcement

The Yukon government and DFO have agreed to a Protocol providing a coordinated approach to habitat inspections under the federal *Fisheries Act* and inspections pursuant to the territorial *Waters Act* and *Placer Mining Act*. Under this agreement, Yukon officials have the lead for all compliance monitoring and enforcement activities related to placer mining.

The agreement also addresses the timing and frequency of inspections. In addition, the Client Services and Inspections Branch performs a yearly risk assessment exercise, and establishes an inspection plan designed to prevent or reduce the risk to persons, property or the environment posed by placer mining activity.

Adaptive Management Framework

Adaptive management has been defined as the process whereby management is initiated and then incrementally evaluated and refined [Kershner (1997), Monitoring and Adaptive Management]. Unlike traditional management, an adaptive approach recognizes uncertainty and the constraints of limited knowledge. It provides a process for using new information from monitoring and research to modify management practices. In particular, high-quality monitoring data from both successes and failures leads to improved decision-making.

Three effects-monitoring programs will be implemented in the new regime: water quality objectives monitoring; aquatic health monitoring; and economic health monitoring. Monitoring will follow strict protocols addressing sampling methodology; the location, timing and frequency of sampling; and sample analysis. Reports from the monitoring programs will be evaluated on an annual basis in combination with any newly acquired traditional knowledge, following decision rules set out in the Adaptive Management Framework. If the results are significant, recommendations will be made to the regulators that may result in changes to watershed authorizations.

In summary

The Yukon Placer Authorization will be replaced by a new system for managing Yukon placer mining under the *Fisheries Act*. The new regime employs a Risk Management Framework, a watershed health approach, and an Adaptive Management Framework to achieve its management objectives: conservation and protection of fish and fish habitat supporting fisheries; and a sustainable placer mining industry in the Yukon.

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Klondike Placer Miners' Association
Miners of the Year Awards, 2003-2006

by Mike McDougall
President, Klondike Placer Miners' Association

For more than 20 years, the Klondike Placer Miners' Association (KPMA) has honoured miners who best represent, or who have made a special contribution to, the placer mining industry. We congratulate them and their families. The following are the introductions that were offered during the presentation of these awards each year.

2006: Frank and Karen Hawker

Frank and Karen Hawker

For 2006, we honour a family of Klondike Placer miners. The Hawkers have made extraordinary contributions to the Yukon's placer industry through their volunteer efforts and on-going support of the association.

In 1991, coming for a second time to Canada, our Mr. and Mrs. Miner of the Year and their family brought with them to the Klondike new techniques and technologies from New Zealand, and a willingness to learn the quirks of the Yukon placer field. Quietly, but certainly, they have been dedicated volunteers at all KPMA events. Frank has served two terms as a director of our association.

Frank and Karen have mined in many areas of the Klondike. They are thoughtful and careful miners who bring an efficiency and thoroughness to their mining. This has allowed the Hawkers to successfully work some non-traditional areas.

As recipients of the Robert E. Leckie Reclamation Award in 2003, Frank and Karen were recognized by government and regulators for outstanding reclamation on their Sixtymile mining property. They are strong proponents of careful mine planning and progressive reclamation to reduce both costs and work required to restore the mine site to a productive area.

The Klondike Placer Miners' Association is proud to honour Frank and Karen Hawker as Mr. and Mrs. Miner 2006.

2005: Joe and Wendy Fellers

The KPMA honours Joe and Wendy Fellers for their work for the association over the last many years.

In the mid-1960s, Joe Fellers came to Dawson City, where he met Dawson City-born Wendy Hakonson. They were married in 1968. The Fellers bought out Ivor Norbeck in 1974 and mined one season on Dominion. From there, they spent a further 16 years on Sixtymile River and Big Gold and Glacier creeks. Joe and Wendy mined with their two sons, J.J. and Will. In 1990, they moved to Kirkman Creek. They have mined at Ballarat and Thistle creeks, and continue to mine on Kirkman Creek with Will, his wife, Melanie, and their two sons.

Joe and Wendy Fellers have been generous contributors to the community of Dawson City and to the mining community. Since the inception of the Yukon Quest sled dog race, they have annually donated four ounces (120 g) of placer gold as the prize for the first musher into Dawson City. They make many other donations towards their hometown activities, including for the skidoo club races, the horse show and the tow-rope on the Dawson City ski hill.

Wendy serves on the KPMA board of directors and has been instrumental in re-inventing our association's fundraising activities. The 'Mining and Dining' dinner and auction has been hugely successful for the past two years, thanks in a large part to Wendy's determination and energy.

Wendy, Joe and their family have been, and continue to be, very supportive of the KPMA members and Dawson City citizens.

2004: T. Alex Kapty

Al Kapty

This year we honour a dedicated Yukon ambassador and friend, the late T. Alex Kapty.

The Klondike Placer Miners' Association wishes to pay tribute, and honour a man who was, in every respect a Yukon ambassador. Taras Alex Kapty — Al to his friends — was the consummate committee member. As such, he dedicated a great deal of his life and energy to the promotion and improvement of the image and future of all Yukon enterprises. He was a firm believer in Yukoners, and was determined to advance the image of the Yukon entrepreneurial spirit everywhere he travelled.

The placer industry was a beneficiary of a precious portion of Al Kapty's unflagging energy and enthusiasm. Beginning in 1985, Al took his position of chair of the Implementation Review Committee (IRC) and the Yukon Placer Committee (YPC) with utmost seriousness.

Al believed in the process of consultation and was determined that all parties at the table could reach a reasonable agreement, a daunting task that occasionally failed, despite best efforts. He was a champion of balanced and just regulations for the Yukon placer industry. He never gave up.

Al's job as chair of IRC and YPC was not easy. Over almost 20 years, he chaired many long hours of negotiations that were often difficult and emotional. Throughout it all, he was the soul of diplomacy, justice and fairness. He met adversity with patience and a sense of humour. He was determined that a way could be found for all stakeholders to to reach balance, to both preserve the Yukon's environment and to advance the its placer industry. Al would not give up when lesser people would have run for cover.

Having Al at the head of the table ensured that meetings were well organized in every detail, ran on time and stuck to agendas, and that negotiations would remain on the high road. And, of course, that there would be doughnuts. He tackled dissent from all sides with patience and stoic insistence on justice, seldom giving way to emotion.

Al Kapty was the soul of integrity in all aspects of his life, and we shall be hard pressed to find his equal.

To those of us who were fortunate enough to know him personally, he has left many rich memories. Al enjoyed a good joke and sharing fine scotch with good friends. We will miss his smile, his charm, his ability to put all at ease, and his genuine interest in everything about those around him. Al would put aside his own problems and ask, with sincere concern, about ours. Even during his last days in hospital, Al put aside his pain and asked with keen interest about the negotiations for the recovery of the Yukon Placer Authorization. Al gave generously of himself to so many people in so many ways.

And so here we are, 10 months after Al left us, voicing our pleasure at having known him, our honour at having worked with him, and our regret at having lost him.

Thus, the Klondike Placer Miners' Association and the Yukon placer industry wish to recognize the efforts of the late T. Alex Kapty in his pursuit of fairness and justice. His outstanding contributions to the people of the Yukon will be greatly missed by his many friends. In recognition of his many achievements, we are honouring T. Alex Kapty as the Klondike Placer Miners' Association 2004 Miner of the Year.

2003: Tara Christie

Tara Christie

The Klondike Placer Miners' Association is pleased to announce Ms. Miner for 2003 — Tara Christie.

Tara is a working partner in Gimlex Gold Mines, with her parents, Jim and Dagmar Christie, and her brother, Sheamus. She holds two degrees from the University of British Columbia, a Bachelor of Applied Science in Geological Engineering, and a Master's degree in Geological Engineering with a specialty in geotechnical and geochemistry. She maintained honours throughout her post-secondary career, winning over 30 scholarships and prizes. She graduated at the top of her class in geological engineering and was awarded the Dr. Aaro E. Aho Gold Medal and honourarium, and the Association of Professional Engineers and Geoscientists' award for demonstrating great promise.

In 2001, Tara became president of the Klondike Placer Miners' Association — a volunteer position — to help guide the mandated review of the Yukon Placer Authorization (YPA). She showed an amazing capacity for taking on any challenge with remarkable optimism. Tara courageously carried the message of responsible placer mining to many Yukon communities and First Nations governments, in the hopes of developing lasting working relationships with the industry. She completed the review of the YPA and, against all odds, helped forge a consensus with the very divergent groups on the Yukon Placer Committee.

When the Minister of Fisheries and Oceans Canada announced the decision to withdraw the YPA on December 16, 2002, the whole placer industry was thrown into a tailspin. Tara's optimism and unfailing faith in reason and the good will of Canadians wouldn't let her give up. She threw herself into the challenge of injecting common sense into politicians and the public. She travelled tirelessly between Ottawa, Vancouver, Whitehorse, Dawson City and the family's mine on Dominion Creek, advocating the message of responsible placer mining balanced with sound environmental protection practices.

Tara is adept at all aspects of placer mining and exploration, and is as comfortable at the keyboard of a computer as she is at the controls of an excavator. She has been working alongside her family for most of her life: planning and running exploration programs, mapping, scheduling, managing crews and operating mining equipment. Tara has proven herself to be a brilliant and determined negotiator and lobbyist. She has shown patience, diligence and humour in the face of overwhelming odds. Throughout the last year, Tara Christie has done the impossible: she has put the Klondike on the map in Ottawa. The KPMA and the placer mining community owe Tara a debt of gratitude.

We are proud to honour Tara M. Christie, B. A.Sc., M. A.Sc., as Miner of the Year.

Miners of the Year for 1981 to 2006

1981: Mary and Ole Lunde
1982: Margaret Bremner
1983: George and Agnes Shaw
1984: Lorne and Paula Ross
1985: Edward Bleiler
1986: Ian Bremner
1987: Art and Noreen Sailor
1988: Marion Schmidt
1989: Norman and Sandra Ross
1990: Lowell and Lyn Bleiler
1991: Alex and Mary Seely
1992: Murray and Donna Crockett
1993: Frank and Bonnie Taylor
1994: Ken and Joan Tatlow
1995: Stuart and Judy Schmidt
1996: Pete and Ruth-Ann Risby
1997: Gordon and Brenda Caley
1998: Peter and Margaret Erickson
1999: Mike and Kim McDougall
2000: Bruce and Elaine Cowan
2001: Dr. James and Dagmar Christie
2002: Randy and Laura Clarkson
2003: Tara Christie
2004: T. Alex Kapty
2005: Wendy and Joe Fellers
2006: Frank and Karen Hawker

Robert E. Leckie Awards for Outstanding Reclamation Practices

by Judy St. Amand
Mineral Resources Branch, Energy, Mines and Resources

Robert Leckie

The Robert E. Leckie Awards were established in 1999 by the Mineral Resources Directorate of Indian and Northern Affairs Canada (DIAND) to recognize outstanding reclamation practices on Quartz and Placer claims in Yukon. The award is named after the late Robert (Bob) Leckie, a mining inspector with DIAND, who passed away in November, 1999. Bob was a strong advocate of both the mining industry and the environment. Following devolution of Mineral Resources Directorate in April, 2003, the responsibility for bestowing the Leckie awards was transferred to the Yukon Department of Energy Mines and Resources, Mineral Resources Branch.

The awards are given out yearly at the Yukon Geoscience Forum and results are also published in the Yukon Exploration and Geology annual reports. This designation is granted to mining operators who take the initiative to carry out exceptional reclamation and site restoration efforts, such as adding features to the land that notably enhance the area and local community, or by returning mined land to a condition that is structurally sound and also aesthetically pleasing.

2003 award presented to Frank and Karen Hawker, Sixtymile River

Frank and Karen Hawker have been mining in the Sixtymile River area near Dawson since 1993, and as the Hawkers consider site restoration part of the mining process, they have consistently surpassed reclamation requirements (see also Miners of the Year Awards, 2006, McDougall, this volume).

Mining this previously dredged area brought organic materials, which were previously buried under coarser material, back to the surface to be redistributed over recontoured tailings piles to promote natural regeneration. While contouring, the area was scarified to encourage retention of water and airborne seeds. The mined area supports rapid natural revegetation and has been converted from an almost barren landscape of dredge tailings and old abandoned cuts to vegetated rolling hills.

Frank and Karen Hawker's operation on a bench of the Sixtymile River in 2003. Reclaimed land and a stabilized stream channel are visible in the lower part of the photo.

2004 award presented to John Alton and Martin Knutson, Henry Gulch Placers, Last Chance Creek

Henry Gulch Placers' mining operation on Last Chance Creek in 2004, with contoured and reclaimed hydraulic tailings visible in the background.

John Alton and Martin Knutson have been mining together for 22 years through the Klondike area and have consistently maintained high standards of reclamation.

In July 2000, Alton and Knutson relocated operations to Last Chance Creek — a site which has been repeatedly disturbed since 1896. Here, White Channel gravels had been hydraulically mined from the hill above, and formed a fan up to 18 m deep in some areas. Previous mining on the right-limit hillside resulted in a slump falling into Last Chance Creek, and old drains, still in place, posed a safety hazard. The creek was completely destabilized by these effects and as such contributed to sedimentation in Hunker Creek.

To remediate this, massive amounts of White Channel gravels were moved to the left limit to form low-relief rolling hills, and covered with overburden to ensure swift natural revegetation. Old mine pits were reclaimed and stabilized, and a pond was built to catch material from old workings above the site to further protect the creek. The old drains have been removed, the area restored and the creek has been stabilized. As well, a new, safer road system is in place. Reclamation efforts on Last Chance Creek illustrate the diligence and efforts of Knutson and Alton in restoring old mine works successfully.

2005 award presented to Gimlex Enterprises Ltd., Dominion Creek

A view of Gimlex Enterprises Ltd.'s Dominion Creek property, after site reclamation and restoration in 2005.

Dr. Jim Christie and family operated as Gimlex Enterprises Ltd. on Dominion Creek in the Klondike area from 1996 until 2004, mining a large portion of the wide valley bottom, a short distance upstream from the confluence with Sulphur Creek. Reclamation works included sloping old mining cuts to lower grades, creating natural-looking ponds, and promoting revegetation on slopes adjacent to the ponds. These ponds are already providing seasonal waterfowl habitat. Tailing piles and waste piles were recontoured and stockpiled overburden was spread through the area, which resulted in rapid natural revegetation.

In addition to the seasonal reclamation work done during the term of their water license, a considerable amount of work was done to create a system of stable ditches. These provide ongoing control of surface drainage and prevent erosion of reclaimed areas. Gimlex Enterprises is a great model of reliable reclamation practices in the placer mining industry.

2006 award presented to 365334 Alberta Ltd. (A-1 Cats), Dominion Creek

365334 Alberta Limited, operating as A-1 Cats, has been mining on Dominion Creek in the Dawson Mining district since 2002. A-1 Cats focuses on addressing reclamation on an ongoing basis and, as such, works are completed in a timely, economical and efficient manner.

The use of organic material has enhanced revegetation and although seeding is not required in areas where regeneration naturally occurs, A-1 Cats has shown promising results in seeding trials. A-1 Cats' efforts in restoring previous disturbances have resulted in smoother topography and have aided in stabilizing the site.

The entire property has been reclaimed to 2006 standards and A-1 Cats' Best Management Practices have become a credit to the placer mining industry.

Aerial view of A-1 Cats' Dominion Creek property in 2006. Contoured tailings and reclaimed areas adjacent to active mining show signs of regrowth of vegetation.

Historical notes

by George W. Gilbert[1]

G.W. Gilbert

Few metals occur naturally. Gold and copper are the major exceptions. Prehistoric people likely found these elements as anomalous particles in stream beds. Although copper subsequently proved to be of some practical value for arrowheads, knives, etc., gold, being extremely soft, had only an ornamental value. It was, nevertheless, apparently highly prized, judging from its appearance in ancient graves and the fact that it was mined. Placer mining was well established by 3800 B.C. as shown by drawings on Egyptian monuments of that era. It seems that placer mining, which has been an industry for some six thousand years, shows no signs of dying out.

One of the most famous legends involving gold is Homer's story of Jason and the Argonauts who, at about 1200 B.C. decided to launch an expedition to the southeast shore of the Black Sea (present-day northeast Turkey or southwest Russia) and raid the placer miners there. This enterprise in search of the "Golden Fleece" probably referred to the fact that the miners, having no astroturf or coco-matting, used sheepskins in the bottom of their sluices to collect fine gold. Our current word "to fleece" may have its origin from this Greek adventure in the context of "to strip of money or belongings; to swindle." In any event, the fact that Jason and his merry men undertook such a perilous voyage indicates the intrinsic value of gold at that time. It was undoubtedly used as a medium of exchange (as were cows, donkeys, campfire tripods, weapons, tools, slaves and seashells).

Coins did not appear until 800 B.C., when Croesus, King of Lydia (northwest Turkey) issued bean-shaped lumps of gold with an acceptable royal symbol stamped upon them. These have recently been assayed and found to be about 75% gold and 25% silver, which suggests their placer gold origin. It was not until about 500 B.C. that Pheidon, king of present-day southeast Greece, minted disc-shaped coins, and is thus considered the inventor of modern coinage. (There is some evidence that the Chinese were experimenting with square copper or bronze coins about this time.)

About 350 B.C. in Rome, the mediums of exchange were primarily cows or donkeys. (Our word "pecuniary" is derived from the Latin "pecus," meaning "head of cattle.") The king of the day, Servius Tullius, decided to try the Greek's system of coinage. He had a coin minted from bronze. It weighed about a pound and represented the value of one donkey. It was only marginally handier than dragging the original donkey to the supermarket. The coin was originally called an "ass" and later a "libra" (pound). For the benefit of shoppers who only wanted a pack of cigarettes, the libra was subsequently designed so that it could be broken into segments: halves, thirds, quarters, sixths and twelfths. Each piece had a Latin name but the only one which has survived to this day is the twelfth part — the "uncia" (ounce).

The bronze coins were understandably not too popular. It is unlikely that people "flipped" one-pound coins to see who would pay for lunch. Therefore, a silver coin was minted. It had a value of about 12 pounds of bronze and was called a "denarius." Sometime later, a gold coin was struck, roughly equivalent to 20 denarii. This was

[1]*This previously unpublished article was written many years ago by long-time Yukoner and historian George W. Gilbert. Though Gilbert retired as Chief Mining Inspector of the Department of Indian Affairs and Northern Development in 1989, he maintains an active interest in the placer industry.*

named the "solidus" or "aureus." Both of these coins became very popular and, beginning with the expansion of the Roman Empire about 100 B.C., were used as currency throughout most of Europe for some centuries.

In the German–Austrian regions, where most of Europe's gold and silver were mined at the time, the inhabitants changed the names of the coins: the denarius became the "pfennig," the solidus the "schilling." The corruption of "pfennig" to "penny" followed. (Much later, the English system of currency used the abbreviations "l" for pound, "s" for solidus or schilling, and "d" for the original denarius.)

About 780 A.D., Charlemagne, emperor of the so-called "Holy Roman Empire," instructed his mint of Troyes in France to cut one libra (pound) of silver into 240 pennies (he called them "deniers"), i.e., 20 per ounce ("uncia"). The weight of each became a measure of weight — the "pennyweight." In addition, a small weight had been around since antiquity: the "grain." This was defined as "the weight of a grain of wheat." It was a weight that varied by such factors as the rainfall and the fertility of the ground the wheat was grown in. Charlemagne redefined the grain as 1/24th of a pennyweight. After 1200 years, this system of measurement is still in use today as "Troy" (Troyes) weight. However, the Troy pound has disappeared since it was made illegal by Britain in 1879.

Charlemagne's major contribution to measurements was in defining the grain, which is the same weight today in all three systems of weights: Troy, avoirdupois and apothecary. The Troy ounce of 480 grains proved to be somewhat heavier than the Roman "uncia" or the German "untzen." Archeological research has shown that these measured 412.2 grains and 451.2 grains, respectively.

Apparently, the gold solidus and the silver denarius of the Romans were about the same weight, indicating that they considered gold to be 20 times more valuable than silver. Around 1792, the U.S. dollar was defined as 24.75 grains of silver: a ratio of 15 to 1. It follows that an ounce of gold in 1792 was worth $19.39 and silver $1.29 U.S.

In 1837, the U.S. dollar was redefined as 25.8 grains of 900 fine gold which made the price per ounce $20.672 U.S. This price remained in effect until January 31, 1934, when the U.S. dollar was again redefined as 15 5/21 grains of 900 fine gold. This odd weight was necessary to bring the price to $35.000 U.S. per ounce.

In the late 1960s the dollar was no longer tied to gold and the price has since reflected supply and demand.

If the value of the original libra was actually the price of one donkey, then gold was extremely valuable in Roman times and/or donkeys were extremely cheap. A few calculations will show that an ounce of gold would buy about 1500 donkeys. Finning Tractor, among others, is probably quite relieved that this situation no longer exists.

Yukon's Gold Legacy: Richness of the Klondike

From Yukon's Gold Legacy, Written by Lee Olynyk, for MacBride Museum, www.macbridemuseum.com, 1995. Used with permission.

Although the Klondike was exceeded by other gold camps throughout the world in total production, portions of it were reputed to be the richest worldwide per square foot of area. Notably rich were portions of Bonanza and Eldorado creeks.

Reporting on the wealth of the Bonanza Creek gravels, R.G. McConnell commented in 1905:

> *Some of these 500 foot claims have yielded upwards of half a million dollars each or at a rate of $I,000 per running foot of valley (625 ounces per foot or 31,250 ounces per claim length at $16 per ounce). A fraction at the mouth of Little Skookum Gulch, about 80 feet in length, commonly known as Dick Lowe's fraction, is reported to have yielded over $300,000 (18,750 ounces at $16 per ounce or 234 ounces per running foot).*

Commenting on the richness of Eldorado Creek, R.G. McConnell states:

> *Eldorado Creek has proven the richest creek in the Klondike district and one of the greatest placer creeks ever discovered. The first thirty-seven claims (from the mouth up), with a few intervening fractions, have yielded gold of an estimated value of between twenty and twenty-five million dollars and several millions will be added to this amount before the creek is exhausted. No. 17, at the mouth of French Gulch, reputed to be the richest claim in the whole district, had yielded nearly a million and a half dollars worth of gold (100,000 ounces at $15 per ounce).*

G.W. Gilbert, in "A Brief History of Placer Mining in the Yukon," commenting on the tremendous wealth of the creeks, stated:

> *Bonanza and Eldorado proved to be two of the richest creeks ever found. For example, Eldorado No. 17, a 425 foot claim, yielded 125,000 ounces (4.3 tons of gold worth $90,000,000 at 1980 prices). Lowe's 86 foot fraction just below Grand Forks produced more than 400 ounces for each foot of creek and further gold was recovered later by dredge.*

Probably nothing emphasized the extraordinary richness of the Klondike like the heart pounding effect produced by the sight of an exceedingly rich pan. Andrew Baird, "Sixty Years on the Klondike," commented:

> *In the early days I saw several pans taken from the drifts which yielded approximately $1,000. The first of these, which came under my personal observation, was taken from No. 2A below Discovery on Bonanza, Dick Lowe's famous fraction, possibly the richest piece of placer ground on the North American continent. It was panned by Hugh Coffee and yielded 64 ounces, which valued at $16 an ounce, the then prevailing price of gold in Yukon, netted slightly more than $1,000.*

A variety of gold nuggets are shown here from Eldorado Creek. Alison Hartley (student assistant, 1999) smiling in the background.

Mr. Baird goes on further to describe several other pans yielding $1,000 each, of which he had personal knowledge.

> *The "Dawson Daily News" 1899 ran daily accounts of the Klondike's remarkable wealth. One story reports striking ground yielding pans of 30, 54, and 62 ounces respectively. Another account told of a miner referred to as Caribou Bill collapsing his rocker canvas under the weight of 116 troy ounces (8 lb.) after only 3 hours of rocking. Another 6 hours of rocking yielded a further 181 troy ounces. ("Dawson Daily News," August 5, 1899)*

Early writers commonly agree that while working the virgin ground, gold could be seen throughout the deposit, with the naked eye. This has been verified by present day miners who have encountered a patch of rich ground missed, or purposely left as a support pillar, by underground miners. One such pillar was found in the early 1980s near the mouth of Mint gulch, a tributary to Hunker Creek. Upon its discovery, the two partners shut off their machines, opened a case of beer, and proceeded to pan out 85 ounces that hot summer afternoon. Many 1-ounce pans were had and gold could be seen throughout. (Story can be verified by Herman Liedke or John Erickson, the discoverers.)

Mike Olynyk, while pushing pay gravels on Henderson Creek, spotted a cluster of nuggets from the seat of his D8 dozer. Joined by fellow workers, he hand picked several ounces from a small area the size of a washtub. Mike reports that it appeared as if a person had taken a jar of gold and tossed it on the ground.

George Gilbert tells a story of a single miner who, decades ago, encountered a visible run of gold on Gold Run Creek and promptly cleaned up 4000 ounces with modest-sized equipment.

The author has personally taken a 3.5 pennyweight pan left from underground workings on 15 Pup, a tributary of Last Chance Creek. Rubbing his finger along the gravel, gold became visible every inch or so. This pan in 1995 represented $65 (Ed. note: at $530 Cdn per ounce of gold).

A great story of extraordinarily rich ground (discovered at the mouth of Glacier Creek, Sixty Mile) that started a stampede from Clinton Creek can still be gotten from one of the property owners, Lorenzo Grimard. Evidently, it took a bulldozer to clear the cut of Sunday "gold-pickers."

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Revisiting a resource: Yukon's "technogenic" placer deposits

by William LeBarge
Yukon Geological Survey

While mining in non-traditional areas of Yukon is increasing, exploration and mining of placer gold in historic placer regions continues. In order to facilitate this, increasingly innovative mining and exploration methods must be employed.

Using a combination of historic and modern exploration tools, it is possible to delineate placer gold deposits in areas which were previously thought to be exhausted of reserves. These placer settings are sometimes referred to as 'technogenic', a term used to describe original gravel remnants and gold-bearing tailings which formed as a consequence of inefficient technology or poor mining techniques. These deposits may now be exploited using modern exploration and mining methods.

Most workers involved in the study and mining of placer deposits know that characterizing the grade and overall value of placer deposits is a difficult and sometimes impossible task. With this in mind, the figures used in the following text are best estimates based on a combination of documented records (i.e., from Yukon Consolidated Gold Company records), Yukon Geological Survey sampling, and anecdotal reports from miners and other workers in the goldfields (Yukon Placer Database, LeBarge [comp.], 2007). The author welcomes any and all information on the grade and value of Yukon placer deposits to improve these figures.

Types of technogenic placer deposits

Although they do not comprise a large component of the existing placer reserves in the Yukon, there are several examples of technogenic placer deposits, mainly situated in the historic Klondike and Sixtymile placer mining areas (Fig. 1). There are five main types of resources which can be classified according to their previous mining activity: 1) hand-mined creeks and gulches, 2) hydraulically mined areas, 3) dredged alluvial plains, 4) mechanically mined areas, and 5) combinations of one or more of the above types.

Hand-mined placer deposits

In creeks and gulches which were once hand-mined (mostly by Klondike gold rush miners), the gravels have variable sedimentological characteristics, but are commonly pebble-cobble gravels with little clay. Previous miners may have had problems recovering gold because of permafrost, the presence of large boulders, or undulating bedrock conditions. In addition, parts of the original stream channel may have been obscured by bedrock reefs and colluvium. Original grades were usually high (consistent grades of more than an ounce per cubic yard [>30 g/m^3] and sometimes much higher; see "Richness of Yukon Gold," Olynyk, this volume), and the volume was characteristically low. Grades in tailings are variable but can range form 0.010 to 0.125 oz/yd^3 (0.35 to 4 g/m^3). Modern access is characteristically good, and today's miners can use hydraulic mining or mechanized mining methods to recover much of the remaining placer gold (Fig. 2).

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Hydraulically mined areas

Hydraulically mined areas are those where human-made alluvial fans were created as a result of hydraulic monitoring (washing) of terrace gravels, such as the historic White Channel gravels (Fig. 3). These deposits are typically cobble-boulder gravel with the clay matrix mainly removed through the previous washing process. Originally the gold grades were variable, from low to high (0.010 to 0.30 oz/yd^3; 0.35 to 10 g/m^3) and locally very high, with large volumes. There remains in some areas low to moderate

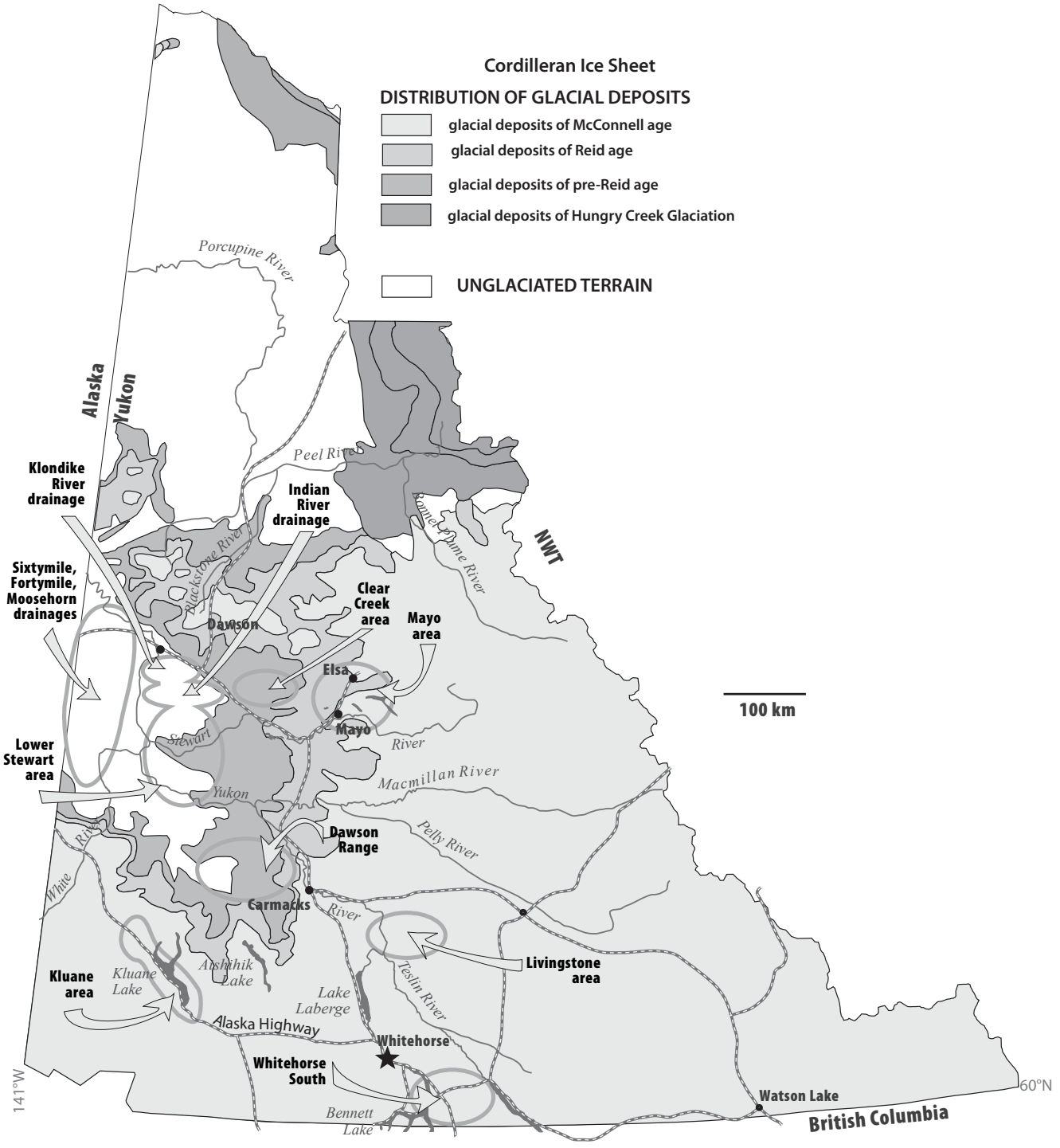

***Figure 1**. Technogenic placer deposits occur in each of the ten major placer mining areas in the Yukon. Technogenic placers which were hand-mined, hydraulically mined and dredged tend to occur in the unglaciated, traditionally mined areas, while mechanically mined technogenic placers are more common in glaciated, non-traditional mining areas. Glacial limits are modified after Duk-Rodkin (1999).*

***Figure 2**. Buried channels of virgin gravel are occasionally discovered, having been initially obscured by bedrock reefs such as here on Bonanza Creek. Old timers often mined such high-grade material that even their tailings contain economic gold at today's prices.*

***Figure 3**. In the Klondike, human-made alluvial fans were often created during hydraulic mining of the high-level White Channel Gravel terraces, such as here on Last Chance Creek. In addition to containing sporadic, locally economic, concentrations of gold, these hydraulic fans locally buried virgin alluvial gravels and old timers' workings containing economic gold values.*

***Figure 4**. Dredge tailings are easily recognized by the inverted stratigraphy and unusually well-developed planar tabular cross-stratification. Gold values in these tailings are rarely economic, however, combined with pockets of virgin gravel in undulating bedrock, there may be a mineable technogenic placer deposit.*

grades in tailings (0.005 to 0.015 oz/yd^3; 0.15 to 0.5 g/m^3). Advantages to this deposit for modern miners include the absence of permafrost and the lack of overburden, as well as excellent road access.

Dredged alluvial plains

Dredged alluvial plains are areas that have had historic large-scale dredging, mainly in the Klondike, but also in other parts of the Yukon such as Mayo and Clear Creek. Sandy cobble-pebble gravels are typical and the original stratigraphy is inverted – bedrock is overlain by silt and then gravel (Figs. 4 and 5). The original grades were variable but generally moderate (0.01 oz/yd^3; 0.35 g/m^3) and the volume was high, however, in the tailings the gold grades are typically low to very low. Advantages for modern mining are the fact that previously frozen ground is now thawed and there is little to no overburden. Modern miners can take advantage of the good road access and can use large-scale mechanized stripping and mining methods.

Mechanically mined placer deposits

With the advent of modern mechanized mining in the mid 20th century, several new placer mining areas began to be exploited in the Yukon. Several of these areas were mined with equipment that was too small to deal with the size of the boulders or the presence of hard permafrost. Mechanically mined areas with remnant reserves are commonly boulder-cobble gravels, which were clay-rich originally, and may still be to some extent. The grades were originally moderate to high (0.01 to 0.20 oz/yd^3; 0.35 to 7 g/m^3), with a moderate to high gravel volume. Tailings contain generally low to moderate grades that are somewhat unpredictable. Deposits are discontinuously thawed and, in places, overburden complicates mining; in addition, access may be limited. Modern miners use larger equipment and more efficient processing plants to overcome the problems that were faced by previous miners (Fig. 6).

***Figure 5**. On Sixtymile River, dredges were unable to completely clean the undulating bedrock surface. Pockets of economic virgin gravel were left behind and buried under dredge tailings, waiting to be re-exposed by today's placer miners.*

***Figure 6**. On Fourth of July Creek, economic placer gravels have been found beneath previously mined gravel layers. Newer mining technologies such as floating trommel wash plants have helped to overcome past difficulties such as mine pit drainage problems.*

Combination technogenic placer deposits

Several technogenic placer deposits in the Yukon can be characterized as combination areas. These are deposits where one or more of the other types of technogenic placer deposits are found, along with pockets, pillars and channels of original gold-bearing gravels (Figs. 7, 8 and 9). These include 1) previously undiscovered channels obscured by bedrock remnants; 2) original gold-bearing gravels buried in hydraulic tailings; 3) pillars of original gravel covered by dredge tailings; 4) pockets of original gravel in undulating bedrock; 5) remnants of original gravels on valley sides; 6) unmined gold-bearing gravels beneath previously mined pay layers, and 7) gold-bearing gravels which lie beneath the water table (Fig. 7).

Conclusions

In many areas of Yukon, previous mining in traditional areas has not recovered all of the placer gold which originally lay within the gravels and bedrock. Using a combination of research, modern exploration techniques and modern mining methods, it is possible to revisit many of these deposits and economically recover placer gold. Due to several factors which include good road access, thawed ground and little or no overburden, these technogenic deposits in the short term may be more profitable than developing new placer deposits in new, non-traditional areas.

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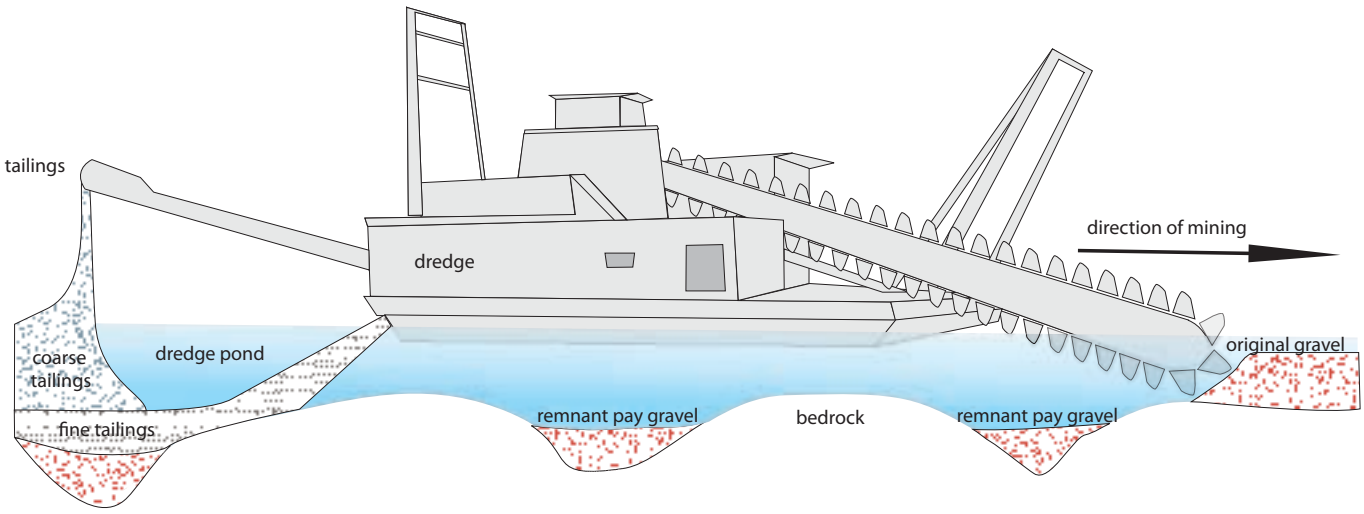

Figure 7*. The making of a "technogenic" placer deposit. Dredges sometimes lacked the capability to scour all of the gravel from a bedrock surface that was undulating, frozen, unusually hard or fractured. Pockets of virgin gravel would be left and subsequently buried by fine and coarse dredge tailings. If these pockets are sufficiently rich, it may be economic to re-excavate and mine these deposits with modern mechanized equipment.*

Figure 8. *Reefs and berms of virgin gravel are often left behind as these barriers are sometimes required to maintain pond integrity. The photo above illustrates how these berms are created during the dredging process.*

Figure 9. *This photo shows a virgin gravel remnant which was left behind by previous dredge mining. These remnants commonly contain high grades of placer gold worth unearthing from beneath former dredge tailings and settling ponds.*

Yukon placer diamonds: Possible sources

by Yana Fedortchouk
Yukon Geological Survey

Diamond placer occurrences are historically reported in Yukon and in the adjacent areas of British Columbia and Alaska (Casselman and Harris, 2002) and are generally recovered during clean-ups on placer gold mining operations. While three stones from Crooked Creek in Alaska have been scientifically confirmed and described (Forbes *et al.*, 1987), the same cannot be said of the Yukon diamond placer occurrences. In the Yukon, reports of a diamond discovery initiated sampling for diamond-indicator minerals that subsequently returned neither diamonds nor their indicators (chrome-diopside, pyrope-garnet, picro-ilmenite). Furthermore, none of the known ultramafic rocks, diatremes of ultramafic-alkaline volcanic rocks nor high-pressure eclogites in Yukon and Alaska have been proven to be diamond-bearing. Alluvial diamonds are present along the West Coast in Oregon and California (Hausel, 1994) and exploration of diamond placers in California produced several hundred stones, including high-quality gems. However, all of these aforementioned occurrences lack diamond-indicator minerals common for cratonic diamond deposits, and no igneous diamond-bearing rocks are known in the area. Therefore, the placer occurrence of diamonds in Yukon as well the Pacific Coast remains enigmatic.

Conventional and unconventional diamond sources

Most economic diamond deposits in the world have been identified on Archean cratons, the oldest and most stable parts of the continents. At the base of these continental nucleuses, in a high-pressure region (approximately 200 km deep), temperatures are lower than in the younger mobile belts and this creates an environment allowing diamonds to be stable. Kimberlites and other deep-seated magmas which originate in the mantle ascend to the Earth's surface and provide transportation for diamonds and other deep mantle minerals (such as diamond-indicator minerals). The mantle outside of the cratonic areas is believed to be too hot to contain diamonds.

Geologically, Yukon is located outside of the North American craton in a mobile belt with Paleozoic and Mesozoic tectonic activity. It is, therefore, not in a conventional setting for diamond deposits, in contrast to the Northwest Territories. Glacial transportation of diamonds from the North American craton into Yukon is generally not supported, as there were no glaciations in many of the areas of Yukon with reported diamond occurrences (Canil *et al.*, 2005, and references therein). Another possibility explaining the presence of diamonds in the Yukon is the preservation of diamondiferous fragments of the cratonic keel in the Cordillerian lithospheric mantle sampled by kimberlites and other deep-seated magmas (Simandl, 2004). However, this is not probable due to the absence of igneous diamond-bearing rocks in the area and lack of diamond-indicator minerals in detritus. The location of Yukon and Pacific Coast placer diamond occurrences outside of the craton in the tectonically active zone, absence of diamond-bearing igneous sources, and lack of conventional diamond-indicator minerals has led to the search for another mechanism of diamond formation, which is different from that in cratonic keel settings.

Diamond formation in a oceanic plate undergoing subduction was proposed by a number of researchers (e.g., Hausel, 1994; Griffin *et al.*, 2000; Simandl, 2004). Very low temperatures in the down-going slab promote diamond stability at lower pressures and at a notably shallower depth (~ 100 km) than in the cratonic mantle (~150-200 km)

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(Simandl, 2004). During plate collision, some of these diamondiferous parts of the oceanic plate might have been tectonically emplaced on the Earth's surface. Obducted ophiolites along the North American plate margin were proposed as a possible source for the alluvial diamonds in California (Hausel, 1994). Such diamond occurrences in chromite lenses of alpine-type peridotites have been identified in few locations around the world including Morocco, Spain and Tibet (Griffin *et al*., 2000, and references therein). Erosion of these massifs would produce alluvial diamonds accompanied only by chromites.

Tectonic uplift of ultrahigh pressure (UHP) crustal metamorphic rocks during continent-continent collision is known to produce massifs with diamondiferous eclogites and gneisses, such as Kokchetav massif (Kazakhstan) and massifs in China and Western Norway (Griffin *et al*., 2002, and references therein). Detrital clinopyroxenes and garnets with composition similar to the UHP massifs were found in the Atlin area, Northern BC and are proposed to be derived from a possible UHP source for the Wilson Creek diamond reported in the Atlin area (Canil *et al*, 2005). However, all diamonds found in tectonically uplifted massifs are poor quality. Crustal massifs contain only micro-diamonds which are cubic shape, commonly fibrous or partially graphitized and found as inclusions in other minerals.

Alpine-type peridotites contain some macro-diamonds, but these are completely graphitized (Griffin *et al*., 2000). As yet, no diamonds of good quality have been confirmed to have been derived from tectonically emplaced high-pressure rocks.

In addition to being the hardest mineral, diamond is also chemically inert at the conditions of the Earth's surface and is very stable during erosion and subsequent transportation. Therefore, the absence of indicator minerals in diamond placers may also be the result of a very long alluvial history. The diamonds may have been formed at the base of the North American or some other ancient craton and then transported to the Earth's surface by ancient Precambrian magmas. Erosion of these igneous sources, followed by a long history of formation and subsequent erosion of diamond secondary collectors (such as conglomerates), would create placer deposits containing high-quality diamonds accompanied by no indicator minerals, such as those in New South Wales, Australia (Davies *et al*., 2002). A characteristic feature of ancient diamonds that have experienced a long surface history is good quality which was resistant to breakage, and the presence of abrasion marks on the diamond surfaces as a result of transportation in large river systems (Afanasiev *et al*., 2000 and references therein).

Figure 1*. Origins of placer diamonds.*

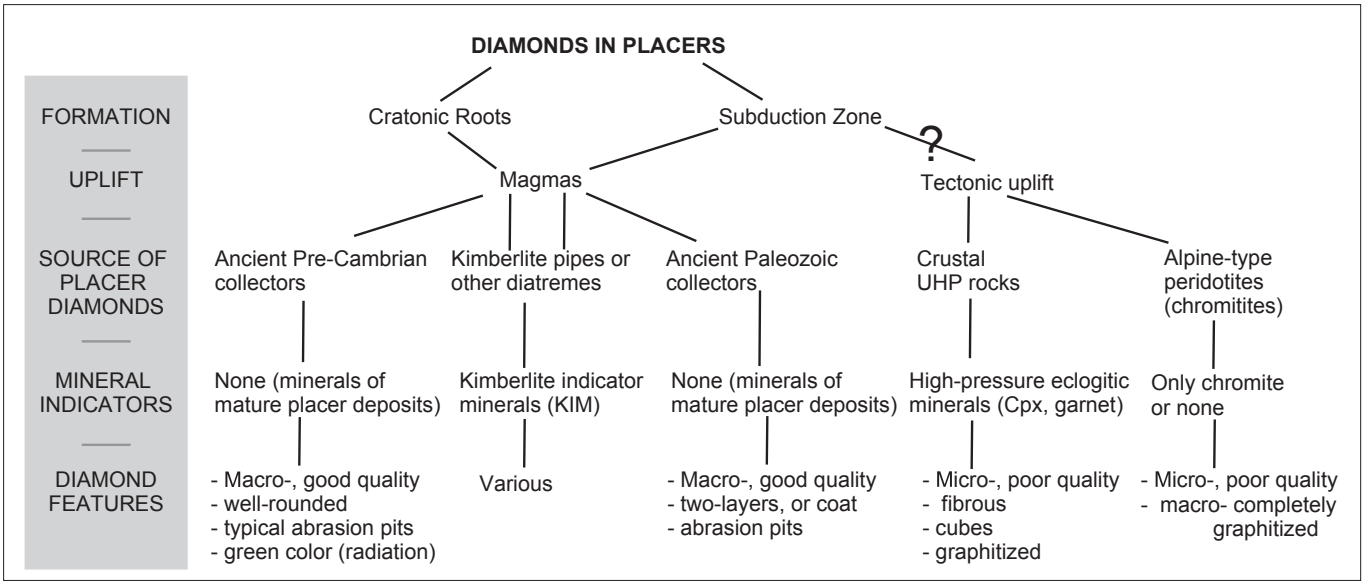


Figure 1 summarizes sources, paths, associated minerals and diamond properties of different origins for placer diamonds. The sections following describe the properties and settings of Yukon alluvial diamonds aiming to define which of the possible scenarios are the most suitable for these occurrences.

Properties of reported diamonds

Properties of diamonds (colour, morphology, surface features) reflect the conditions during their growth, method of transportation to the Earth's surface and their history at the surface. None of the diamonds recovered from placers in the area of the Pacific Coast underwent a full-scale scientific investigation that may have included studies of nitrogen content, isotope ratios and inclusion assemblage to determine their cratonic *versus* subduction origin. However, a group of diamonds from Trinity County, California and three diamonds from Circle, Alaska were well described (Kopf *et al*., 1990, Forbes *et al*., 1987). None of the Yukon diamond occurrences were well documented or confirmed. Table 1 is based on the information from Casselman and Harris (2002) that summarizes the properties of diamonds reported from Yukon and the adjacent areas of Alaska and B.C.

Nearly all of the diamonds reportedly found in Yukon were visually identified and hand-picked by placer gold miners during the clean-up of their concentrate. It is likely that most of these diamonds were macro-diamonds, transparent or nearly transparent, not fibrous or coated, and had an octahedron or rounded shape such that a lay-person would recognize them. This would be consistent with the physical features described for the diamonds found in Circle, Alaska, and Wilson Creek, B.C. This type of diamond is common in kimberlites and other diamond-bearing magmas that sampled cratonic mantle, but has never been found in tectonically emplaced massifs.

***Table 1**. Properties of diamonds reported in Yukon and adjacent areas of Alaska and BC.*

Location	Size, weight	Colour/quality	Morphology	Recovery	Surface features	References
Yukon						
Bonanza Creek, Dawson area		mounted on a ring		"showing-up" in the concentrate during clean-up		1
Clear Creek, Dawson area	6 small diamonds			grease table		1
Indian River[1], Dawson area	12 diamonds					1
Dixie Creek, Kluane area Dominion Creek and Rosebud Creek, Dawson area						1
British Columbia						
Wilson Creek	¼ inch	yellowish white	flat, rounded shape		rough surface	1
Alaska						
Canyon Creek	single diamond			cleaning placer concentrates		1
Jack Wade Creek		Tested with thermal inertia probe[2]				1
Circle Diamonds "Regan Diamond" "Warren Diamond" "Manuel Diamond"	 1/3 carat 1.4 carat 0.83 carat	 clear yellow-white light yellow	rounded octahedron deformed or pseudo-dodecahedron twinned dodecahedron	clean-up operations	numerous small, crescentic indentations small percussion marks	1, 2
Turn Creek						1

[1]C.F.Mineral Research – visual examination reported chrome-diopside, olivine and variously coloured garnets
[2]Thermal inertia probe mostly does not work for fibrous opaque diamonds

References: 1. Casselman and Harris, 2002; 2. Forbes *et al.*, 1987.

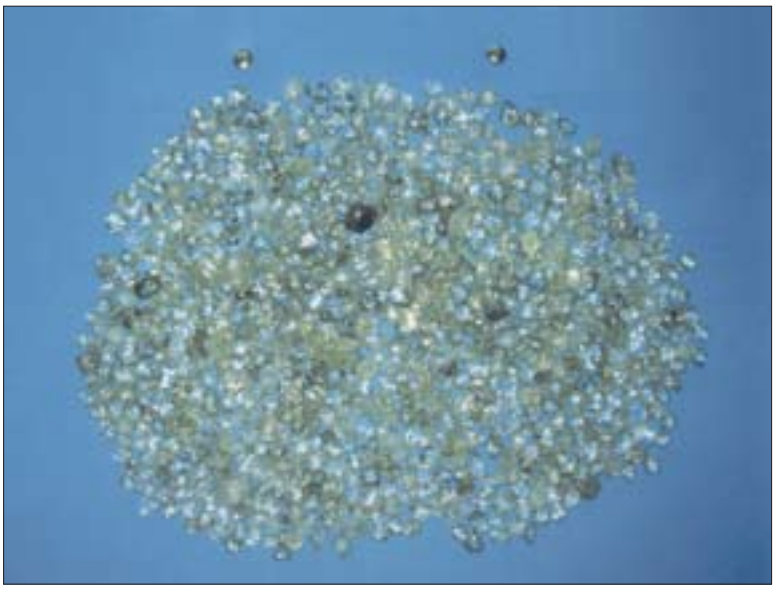
All diamond descriptions in Table 1 indicate a rough surface or the presence of percussion marks on the stones that can only be developed through a very long alluvial history as a result of mechanical abrasion (Afanasiev *et al*., 2000). Percussion marks are believed to be a result of transportation in very large river systems — these would be much bigger than the present-day creeks containing diamonds in their alluvium. These surface features resemble percussion scars observed on alluvial diamonds from New South Wales, Australia. Located in a convergent-margin setting of Eastern Australia, these placer diamonds also lack any indication of their primary or bedrock source. They are divided into two groups: 1) Precambrian diamonds which were formed and magmatically emplaced onto one of the world's ancient cratons, and 2) diamonds which formed in a subducting slab and were transported to the surface by magmas during the late Paleozoic. Both diamond types underwent a very long surface history in secondary collectors and now occur in mature alluvium and paleo-alluvium containing ancient sediments (Davies *et al*., 2002). This form of diamond placer is also known in other places of the world, such as the Ural Mountains in Russia (Fig. 2).

The existing diamond descriptions from placer occurrences in Alaska, B.C. and the good quality of diamonds reported in Yukon, suggest a relatively long history of equilibrium growth at the base of a craton or in a subducting slab, followed by subsequent transportation to the Earth's surface in a kimberlitic or other deep-seated magma. Rough surfaces and percussion marks suggest a long alluvial history.

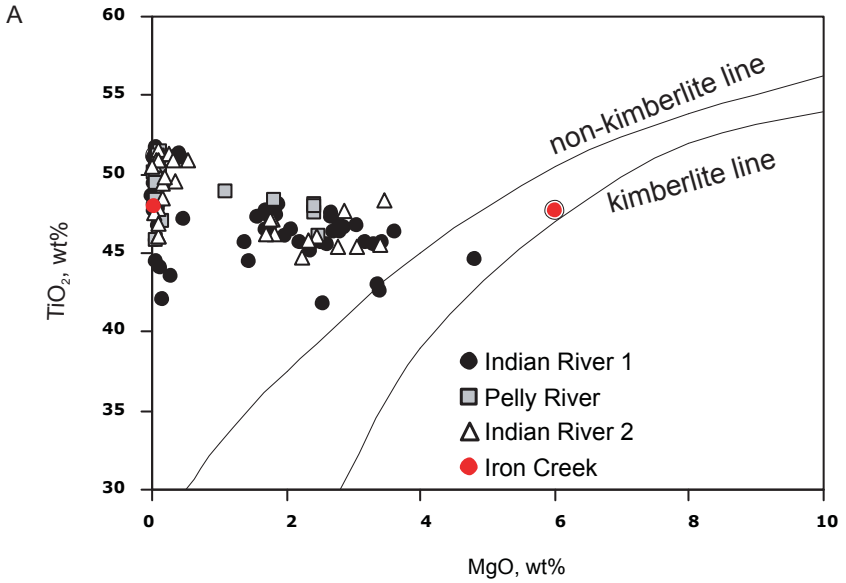
Diamond-indicator minerals

Minerals, including pyrope-garnet, ilmenite and chrome-diopside, are mostly from a diamond-bearing mantle source and are known as diamond (or kimberlite)-indicator minerals. These minerals generally accompany diamonds during their transportation in kimberlite magmas to the surface, and follow them during the erosion of the kimberlite pipe and subsequent incorporation into sediments such as alluvium. These minerals are relatively resistant to chemical and mechanical weathering, and their presence in detritus indicates the possibility of a diamond occurrence. However, garnet, ilmenite and diopside are common minerals of a large variety of igneous and metamorphic rocks. Therefore, only the presence of certain elements in the mineral structure (e.g., Cr and Ca in garnet, Mg in ilmenite and Cr (Na and Al) in diopside) can be used to determine the mantle origin of these minerals. Dark green diopside, as well as purple and orange garnets, were reported from a few localities in Yukon and California, but these were only visually identified and not followed up by any chemical analyses (Casselman and Harris, 2002, Kopf *et al*., 1990).

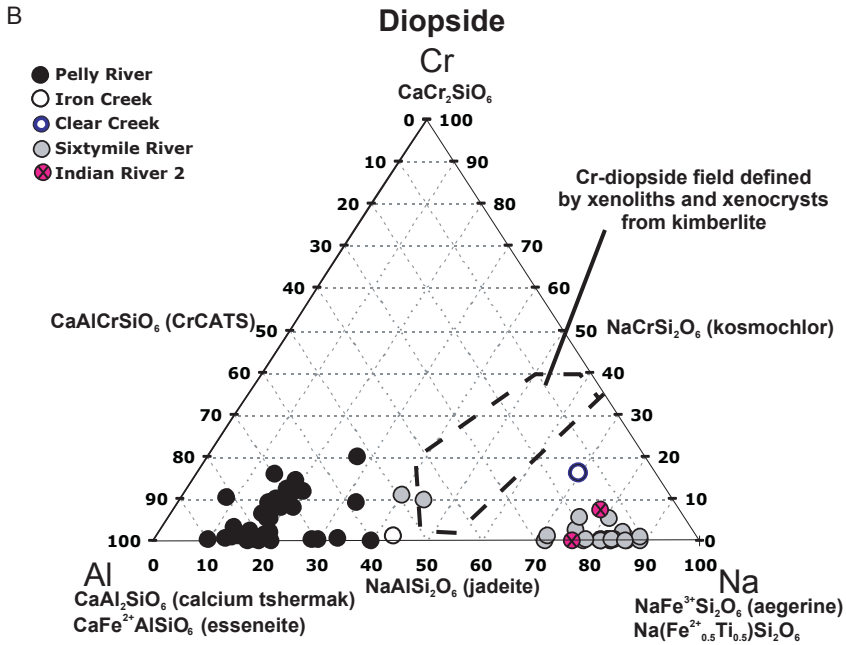
***Figure 2**. Alluvial diamonds from the Ural Mountains in Russia. Note the transparency and high quality, typical of diamonds which have undergone a long transportation history.*



A detailed study of heavy-mineral concentrates from several creeks with reported diamond or diamond-indicator mineral occurrences was performed by Yukon Geological Survey in order to confirm mineral compositions and determine possible sources. The samples returned abundant garnets which were pink, orange and red in colour, as well as some grains of dark green diopside, ilmenites, chromites and few olivines. The chemical composition of these grains was determined by electron microprobe analyses at McGill University. All the analysed grains lie outside of the kimberlite field (Fig. 3) and differ from the composition of the mineral assemblage of high-pressure eclogites. Thus, the study of several hundred mineral grains revealed no diamond-indicator minerals.



after Wyatt *et al.* (2004)



after Morris *et al.* (2002)

***Figure 3**. Composition of ilmenites (A) and diopsides (B) from the reported diamond or diamond-indicator mineral placer occurrences (Indian River, Sixtymile River, Clear Creek Iron Creek and Pelly River) compared to the compositional fields of kimberlite-indicator minerals.*

The complete absence of diamond-indicator minerals in the alluvium from creeks with reported diamond occurrences may suggest that the diamonds have come from some ancient sources and all other mantle minerals were completely destroyed during the long alluvial history (V.P. Afanasiev, personal communication, 2007). As the mineral most stable to chemical alteration and abrasion, diamond would be the only preserved mineral in this case. It is possible that some diamond-indicator minerals in the studied samples were overlooked, but their presence is unlikely given the large number of analysed mineral grains. For that reason, formation of diamond placers from the erosion of unknown igneous rocks or high-pressure eclogites is improbable. However, placers of ancient diamonds re-deposited from paleo-alluvium originating on a craton

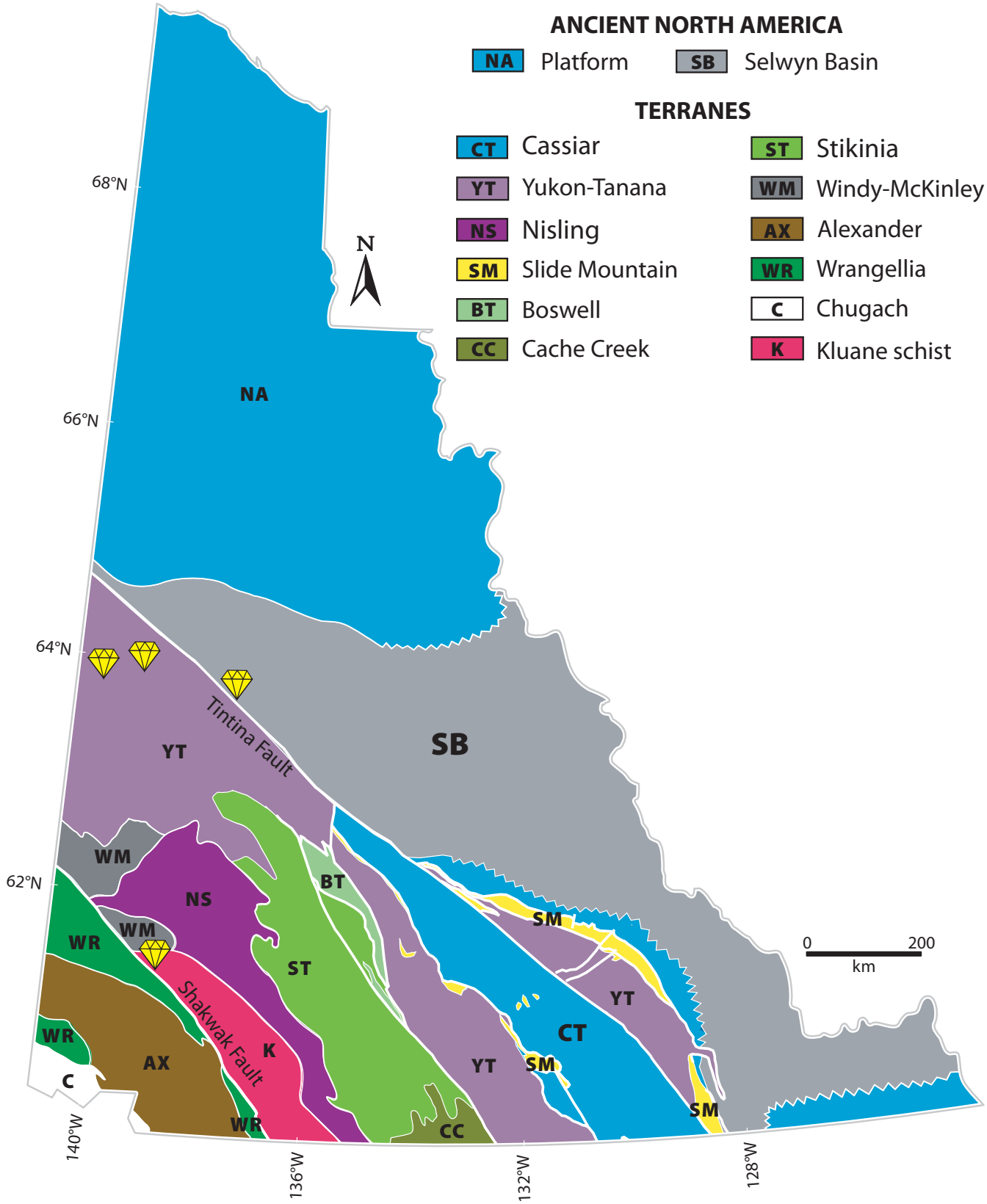


***Figure 4**. Geologic location of reported diamond occurrences in Yukon (terrane map is modified after Gordey and Makepeace, 2001).*

and containing only minerals typical of mature placers, such as corundum, zircon and quartz, provide a more suitable explanation for the absence of any indicator minerals or diamond-bearing igneous rocks in the area. Obducted ophiolites proposed by Hausel (1994) as a diamond source in California would result in detritus with an eclogitic mineral assemblage: pink or orange garnets with elevated sodium-content and pyroxenes with high Na_2O and Al_2O_3. However, in some cases, chromite may be the only mineral of diamond-bearing alluvium derived from ophiolite; but there may be platinum associated with the assemblage.

Geologic settings of Yukon diamond occurrences

The Yukon has complex geology consisting of several terranes with very different composition, tectonic and geological history (Gordey and Makepeace, 2003, 2001; Fig. 4). The northeast part of the Territory represents a margin of the ancient North American continental craton, divided by the major Tintina Fault from younger rocks on the southwest side of the Yukon. This younger part of Yukon has a complex history of rifting, formation of ocean basins, volcanic arcs and subsequent subduction. It consists of 1) pericratonic terranes with an affinity to the North American craton, as indicated by the similarities of the composition and stratigraphy of sedimentary rocks; 2) terranes composed of oceanic floor rocks and volcanic arcs developed on the margin of North America; and 3) exotic terranes that formed very far from their present location and drifted to collide with North America, as a part of subducting oceanic plate.

Restriction of diamond placers to certain terranes may provide insight to their origin. Post-accretion kimberlite pipes or other diamond-bearing diatremes could be emplaced within different tectonic units. In contrast, obducted ophiolites, and diamond placers associated with them (Hausel, 1994), will be most likely located within oceanic terrains. Secondary collectors of ancient diamonds with a long alluvial history are expected to exist within pericratonic terranes containing redeposited sediments derived from the craton. The location of Yukon diamond occurrences within or in the immediate proximity of the pericratonic terranes (Fig. 4) favours the proposed ancient origin for the Yukon diamonds.

Summary

There are several possible sources of placer diamonds (Fig. 1). The occurrences of the Pacific Coast alluvial diamonds outside of the ancient North American craton (a typical setting for diamond deposits), and the absence of common diamond-indicator minerals and diamond-bearing igneous rocks, limit the possible sources to 1) tectonically emplaced obducted oceanic slab that underwent high-pressure and low-temperature metamorphism (Hausel, 1994, Simandl, 2004); and 2) secondary collectors of ancient diamonds uplifted during a Precambrian or Paleozoic intraplate magmatic event from their source at the base of a craton or in a deep subducting slab. The latter scenario satisfies all the existing data, including the properties of the recovered and reported diamonds, the absence of kimberlite-indicator minerals and minerals of high-pressure eclogites, and the geological position of diamond occurrences.

Prospecting for placer diamonds of ancient origin requires different methodology than prospecting for placers formed by the erosion of the conventional diamond sources, and requires a good understanding of the local geology. Such diamond occurrences are expected to happen in the proximity of sedimentary rocks that contain paleo-alluvium or elements of ancient sediments formed on the craton in, presumably, Proterozoic time. Detrital minerals that may indicate a presence of such old sediments are the minerals of mature placers – well-rounded corundum, zircon, quartz, topaz and some Al-rich minerals. Due to the large difference in the specific gravity of gold (15 – 19) *versus* diamond (3.5), the gold recovery system used by most miners is not suitable for diamond prospecting. Therefore, if diamond prospecting is to accompany gold mining,

an additional extraction system that retains minerals with lower specific gravities has to be used.

Acknowledgements

The author is indebted to Valentin Afanasiev for his valuable comments and suggestions regarding the origin of placer diamonds. Andrei Barkov at McGill University is thanked for the assistance with electron microprobe analyses of the minerals.

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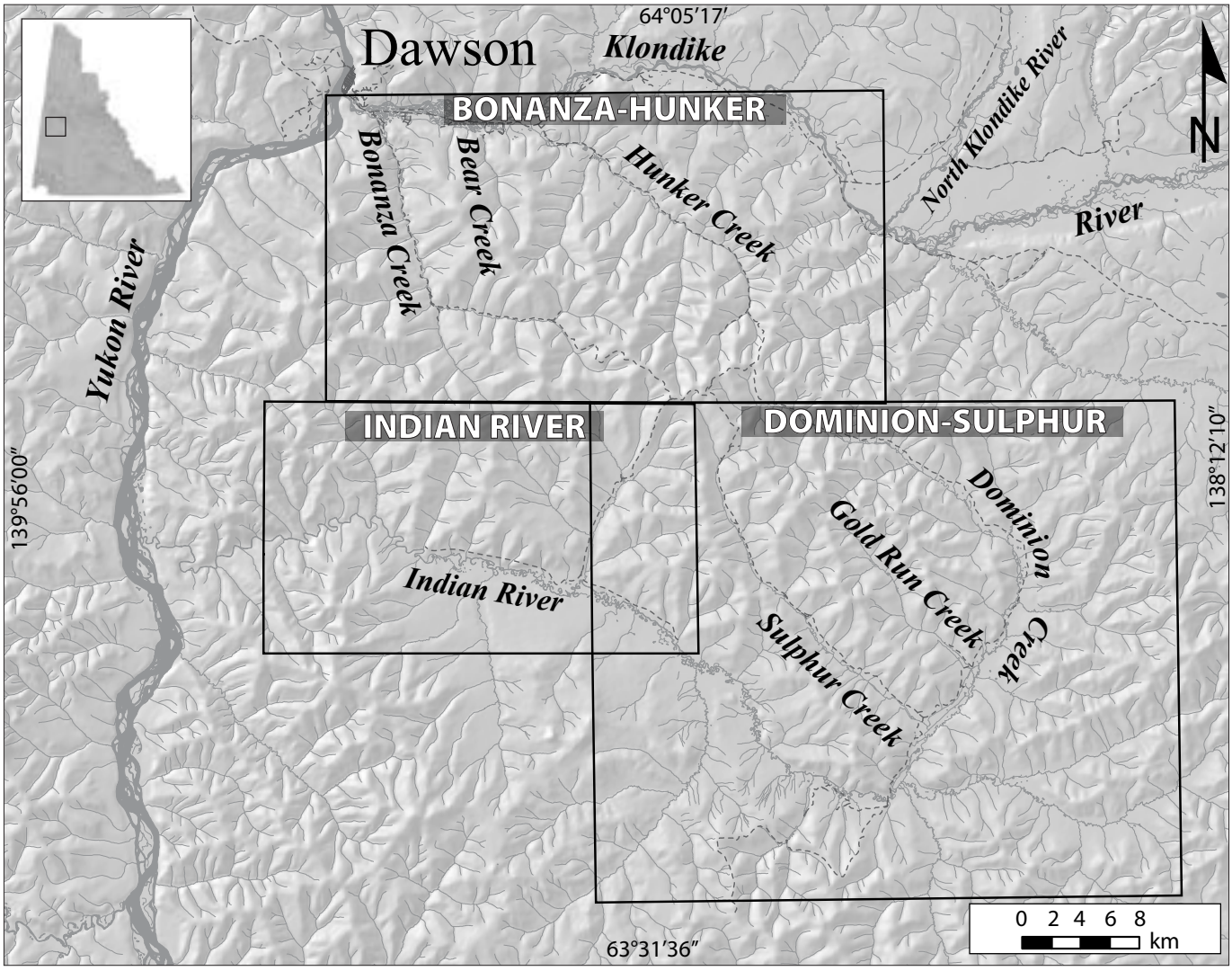
KLONDIKE PLACER AREAS

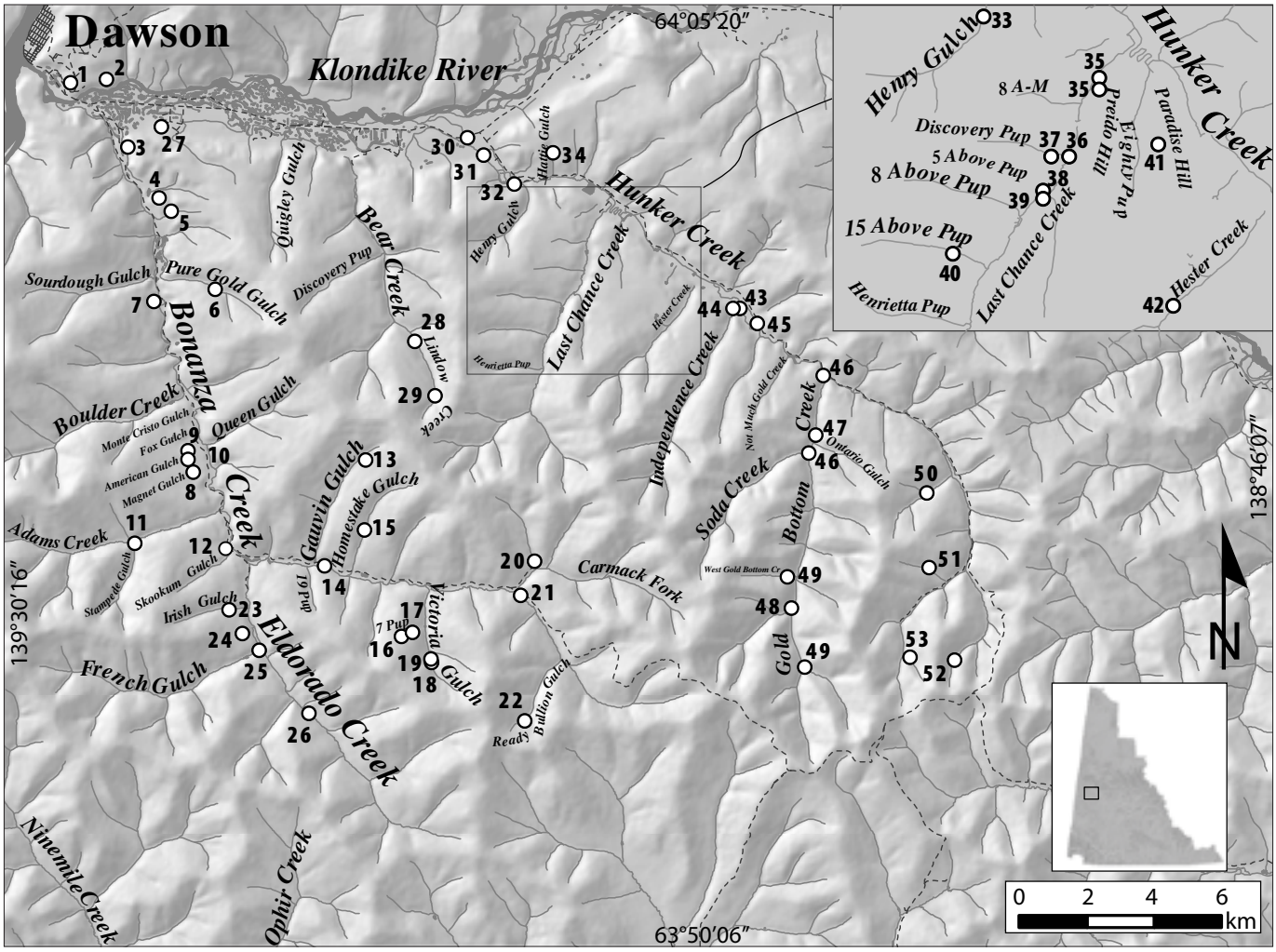
SITES 1-90



Inset maps are shown on pages following.

KLONDIKE:
BONANZA-HUNKER
PLACER AREA

SITES 1-53



LEGEND

1.....Carey
2.....Olson/Klippert
3.....Creaven
4.....Nicholson
5.....Coles
6.....Lanzinger
7.....Kohlman Explorations Ltd.
8.....LaBonte
9.....Jackson, D.
10.....Trudeau/Berglund
11.....Evans
12.....Daunt
13.....Roberts, W.
14.....Knutson
15.....McInroe
16.....Bryde
17.....Kissler/Jackson
18.....Laurenson
19.....6077 Yukon Ltd. - Victoria Gulch
20.....6077 Yukon Ltd. - Carmack Fork
21.....Maller
22.....Fournier
23.....Beron Placers Co. Ltd. - Irish Gulch
24.....Beron Placers Co. Ltd. - Eldorado
25.....Archibald
26.....Perunovic/Hinnek/Rauguth
27.....Crawford
28.....Hawker
29.....Roberts, A.
30.....Farley's Machine Inc.
31.....T.D. Oilfield Services Ltd.
32.....Henry Gulch Placers - Henry Gulch
33.....Gillespie
34.....Gould, P.
35.....Henry Gulch Placers - Last Chance
36.....Favron Enterprises Ltd.
37.....Last Chance Placers Ltd. - Discovery Pup
38.....Gritzka/Last Chance Placers Ltd.
39.....Last Chance Placers Ltd.- Last Chance
40.....Last Chance Placers Ltd. - 15 Pup
41.....Tamarack Inc.
42.....The Nugget Factory Inc.
43.....Levesque
44.....Kosuta
45.....Gould, D.
46.....Mogul Gold Placers Ltd.
47.....Pay Streak Placers
48.....Jackson, K.
49.....Aimola
50.....Grew Creek Ventures Ltd.
51.....Ahnert
52.....Laurenson
53.....McMahon

KLONDIKE RIVER, a tributary of Yukon River

116B/3 2005: 64°02'50"N, 139°24'48"W

Darrell Carey, Michelle Carey
Water license: PM98-047 (2010)
Exploration (2003-2005) **Operation no. 1**

Location The property was located on a right-limit bench of the Klondike River.

Work History and Mining Cuts In 2002, numerous small test pits were excavated. From 2004 to 2005, Darrell and Michelle Carey worked a daily 6-hour shift test mining several pits on the property. The main cut was 70 feet long, 40 feet wide and 30 feet deep (20 x 10 x 10 m).

Equipment and Water Treatment Equipment included a Komatsu PC120 excavator, a Komatsu WA500 loader and a Kenworth KW900 dump truck. Pay was hauled to the valley for sluicing. The wash plant was hand-fed at a rate of 2 to 3 loose cubic yards per hour and included a 10-cubic-yard dump truck box over a 2-foot-wide, 25-foot-long single-run sluice lined with 2-inch angle iron riffles, astroturf and gunny sacks. Water was acquired from dredge tailings ponds and was supplied by a 4-inch Deutch pump rated at 1200 igpm. Effluent was settled in a 1000- by 300-foot (300- x 100-m) pond.

Surficial Geology and Stratigraphy The section consisted of 20 feet (6 m) of old strippings and tailings (from Djukastein 1992-1997) overlying 3 feet (1 m) of silt and 17 to 25 feet (5 to 8 m) of gravel. The lowest 2 feet (0.6 m) of gravel plus 3 to 4 feet (0.9 to 1.2 m) of bedrock were sluiced.

Bedrock Geology Bedrock is soft, graphitic quartz-mica schist, quartz-sericite schist with minor quartz veins and lenses. It is decomposed to at least 4 feet (1 m) below the surface.

KLONDIKE RIVER, a tributary of Yukon River

116B/3 2006: 64°02'52"N, 139°23'30"W

William Olson, Jr., Dan Klippert
Water license: PM04-371 (2014; Licensee: Paul O'Brien)
Active producer (2006) **Operation no. 2**

Location This operation was located on the right-limit bench of the Klondike River valley downstream from Thomas Gulch.

Work History and Mining Cuts This small-scale operation was first active in 1982. In 2006, Dan Klippert and Willy Olson Jr. tested some areas on the bench and mined a test cut.

Equipment and Water Treatment In 2006, equipment on site included a Caterpillar excavator and bulldozer, and a Komatsu PC400LC excavator. Dan Klippert's wash plant was a New Zealand trommel with a radial 15° stacker. The plant reduced the pay gravel to ¾ inch minus and fed to a sluice run 10 feet wide by 12 feet long with hydraulic riffles and specialized rubber matting. A 4- by 6-inch diesel-powered pump supplied the water.

Dan Klippert's wash plant operating on the Klondike River bench, 2006.

Surficial Geology and Stratigraphy The property lies on an intermediate level terrace above Klondike River, which has been interpreted to be early Pleistocene in age — younger than White Channel, but older than the modern streams. In 2006, the section consisted of 12 feet (4 m) of silt overlying 6 feet (2 m) of sandy gravel, 3 feet (1 m) of poorly sorted gravel and 3 feet (1 m) of grey, compact cobbly gravel on bedrock. The lowest 3 to 4 feet (0.9 to 1.2 m) of gravel was sluiced along with about a foot (0.3 m) of bedrock.

Bedrock Geology Bedrock is a rusty, blocky quartzite and schist.

Gold Characteristics Gold from this property has been reported as fine-grained and flat, with a fineness from 780 to 800.

BONANZA CREEK, a tributary of Klondike River

116B/3 2004: 64°01'48"N, 139°22'48"W

Michael F. Creaven
Water licenses: PM04-372 (2009), PM00-176 (2004)
Active producer (2004, 2006) **Operation no. 3**

Location The property was located at the lower end of Bonanza Creek, between California Gulch and Examiner Gulch on the right limit at the base of Lovett Hill.

Work History and Mining Cuts Mr. Creaven began working in the area in 1993. In 2004, Creaven mined at the base of Lovett Hill on the right limit at the valley bottom. In 2006, sluicing was conducted on the right limit of Bonanza Creek.

Equipment and Water Treatment Equipment included a Case 580 excavator/loader which was used to excavate pay gravel, feed the wash plant and remove tailings. A 4- by 8-foot screen deck classified material to ⅝-inch and fed into a 16- by 1-foot single sluice run lined with angle iron riffles. Groundwater seepage was recycled from out-of-stream ponds in mining cuts from previous operations in the area. Gold was cleaned up using a micro concentrator.

Surficial Geology and Stratigraphy The right limit of the valley was previously mined up to an exposed face of gravel and bedrock about 20 feet (6 m) deep. On the right limit of the valley bottom, pay gravel were excavated from a 20-foot (6-m) deep vertical face composed of alternating layers of black muck and gravel.

Bedrock Geology The bedrock is Klondike Schist.

Gold Characteristics The gold was reported as fine, flat and smooth, with a fineness of approximately 800.

LOVETT GULCH, a tributary of Bonanza Creek

116B/3 2005: 64°00'59"N, 139°21'43"W

Clive Nicholson
Water licenses: PM06-533 (2016), PM01-226 (2006)
Active producer (2003-2006) **Operation no. 4**

Location The property was located at the mouth of Lovett Gulch, a right-limit tributary to lower Bonanza Creek.

Work History and Mining Cuts Mr. Nicholson began mining in the area of Lovett Gulch and Trail Hill in 1973 and has mined each year since then. From 2003 to 2006, Nicholson continued mining on the first-tier bench of Lovett Gulch. The crew of four employees averaged 8 to 10 hours per day of sluicing during the season.

Equipment and Water Treatment Equipment included a Caterpillar D9 bulldozer, two Caterpillar 627 scrapers and a Caterpillar 920 loader. The wash plant was a 7-foot-diameter trommel which fed a 4- by 30-foot single sluice run lined with expanded metal riffles and Nomad matting. Processing rate was approximately 60 cubic yards per hour. Effluent was settled out-of-stream and recycled from abandoned mining cuts.

Clive Nicholson's pit on the right limit of Bonanza Creek, 2005. View looking east-southeast.

Surficial Geology and Stratigraphy The section consisted of up to 60 feet (20 m) of hydraulic tailings washed from the White Channel gravel terrace, overlying 35 to 45 feet (11 to 14 m) of original frozen muck and gravel. Pay gravel was 6 to 10 feet (2 to 3 m) deep which was sluiced along with 3 to 4 feet (0.9 to 1.2 m) of bedrock. Mammoth tusks and bones were found in the muck overburden and in frozen gravel.

Bedrock Geology The bedrock is chloritic quartzite and schist.

Gold Characteristics The gold recovered was flat and dull with a fineness of 795.

TRAIL GULCH, a tributary of Bonanza Creek

116B/3 2005: 64°00'46"N, 139°21'18"W

Tim Coles
Water license: PM01-258 (2012)
Active producer (2005-2006) **Operation no. 5**

Location The operation was located approximately half-way up Trail Gulch.

Work History and Mining Cuts Mr. Coles moved equipment here from his Upper Dominion Creek property and mined in 2005 and 2006.

Surficial Geology and Stratigraphy The section consisted of a large thickness of hydraulically washed White Channel gravel tailings over black muck and virgin gulch gravel.

Bedrock Geology Bedrock in this area is Klondike Schist.

PURE GOLD GULCH, a tributary of Bonanza Creek

1150/14 2003: 63°59'31"N, 139°19'48"W

Max Lanzinger, Vince Young
Water license: PM01-252 (2007, Licensee: Vince Young)
Active producer (2003) **Operation no. 6**

Location The operation was located on Pure Gold Gulch, a tributary of Bonanza Creek.

Work History and Mining Cuts This operation was first active in 2002, when some stripping and sluicing was done. In 2003, the property was leased to a third party. A pit was excavated at the top end of the property and some sluicing was conducted.

Bedrock Geology Bedrock is mapped as Klondike Schist.

BONANZA CREEK, a tributary of Klondike River

1150/14 2005: 63°59'21"N, 139°22'00"W

Kohlman Explorations Ltd., Leo Twordik, Cam Arkinstall, Steve Van Bibber
Water licenses: PM99-087 (2009)
Active producer (2003-2006) **Operation no. 7**

Location The property was located along the left limit of Bonanza Creek.

Work History and Mining Cuts Leo Twordik began mining on Bonanza Creek in 1983. In 2003, Mr. Twordik and Mr. Arkinstall mined a small cut along the left limit. In 2005, the operation was at the mouth of Sourdough Gulch. In 2006, Steve Van Bibber was working with Mr. Twordik.

Tim Cole's operation on Trail Gulch, 2006.

Kohlman Explorations Ltd.'s Bonanza Creek operation.

Equipment and Water Treatment Equipment included a Fiat Allis 41 bulldozer, a John Deere 890 excavator, a Lieb Herr 981 excavator, a Terex 50-ton rock truck and a Hough 120 loader. The wash plant was a 6.5- by 40-foot trommel which classified to ½ inch, over four 16-foot-wide oscillating sluice runs. An 8- by 10-inch Paco water pump powered by a Cummins 195 diesel engine provided approximately 2500 igpm which was used to process from 150 up to 200 cubic yards per hour. Water was pumped directly from Bonanza Creek and was settled in two large out-of-stream ponds in old mining cuts with seepage discharge only.

Surficial Geology and Stratigraphy The section generally consisted of 50 feet (15 m) of frozen overburden overlying 16 feet (5 m) of pay gravel along the left limit, while the centre of the valley was covered with dredge tailings with localized remnant pay pockets in bedrock.

Bedrock Geology The bedrock at this site is Klondike Schist.

Gold Characteristics Gold was reported as mostly fine grained with some flakes and small nuggets. The fineness was 780.

BONANZA CREEK, a tributary of Klondike River

1150/14 2005: 63°56'59"N, 139°20'55"W

Ralph LaBonte
Water license: PM02-298 (2013)
Active producer (2003-2006) **Operation no. 8**

Location This operation was located on the left limit on a White Channel terrace. Sluicing occurred in the Bonanza valley in 2003 to 2005, but was moved to the bench in 2006.

Work History and Mining Cuts The operators sluiced 6 to 8 hours per day with two employees. The cuts were located on the left-limit bench of Bonanza Creek in the vicinity of Fox Gulch and the sluicing operation occurred in the Bonanza valley. In 2006, the sluicing operation was moved up onto the left-limit bench at the base of the White Channel deposit. The operation used total recycle with no discharge and used only make-up water from Bonanza Creek.

Ralph LaBonte sluicing on Bonanza Creek.

Equipment and Water Treatment A Caterpillar 235 excavator was used to load a dump truck which took the material to the sluice box in the Bonanza valley. The operation used an in-stream reservoir pond located in Bonanza Creek above Claim 33, and out-of-stream settling ponds in the dredge tailings, with no surface discharge to Bonanza Creek.

Bedrock Geology The bedrock at this site is sericite and chlorite schist.

BONANZA CREEK, a tributary of Klondike River

1150/14 2004: 63°56'51"N, 139°20'56"W

Doug Jackson
Water license: PM03-344 (2009)
Active producer (2004-2006) **Operation no. 9**

Location The operation was located on American Hill on the left limit of Bonanza Creek.

Work History and Mining Cuts Each season from 2004 to 2006, Mr. Jackson worked a daily 12-hour shift alone. In 2004, he processed a 60- by 80-foot (20- x 25-m) cut, in 2005, he mined a 100- by 80-foot (30- x 25-m) cut, and in 2006, he mined a 150- by 80-foot cut (45- x 25-m).

Equipment and Water Treatment Equipment included Caterpillar D824 and D4 bulldozers, a Bucyrus Erie 20-ton trackhoe, a Caterpillar 966 loader and a Clark 125 loader. The wash plant included a trommel with a 5-foot-diameter barrel and a 4- by 10-foot single screen deck over 4- by 10-foot sluice runs lined with expanded metal and Nomad matting. Water was acquired from Bonanza Creek and supplied by a Chrysler-powered 5- by 6-inch Ajax pump rated at 1400 igpm. Effluent was settled out-of-stream and 100% recycled from a 200- by 200-foot (60- x 60-m) pond. Clean-ups were done with a rocker/shaker box and Diester table.

Surficial Geology and Stratigraphy The section consisted of 80 feet (20 m) of White Channel gravel on bedrock, on the bench above Bonanza Creek valley. The bottom 4 to 6 feet (1 to 2 m) of gravel and 2 to 4 feet (0.6 to 1 m) of bedrock were sluiced.

Bedrock Geology Bedrock is Klondike Schist.

Gold Characteristics Gold recovered was fine-grained and silver-gold in colour with a fineness of 800.

BONANZA CREEK, a tributary of Klondike River

1150/14 2005: 63°56'39"N, 139°20'45"W

Roland Berglund, Daniel B. Trudeau
Water license: PM02-300 (2013, Licensee: Roland Berglund)
Active producer (2003-2006) **Operation no. 10**

Location This operation was located on Magnet Hill on the left limit of Bonanza Creek.

Work History and Mining Cuts Mechanical stripping and settling pond construction occurred on the property in 2002, with some sluicing of stockpiled material. Mining of the bench gravel deposits took place during the 2003 to 2006 seasons.

Equipment and Water Treatment The equipment consisted of Caterpillar D8 and D9 bulldozers for stripping and general purposes, a Caterpillar 988F loader to feed the sluice plant, and a Samsung 280 excavator for loading the 15-cubic-yard Mack dump truck. The wash plant included a 12- by 12-foot grizzly over a 4-foot-diameter trommel. Material screened to ½-inch minus fed to 4 by 6 feet of sluice runs lined with Hungarian riffles. Tailings were stacked by a 2- by 30-foot conveyor. A Deutz-diesel powered 6- by 6-inch Monarch pump rated at 800 igpm supplied water for the plant from an in-stream reservoir. Effluent was 50% recycled from four out-of-stream settling ponds. Gold was cleaned up using a jig, a long tom and a vibrating gold table.

Surficial Geology and Stratigraphy In 2002, stockpiled gravel was sluiced. In the 2003 to 2006 seasons, White Channel gravel was mined on the bench.

Bedrock Geology Bedrock is Klondike Schist.

Trudeau and Berglund's operation, Bonanza Creek.

STAMPEDE GULCH, a tributary of Adams Gulch

1150/14 2005: 63°55'33"N, 139°22'55"W

John Evans, Steve Van Bibber
Water licenses: PM03-329 (2008), PM02-274 (2007)
Active producer (2003-2006) **Operation no. 11**

Location The operation was located at the mouth of Stampede Gulch, a tributary to Adams Gulch.

Work History and Mining Cuts A small amount of stripping occurred at the downstream boundary of the property in 2003. In 2005, mining took place at the mouth of Stampede Gulch. In 2006, exploration drilling and trenching was conducted upstream on Adams Gulch.

Equipment and Water Treatment In 2004, a three-person operation established an out-of-stream recycle system with no discharge.

Surficial Geology and Stratigraphy From 12 to 15 feet (4 to 5 m) of black muck was overlying 4 to 6 feet (1 to 2 m) of angular gravel on bedrock. All of the gravel was sluiced.

Bedrock Geology Bedrock is muscovite schist.

SKOOKUM GULCH, a tributary of Bonanza Creek

1150/14 2003: 63°55'10"N, 139°19'55"W

Ivan Daunt
Water license: PM04-409 (2015)
Active producer (2003-2006) **Operation no. 12**

Location This operation was located along the left limit of Bonanza Creek, at the mouth of Skookum Gulch immediately below Grand Forks.

Work History and Mining Cuts Work at this operation began in 1983 and the gulch has been mined nearly every year since then. In 2003, mining continued, but in 2004, only stripping and pond construction were done. The property was inactive in 2005, but a limited amount of mining was done in 2006.

Equipment and Water Treatment The equipment included a Komatsu bulldozer (Caterpillar D6 equivalent), a Caterpillar 951 crawler loader and a Caterpillar 966B loader. The plant was a small hopper over a 5- by 12-foot shaking screen deck which classified pay gravel to ¾ inch. A single sluice run was 3 feet wide by 20 feet long with angle iron riffles over a plastic mat. A 6- by 6-inch Monarch pump, powered by a Perkins V8 diesel engine, delivered about 1200 igpm of water which was used to process up to 40 yards per hour. In 2006, a water intake pump with a metal gate in Bonanza Creek was being used for make-up water only. Two recycle/settling ponds were located in-stream on Big Skookum Gulch with bedrock spillways.

Surficial Geology and Stratigraphy Frozen black muck overburden, with evidence of old mining shafts, was 25 to 30 feet (7 to 9 m) deep. Pay gravel varied from 3 to 6 feet (0.9 to 2 m) deep and were up to 20 feet (6 m) wide in the gulch bottom. All gravel plus 2 to 3 feet (0.6 to 1 m) of broken bedrock were sluiced. One main cut in the valley bottom centre averaged about 30 feet wide by 15 feet deep (10 x 5 m) and was progressively worked upstream by 75 to 100 feet per season (20 x 30 m).

Bedrock Geology The bedrock is composed of green, decomposed muscovite schist.

Gold Characteristics Gold was reported as rough and angular with attached quartz, and a fineness of approximately 660.

GAUVIN GULCH, a tributary of Upper Bonanza Creek

1150/14 2003: 63°56'46"N, 139°14'34"W

Wallace L. (Red) Roberts
Water license: PM02-286 (2008)
Active producer (2003-2006) **Operation no. 13**

Location This operation was located on upper Gauvin Gulch about 2.5 miles (4 km) upstream from its confluence with Upper Bonanza Creek.

Work History and Mining Cuts The property was tested in 1996 and 1997, and mining began in 1998. From 2003 to 2006, Mr. Roberts worked a daily 8- to 10-hour shift. Over this time he processed a cut 150 feet long by 100 feet wide (50 x 30 m) which varied in depth between 10 and 30 feet (3 and 10 m).

Equipment and Water Treatment From 2003 to 2006 equipment included a TD8 International bulldozer, a 721 BobCat, a Case 480E excavator, a Terex 71-51 loader, a Ford 15-cubic-yard-capacity dump truck and a Bucyrus-Erie 22B dragline. A Case 220B excavator was purchased in 2006. The Case 480E excavator fed the wash plant, while the TD8 International bulldozer was used to scrape pay from the cut bank. The 721 BobCat was used for small reclamation jobs. The dump truck was used to remove tailings after they were dried out and stacked against the hillside. The wash plant was fed at a rate of 12 to 15 loose cubic yards per hour and consisted of a single screen deck over a single run sluice 20 feet long and 2 feet wide, lined with hydraulic riffles. Water for the sluice was pumped by a Deutz-powered 4-inch Gorman Rupp pump. Cross-valley dams were built to capture run-off which was used for sluicing. Effluent was settled into an upper pond, which was regularly bailed out with the Bucyrus-Erie dragline. The second pond further settled material and the lower pond was a reservoir out of which water was pumped back up the hill to the sluice. Clean-ups were done with a 5-foot-diameter gold wheel once or twice a month.

Surficial Geology and Stratigraphy In the gulch, frozen overburden varied from 25 up to 50 feet (10 to 20 m) deep on top of only 4 to 6 feet (1 to 2 m) of gravel.

Gravel was mixed with some clay. All gravel plus 1 foot (0.3 m) of decomposed bedrock were sluiced. From 2003 to 2006, the mining exposure consisted of a buried alluvial terrace which was cut by the gulch. It was comprised of a coarse gravel layer 10 to 30 feet (3 to 10 m) thick, with large rounded quartz boulders up to 6 feet (2 m) in diameter. All of the gravel was sluiced.

Bedrock Geology Bedrock at this site is a wavy quartz-sericite schist. Bedrock slabs were found in the rust-coloured gravel at all levels.

Gold Characteristics From 2003 to 2006, the gold was described as coarse-grained, with a fineness of 664.

Red Roberts' operation on Gauvin Gulch, 2006.

Marty Knutson's operation, Upper Bonanza Creek, 2006.

UPPER BONANZA CREEK, a tributary of Bonanza

1150/14 2006: 63°55'07"N, 139°16'08"W

Marty Knutson
Water license: PM04-433 (2015, Licensee: Martin Knutson)
Active producer (2005-2006) **Operation no. 14**

Location The operation was located on Upper Bonanza Creek between Homestake and Gauvin Gulch.

Work History and Mining Cuts In 2005, Marty Knutson and his crew began mining in the centre and on the right limit of the Upper Bonanza Creek valley. In 2006, the operation continued to mine in the valley and a cut was opened up downstream on the left limit.

Equipment and Water Treatment Equipment included a Nodwell-mounted 6-inch auger drill, a Caterpillar 225 excavator, a Caterpillar 235 excavator, two Caterpillar D9 bulldozers and two Caterpillar rock trucks. The wash plant was a single deck offset shaker with ¾-inch punch plate and a 30-inch by 30-foot stacker for coarse tailings. Boil boxes captured coarse gold, while two 8-foot sluice runs with expanded metal, hydraulic riffles and Nomad matting captured the smaller fractions. Approximately 90 loose cubic yards per hour were processed. Sluicing occurred with in-stream settling of effluent and out-of-stream settling for mining pit dewatering. A diversion channel was built in the valley centre with three large boulder drop structures.

Surficial Geology and Stratigraphy The valley and right-limit cuts consisted of virgin gravel missed by the dredge, oldtimers' tailings and dredge slickings. The left-limit cut included a low terrace on bedrock with angular gravel.

Bedrock Geology Bedrock is a blocky quartzose schist on the left limit, and a decomposed chlorite schist on the right limit.

HOMESTAKE GULCH, a tributary of Upper Bonanza

1150/14 2006: 63°55'40"N, 139°14'41"W

Dave McInroe, Lawrence Beyer
Water license: PM03-306 (2013, Licensee: Lawrence Beyer)
Active producer (2006) **Operation no. 15**

Location The operation was located on Homestake Gulch.

Work History and Mining Cuts In 2006, Dave McInroe set up an operation under Lawrence Beyer's water license, working a daily 8-hour shift alone. He mined a 50- by 400-foot (10- x 100-m) cut.

Equipment and Water Treatment Equipment included a Kobelco 250 excavator for stripping the ground and feeding the plant. The wash plant, fed at 65 loose cubic yards per hour, was a

land-based trommel with sluice runs 7 feet wide and 8 feet long, lined with hydraulic riffles, expanded metal and Nomad matting. Water was acquired from Homestake Gulch and supplied by a Perkins-powered 5- by 4-inch Ajax pump rated at 700 igpm. Effluent water was 100% recycled. Clean-ups were done with a long tom and gold wheel.

Surficial Geology and Stratigraphy The frozen section consisted of 10 to 20 feet (3 to 6 m) of black muck overlying 2 to 6 feet (0.6 to 2 m) of gravel on bedrock. The lower 2 feet (0.6 m) of gravel plus 1 foot (0.3 m) of bedrock was sluiced.

Bedrock Geology Bedrock is Klondike Schist.

7 PUP, a tributary of Victoria Gulch

1150/14 2003: 63°53'58"N, 139°13'27"W

Jerry Bryde
Water license: PM05-486 (2011)
Active producer (2003-2006) **Operation no. 16**

Location This operation was located at upper reaches of 7 Pup, immediately below the historic Lone Star hardrock gold mine (Yukon MINFILE 115 072; Deklerk, 2006).

Work History and Mining Cuts Jerry Bryde began working on the property in 1982. For the 2003 to 2005 mining seasons, Mr. Bryde worked a daily 16-hour shift alone. For each year a cut 100 by 75 by 7 feet (30 x 20 x 2 m) was processed. In 2006, one exploration shaft was hand excavated.

Equipment and Water Treatment Between 2003 and 2005, a Caterpillar D7-3T was used for ground preparation, feeding the dump box and removing tailings, while a Caterpillar 941B loader was used for miscellaneous duties. An Insley dragline was used for cleaning the settling and recycle ponds. Approximately 20 loose cubic yards per hour were fed to the 4- by 8-foot deck which classified material to ¾ inch. Two 3- by 10-foot sluice runs included a boil box, hydraulic riffles and expanded metal and un-backed Nomad matting. Water was acquired from the Lone Star Boulder adit at a rate of 5 igpm and pumped by an Uster-powered Gorman Rupp 4- by 4-inch pump rated at 300 igpm. Effluent was settled out-of-stream and 100% recycled from a 100- by 50- by 10-foot (30- x 10- x 3-m) pond.

Surficial Geology and Stratigraphy As in previous years, from 2003 to 2006 the section was a thawed eluvial placer consisting of weathered bedrock and soil. There was no

Jerry Bryde's operation on 7 Pup, 2003

washed gravel under the 1 to 2 feet (0.3 to 0.6 m) of moss, and all of the approximately 5 feet (2 m) of poorly sorted material and weathered bedrock was gold-bearing and was sluiced.

Bedrock Geology Bedrock at this site is a slabby-weathered fractured quartz and schist with near-vertical foliation.

Gold Characteristics From 2003 to 2005, the gold was crystalline, angular, sharp and unworn with quartz attached and a fineness of 801. Abundant quartz float with visible gold was recovered. Heavy minerals included magnetite, goethite and barite.

7 PUP, a tributary of Victoria Gulch

1150/14 2003: 63°54'02"N, 139°13'03"W

Everett Kissler, Douglas Jackson
Water license: PM96-089 (2005, Licensee: Douglas Jackson)
Active producer (2003) **Operation no. 17**

Location This operation was located near the top end of 7 Pup, a left-limit tributary to Victoria Gulch on upper Bonanza Creek.

Work History and Mining Cuts Everett Kissler started this operation in 1999, taking over from Peter Bodin. One main cut near the middle of the claim was mined at a rate of about 2000 cubic yards (1500 m^3) per season. Sluicing continued through 2003, when Douglas Jackson took over the license.

Equipment and Water Treatment A Caterpillar 966 loader was used to dig pay gravel, feed the wash plant and remove tailings. A shaking screen deck about 10 by 10 feet was followed by a single sluice run, 2 feet wide by 21 feet long, with expanded metal riffles over Nomad mat. A Gorman-Rupp 4-inch water pump supplied about 400 igpm of water which was used to sluice about 25 cubic yards per hour. Surface runoff was minimal this high up on the hillside, but seepage water was recycled in two settling ponds about 50 by 50 feet (10 x 10 m) each. During 2003, this was an out-of-stream operation capturing ground water and rainfall in reservoir ponds.

Surficial Geology and Stratigraphy There was no overburden left on surface in the area of mining; surface gravel mixed with tailings from old workings occurred throughout with depths varying from 5 to 20 feet (1 to 6 m). All gravel was sluiced from surface to bedrock.

Bedrock Geology Bedrock at this site is a slabby-weathering schist with near-vertical foliation.

Gold Characteristics The gold was reported as coarse with a few small nuggets, some with silver colour, and fineness around 860.

VICTORIA GULCH, a tributary of Upper Bonanza Creek

1150/14 2006: 63°53'33"N, 139°12'25"W

Dave Laurenson , Sarah Laurenson, Vern Trainer
Water license: PM04-452 (2015, Licensee: Vern Trainer)
Active producer (2006) **Operation no. 18**

Location The operation was located adjacent to Vern Trainer's mine on 13 Pup, upper Victoria Gulch.

Work History and Mining Cuts Dave and Sarah Laurenson moved here from Little Gold Creek in 2006 to mine under Vern Trainer's water license. They worked a daily 12-hour shift and processed a cut 1000 by 50 feet (300 x 10 m).

Equipment and Water Treatment Equipment consisted of a Caterpillar D8H bulldozer equipped with a ripper and U-blade for stripping, preparing pay gravel, clearing tailings and reclamation. A Terex 72-51 loader fed the sluice plant and did miscellaneous jobs. The wash plant included a 10-yard hopper which fed into a 4-foot-wide by 14-foot-long double screen deck. The classified gravel was then washed through sluice runs totalling 7 by 21 feet, which were lined with a combination of angle iron riffles, expanded metal and Nomad matting. Tailings were stacked with a 40-foot conveyor. Water from Victoria Gulch was supplied by an English 6-cylinder diesel-powered Ford 5- by 4-inch pump rated at 1200 igpm, enough to process 100 loose cubic yards per hour. Effluent was settled out-of-stream and 100% recycled from a 400- by 200-foot (100- x 60-m) pond. Clean-ups were done with a long tom.

Surficial Geology and Stratigraphy The section had been stripped before and the depth of gravel was 25 feet (8 m). All of the gravel was sluiced.

Bedrock Geology Bedrock is Klondike Schist.

Gold Characteristics Gold was reported as coarse-grained and bright yellow. The fineness was 820.

VICTORIA GULCH, a tributary of Upper Bonanza Creek

1150/14 2006: 63°53'36"N, 139°12'26"W

6077 Yukon Ltd., Vern Trainer, Don Trainer
Water license: PM04-452 (2015)
Active producer (2006) **Operation no. 19**

Location In 2006, the operation was located at the mouth of 13 Pup on Victoria Gulch.

Work History and Mining Cuts The operators first began working in this area in 1983. In 2006, a crew of three miners and two camp personnel worked a daily 8-hour shift. A cut 1000 by 100 feet (300 x 30 m) was mined. Dave and Sarah Laurenson also mined under this license.

Equipment and Water Treatment Two Caterpillar D8 bulldozers and one Caterpillar 980 loader were used. The wash plant was a hopper-fed double screen deck over 3 sluice runs lined with angle iron riffles and expanded metal. Water was acquired from Victoria Gulch and supplied by a Perkins-powered Morris 6-inch pump rated at 1500 igpm. Effluent was settled in-stream and 100% recycled from a 60- by 150-foot (20- x 50-m) pond. Over the season, five clean-ups were done using a jig for the final concentrate.

Surficial Geology and Stratigraphy In 2006, the section was thawed in the creek, but frozen in the banks. It consisted of 2 feet (0.6 m) or more of black muck overlying slide bedrock and very little gravel. All of the chunky bedrock was sluiced.

Bedrock Geology Bedrock is blocky-weathering quartz-sericite schist and soft chlorite schist.

Gold Characteristics The gold was reported as rough with a fineness of 820.

CARMACK FORK, a tributary of Upper Bonanza Creek

1150/14 2004: 63°55'06"N, 139°08'37"W

6077 Yukon Ltd., Dave Trainer, Wayne Hawkes
Water license: PM97-055 (2005)
Active producer (2003-2004) **Operation no. 20**

Location The operation was located on Lafferty Pup, Flannery Pup and Carmack Fork.

Work History and Mining Cuts This ground was first tested in 1997 and mining began in 1998. In 2002 and 2003, Wayne Hawkes worked under a license agreement with Dave Trainer. One cut 30 by 3 by 2500 feet (10 x 1 x 800 m) was processed. The sluice plant was moved upstream above Flannery Pup with a new settling pond added. In 2004, the operation moved upstream into Flannery Pup.

Equipment and Water Treatment In 2003, Wayne Hawkes stripped ground with a Caterpillar D9 bulldozer and Dave Trainer used a 466 Koehring excavator to feed the plant. The wash plant included a 10- by 15-foot Derocker dump box which fed into a single 4- by 30-foot sluice run with oscillating angle iron riffles. A 6-inch Perkins water pump supplied about 2000 igpm which was used to sluice 100 to 150 loose cubic yards per hour. Clean-ups were conducted using a long tom. A hydraulic monitor was used to melt black muck which was settled into a large downstream pond with 2 culverts acting as spillways. Make-up water only was pumped directly from Carmack Fork and process water was recycled from within an out-of-stream 300- by 150-foot (100-x 50-m) settling pond. A creek bypass channel around the settling pond was built and maintained along the left limit of the valley bottom. In 2004, the operation had two primary in-stream recycle ponds and another larger downstream settling pond.

Surficial Geology and Stratigraphy Organic overburden, from 8 feet (2 m) deep up to 20 feet (6 m) deep, was thawed near the creek channel and frozen along the sides of the valley. Gravel layers were up to 12 feet (4 m) deep and the bottom 6 feet (2 m) of gravel plus 1 foot (0.3 m) of bedrock were sluiced.

Bedrock Geology Bedrock is chloritic quartzite and muscovite-chlorite schist.

Gold Characteristics The gold was reported as fine-grained and the fineness was 692.

UPPER BONANZA CREEK, a tributary of Bonanza

1150/14 2006: 63°54'34"N, 139°09'09"W

Allen Maller, Anita Maller
Water license: PM04-384 (2014)
Active producer (2006) **Operation no. 21**

Location The operation was located on Upper Bonanza Creek just upstream of Carmack Fork.

Work History and Mining Cuts Mr. Maller worked the operation with the help of his wife Anita. Sluicing took place approximately 4 to 6 hours per day.

Equipment and Water Treatment Equipment consisted of a Warner and Swasey H-550 backhoe, a Case 450B track loader and a Caterpillar D7 bulldozer. The wash plant consisted of an 8- by 8-foot hopper with screen deck feeding a 3- by 12-foot single run sluice lined with angle iron riffles and Nomad matting. The operation used out-of-stream recycling with seepage discharge only.

Surficial Geology and Stratigraphy The section consisted of 20 feet (6 m) of muck and silt overlying 10 feet (3 m) of gravel.

Bedrock Geology Bedrock is Klondike Schist.

READY BULLION GULCH, a tributary of Upper

1150/14 2003: 63°52'35"N, 139°09'08"W

Andre Fournier
Water license: PM03-309 (2007)
Active producer (2003-2004) **Operation no. 22**

Location This property was located on Ready Bullion Gulch, a tributary of Upper Bonanza Creek.

Work History and Mining Cuts Activity during 2003 included refurbishment of the old residence. In 2004, Mr. Fournier recovered several ounces of gold while mining.

Bedrock Geology The bedrock is fractured muscovite-quartz Klondike Schist. The bedrock surface is irregular, with prominent reefs and hollows, and slopes into the valley wall along the left limit of the creek.

Allen and Anita Maller's operation on Upper Bonanza Creek, 2006.

IRISH GULCH, a tributary of Eldorado Creek

1150/14 2005: 63°54'28"N, 139°19'36"W

Beron Placers Co. Ltd., Bern Johnson, Ron Johnson
Water licenses: PM99-137 (2005), PM95-003 (2005)
Active producer (2003-2005) **Operation no. 23**

Location Ron and Bern Johnson mined progressively upstream on Irish Gulch, starting at its confluence with the left limit of Eldorado Creek.

Work History and Mining Cuts Mining at this property began in 1998, moving upstream each season until 2000 when a right-limit bench was discovered. The bench was mined until 2002, and mining again progressed upstream on Irish Gulch each season from 2002 to 2005. Frozen overburden was stripped mechanically and hydraulically, with in-stream settling ponds in Irish Gulch, a recycle pond in Eldorado valley and final discharge to Eldorado Creek. In 2006, Beron Placers moved to a bench on the left limit of Eldorado Creek between Irish Gulch and French Gulch.

Equipment and Water Treatment Equipment included a Caterpillar D6C bulldozer which was used for stripping and a 6-inch auger drill which was used for testing. A Caterpillar D8K bulldozer was used for stripping overburden and stockpiling pay gravel, while a Caterpillar 245 excavator was used to dig pay gravel, feed the wash plant and clean out settling ponds. A Caterpillar 950 loader was used to remove tailings. The wash plant was wheel-mounted and included a 17- by 15-foot dump box and a 4- by 20-foot vibrating screen deck with four 4- by 10-foot sluice runs. These narrowed into a single sluice run 42 inches wide by 7 feet long. Tailings were stacked with a 48-inch by 50-foot conveyor. A GM 871 diesel powered 8- by 10-inch Paco water pump supplied approximately 2500 igpm which was used to sluice up to 150 loose cubic yards per hour. Water was pumped from a large reservoir/recycle pond located in the Eldorado Creek valley, uphill into Irish Gulch using 2000 feet (600 m) of 10-inch aluminum pipe. A series of cross-valley rock-filled dams created permanent in-stream settling ponds in Irish Gulch. Gold was cleaned up using a Wilfley Table.

Bern and Ron Johnson sluicing on Irish Gulch.

Surficial Geology and Stratigraphy Frozen black muck overburden increased in depth as mining progressed upstream in Irish Gulch, starting with only 10 feet (3 m) near the mouth and increasing to more than 50 feet (10 m) deep on the upper right limit of the gulch. Near the middle of the gulch about 15 feet (5 m) of black muck mixed with angular rocks covered pay gravel 3 to 5 feet (1 to 2 m) deep. Up to 3 feet (1 m) of broken bedrock was also sluiced. Pay gravel was approximately 1½ feet (0.5 m) thick, light brown and rested on chlorite schist that slopes north. The gravel was overlain by 16½ feet (5 m) of muck that contained massive ground ice and an old ice-filled adit.

Bedrock Geology Bedrock is schist.

Gold Characteristics Coarse, angular gold with numerous nuggets and fineness around 650 was recovered, as well as rounded, smooth gold with a fineness of 750.

ELDORADO CREEK, a tributary of Bonanza Creek

1150/14 2006: 63°54'05"N, 139°19'09"W

Beron Placers Co. Ltd., Ron Johnson, Bern Johnson
Water license: PM04-458 (2015)
Active producer (2006) **Operation no. 24**

Location In 2006, the operation was on a left-limit bench between Irish Gulch and French Gulch.

Work History and Mining Cuts The Johnson brothers first worked on Eldorado Creek in 1975. In 2006, they returned to the left-limit bench on Eldorado Creek and operated a daily 12- to 14-hour shift with 2 miners and 2 camp personnel. One mining cut 50 feet wide and 1000 feet (15 x 300 m) long was processed.

Equipment and Water Treatment In 2006, equipment included Caterpillar D8K and D6C bulldozers for stripping and tailings removal, a Caterpillar 245 excavator for stripping and feeding the wash plant and a Caterpillar 950 loader for removing tailings. Miscellaneous other equipment included a drill rig for testing. The wash plant was fed 150 loose cubic yards per hour, and consisted of a vibrating grizzly feeder and screen deck feeding four 4- by 14-foot sluice runs lined with 1½- and 1-inch angle iron riffles, expanded metal and Nomad matting. Tailings were stacked by a 42-inch by 50-foot conveyor. Water from Eldorado Creek was supplied by two pumps, a GMV871-powered 10- by 8-inch pump rated at 4000 igpm and a GM471-powered 8- by 6-inch pump rated at 2000 igpm. Effluent was settled

Beron Placer's mining operation on the left-limit bench of Eldorado Creek, 2006.

out-of-stream and 100% recycled from a 600- by 50-foot (200- x 15-m) pond. Clean-ups were done daily with a long tom, Wilfley table and furnace.

Surficial Geology and Stratigraphy The section mined in 2006 on the left limit was frozen and consisted of 15 feet (5 m) of 'Klondike Wash' overlying 15 feet (5 m) of White Channel gravel on bedrock. All of the White Channel gravel and 3 feet (1 m) of bedrock were sluiced.

Bedrock Geology In 2006, the bedrock on the left limit was described as decomposed chlorite schist.

Gold Characteristics In 2006, the gold recovered from the left limit of Eldorado was crystalline with a purity of approximately 720.

FRENCH GULCH, a tributary of Eldorado Creek

1150/14 2003: 63°53'49"N, 139°18'33"W

J. Archibald
Water license: PM98-057 (2005)
Active producer (2004) **Operation no. 25**

Location The operation was located on French Gulch and just downstream of the mouth of French Gulch in the Eldorado Creek valley.

Work History and Mining Cuts James Archibald first operated in this location in 1978 and has mined nearly continuously since then. Mining cuts varied from 50 feet to 80 feet (15 to 25 m) wide by up to 500 feet (150 m) long each year. In 2004, Mr. Archibald sluiced in the Eldorado valley at the mouth of French Gulch and made cuts along the left limit of Eldorado Creek at the valley bottom.

Equipment and Water Treatment Equipment included a Caterpillar D6C bulldozer, a Caterpillar D8K bulldozer and a Caterpillar 980B loader. The wash plant consisted of a 10- by 20-foot Derocker over a single sluice run lined with angle iron riffles. Effluent was settled out-of-stream and recycled from two large settling ponds in Eldorado Creek valley at the mouth of French Gulch.

Surficial Geology and Stratigraphy Deposits along the left limit of Eldorado Creek consisted of frozen 1927-era dredge tailings up to 33 feet (10 m) thick, which covered residual virgin pay gravel with a thickness from 2 feet (0.6 m) to 15 feet (5 m) near the rim. Up to 40 feet (10 m) of White Channel gravel hydraulic tailings from operations on French Hill covered virgin gravel on the left limit of French Gulch.

Bedrock Geology Bedrock is a quartz-chlorite-sericite schist and black carbonaceous pyritic schist.

Gold Characteristics Fine-grained gold (minus 16-inch mesh) was recovered from below the dredge tailings with a fineness of approximately 710. Gold recovered from the side pay was coarser, mainly plus 16 mesh, with a fineness around 760.

ELDORADO CREEK, a tributary of Bonanza Creek

1150/14 2006: 63°52'48"N, 139°16'51"W

Ljubomir Perunovic, Walter Hinnek, Erich Rauguth
Water license: PM03-328 (2009, Licensee: Ljubomir Perunovic)
Active producer (2004-2006) **Operation no. 26**

Location The operation was located on the left and right limits of Eldorado Creek between Oro Grande and Gay Gulch.

Work History and Mining Cuts From 2004 to August 2006, Ljubomir Perunovic operated the mine with Walter Hinnek under Mr. Perunovic's water license. He mined side pay gravel, with one hired crew person on a daily 8-hour shift. In 2004, three cuts were mined: 50 by 300 feet (15 x 90 m), 40 by 300 feet (10 by 90 m), and 50 by 250 feet (15 x 80 m). In 2005, one cut 1000 by 50 feet (300 x 15 m) was mined, and in 2006, tailings and some bedrock were sluiced for a total of 6000 cubic yards (5000 m^3). In September 2006, the operation was transferred to Erich Rauguth. Mr. Rauguth continued to mine under Mr. Perunovic's water license using a crew of four miners working a daily 10-hour shift.

Equipment and Water Treatment Mr. Perunovic's equipment included a Koehring excavator, a Hitachi U14H excavator and a Caterpillar 980B loader. For stripping jobs, a Caterpillar bulldozer was hired on a casual basis. The wash plant was a single screen deck with four 8- by 2-foot sluice runs, hydraulic riffles, expanded metal and Nomad matting. Material was processed at 40 loose cubic yards per hour. Water was supplied by an 8- by 6-inch Perkins-powered pump rated at 500 igpm. Final clean-ups were done by Don and Rose Kenzie in Callison. Water was acquired from Eldorado and 50% recycled in a 400- by 50-foot (100- x

15-m) pond. Mr. Rauguth used the existing Caterpillar 980B loader and Hitachi U14H excavator when he took over the operation but added a Caterpillar D9G bulldozer. His wash plant was a single screen deck with three sluice runs lined with angle iron and hydraulic riffles, expanded metal and Coco matting. Water was acquired from Eldorado Creek and supplied by a John Deere 6- by 6-inch pump rated at 1200 igpm. Pay was processed at 80 loose cubic yards per hour. Effluent was settled in a 50- by 140-foot (15 x 40 m) pond. Clean-ups were done using a long tom, gold wheel and concentrating table.

Surficial Geology and Stratigraphy The section encountered by Mr. Perunovic was frozen on the left limit and consisted of 6 to 8 feet (2 to 3 m) of overburden overlying 3 feet (1 m) of gravel. All of the gravel plus 3 feet (1 m) of bedrock was sluiced. Mr. Rauguth stripped overburden 8 to 40 feet (3 to 10 m) thick to access mineable side pay gravel which was 20 to 40 inches (50 to 100 cm) thick. An additional 3 feet (1 m) of gravel was sluiced if the bedrock was slabby and competent. Only 2 feet (0.6 m) of bedrock was sluiced if it was decomposed clay.

Bedrock Geology Bedrock is chloritic schist.

Gold Characteristics Mr. Perunovic reported the gold as variable from coarse- to fine-grained and bright yellow in colour. The fineness was 750. Mr. Rauguth recovered coarse gold, 20 mesh and larger in size.

JACKSON HILL, a tributary of Klondike River

116B/3 2005: 64°02'06"N, 139°21'35"W

Gary Crawford, Walter Hinnek, Mike Heisey
Water license: PM02-272 (2012, Licensee: Mike Heisey)
Active producer (2005-2006) **Operation no. 27**

Location The operation was located at the base of Jackson Hill on the left limit of Klondike River.

Work History and Mining Cuts In 2005, Walter Hinnek and Gary Crawford sluiced some White Channel gravel on the bench of Jackson Hill under Mike Heisey's license. In the fall, a drill program was conducted to evaluate the grade of the buried Klondike River gravel. In 2006, a crew of five miners and one camp personnel worked a daily 12-hour shift. The operation mined virgin Klondike River gravel on the left limit of Klondike River, at the base of Jackson Hill, after stripping off hydraulic tailings and black muck. A mining cut 800 by 150 feet (200 x 50 m) with a total average depth of 75 feet (20 m) from surface was processed.

Equipment and Water Treatment In 2005, test sluicing was conducted on the Jackson Hill bench above Klondike River. Water was pumped from a dredge pond in the valley and after partial recycle on the bench the final discharge was to dredge tailings in the valley. An Ingersoll & Rand reverse circulation drill capable of drilling to 300 feet (100 m) was used for the drill program. In 2006, equipment consisted of a Caterpillar D10N bulldozer, a Caterpillar 245 excavator,

Aerial view of Perunovic's mining operation on Eldorado Creek, 2006.

a Samsung 350 excavator, a Caterpillar 988B loader, three Caterpillar 769B rock trucks and two Caterpillar D40D rock trucks. The wash plant was a 6-foot-diameter land-based trommel with two sets of sluice runs each 8 feet wide and 10 feet long, lined with expanded metal and Nomad matting. Water for the operation was acquired from dredge ponds and pumped by a V6 Jimmy-powered 10- by 8-inch Morris pump rated at 3000 igpm. Effluent was discharged to old dredge tailings and 100% recycled with seepage only to dredge ponds.

Surficial Geology and Stratigraphy The section in 2005 consisted of White Channel gravel on Jackson Hill at the bedrock contact. In 2006, the Klondike valley section on the left limit consisted of 55 feet (17 m) of hydraulic tailings overlying 20 feet (6 m) of black muck on top of 6 feet (2 m) of virgin Klondike River gravel. All of the virgin gravel plus 3 feet (1 m) of bedrock was sluiced.

Bedrock Geology The bedrock at this site is graphitic and chloritic schist.

Gary Crawford's wash plant operating on the Klondike River at the base of Jackson Hill, 2006.

Gold Characteristics Gold was reported as dark-coloured and fine-grained with very few nuggets. The purity was 790.

Gary Crawford sluicing on Jackson Hill, 2005

LINDOW CREEK, a tributary of Bear Creek

1150/14 2006: 63°58'37"N, 139°12'41"W

Frank Hawker
Water license: PM04-388 (2015)
Active producer (2006) **Operation no. 28**

Location The operation was located on Lindow Creek downstream of Alf Robert's operation.

Work History and Mining Cuts The early part of the 2006 season was spent moving equipment from Sixtymile to Lindow, and digging test holes with the excavator. When mining began, two miners and one camp person worked a daily 12-hour shift. A 350- by 75-foot (100- x 20-m) cut was processed.

Equipment and Water Treatment Equipment included a Komatsu 375 bulldozer for stripping, two Hitachi excavators (EX200 and EX300) for stripping and sluicing, and a Caterpillar D30D rock truck for hauling overburden. The wash plant was a land-based trommel with a 4-foot-diameter barrel and sluice runs lined with hydraulic riffles. Material was processed at 55 loose cubic yards per hour. Water was acquired from Lindow and Bear creeks and supplied by a Caterpillar 3208-powered 6- by 6-inch pump rated at 1200 igpm. Effluent was 50% recycled from the settling facilities.

Surficial Geology and Stratigraphy The section was frozen and consisted of 30 feet (10 m) of muck and waste gravel overlying pay gravel 1 to 2 feet (0.3 to 0.6 m) thick on bedrock. Up to 6 feet (2 m) of bedrock was sluiced along with the pay gravel.

Bedrock Geology Bedrock is Klondike Schist.

Test pit at Frank and Karen Hawker's operation on Lindow Creek.

LINDOW CREEK, a tributary of Bear Creek

1150/14 2006: 63°57'45"N, 139°12'01"W

Alfred Roberts, Marlene Roberts
Water license: PM03-334 (2008)
Active producer (2003-2006) **Operation no. 29**

Location This operation was located on upper Lindow Creek, a tributary of Bear Creek.

Work History and Mining Cuts In 2003, Alf and Marlene Roberts worked a daily 8-hour shift mainly cleaning their old site at Homestake Gulch and moving equipment to Lindow Creek. In 2004, one cut 300 feet long, 40 feet wide and 2 feet deep (90 x 10 x 1 m) was mined. In 2005, the season was spent cleaning up and digging the pre-settling pond and the sump for the main settling pond with the dragline. In 2006, two cuts were stripped, one 200 by 25 feet (60 x 8 m) and another 300 by 20 feet (90 x 6 m). Approximately 70 cubic yards (50 m^3) were sluiced.

Equipment and Water Treatment Equipment consisted of a Caterpillar D8H bulldozer with U-blade and no ripper for stripping and pushing pay, and an International 125C track loader with a 1½-cubic-yard bucket and ripper was used for loading the wash plant. A Bay City dragline with a ¾-cubic-yard bucket was brought to the site in 2005 to move overburden and clean out the settling ponds. The wash plant was a 5- by 10-foot wet double screen shaker with 2-inch openings on the top and 1-inch openings on the bottom. This fed to an 18-inch by 20-foot sluice run with Nomad matting, of which the first 12 feet was inclined at 1½ inch to 1-foot grade and lined with 4-lb expanded metal, and the last 8 feet was inclined at 3 inches to 1 foot and lined with 1-inch

Alf and Marlene Roberts operation on Lindow Creek, 2006.

Sometimes the crew is small but their contribution is great.

riffles. Water for the plant was supplied at 600 igpm by a Gorman Rupp 6-inch pump powered by a GM 353 diesel engine, enough to process 20 loose cubic yards per hour. Clean-ups were done once weekly with a wash tub, long tom and gold wheel. Water in 2004 was acquired from a 100% recycled out-of-stream pond 200 by 50 by 6 feet (60 x 15 x 2 m). In 2003 and 2005, no water was used. In 2006, water was acquired from a 50- by 100- by 6-foot (15- x 30- x 2-m) deep pump pond on the adjacent downstream claim. Effluent was settled out-of-stream and 100% recycled from a 150- by 50- by 8-foot (50- x 15- x 2-m) deep pond.

Surficial Geology and Stratigraphy There are reportedly two pay streaks on the creek, with many oldtimers' workings throughout. The top pay streak is 4 to 6 feet (1 to 2 m) above the bedrock, and the bottom one is on bedrock. The section mined in 2004 consisted of 1½ feet (0.5 m) of moss and dirt and 2 feet (0.6 m) of top soil, overlying 2 feet (0.6 m) of gravel which was the top pay streak found to be overlying a clay 'false bedrock' layer. The deeper gravel layer (the second pay streak) and bedrock had not yet been reached by the operator. The top pay gravel was sluiced. In 2006, the section was frozen on the right limit but thawed in the middle of the valley. The middle of the valley had 1 foot (0.3 m) of moss and dirt over 6 feet (2 m) of gravelly slide rock overlying 11 feet (3.4 m) of gravel. The valley side had up to 18 feet (5.5 m) of overburden. A 5-foot (1 m) thickness of gravel was sluiced. Bedrock was not reached.

Gold Characteristics Mr. Roberts recovered rough and chunky 'gulch' gold up to 10 mesh in size. The fineness was reported as 658.

HUNKER CREEK, a tributary of Klondike River

116B/3 2005: 64°01'48"N, 139°10'35"W

Farley's Machine Inc., Dave Farley, Owen McKinney
Water license: PM04-440 (2015)
Active producer (2003-2006) **Operation no. 30**

Location This operation was located at the mouth of Hunker Creek immediately next to the Klondike Highway.

Work History and Mining Cuts This operation began in 1998. Mining took place in 1999 and 2000, and in 2001 and 2002 a single cut was excavated but no sluicing occurred. During the 2003 season, a cut was stripped and pay gravel was stockpiled. In 2004, no mining activity took place, but in 2005 and 2006, a large amount of stockpiled pay gravel was sluiced.

Equipment and Water Treatment Mr. Farley's equipment included Caterpillar 235 and EL-300 excavators, a Caterpillar D8K bulldozer, a Komatsu 355 bulldozer, a Caterpillar 769 dump truck and an O&K RH-75 excavator. In 2003, a new wash plant was set up and seepage water was pumped into Hunker Creek most of the summer.

Surficial Geology and Stratigraphy The ground varied in depth, but an average of 20 feet (6 m) of silt overburden and 20 feet (6 m) of gravel was encountered. The top 14 feet (4 m) of gravel was wasted and the lower 5 feet (2 m) of gravel and 3 feet (1 m) of bedrock was sluiced. The bottom 15 feet (5 m) of the profile was found to be frozen in areas, and the water table was near the surface which required continuous dewatering.

Bedrock Geology The bedrock is graphitic schist.

Gold Characteristics The gold was reported to be 80 to 90 percent minus 10 mesh with the remainder plus 10 mesh. It was typically flat, rough and dull with a fineness of 780.

The wash plant of Farley's Machine on the Klondike River, 2004.

HUNKER CREEK, a tributary of Klondike River

116B/3 2003: 64°01'31"N, 139°10'01"W

Grew Creek Ventures, Dave Marsters, Terri Marsters
Water license: PM04-382 (2015)
Active producer (2003-2006) **Operation no. 31**

Location The operation was located close to the mouth of Hunker Creek on the left side of the valley and on the left limit of Klondike River valley.

Work History and Mining Cuts This operation was started by Mr. Doug Busat in 1996. It was acquired by Dave Marsters in 2001 and production continued. In 2003, Mr. Marsters spent time stripping and mining a cut along lower Hunker Creek. In 2004, a crew of 10 miners worked daily 12-hour shifts. Four cuts were mined with dimensions of 200 by 800 feet (60 x 200 m), 150 by 600 feet (50 x 200 m), 150 by 700 feet (50 x 200 m) and 100 by 500 feet (30 x 100 m). In 2005 and 2006, a crew of 12 miners worked 12 hours daily. A large strip was cut along the left limit of Hunker creek which continued down the left limit of the Klondike River. Four cuts were completed in 2006: cut #1 was 200 by 800 feet (60 x 200 m), cut #2 was 250 by 1200 feet (75 x 370 m), cut #3 was 200 by 1000 feet (60 x 300 m) and cut #4 was 150 by 800 feet (50 x 200 m).

Equipment and Water Treatment Equipment included two Caterpillar D9H bulldozers and three Caterpillar 769C rock trucks for stripping, a Caterpillar D7G for reclamation, a Caterpillar 330L hoe for stacking pay, as well as a Caterpillar 345B excavator, a Volvo A35 truck and two Caterpillar 980C loaders for various duties. In addition, a Caterpillar D10N bulldozer, Caterpillar 980B loader and Hitachi EX450 excavator were added in 2006. The wash plant consisted of a 30-foot-long Clemro feeder with a 20-cubic-yard hopper,

T.D.Oilfield Services pit on the left limit of Klondike River at the mouth of Hunker Creek, 2003.

a Clemro 5- by 10-foot screen deck and 8 sluice runs with hydraulic riffles. Tailings were stacked by an 80-foot-long conveyor. Water was acquired from ground seepage and 100% recycled from a 500- by 1500-foot (150- x 450-m) out-of-stream pond, pumped by a Berkley 10- by 12-inch pump powered by a Caterpillar 3208 engine rated at 3000 igpm. Pay was processed at a rate of 120 loose cubic yards per hour. Clean-ups were conducted daily with a reverse drum spinner.

Surficial Geology and Stratigraphy In 2004, the stratigraphic section consisted of 10 feet (3 m) of black muck overlying 20 feet (6 m) of muddy gravel and 10 feet (3 m) of 'Klondike Wash', black cobbly gravel deposited by the ancient Klondike River. Approximately 6 feet (2 m) of the black gravel and 2 feet (1 m) of bedrock were sluiced. The section in 2006 was 50 feet (15 m) of frozen muck overburden overlying 6 feet (2 m) of the Klondike Wash gravel. All of the gravel and 2 feet (0.6 m) of bedrock were sluiced.

Bedrock Geology Bedrock is a graphitic to chloritic schist.

Gold Characteristics In 2004, the gold was reported as flat and smooth with a fineness of 750. In 2006, the gold was reported as fine-grained with a fineness of 730.

HUNKER CREEK, a tributary of Klondike River

116B/3 2006: 64°01'03"N, 139°08'57"W

Henry Gulch Placers, John Alton, Marty Knutson
Water licenses: PM04-405 (2015, Licensee: Marty Knutson),
PM04-416 (2015, Licensee: John Alton)
Active producer (2005-2006) **Operation no. 32**

Location This operation was located on the left limit approximately one mile (2 km) from the confluence with the Klondike River.

Work History and Mining Cuts This area was first tested by Henry Gulch Placers in 1997, and some testing and mining was done until 2000. In 2005, the operators returned. The season was spent cleaning up the left limit of Hunker Creek below Henry Gulch, which consisted of mining the leftovers from the dredge limit as well as previous Cat mining and oldtimers' workings. Five miners worked a daily 11-hour shift and stripped and sluiced three cuts. These measured 140 by 130 by 25 feet (45 x 40 x 8 m) or 16,851 cubic yards (12 677 m^3) and 225 by 100 by 35 feet (70 x 30 x 10 m) or 29,167 cubic yards (22 299 m^3), and 300 by 85 by 35 feet (90 x 25 x 10 m) or 33,055 cubic yards (25 272 m^3). A fourth cut measuring 400 by 150 by 65 feet (100 x 45 x 20 m) or

Hydraulic and mechanical stripping on the left limit of Hunker, Henry Gulch Placers, 2006.

144,444 cubic yards (111 435 m^3) was stripped with the hydraulic monitor. In 2006, five miners and three camp personnel worked a daily 11-hour shift. Some remnants of gravel left by the dredge on the left limit in the valley were mined, and a cut on the high left-limit bank was hydraulically monitored. In total, three cuts were mined: cut #1 was 220 by 100 feet (70 x 30 m), cut #2 was 80 by 250 feet (20 x 75 m) and cut #3 was 150 by 300 feet (50 x 100 m).

Henry Gulch Placer's wash plant operating on Hunker Creek, 2005.

Equipment and Water Treatment Equipment included Caterpillar D9H and D9G bulldozers, two Caterpillar Scrapers (631-B and 631-C), two Caterpillar D350 rock trucks, one Hitachi EX200LC excavator, a Caterpillar 235 excavator and a Caterpillar 980B loader. A Caterpillar 245 excavator used in 2005 was replaced by a Hitachi EX400 excavator in 2006. A hydraulic monitor which ran 24 hours a day was used to thaw and strip the frozen black muck on the left-limit cut after initial stripping with the Caterpillar D9H bulldozer. The thawed valley cuts were stripped with the excavators, which cast the overburden into mined-out areas. The wash plant consisted of a single deck offset shaker with ¾-inch punch plate feeding two 10-foot sluice runs with expanded metal and Nomad matting, 4 feet of hydraulic riffles and 4 boil boxes. A 50-foot-long, 30-inch-wide conveyor stacked coarse tailings. A Fairbanks Morse 10- by 8-inch pump powered by a GM 371 engine with 1500 to 2000 igpm supplied enough water to process 80 to 100 loose cubic yards of pay per hour. Effluent was treated in a 500- by 250- by 15-foot (150- x 75- x 5-m) deep out-of-stream pond, with 90% of the water recycled and make-up water supplied by a 6-inch thrash pump and inflow from Hunker Creek. The top of the box was cleaned daily and total clean-ups were done every 50 to 100 hours with a twin jig set-up.

John Alton and crew in the Hunker Creek diversion after the water was turned in. No miners were hurt in the making of this photo.

Surficial Geology and Stratigraphy In 2005 and 2006, two types of pits were excavated, thawed valley cuts and a thick frozen left-limit cut. The thawed valley cuts had a total thickness of 20 to 22 feet (6 to 7 m) and were described as having interbedded mud and gravel layers with variable grain sizes, which increasingly had large cobbles near bedrock. Many old workings and drift rooms were encountered, but very few fossil bones. On the frozen left-limit cut, the total section depth was 60 to 85 feet (20 to 25 m). Frozen interbedded layers of mud mixed with rim rock, layers of slide rock (colluvium) and very large ice seams comprised the upper 45 to 60 feet (15 to 20 m). This was overlying 6 to 12 feet (2 to 4 m) of gravel mixed with oldtimers' tailings. Many old workings and drifts were encountered in the bedrock.

Between 4 and 6 feet (1 and 2 m) of gravel and 3 to 6 feet (0.9 to 2 m) of bedrock were sluiced.

Bedrock Geology Bedrock in the valley on the left limit was described as wavy schist capped by decomposed schist. On the far left limit closer to the rim, the bedrock was described as varied with white and schistose capping layers, and large imbedded angular quartz pieces.

Gold Characteristics In 2005 and 2006, the gold varied according to location recovered. Nearer to the valley centre, a fair amount of coarse, chunky gold was recovered including some dendritic pieces and some nuggets with attached quartz. At this location, approximately 30% of the gold was plus 10 mesh, 40% was between 10 and 60 mesh, and 30% was less than 60 mesh. Closer to the left limit the gold was finer grained, with 10% greater than 10 mesh, 60% between 10 and 60 mesh, and 30% less than 60 mesh. The purity of the gold was generally 709, although closer to Henry Gulch, the fineness dropped to 699.

HENRY GULCH, a tributary of Hunker Creek

116B/3 2005: 64°00'46"N, 139°08'29"W

Rick Gillespie
Water license: PM04-377 (2009)
Active producer (2005) **Operation no. 33**

Location This operation was located on Henry Gulch, a left-limit tributary of Hunker Creek.

Work History and Mining Cuts Rick Gillespie has been working this creek since 1995, and has mined intermittently since that time. In 2005, one cut was stripped, 100 by 50 feet and 60 feet (30 x 15 x 20 m) deep, for a total of 11,111 cubic yards (8495 m^3); a small amount was sluiced.

Equipment and Water Treatment Equipment included a Caterpillar 212 excavator and a Caterpillar 320 excavator, as well as a Volvo rock truck (for hauling muck waste) and Caterpillar 966C loader. The wash plant was a 5- by 11-foot oscillating screen deck with a stacker, and the sluice run was 10 feet long and 3 feet wide, with angle iron riffles, Nomad matting and expanded metal. Water was acquired by a Detroit-powered Gorman-Rupp 6-inch pump rated at 1500 igpm, pumping from a 30- by 60- by 6-foot (10 x 20 x 2 m) deep pond which was 100% recycled. From 50 to 60 loose cubic yards per hour were processed.

Surficial Geology and Stratigraphy Approximately 50 feet (15 m) of black muck was overlying 6 to 8 feet (2 to 3 m) of gravel. All of the gravel (described as quartz-rich and 'chunky') plus 2 feet (1 m) of black slabby bedrock were sluiced.

Bedrock Geology Bedrock was generally solid and fractured and some gumbo clay was encountered. Klondike Schist occurs near the headwaters of the gulch, with Nasina quartzite outcropping lower in the valley.

Gold Characteristics Gold was reported to be coarse and ranging in fineness between 650 and 680.

HATTIE GULCH, a tributary of Hunker Creek

116B/3 2005: 64°01'31"N, 139°07'32"W

Peter Gould, John Gould, Mike Heisey
Water license: PM98-059 (2009)
Active producer (2003-2005) **Operation no. 34**

Location Hattie Gulch is a right-limit tributary of Hunker Creek which cuts Australian Hill.

Work History and Mining Cuts John, Peter, and Susan Gould first began operations here in 1989. In 2003, pay gravel was stripped and stockpiled, and some sluicing was done by Mike Heisey. In 2004, the operators stripped a deep cut along the left limit of the Hattie Gulch and conducted a drilling program to locate reserves. Some pay gravel was sluiced in 2005.

Equipment and Water Treatment Equipment included a Caterpillar D7F bulldozer which was used to strip overburden, excavate and stockpile pay gravel, and a Caterpillar 930 loader which was used to feed the wash plant and remove tailings. A P&H dragline stripped overburden. A Caterpillar rock truck was used to move overburden. Mr. Heisey's wash plant was a hopper-fed, 6-foot-diameter trommel over two 4- by 15-foot sluice runs equipped with hydraulic riffles. Effluent was recycled in out-of-stream settling ponds which were upgraded in 2003. Reservoirs were used in 2004 for sluicing.

Surficial Geology and Stratigraphy Australian Hill forms a terrace of the Tertiary 'White Channel' gravel, which is overlain in part by glaciofluvial outwash, locally referred to as Klondike Wash. In the area of Hattie Gulch, the Klondike Wash is thinner than on the Klondike River valley side, and the White Channel gravel varies from 50 to 100 feet (15 to 30 m) thick to bedrock. Pay values are in the 3 to 12 feet (1 to 4 m) of gravel above bedrock and 1 to 2 feet (0.3 to 0.6 m) of underlying bedrock, with occasional higher gold values within the White Channel gravel section. Numerous oldtimers' adits are present at the bedrock/gravel contact.

Bedrock Geology Bedrock is clay-sericite altered chloritic and graphitic schist.

Gold Characteristics Flat and coarse gold was recovered from the bedrock while fine and angular gold was recovered from the gravel. The fineness was approximately 730.

Peter Gould's operation on Hattie Gulch, 2004.

LAST CHANCE CREEK, a tributary of Hunker Creek

116B/3

2004: 64°00'15"N, 139°06'05"W
2003: 64°00'21"N, 139°06'06"W

Henry Gulch Placers, Marty Knutson, John Alton
Water license: PM99-139 (2005)
Active producer (2003-2004) **Operation no. 35**

Location This operation was located on Last Chance Creek approximately 1500 feet (500 m) upstream from the mouth.

Work History and Mining Cuts In 2003, a crew of 12 to 15 miners worked 12-hour shifts, mining four cuts under a thawed hydraulic tailings fan in the centre of the valley and one cut on the right limit in frozen virgin ground. These cuts are listed in Table 1. A total of 1040 hours were spent sluicing.

In 2004, a crew of eight miners worked 11 hours a day, mining one cut under thawed hydraulic tailings and one cut on the right limit in frozen virgin ground. The cut under the fan was 400 by 175 by 40 feet (100 x 50 x 10 m; 103,703 cubic yards; 79 286 m^3) stripped and 400 by 160 by 10 feet (100 x 50 x 3 m; 23,703 cubic yards; 18 122 m^3) sluiced. The virgin ground was 1400 by 60 by 20 feet (430 x 20 x 7 m; 62,222 cubic yards; 47 572 m^3) stripped and 1400 by 60 by 8 feet (430 x 20 x 2 m; 24,888 cubic yards; 36 371 m^3) sluiced. Final mining and reclamation of this property was completed in 2004, and the operation moved to Hunker Creek just downstream of Henry Gulch.

Equipment and Water Treatment In 2003, a large volume of hydraulic tailings was removed and underlying creek gravel was mined using equipment which included one Caterpillar D9G and two Caterpillar D9H bulldozers, one Caterpillar 621 and three Caterpillar 631 scrapers, three Caterpillar excavators (225, 235 and 245), and three Caterpillar D350 articulating rock trucks. A Fairbanks Morris 10- by 8-inch pump powered by a General Motors 371 engine supplied 2000 igpm to the wash plant which processed 90 loose cubic yards per hour. The wash plant was a single deck offset shaker with ¾-inch punch plate and a 30-inch by 50-foot stacker for coarse tailings. Four boil boxes captured coarse gold, while two 8-foot sluice runs with expanded metal, hydraulic riffles and Nomad matting captured the smaller fractions. The out-of-stream pond was 400 by 200 by 15 feet (100 x 60 x 5 m) deep and fully recycled with some make-up water supplied by the dewatering pump in the mining pit. Clean-ups were done with a twin-jig setup.

Stripping hydraulic tailings at Henry Gulch Placers' operation on Last Chance Creek, 2003.

In 2004, the equipment was the same as in 2003 except the wash plant had a 30-foot by 30-inch stacker and only 2 boil boxes.

Surficial Geology and Stratigraphy In 2003, the stratigraphic section consisted of the hydraulic tailings fan which was from 10 to 60 feet (3 to 20 m) thick, overlying 10 to 16 feet (3 to 5 m) of mud, overlying 6 to 12 feet (2 to 4 m) of gravel on bedrock. Approximately 4 feet (1 m) of gravel and 3 to 8 feet (1 to 2 m) of bedrock were sluiced, with the upper 20 to 70 feet (6 to 20 m) of mud and hydraulic tailings wasted. Oldtimers' tailings, when encountered, were also sluiced as they had good values of gold. In 2004, the valley section consisted of 30 feet (9 m) of hydraulic tailings over 10 to 16 feet (3 to 5 m) of mud and 6 to 12 feet (2 to 4 m) of gravel on bedrock. On the right limit, 10 to 12 feet (3 to 4 m) of mud overlaid 6 to 12 feet (2 to 4 m) of gravel on bedrock.

Table 1. Mining cuts at Henry Gulch Placers operation on Last Chance Creek, 2003.

cut number	feet	metres	cubic yards	m^3	stripped/sluiced
1	370 x 120 x 60	100 x 40 x 20	98,667	75 436	stripped
	340 x 100 x 10	100 x 30 x 3	12,593	9628	sluiced
2	350 x 240 x 60	100 x 70 x 20	186,667	142 717	stripped
	325 x 225 x 10	100 x 70 x 3	25,880	19 787	sluiced
3	375 x 240 x 70	114 x 73 x 20	250,000	190 000	stripped
	345 x 215 x 10	105 x 65 x 3	27,472	21 003	sluiced
4	340 x 410 x 45	100 x 120 x 14	232,333	177 631	stripped
	310 x 410 x 10	90 x 120 x 3	47,074	35 990	sluiced
right-limit cut in virgin ground	300 x 125 x 55	100 x 38 x 17	76,389	58 403	stripped
	270 x 110 x 8	82 x 33 x 2	8800	6728	sluiced
Total all five cuts			844,056	645 327	stripped
			121,819	93 137	sluiced

Approximately 4 feet (1 m) of gravel and 3 to 8 feet (1 to 2 m) of bedrock were sluiced.

Bedrock Geology Bedrock is a mixture of volcanic andesite and sedimentary black shale.

Gold Characteristics In 2003 and 2004, the gold was 25% greater than 10-inch mesh, 25% between 10 and 60 mesh, and 50% smaller than 60 mesh. Coarse gold (greater than 14 mesh), when encountered, was commonly dendritic. The fineness was 720 to 730.

LAST CHANCE CREEK, a tributary of Hunker Creek

1150/14, 116B/3

2005: 63°59'39"N, 139°06'32"W
2003: 63°59'46"N, 139°06'34"W

Favron Enterprises Ltd., Paul Favron, Mark Favron, Guy Favron
Water license: PM04-369 (2014)
Active producer (2003-2006) **Operation no. 36**

Location This operation was located on the left limit and in the valley of Last Chance Creek.

Work History and Mining Cuts Favron Enterprises Ltd. first began working on Last Chance Creek in 2000, and mining continued through to 2006. The crew between 2003 and 2006 consisted of six miners and three camp personnel working a daily 12-hour shift. The operation continued stripping and mining in various locations between Discovery Pup and the mouth of Last Chance Creek. In 2004, black muck overburden was stockpiled on the right limit of the valley and some of Peter Erickson's pond tailings were removed at Discovery Pup in order to process underlying pay material. Some mechanical stripping was done on Last

Favron Enterprises Ltd, Last Chance Creek, 2004; view to the west.

Chance Creek downstream from the mouth of Discovery Pup. In 2005, the operators sluiced at the mouth of Discovery Pup, and stripped a long narrow left-limit cut near the mouth of Last Chance Creek. The claims at Discovery Pup were reclaimed and sold to a third party. Pay gravel was removed and stockpiled for sluicing in 2006. In 2006, pay gravel was removed from the mine pit and stockpiled, and the mine pit was then used as a recycle pond for sluicing. A 1200- by 100-foot (360- x 30-m) mining cut was processed, and a cut along the left limit of Last Chance Creek was stripped and ready for mining the following season.

Equipment and Water Treatment Equipment included Caterpillar D9L and D8K bulldozers, a Komatsu 155-3 bulldozer and a Terex 8230B bulldozer. The Caterpillars were used for stripping and all four bulldozers were used for feeding the wash plant. A Hitachi EX750 excavator was used to strip overburden and load pay. Two Terex TA40 rock trucks were used to haul overburden and pay, and a Terex TS24B scraper was used to haul and strip pay. The wash plant included a dozer-trap screened hopper over a 42-inch by 16-foot conveyor, which fed material to an elevating 36-inch by 60-foot conveyor. The second conveyor fed pay to the 5- by 10-foot double (1½-inch and ¾-inch) oscillating screen deck. Plus ¾-inch material was removed by a 36-inch by 30-foot radial stacking conveyor while minus ¾-inch material fed to six 32-inch by 16-foot sluice runs lined with angle iron riffles, expanded metal and Nomad matting. Water was acquired from Last Chance Creek and supplied by a Detroit 6V71-powered Aurora 12- by 10-inch pump rated at 3500 igpm. Effluent was 100% recycled from a 1200- by 100-foot (400- x 30-m) out-of-stream pond. Clean-ups were done with a long tom and gold wheel every 50 hours.

Surficial Geology and Stratigraphy The valley's width was approximately 400 feet (100 m). Up to 40 feet (10 m) of White Channel gravel hydraulic tailings were overlying 10 feet (3 m) of black muck and 3 to 5 feet (1 to 2 m) of well-sorted virgin creek gravel, all of which was sluiced. Up to 1 foot of clay-altered decomposed bedrock was sluiced.

Bedrock Geology Bedrock is clay-altered conglomerate and coarse sandstone.

Gold Characteristics In 2006, the gold ranged in size from fine-grained up to small nuggets. The fineness was 700.

Loading pay gravel, Favron Enterprises Ltd., 2003.

DISCOVERY PUP, a tributary of Last Chance Creek

1150/14 2006: 63°59'38"N, 139°06'53"W

Last Chance Placers Ltd., Lee Olynyk
Water license: PM04-424 (2015)
Active producer (2005-2006) **Operation no. 37**

Location This operation was located on Discovery Pup upstream from the confluence with Last Chance Creek.

Work History and Mining Cuts In 2005, three miners worked an 11-hour shift to mine a cut 200 by 60 feet (60 x 20 m), after processing stockpiled 2004 pay and a cut from 15 Above Pup. In 2006, two previously thawed cuts were hydraulically monitored and sluiced in the valley. Both cuts were on the right limit and approximately 100 by 40 feet (30 x 10 m) in size, although one cut was in the valley and one cut was on a bedrock terrace 40 feet (10 m) above the valley. The terrace cut was bulldozed into the valley for sluicing.

Equipment and Water Treatment In 2005, overburden was bladed downstream with a Caterpillar D9G bulldozer and pay material was hauled by an International Harvester Payhauler 50-ton truck a distance of 1500 feet (300 m) upstream on Last Chance Creek where it was sluiced. Water was acquired from Last Chance Creek and settled into a 200- by 300-foot (60- x 100-m), 50% recycled pond located upstream of the pump pond. In 2006, water was acquired from a large estuary pond at the mouth of Discovery Pup. This pond was also used to settle effluent with discharge back to Last Chance Creek through an intake. Other equipment on-site included a Caterpillar D8H bulldozer (used only in 2005) for stripping overburden, pushing pay and removing tailings. Two excavators (a Hitachi EX270 and Caterpillar 235) alternately stripped overburden and fed the sluice plant. Water for the wash plant was supplied by an 8- by 6-inch Allis Chambers John Deere-powered pump which supplied 2000 igpm to process 80 loose cubic yards per hour. The wash plant consisted of a 5- by 11-foot single deck oscillating screen deck with ¾-inch punch plate. Undersize material flowed to a static 4- by 6-foot tray with 1-inch angle iron riffles over Nomad matting, then to two 4- by 8-foot oscillating trays with large expanded metal over Nomad matting. The screen deck was modified from a Clinton Creek asbestos screener. Clean-ups were done every day with a long tom and gold wheel.

Surficial Geology and Stratigraphy The stratigraphic section mined in 2005 was 20 feet (6 m) of muck overlying from 5 to 10 feet (2 to 3 m) of angular cobbles interbedded with muck and sand seams. All of the gravel plus 5 feet (2 m) of bedrock was sluiced.

Gold Characteristics The gold recovered was smooth and bright with 70% coarser than 25 mesh in size. The fineness was 700.

5 ABOVE PUP, a tributary of Last Chance Creek

1150/14 2003: 63°59'20"N, 139°06'58"W

Dietmar Gritzka, Last Chance Placers Ltd.
Water license: PM04-424 (2015)
Active producer (2003) **Operation no. 38**

Location In 2003, the operators mined at the mouth of 5 Above Pup and on Gumbo Hill.

Work History and Mining Cuts Dietmar Gritzka started mining on claims 5 and 6 Above Discovery in 1998. Starting in the fall of the 2000 mining season, Last Chance Placers Ltd. took over the project with Mr. Gritzka working for them in 2001. In 2003, Last Chance Placers Ltd. mined at the mouth of 5 Above Pup and at the base of Gumbo Hill. The crew consisted of three miners working an 11-hour shift. The first mining cut was 230 by 60 feet (70 x 20 m), on the extreme limit of 5 A/D (Above Discovery) Pup where it enters Last Chance valley. The cut floor dropped 50 feet (15 m) in elevation lengthwise along 5 Above Pup over a 230-foot (70 m) horizontal distance. Stranded on the steep incline were large quartz boulders from the elevated Last Chance channel (eroded by 5 Above Pup) — oldtimers had tried to work this ground but were foiled by the steep bedrock incline. Several cuts were put in at the base of Gumbo Hill, all bladed to the wash plant at one location. A 150- by 30-foot (50- x 10-m) cut along the southern hydraulic cut wall of Joe Boyle's concession was sluiced along with three of Boyle's bedrock drains, each of which was 100 feet long and 40 feet (30 x 10 m) wide. Only the head of the drains were sluiced as they were where the most gold had been lost by Boyle.

Equipment and Water Treatment In 2003, the equipment included a Caterpillar D8H bulldozer and a Caterpillar D9G bulldozer, which were used for stripping, pushing pay and removing tailings. A Caterpillar 235 excavator was used to feed the wash plant and strip overburden. The wash plant consisted of a 5- by 11-foot single deck oscillating screen deck with ¾-inch punch plate, feeding a static 4- by 6-foot tray with 1-inch angle iron riffles over Nomad matting, then to two 4- by 8-foot oscillating trays with large expanded metal over Nomad matting. An 8- by 6-inch Allis Chalmers pump, powered by a 6-cylinder John Deere diesel engine, supplied 2000 igpm of water which was enough for the plant to process 80 loose yards of material per hour. Process water was recycled at 50% using a 200- by 200-foot (60- x 60-m) out-of-stream pond for the 5 Above Pup cut and a 200- by 300-foot (60- x 100-m) out-of-stream pond for the Gumbo Hill cuts. Clean-ups were done daily with a long tom and gold wheel.

Surficial Geology and Stratigraphy In 2003, the cut on 5 Above Pup consisted of 40 feet (10 m) of black muck over 3 feet

(0.9 m) of gravel containing rounded pebbles, cobbles and boulders up to 2 feet (0.6 m) in diameter. All of the gravel plus 4 feet (1 m) of bedrock was sluiced. The cuts at the base of Gumbo Hill consisted of 5 feet (2 m) of hydraulic tailings on top of three bedrock drains left behind by Joe Boyle's hydraulic mining operation. The heads of the drains were sluiced along with up to 3 feet (0.9 m) of bedrock.

Last Chance Placers' sluicing on Last Chance Creek, 2004.

Bedrock Geology At the mouth of 5 Above Pup, bedrock was a light grey coloured slate that broke off in thin large flat sheets. These sheets had almost no fractures and subsequently the gold could not penetrate it. Where the area had been worked by early drift miners. the bedrock was thoroughly cleaned.

Gold Characteristics In 2003, the gold (described as brought down from the elevated Last Chance Channel) was bright, angular and smooth, with a fineness of 695. A crystalline, frog-shaped nugget weighing slightly less than 2 ounces was recovered from a bedrock drain left behind by Joe Boyle's mining. This nugget normally wouldn't have been recovered by the modern miners either, if not for the fact that their screen deck had a worn-through hole of more than 1-inch-diameter which allowed the nugget to fall to the sluice rather than be screened out.

LAST CHANCE CREEK, a tributary of Hunker Creek

1150/14 2006: 63°59'16"N, 139°06'57"W

Last Chance Placers Ltd., Lee Olynyk
Water license: PM05-498 (2015)
Active producer (1993-2006) **Operation no. 39**

Location This operation was located at various places on the main valley of Last Chance Creek between 15 Above Pup and 8 A/M Pup.

Work History and Mining Cuts Last Chance Placers Ltd. began testing on Last Chance Creek and its tributaries in 1991 with mining beginning in 1993. On the main valley of Last Chance Creek in 2004, a crew of four miners worked daily 11-hour shifts to process three cuts, two in the vicinity of claim 3 A/D (Above Discovery) and one in the area of claims 6 and 7 A/D. The first cut at 3 A/D was 100 by 100 feet (30 x 30 m). Cut 2 at 6 A/D and 7 A/D was 90 feet wide and 470 feet long (25 x 140 m). Cut 3 on the left limit of Last Chance at 3 A/D was 90 feet wide, 200 feet long and 90 feet deep (25 x 60 x 25 m). Freeze-up necessitated leaving approximately 12,000 loose cubic yards of this material on the sluice ramp to be processed the following spring. In 2005 and 2006, the crew of three miners worked daily 11-hour shifts initially processing the stockpiled pay. Subsequently, a side cut on the right limit was taken out on the outer edge of an area of previous Last Chance Placers' mining. The cut was primarily on claim 7 A/D and was approximately 220 feet long and 60 feet wide (65 x 20 m). In addition, an adjoining strip approximately 180 feet long and 40 feet wide (55 x 10 m) was mined upstream to the right limit side of a cut previously taken out by Murray Crockett.

Equipment and Water Treatment Equipment included a Caterpillar 235 excavator and a Caterpillar D9G bulldozer. A Caterpillar D8H bulldozer was used in 2004 and 2005. In addition, a Hitachi EX270 excavator (equivalent to the Caterpillar 235) was purchased and an International Harvester Payhauler 50-ton rock truck was leased for hauling pay to the elevated pad to sluice. The wash plant consisted of a 5- by 11-foot single deck oscillating screen deck with ¾-inch punch plate, feeding a static 4- by 6-foot tray with 1-inch angle iron riffles over Nomad matting, then to two 4- by 8-foot oscillating trays with large expanded metal over Nomad matting. An 8- by 6-inch Allis Chalmers pump, powered by a 6-cylinder John Deere diesel engine,

supplied 2000 igpm of water which was enough for the plant to process 80 loose yards of material per hour. Water was supplied from an estuary pond on Last Chance Creek and 50 to 60% recycled in a 100- by 200-foot (30- x 60-m) out-of-stream pond near the mouth of 5 Above Pup. Clean-ups were done daily with a long tom and gold wheel.

Surficial Geology and Stratigraphy In 2004, the first section at 3 A/D was entirely thawed, and consisted of 10 feet (3 m) of muck over 7 feet (2 m) of gravel. A total of 5 feet (1.5 m) of gravel was sluiced. At 6 and 7 A/D, the section was primarily thawed and consisted of 15 feet (5 m) of tailings (from Murray Crockett's 1991-1997 operation) overlying 15 feet (5 m) of muck and 8 feet (2 m) of cobbly rounded gravel. The bottom 5 feet (1.5 m) of gravel was sluiced along with 4 feet (1 m) of gummy bedrock. Some undersize gummy tailings were resluiced as the gummy bedrock did not wash easily. The second 3 A/D cut consisted of 45 feet (15 m) of Crockett tailings overlying 35 feet (10 m) of original muck and 8 feet (2 m) of rounded gravel. The bottom 8 feet (2 m) of gravel plus 4 feet (1 m) of bedrock was sluiced. In 2006, the section consisted of 15 feet (5 m) of thawed muck overlying 4 feet (1 m) of waste gravel over 4 feet (1 m) of well-rounded cobbly pay gravel and extremely gummy bedrock. Efforts were made to mix the bedrock with the gravel to facilitate sluicing of the material. All material that was sluiced through the trays (¾-inch minus) for a distance of approximately 80 feet (25 m) downstream of the plant was excavated with the Caterpillar 235, trucked back to the plant and re-washed.

Bedrock Geology Bedrock was described as decomposed 'gumbo' graphitic black and orange schist.

Gold Characteristics The gold recovered in 2004 and 2005 was smooth and bright and fine-grained, with 90% less than 12 mesh in size. The fineness was 695. In 2006, the gold was smooth, bright and between minus 16 mesh and plus 60 mesh in size. The fineness was 700.

15 ABOVE PUP, a tributary of Last Chance Creek

1150/14 2005: 63°58'43"N, 139°08'36"W

Last Chance Placers Ltd., Lee Olynyk
Water license: PM97-052 (2005)
Active producer (2005-2006) **Operation no. 40**

Location 15 Above Pup is a left-limit tributary to Last Chance Creek. The 2005 cut was located 2000 feet (600 m) upstream from the confluence with Last Chance Creek. The 2006 cut was located 5000 feet (1500 m) upstream of the confluence with Last Chance Creek.

Work History and Mining Cuts Last Chance Placers Ltd. first mined here in 1993, and also mined here from 1995 to 1999 and in 2001. In 2005, a crew of three miners worked a daily 11-hour shift, mining a cut 330 feet long and 70 feet wide (100 x 20 m). In addition, the gummy nature of the material necessitated the re-sluicing of the fines for a distance of 60 feet (20 m) below the wash plant. In 2006, an area on 15 Above Pup approximately 5000 feet (1500 m) upstream from its confluence with Last Chance Creek was prepared for sluicing. Material from the 1300- by 60-foot (400 x 20 m) cut was to be loaded into the IH Payhauler and trucked to an area approximately 1000 feet (300 m) from the mouth of 15 Above Pup for processing. Unfortunately, after just 3.5 hours of trucking and sluicing the Payhauler lost a piston and mining was halted. Operations were then moved to downstream of Discovery Pup where the operators could mine without trucking. While monitoring, a group of scientists under the guidance of Mr. Dick Mol from the Netherlands documented the event. With permission from the Yukon Heritage Branch they collected and documented all the Pleistocene bones from the cut over a period of two weeks. Mr. Mol was much regarded for his recent film production 'Raising the Mammoth', shown on Discovery Channel.

Equipment and Water Treatment A Caterpillar D8H and D9G bulldozers were used to strip overburden, push pay and remove tailings. Two excavators (a Hitachi EX270 and Caterpillar 235) alternately stripped overburden and fed the sluice plant.

In 2005, overburden was removed primarily with a monitor powered by 2 pumps in series. A vintage Caterpillar D326, a 6-cylinder stationary engine drove a high-lift Cornell 8- by 5-inch pump which delivered water to the second pump situated approximately 200 feet in elevation above. The engine was rated at 166 horsepower at 1800 rpm. The second high-lift pump was an 8- by 6-inch Allis Chambers powered by a John Deere 6-cylinder diesel engine. Over 2000 feet (600 m) of 12- and 8-inch pipeline was used to lift the water a distance of 2000 feet (600 m) to the cut, at an estimated head of 340 feet (100 m). Approximately two-thirds of the cut was stripped hydraulically, while the remainder was stripped with a combination of ripping the muck with the 235 equipped with a D8 ripper shank tool, followed by monitoring. Water for hydraulic and sluicing operations was supplied from an estuary pond at the mouth of 15 Above Pup. While sluicing, the pump engines were idled back to deliver approximately 2000 igpm to process an estimated 90 to 100 loose cubic yards of material per hour.

The wash plant was a 5- by 11-foot single deck oscillating screen deck with ¾-inch punch plate. Undersize material flowed to a static 4- by 6-foot tray with 1-inch angle iron riffles over Nomad matting, then to two 4- by 8-foot oscillating trays with large expanded metal over Nomad

matting. Water was 60% recycled from the estuary pond below. A 60- by 200-foot (20 x 60 m) in-stream settling pond situated 800 feet (250 m) from the mouth of 15 Above Pup was used to settle the effluent prior to reaching the estuary/pump pond. Clean-ups were done every day with a long tom and gold wheel.

Surficial Geology and Stratigraphy In 2005, the section consisted of 40 feet (10 m) of muck overlying 3 feet (0.9 m) of gravel. All of the gravel and 4 feet (1 m) of bedrock were sluiced. In 2006, the section was described as 20 feet (6 m) of frozen black muck over 4 feet (1 m) of 'boney', cobbly, angular pay material on bedrock. The pay was mixed with colluvium which was derived from the hill slope on the right limit. All loose material was sluiced together as it could not be separated.

One of the more interesting Pleistocene bone finds from the hydraulic monitoring work on 15 Above Pup was a femur from an American lion that the Yukon Heritage Branch had carbon dated to be 40 000 years old.

Bedrock Geology Bedrock is mapped as grey to black, fine-grained graphitic quartzite, grey micaceous quartzite and quartz muscovite schist. The bedrock encountered in 2006 was partially decomposed and partially competent but generally easy to process.

Gold Characteristics The gold in 2005 and 2006 was fine-grained and angular with a few dendritic specimens recovered. The fineness was 680 to 685.

PARADISE HILL, a tributary of Hunker Creek

1150/14, 116B/3 2006: 63°59'50"N, 139°04'49"W

Tamarack Inc., Tony Beets
Water licenses: PM02-296 (2013), PM97-029 (2003)
Active producer (2005-2006) **Operation no. 41**

Location The operation has been located on various parts of Paradise Hill and the adjacent Hunker Creek valley.

Work History and Mining Cuts Tamarack Inc. began work on the property at Paradise Hill in 1983, mining until 1986. They mined at this location again from 1989 to 1999, when they moved the operation to Indian River. The operation returned from Indian River in the fall of 2005 with a crew of eight working 12-hour shifts for five days double and ten days single. Bedrock was mined to a depth of 30 feet (10 m) on previous year's pits, including one which was 200 by 50 feet (60 x 15 m). In 2006, an area at the southwest part of the pit was opened up and mined.

Equipment and Water Treatment Three Caterpillar 657 scrapers were fed pay using a Caterpillar 245 excavator while a

Excavator loading a scraper on Tamarack Inc's Paradise Hill property, 2006.

Caterpillar D9 bulldozer was used to feed the plant and a Caterpillar 988 loader removed tailings. A second Caterpillar D9 bulldozer was kept on standby for sluicing. The wash plant was an 8-foot-diameter trommel which processed 200 loose cubic yards per hour. Water was supplied by a Crane Demming 8- by 8-inch pump powered by a Caterpillar D398 engine, pumping 3000 igpm.

Surficial Geology and Stratigraphy Paradise Hill is a terrace comprised of Tertiary 'White Channel' gravel overlain in part by pre-Reid glaciofluvial outwash, locally referred to as 'Klondike Wash'. The Klondike Wash gravel is 0 to 30 feet (0 to 9 m) thick and the White Channel gravel is between 85 and 100 feet (25 to 30 m) thick. The best gold values are in the lower 15 to 35 feet (5 to 10 m) of White Channel gravel. In 2006, a new zone on the southwest part of the hill was mined. At this location, gold values in the White Channel gravel were found both above and below a shallow-dipping thrusted slab of decomposed bedrock.

Bedrock Geology Exposed bedrock was decomposed, clay-altered, fractured graphitic to chloritic schist.

Gold Characteristics In 2005, the gold was reported to be fine-grained with a purity of 830.

HESTER CREEK, a tributary of Hunker Creek

1150/14 2003: 63°58'28"N, 139°04'12"W

The Nugget Factory Inc., Michel Filion
Water license: PM00-209 (2006)
Active producer (2003) **Operation no. 42**

Location This operation was located on Hester Creek.

Work History and Mining Cuts Mining at this operation began in 2001 at the mouth of an unnamed tributary along the left limit of Hester Creek. In 2002, the operation relocated to the

The Nugget Factory's operation on Hester Creek, 2003.

main stem of Hester Creek. In 2003, personnel included two miners and one camp cook. One cut 200 by 150 feet (60 x 45 m) was mined on the former Big Red property.

Equipment and Water Treatment Equipment in 2003 included a Link-belt 2800LC hoe, a Caterpillar 966F loader and a Caterpillar D6 bulldozer. A 6-inch pump powered by a 6-cylinder Nissan engine supplied 700 igpm to the Hall oscillating riffle plant which processed 75 loose cubic yards per hour.

Surficial Geology and Stratigraphy The stratigraphic section in 2003 consisted of 12 feet (4 m) of pay gravel on bedrock. Overburden had been previously stripped by hydraulic mining.

Bedrock Geology Bedrock is decomposed, fractured carbonaceous schist and fractured quartzite schist.

Gold Characteristics The gold was reported to be fine grained and shiny with a fineness of 680.

INDEPENDENCE CREEK, a tributary of Hunker Creek

1150/14 2003: 63°58'59"N, 139°00'59"W

Emile Levesque, Dave Brickner
Water license: PM01-244 (2007)
Active producer (2003-2006) **Operation no. 43**

Location The operation was located on Nugget Hill and at the mouth of Independence Creek.

Work History and Mining Cuts An area was bulk tested in 2002. During 2003, Levesque sluiced gravel and old tailings from the back side of Nugget Hill. In 2004, Levesque stripped a portion of Nugget Hill at the back of the previously mined area. Pay gravel was stockpiled for sluicing in 2005. In 2006, Dave Brickner set up sluicing equipment for a gravity feed system and sluiced some of the stockpiled pay gravel.

Equipment and Water Treatment The loaders were used to feed the sluice plant and for hauling pay gravel. The excavator was used to feed the sluice plant on Nugget Hill and for scraping the cut face and maintenance of drains. The bulldozer was used to scrape the cut faces and for various small jobs. The wash plant consisted of a dump box leading into a 5-foot-wide by 11-foot-long shaker screen outfitted with 1¼-inch punch plate. Sluice water at Independence Creek came from a large reservoir created by the mining done by Tony Kosuta over the last several years. A drain to old dredge tailings provided the effluent treatment. In 2003, the operation sluiced with total recycling and no discharge. Water was acquired from the gravity ditch.

Surficial Geology and Stratigraphy On the rim of Nugget Hill, the White Channel gravel thickness was from 3 to 6 feet (1 to 2 m), all of which was sluiced along with up to 2 feet (0.6 m) of decomposed bedrock.

Bedrock Geology Bedrock is slabby schist, fully decomposed and soft.

Gold Characteristics The gold varied a great deal depending on where it was mined. Gold from Hester Creek tended to be fine grained and ranged from an average purity of 650 fine to a high of 760 fine. The gold on Nugget Hill had a higher purity with an average of 820 fine. Nuggets weighing up to 1 ounce were found on Nugget Hill.

Dave Gould's operation on Hunker Creek, 2005.

HUNKER CREEK, a tributary of Klondike River

1150/14, 1150/15 2005: 63°58'44"N, 139°00'23"W

David Gould
Water license: PM04-392 (2009)
Active producer (2005-2006) **Operation no. 44**

Location From 2004 to 2006, the operation was on the right limit of Hunker Creek near the mouth of Colourado Creek.

Work History and Mining Cuts Mining claims have been in the Gould family since 1903. In this area, hydraulic mining was first conducted on Nugget Hill between Hester and Independence creeks in 1960. The property was mined intermittently over the next 40 years. In 2004, stripping took place along the right limit of Hunker Creek adjacent to Hunker Creek road. Pay gravel was then excavated and sluiced back into the mine pit. In 2005 and 2006, the operators stripped a large cut located along the right limit of Hunker Creek near the mouth of Colourado Creek, and sluiced pay back into the pit as in past years.

Equipment and Water Treatment Equipment included a Caterpillar D9 bulldozer for stripping dredge tailings and excavating pay gravel, a Caterpillar 950B loader to haul pay gravel to the wash plant and remove tailings, and a Komatsu PC220 excavator to dig pay gravel and to feed the wash plant. The wash plant was a 4-foot-diameter 20-foot-long trommel feeding a single 5- by 8-foot sluice run lined with hydraulic riffles, which processed between 25 and 60 cubic yards per hour. Mining cuts were excavated below the water table and had to be pumped out while pay gravel was stockpiled. The pits were allowed to flood and the groundwater was recycled and used to sluice the pay gravel back into the cut, with no discharge to the creek.

Surficial Geology and Stratigraphy The section in the valley consisted of coarse cobbly dredge tailings up to 10 feet (3 m) thick overlying 8 feet (2 m) of sandy gravel and 12 feet (4 m) of mud and silt on bedrock. The decomposed bedrock contained depressions with virgin gravel patches which were missed by the dredge. This bottom gravel plus 2 or 3 feet (0.6 to 1 m) of bedrock were processed. Some virgin pillars in the valley consist of 20 to 25 feet (6 to 8 m) of organic mud and sand overlying 5 feet (1.5 m) of gravel. In those areas, the bottom 3 feet (1 m) of gravel plus about 2 feet (0.6 m) of bedrock were sluiced.

Bedrock Geology Bedrock consists of carbonaceous schist.

INDEPENDENCE CREEK, a tributary of Hunker Creek

1150/14 2003: 63°58'59"N, 139°01'14"W

Anton (Tony) Kosuta, Dietmar Gritzka
Water licenses: PM03-338 (2009), PM99-098 (2004)
Active producer (2003-2004) **Operation no. 45**

Location The property was situated at the mouth of Independence Creek, a left-limit tributary of Hunker Creek.

Work History and Mining Cuts Anton Kosuta began mining this creek in 1989. In 2003, Dietmar Gritzka drilled along the right limit of Independence Creek, while Mr. Kosuta stripped upstream from where he finished in 2002. In 2004, operations continued working upstream. The large settling pond at the mouth of Independence Creek was being used as a recycling pond for sluicing.

Equipment and Water Treatment Equipment included a Caterpillar D5B bulldozer, a Caterpillar D6 bulldozer, a Caterpillar 941 track loader and a Caterpillar 930 loader. The Caterpillar D5B bulldozer and Caterpillar 941 track loader were used for most of the stripping and clearing tailings. The Caterpillar 930 loader was used for feeding the box and removing tailings.

The wash plant was an 8-foot-wide by 14-foot-long dump box over a 3-foot-wide by 24-foot-long single sluice run lined with Nomad matting and angle iron riffles. A Paco 10- by 8-inch pump powered by a Caterpillar D330 engine supplied the estimated 2000 igpm needed to process between 15 and 30 cubic yards per hour. An in-stream reservoir was constructed on Independence Creek and the water was piped to the sluice plant with a gravity system. Water was also available to be recycled from the settling facility constructed in the old mine pit at the mouth of Independence Creek. An additional settling area was constructed utilizing an area of old dredge tailings.

Surficial Geology and Stratigraphy Alternating layers of largely thawed black muck and gravel were found in all cuts. Oldtimers' tailings were found in many areas. The pay streak alternated from the right to the left limit of the valley. All of the gravel and a small amount of the bedrock were sluiced.

Bedrock Geology Bedrock was decomposed schist.

Gold Characteristics Gold was described as variable, from flat and fine to rough and rounded. The fineness varied between 750 and 817. Nuggets weighing up to ½ ounce (15 g) have been found.

GOLD BOTTOM CREEK, a tributary of Hunker Creek

1150/15 2005: 63°57'53"N, 138°58'05"W
2004: 63°56'40"N, 138°58'41"W

Mogul Gold Placers, David Millar
Water licenses: PM98-025 (2008)
Active producer (2003-2006) **Operation no. 46**

Location Mining at this operation took place on the right limit of Gold Bottom Creek opposite Soda Creek for 2003, 2004 and most of 2005, but moved to the left limit of Hunker Creek just downstream of the mouth of Gold Bottom Creek in August 2005, where mining continued in 2006. In June 2006, operations were relocated to a site upstream of the roadhouse on the left limit of Hunker Creek.

Work History and Mining Cuts Mogul Gold Placers began mining in this area in 1990. In 2003, 2004 and most of 2005, Mr. Millar with one occasional helper mined on Gold Bottom Creek opposite Soda Creek. In addition, Mr. Millar ran a panning and gold tour venture business out of an old historic roadhouse in conjunction with the mining activity. Two mine cuts were completed on Gold Bottom Creek from 2003 to mid-2005, each 250 feet (75 m) long by 30 feet (10 m) to 50 feet (15 m) wide. In August 2005, Mr. Millar remined old dredge tailings on the left limit of Hunker Creek, in a cut measuring 500 feet by 100 feet (150 x 30 m). In 2006, a crew of two miners and two camp personnel worked a daily 12-hour shift to process 7000 cubic yards (5351 m^3) of dredge tailings and an underlying cut of virgin ground 60 feet (20 m) by 100 feet (30 m).

Equipment and Water Treatment Equipment for the 2003 to 2006 seasons consisted of one Caterpillar D8H bulldozer, one Hitachi EX200 excavator and one Caterpillar 966C loader. The wash plant was a 5-foot trommel which had a 30-foot tailings stacker, a 10-foot-wide oscillating run with 4 feet of hydraulic riffles and 4 feet of expanded metal. Water was supplied from Gold Bottom and Hunker, and pumped by a Gorman Rupp, 6- by 6-inch pump powered by a Perkins 6/354 diesel capable of 600 to 1000 igpm. The processing rate was 50 loose cubic yards per hour. Effluent was settled out-of-stream in a 100- by 100-foot (30 x 30 m) pond with a return discharge to the creek and no recycling. In 2006, the operators added a Western Star dump truck with a capacity of 10 cubic yards.

Surficial Geology and Stratigraphy From 2003 to 2005, the section at Gold Bottom Creek consisted of 15 feet (5 m) to 35 feet (10 m) of black muck overlying 3 feet (1 m) of gravel mixed with overburden. All of the gravel was sluiced. The section on the left limit of Hunker Creek mined in August 2005 consisted of 12 feet (4 m) of 'chunky' dredge tailings on bedrock, all of which was sluiced. In 2006, more dredge tailings were sluiced and dredge mud was stripped to reveal

Mogul Gold Placers' operation on Gold Bottom Creek, 2003.

intact virgin gravel which had been buried. This virgin ground was sluiced along with several feet of bedrock.

Bedrock Geology Bedrock was flat, blocky and decomposed with occasional deep pockets of gravel.

Gold Characteristics In the 2003 to 2005 mining seasons, the gold recovered from Gold Bottom Creek was small and flat with very few nuggets and had a fineness of 785. Over 50% of the gold was minus 30 mesh in size with very few nuggets. Hunker Creek gold recovered from dredge tailings on the left limit in August 2005 consisted of small nuggets, which ranged in fineness from 800 to 820. In 2006, the gold from the dredge tailings was very fine grained, while the virgin ground produced some nuggets. The fineness was 800.

GOLD BOTTOM CREEK, a tributary of Hunker Creek

1150/15 2005: 63°54'44"N, 138°59'36"W

Ken Jackson
Water license: PM04-455 (2015)
Exploration (2005-2006) **Operation no. 47**

Location This testing operation was located at West Gold Bottom and Gold Bottom creeks.

Work History and Mining Cuts Ken Jackson tested several areas in the first year of this water license. Some old trails were opened up for access, but no mine cuts were created. In 2006, Jackson stripped on the left limit of Gold Bottom Creek.

Equipment and Water Treatment A Heinz Werner C128 backhoe and a small Caterpillar excavator were used to dig test pits. A mobile wash plant was constructed, but test gravel was washed with a small long tom and pump. Water was obtained from Gold Bottom Creek.

Ken Jackson's wash plant, Gold Bottom Creek.

Surficial Geology and Stratigraphy The operator expected to find 20 feet (6 m) of black muck over 10 feet (3 m) of gravel on bedrock, although test pits did not reach bedrock as of the reporting date.

ONTARIO GULCH, a tributary of Gold Bottom Creek

1150/15 2005: 63°56'57"N, 138°58'25"W

Pay Streak Placers, Richard A. Semple
Water license: PM01-229 (2006)
Exploration (2003-2005) **Operation no. 48**

Location Ontario Gulch is a tributary of Gold Bottom Creek.

Work History and Mining Cuts Testing on the property first began in 1999, and stripping and drainage construction was conducted from 2000 to 2002. In 2003, an area approximately 200 by 300 feet (60 x 90 m) was stripped downstream of a left-limit tributary of Ontario Gulch. A cross-valley dam was built in the lower reaches. Activity in 2004 and 2005 was limited to testing.

Equipment and Water Treatment In 2003, equipment included a CPC Drott 40 Excavator and Caterpillar D6 bulldozer, which were used to dig settling ponds, feed the sluice box and strip the ground. A cross-valley dam was constructed downstream of the actual mine area and water was pumped up to the cut via a pipeline and an Allis-Chamber pump. A single run sluice with a hopper was used for testing the gravel. A small butterfly monitor was also used to help thaw ground.

Surficial Geology and Stratigraphy The stratigraphy was composed of 12 to 16 feet (4 to 5 m) of moss and black muck intermixed with an old forest layer about 1½ feet (0.5 m) thick. A 4- to 6-foot (1- to 2-m) angular gulch gravel layer contained some large quartz boulders. The ground was frozen.

Bedrock Geology Bedrock is blocky, green muscovite-quartz schist.

Gold Characteristics The gold recovered in testing was reported to be coarse.

GOLD BOTTOM CREEK, a tributary of Hunker Creek

1150/15 2005: 63°53'18"N, 138°59'05"W
2003: 63°54'14"N, 138°59'29"W

Sergio Aimola, Alfredo Aimola
Water license: PM03-313 (2014)
Active producer (2003-2006) **Operation no. 49**

Location Between 2003 and 2005, mining continued at two locations, on upper Gold Bottom Creek and at the confluence with Soap Creek. In 2006, the operation was relocated downstream from the confluence of Soap Creek to a location on Gold Bottom Creek approximately 0.3 miles (0.5 km) from camp.

Work History and Mining Cuts Alfredo and Sergio Aimola began mining the hillsides of Gold Bottom Creek and Gold Bottom Gulch in 1998. Between 2003 and 2005, Alfredo Aimola and his father Sergio continued to mine on upper Gold Bottom Creek and at the confluence with Soap Creek. Approximately 50,000 cubic yards (38 000 m^3) were sluiced during this period. In 2006, Alfredo Aimola worked a daily 10- to 12-hour shift alone and relocated the operation 0.3 miles (0.5 km) downstream. He mined a cut 150 by 300 feet (50 x 100 m) adjacent to Gold Bottom Creek.

Equipment and Water Treatment A Caterpillar D8K bulldozer with a U-blade and ripper and a Caterpillar 235 excavator loader were used to strip the hillsides to allow thawing of permafrost. The 235 excavator and a monitor were used to clear away the black muck which was stockpiled for reclamation. Pay was pushed by the Caterpillar D8K which was fed to the wash plant by a Caterpillar 988 loader. The wash plant included a dump box equipped with a shuffle board and conveyor belt, which was used to feed material to a trommel with ⅜-inch screen. The pay was then sluiced through two 4- by 8-foot and one 2- by 8-foot sluice runs lined with 1-inch riffles and heavy Nomad matting. A Jimmy diesel engine-powered Worthington 12- by 10-inch pump rated at 1800 igpm allowed the plant to process approximately 70-90 cubic yards per hour. Long toms and wheels were used for final clean-ups. Water for monitoring and sluicing was obtained from Gold Bottom Creek, Gold Bottom Gulch, Soap Creek and an unnamed left-limit

Alfie Aimola mining on Gold Bottom Creek — a one-person operation with three machines.

tributary, depending on location of the mine cut. In-stream settling ponds were employed at both the Soap and Gold Bottom locations. Water was acquired from pump pond reservoirs in the creek channel, and each of the ponds constructed was 100 by 150 feet (30 x 50 m). In 2006, Aimola replaced the Caterpillar 988 loader with a Caterpillar 980C loader. The wash plant processed approximately 80-90 loose cubic yards per hour. Water was acquired from Gold Bottom Creek and effluent was settled out-of-stream in a 125- by 250-foot (40 x 75 m) pond.

Surficial Geology and Stratigraphy Between 2003 and 2005, the stratigraphic section consisted of approximately 20 feet (6 m) of frozen black muck, 7 to 8 feet (2.1 to 2.4 m) of average-sized gravel and 2 to 3 feet (0.6 to 1 m) of unconsolidated flat bedrock. In places, the black muck layer increased in depth up to 40 feet (10 m), and the gravel thickness increased to 16 feet (5 m). In other places, the muck layer was 6 feet (2 m) thick, overlying a gravel layer 15 feet (5 m) thick. The pay zone was located below the water table. All of the gravel and 1 foot (0.3 m) of bedrock were sluiced. Evidence of old shafts were found in the waste section. In 2006, the thawed section consisted of 3 to 4 feet (0.9 to 1.2 m) of gravel overlying blocky schist. All of the gravel and 1 foot (0.3 m) of bedrock were sluiced.

Bedrock Geology Bedrock at this site is decomposed to blocky chlorite schist.

Gold Characteristics The gold recovered varied in size and shape from flat to round, smooth to chunky. Nuggets were recovered which tended to be round in shape and attached to quartz, from ½ ounce (15 g) to more than an ounce (30 g) in weight. Gold recovered at the 2006 location was both rough and smooth with an average fineness of 789.

MINT GULCH, a tributary of Hunker Creek

1150/15 2003: 63°55'59"N, 138°54'30"W

Grew Creek Ventures Ltd.
Water license: PM00-198 (2006)
Active producer (2003) **Operation no. 50**

Location In 2003, the operation was located at the mouth of Mint Gulch along the right limit.

Work History and Mining Cuts Work began on this property in 2001. No mining occurred under this license in 2002, but a small-scale operation continued at the mouth of Mint Gulch in 2003.

Equipment and Water Treatment Equipment consisted of a Caterpillar D8 bulldozer, a Caterpillar 988 loader and a Caterpillar 966 loader. The bulldozer was used for stripping, stockpiling and pushing pay, while the loaders were used for feeding the sluice plant and removing tailings. Hydraulic monitors were used to strip and wash the side pay cuts. The wash plant included a 10- by 12-foot dump box which fed into a 3- by 20-foot single run sluice lined with 1½-inch angle iron riffles and Nomad matting. Water was supplied by a Caterpillar engine powered at 2000 igpm, enough to process approximately 60 cubic yards per hour. Due to the narrow valley and steep gradient on Mint Gulch, the pay gravel was hauled to the mouth of Mint Gulch and sluiced using Hunker Creek water. Effluent was settled out-of-stream in old mine pits along Hunker Creek.

Surficial Geology and Stratigraphy The ground on Mint Gulch varied in depth with 6 to 40 feet (2 to 10 m) of frozen black muck overlying 3 feet (1 m) of gravel. All of the gravel and from 2 to 4 feet (0.6 to 1 m) of the bedrock were sluiced.

Bedrock Geology Bedrock at this location is slabby to decomposed schist.

Gold Characteristics Most of the gold recovered from Mint Gulch was rough with a purity of 835. Numerous nuggets weighing up to 4 ounces (120 g) have been recovered.

24 PUP, a tributary of Hunker Creek

1150/15 2005: 63°54'48"N, 138°54'31"W

Gerald Ahnert, Elizabeth Ahnert
Water licenses: PM04-379 (2015), PM00-178 (2005)
Active producer (2003-2006) **Operation no. 51**

Location This property was located 2500 feet (750 m) up 24 Pup, a small left-limit tributary to the right fork of Hunker Creek.

Work History and Mining Cuts Gerry and Elizabeth Ahnert have mined here since 1980, mining on average 300 cubic yards (200 m^3) per year. In 2003 and 2004, the Ahnerts mined at the top of the gulch where mining began approximately 25 years ago. Hand mining was conducted on pockets along the edge of the old section, at a rate of 1.5 cubic yards (1 m^3) per day. In 2005, mining continued upstream with a cut 60 by 20 by 12 feet (20 x 6 x 4 m) wasted and a cut measuring 50 by 50 feet (15 x 15 m) processed. A total of approximately 75 cubic yards (60 m^3) were sluiced in 25 hours. In 2006, a small amount of stripping was completed.

Equipment and Water Treatment In 2003 and 2004, water was 100% recycled from a 6000 gallon out-of-stream pond, using a 5.5 HP Honda 3-inch pump producing 60 igpm. A 16- by 1-foot sluiceway with Hungarian riffles and expanded metal was hand-fed at 1.5 cubic yards per day. In 2005, a 0.5-cubic-yard dump box fed a 16-foot single-run sluiceway with Hungarian riffles, expanded metal and bar riffles on Nomad matting. A 1969 John Deere 400 loader/backhoe was used for stripping and feeding the sluice box. Water was 100% recycled from a 20- by 15- by 7-foot (6- x 5- x 2-m) out-of-stream pond and pumped by a 5.5 HP Honda 3-inch pump at 300 igpm. Material was processed at 3 loose cubic yards per hour for 25 hours. A metal detector was used to check the bedrock and washed tailings for nuggets.

Surficial Geology and Stratigraphy Previous stratigraphic sections have been comprised of approximately 15 feet (5 m) of frozen muck and angular rock overlying up to 5 feet (1.5 m) of gold-bearing gravel. In 2005, the section consisted of 8 feet (2 m) of muck overlying 4 feet (1 m) of peat-like material. Alluvial gravel was almost non-existent with the dendritic gold found in cracks in the blocky bedrock.

Bedrock Geology Bedrock at this site is a mixture of decomposed schist and hard slabby quartzite.

Gold Characteristics This creek produces several types of gold, including dendritic, wire and crystalline gold. Some nuggets weighing as much as 2⅓ ounces (72 g) were reported, with 60% of the gold larger than ¼ dwt. (0.38 g). Fineness generally ranges from 827 to 845, and between 2003 and 2005 the purity of the gold was reported to be 845 fine. A nugget weighing 4 dwt. (6 g) was found in 2004 and a nugget weighing 3 dwt. (5 g) was found in 2005.

Aerial view of Gerry Ahnert's pit on 24 Pup, 2005.

HUNKER CREEK, a tributary of Klondike River

1150/15 2004: 63°53'20"N, 138°53'43"W

Dave Laurenson, Sarah Laurenson
Water licenses: PM04-383 (2009), PM05-485 (2009)
Exploration (2004-2005) **Operation no. 52**

Location The operation was located on an unnamed left-limit tributary of Hunker Creek, locally named 12 Pup.

Work History and Mining Cuts Dave and Sarah Laurenson worked a daily 12-hour shift to set up a small test-sluicing operation at the mouth of 12 Pup. A small amount of tailings were sluiced in 2004 and 2005 in a mining cut 125 by 50 feet (40 x 15 m). The operation was subsequently shut down and moved to Little Gold Creek.

Equipment and Water Treatment Equipment consisted of a Caterpillar D8H bulldozer equipped with a ripper and U-blade for stripping, preparing pay gravel, clearing tailings and reclamation. A Terex 72-51 loader fed the sluice plant and was used to complete miscellaneous jobs. The wash plant included a 10-yard hopper which fed into a 4-foot-wide by 14-foot-long double screen deck. The classified gravel was then washed through sluice runs totalling 7 by 21 feet, which were lined with a combination of angle iron riffles, expanded metal and Nomad matting. Tailings were stacked with a 40-foot conveyor. Water from Hunker Creek was supplied by an English 6-cylinder diesel-powered Ford 5- by 4-inch pump rated at 1200 igpm, enough to process 100 loose cubic yards per hour. Effluent was settled out-of-stream and 90% recycled from a 125- by 50-foot (40 x 15 m) pond. Clean-ups were done with a long tom.

Surficial Geology and Stratigraphy The ground had been previously stripped and mined and consisted of tailings. A total of 10 feet (3 m) of material was reprocessed and bedrock was not reached.

Gold Characteristics No gold was recovered.

HUNKER CREEK, a tributary of Klondike River

1150/15 2003: 63°53'24"N, 138°55'18"W

Tom McMahon
Water license: PM04-436 (2014)
Active producer (2003-2005) **Operation no. 53**

Location This operation was located on the right limit of the right fork of Hunker Creek.

Work History and Mining Cuts Tom McMahon began a small-scale operation by himself in 1996. Mr. McMahon continued stripping along the right limit, upstream from previous workings in 2002, 2003 and 2004. A new cut along the left limit was stripped in 2005.

Equipment and Water Treatment Equipment included a Gradall excavator for stripping, feeding the wash plant, handling tailings, constructing drains and the construction and maintenance of settling facilities. The wash plant was a hopper-fed New Zealand-style trommel, 3½ feet in diameter and 12 feet long, with 8 feet of ½-inch screen. Classified pay gravel flowed over two boil boxes into a 6- by 5-foot single sluice run lined with hydraulic riffles. Water was supplied by a 5-inch high pressure pump powered by a 4-cylinder Isuzu engine at 600 igpm, enough to process approximately 40 loose cubic yards per hour. Effluent was 100% recycled and settled out-of-stream along the right limit with a by-pass channel.

Surficial Geology and Stratigraphy The section varied in depth from 15 to 20 feet (4 to 6 m). Oldtimers' workings were evident. Approximately 5 feet (1.5 m) of mixed black muck and colluvium overlies 4 feet (1 m) of gravel. All of the gravel and up to 2 feet (0.6 m) of the bedrock were sluiced.

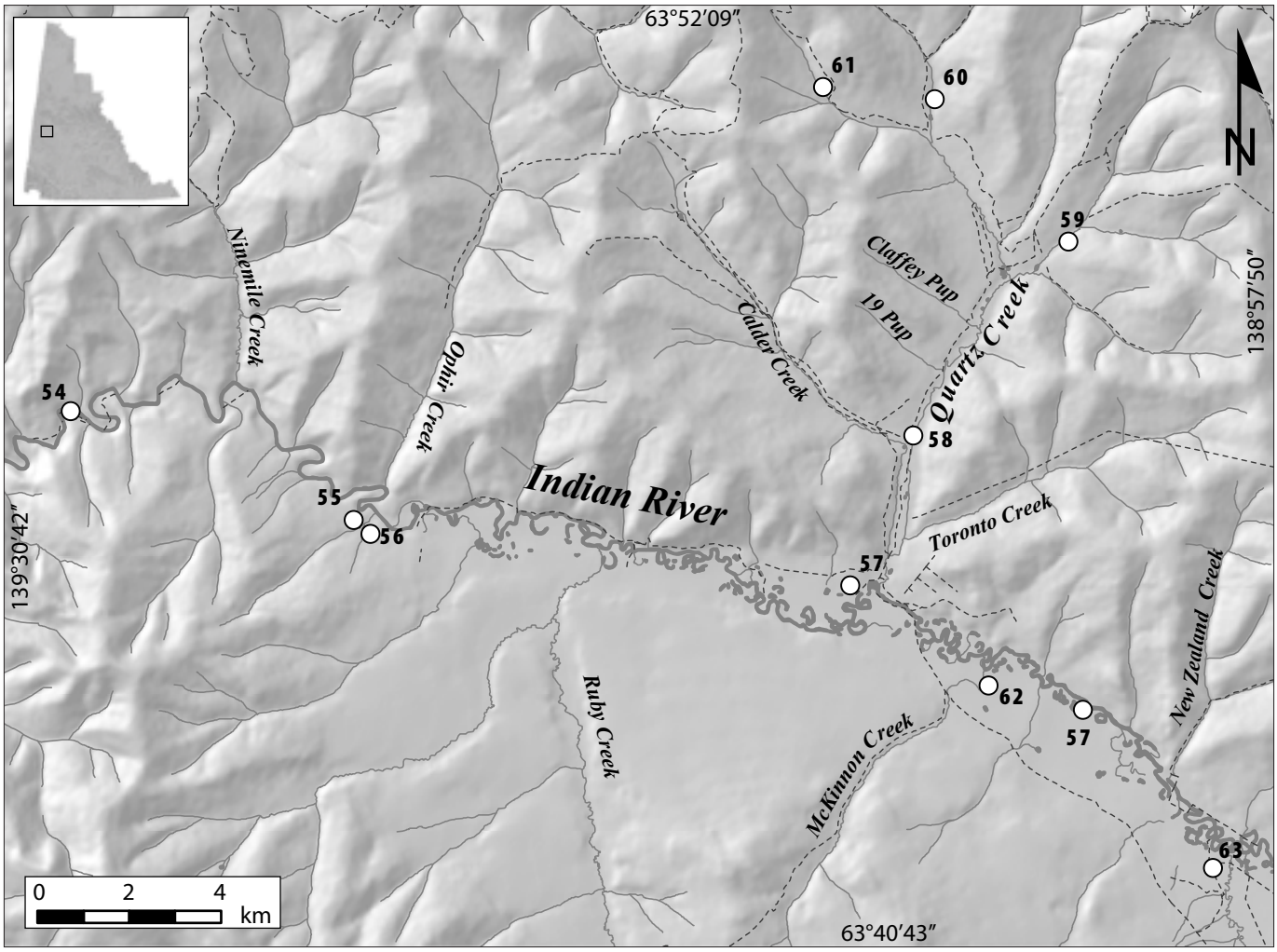
Bedrock Geology Bedrock varies from solid and fractured to fully decomposed sericite and chlorite schist.

Gold Characteristics Most of the gold was rough, dull in colour and many of the small nuggets contained quartz. The fineness was 800.

Tom McMahon's pit on Hunker Creek, 2005.

KLONDIKE:
INDIAN RIVER
PLACER AREA

SITES 54-63



LEGEND

54.....McBurney
55.....Arkinstall
56.....Boulder Mining Corporation Ltd.
57.....Ferguson
58.....Favron Enterprises Ltd.
59.....Tatlow Placer Mines Ltd.
60.....Nafziger
61.....Coomes
62.....Gimlex Enterprises Ltd.
63.....Klondike Star Mineral Corporation Ltd.

INDIAN RIVER, a tributary of Yukon River

1150/13, 1150/14

2006: 63°47'25"N, 139°29'00"W
2003: 63°46'57"N, 139°34'32"W

David McBurney
Water licenses: PM04-412 (2015), PM96-076 (2007)
Active producer (2003-2006) **Operation no. 54**

Location The property was located on the left and right limits of Indian River in various locations downstream of the mouth of Ninemile Creek. Camp is to be relocated to Nine Mile Creek on the right limit of Indian River for 2007.

Work History and Mining Cuts David McBurney began mining in this area in 1994. Mining cuts were excavated about 150 feet wide in consecutive strips, parallel to the river banks. In 2003, McBurney moved upstream on the right limit. In 2004, sluicing operations averaged 10 hours daily. In 2005, two new cuts were sluiced. In 2006, one long cut along the left limit and a smaller cut on an adjacent low terrace were sluiced.

Equipment and Water Treatment From 2003 to 2006, one Caterpillar D9G bulldozer was used for ripping and stripping frozen overburden, flattening tailings and spreading topsoil for restoration. Two Hitachi EX200 excavators were used for digging pay gravel, feeding the wash plant and removing tailings. A conveyor belt, 3 feet wide by 100 feet long, mounted on used excavator tracks, was used to strip overburden and waste gravel.

The wash plant consisted of a 5-foot-diameter trommel mounted on steel skids which classified material to ½ inch. A single sluice run, 2½ feet wide by 4 feet long with angle iron riffles, fed into 5 hydraulic riffle tables, 13 feet wide by 12 feet long. Tailings were stacked by a 40-foot-long conveyor belt. An Isuzu GBGIT-powered 6- by 6-inch Indeng pump delivered about 900 igpm which was used to process 85 cubic yards per hour. Water was pumped directly from the Indian River using fish screen mesh on the pump intake and was settled in out-of-stream ponds in old mining cuts. The settling pond seepage was captured by a ditch well away from Indian River.

Surficial Geology and Stratigraphy The section mined in 2006 consisted of 5 to 8 feet (1.5 to 2.5 m) of silt and organic material overlying 4 to 5 feet (1 to 1.5 m) of fine, stratified pebble gravel overlying 2 to 3 feet (0.6 to 0.9 m) of massive to stratified grey cobble pebble gravel. The lower gravel and up to 6 feet (2 m) of bedrock were sluiced. The low terrace on bedrock just above the main section consisted of poorly sorted angular gravel overlain by a thin organic layer. All material below the organic material was sluiced.

Feeding the wash plant at Dave McBurney's Indian River mine, 2006.

Bedrock Geology Bedrock varied from soft and decomposed to hard and blocky. In 2006, the bedrock was a carbonaceous quartzose schist with minor marble layers.

Gold Characteristics In 2006, the gold was fine-grained and flaky with fineness around 800.

INDIAN RIVER, a tributary of Yukon River

1150/14 2006: 63°46'03"N, 139°21'31"W

Cam Arkinstall, Nnahtur Resources Ltd.
Water license: PM99-046 (2009, Licensee: Nnahtur Resources Ltd.)
Active producer (2005-2006) **Operation no. 55**

Location The operation was located on a left-limit bench of Indian River, opposite the mouth of Ophir Creek.

Work History and Mining Cuts Limited exploration and test mining was done on this bench in past years, however, in 2005, the pit was expanded and a considerable amount of gravel was stripped and mined. Mining of the bench continued in 2006. Mr. Arkinstall worked a daily shift with the assistance of one helper.

Equipment and Water Treatment Equipment on the site included a Hough 90C loader for feeding the wash plant and removing tailings, and two bulldozers for stripping overburden. The wash plant consisted of a 40-foot-long, 6½-foot-diameter trommel with a hopper and final spray wash. Pay was classified to ½-inch and fed onto four oscillating sluice runs which were 16 feet wide and lined with hydraulic riffles. The process rate was 150 to 200 cubic yards per hour. Water was 100% recycled from the out-of-stream settling pond with no discharge.

Surficial Geology and Stratigraphy The stratigraphic section consisted of up to 9 feet (3 m) of organic material and silt overlying 6 to 8 feet (2 to 2.5 m) of stratified rusty pebble gravel on top of 6 feet (2 m) of massive cobble pebble white gravel on bedrock. The white cobble gravel was sluiced.

Bedrock Geology Bedrock at this site is blocky schist.

Cam Arkinstall (left) at his Indian River operation with placer researchers Dr. Vladimir Naumov (Perm University, Russia), William LeBarge (Yukon Geological Survey) and Vitalii Bryukhov (Perm University), 2006.

Gold Characteristics The gold was generally fine-grained and flat although occasional small nuggets were found. The fineness was 830.

INDIAN RIVER, a tributary of Yukon River

1150/14 2006: 63°45'53"N, 139°21'04"W

Boulder Mining Corporation
Water license: PM04-446 (2015)
Active producer (2004-2006) **Operation no. 56**

Location The two main pits were located on the left limit of Indian River just downstream of Ruby Creek.

Work History and Mining Cuts In 2004, Boulder Mining Corporation began exploration of bench gravel in the Indian River area along with Western Prospector Group. A total of 795 placer claims in three zones (Upstream, Downstream and Ruby benches), were staked on a 21-km (13-mile) stretch of Indian River, and cover an estimated 8300 ha (20,000 acres). Exploration consisted of an extensive program of auger drilling, rotosonic drilling, ground-penetrating radar, bulk sampling and geological mapping. Several hundred quartz claims were also staked. Auger drilling on the Downstream bench early in the program resulted in a weighted average gold grade in five holes of 2.3 g/t (0.067 oz/t) gold over 6 m (20 feet). On the upstream bench, the weighted average gold grade of 10 holes along a 3500 x 750 m (11,500- by 2500-foot) width was 0.58 g/t (0.017 oz/t) gold over 21.5 m (70½ feet). Rotosonic drilling results included intersections of 3.16 g/t (0.09 oz/t) over 0.9 m (3 feet), 1.08 g/t (0.03 oz/t) over 1.7 m (5.6 feet), and 0.32 g/t (0.009 oz/t) over 2 m (6.6 feet).

Cut-off grades for the deposit were estimated to be 0.1 g/t (0.003 oz/t). Bulk sampling in test pits by excavator increased the gold grades compared to drilling, as well as recovering coarser gold with several nuggets in the plus 1 g (plus 0.6 dwt) range. Some typical grades in test pits were 0.411 g/t (0.012 oz/t) over 0.8 m (3 feet), 0.586 g/t (0.017 oz/t) over 0.9 m (3 feet), and 0.220 g/t (0.006 oz/t) over 1.12 m (3.7 feet). Individual bulk sample weights were in the range of 12.3 to 34 t (11.2 to 30.9 tons). In 2005, two large pits with areas totalling 50 000 m^2 (540,000 square feet) were stripped and mined on Ruby bench. A total of 13 561 g (436 crude ounces) of gold was recovered. The property was inactive in 2006 except for reclamation, as Boulder concentrated their efforts on other properties. The main pits were recontoured and resloped.

Sluicing in Boulder Mining's main pit on Indian River, 2005

Boulder Mining's rotosonic drill on Indian River, 2004.

Equipment and Water Treatment Equipment and water treatment on site included a Hitachi 300LC excavator, Marooka tracked dump vehicle and Caterpillar D9 and D10 bulldozers. A Komatsu 750 excavator fed the wash plant, which included a hopper over a vibrating double deck which screened pay to minus ½ inch. The main sluice run was lined with angle iron riffles while three subsidiary sluice runs were lined with expanded metal and Nomad matting. The plant processed approximately 300 tonnes (150 m^3) of pay material per hour. Clean-ups were done with an 8- by 4-foot Deister table.

Surficial Geology and Stratigraphy Generalized stratigraphy consists of a Tertiary-age, 'White Channel' gold-bearing gravel on a bedrock terrace, which is in part overlain by glaciofluvial and glaciolacustrine sediments deposited during the earliest pre-Reid glaciation. The West End pit stratigraphy consisted of a massive, white cobble-pebble gravel layer 2 to 3 m (6 to 10 feet) thick overlain by 5 to 10 m (15 to 30 feet) of variable black muck or fine rusty sandy pebble gravel. The white gravel was sluiced along with 0.3 to 0.6 m (1 to 2 feet) of bedrock.

Bedrock Geology Bedrock is decomposed to fractured graphitic to chloritic schist on the main pit.

Gold Characteristics Gold recovered was generally fine grained and flat.

INDIAN RIVER, a tributary of Yukon River

1150/11, 1150/14

2006: 63°45'07"N, 139°08'18"W
2005: 63°45'15"N, 139°07'39"W
2004: 63°45'08"N, 139°07'53"W
2003: 63°43'34"N, 139°02'12"W

Kim Ferguson
Water license : PM02-304 (2008)
Active producer (2003-2006)

Operation no. 57

Location In 2003, the operation was located upstream of the mouth of Quartz Creek. In 2002 and 2004 to 2006, the operation was located at the mouth of Quartz Creek on a low-level right-limit bench of Indian River.

Work History and Mining Cuts In 2002, Kim Ferguson optioned the ground from Nnahtur Resources Ltd. Two miners and one camp person were involved in the short testing operation under a Schedule III water use permit. Two cuts were made at the site, one approximately 600 by 30 feet (200 x 10 m) and the second around 450 by 45 feet (140 x 15 m). In 2003, Mr. Ferguson moved to a location in the Indian River valley several kilometres upstream. He continued to mine in the early part of 2004, but later that season, moved the operation back to the mouth of Quartz Creek where he mined in 2005 and 2006.

Kim Ferguson relaying pay gravel to wash plant at the mouth of Quartz Creek, 2004.

Ferguson's wash plant operating on Indian River, 2003

Equipment and Water Treatment The operation from 2003 to 2006 used a New Zealand trommel which was floating at the upstream location but land-based at the downstream location. It was fed by a Hitachi EX300 excavator. Also on site were a Caterpillar 245 excavator and Caterpillar D9L bulldozer. The operation sluiced and recycled out-of-stream.

Surficial Geology and Stratigraphy In 2003 and 2004, the Indian River upstream section consisted of 6 feet (2 m) of stratified sand and organic material overlying 3 feet (1 m) of organic silt, overlying 9 feet (3 m) of well-sorted pebble cobble gravel on bedrock. The bottom 6 feet (2 m) of gravel was sluiced. The 2005 to 2006 downstream sections consisted of up to 6 feet (2 m) of silt overlying 6 feet (2 m) of rusty, angular stratified gravel mixed with organic pods, which was overlying 5 feet (1.5 m) of bleached quartz-rich white gravel on bedrock. The white gravel was sluiced along with approximately 1 foot (0.3 m) of undulating bedrock. The white gravel may be equivalent to the Ross gravel on Dominion Creek, as described by Froese *et al.* (2000).

Bedrock Geology Bedrock at this site is decomposed schist.

Gold Characteristics In 2002, the gold was described as fine and flaky with very few nuggets. Fineness was 785.

QUARTZ CREEK, a tributary of Indian River

1150/14 2003: 63°46'52"N, 139°06'30"W

Favron Enterprises Ltd., Paul Favron, John Loveless
Water license: PM00-204 (2006)
Active producer (2003) **Operation no. 58**

Location This operation was located on the right limit of Quartz Creek at the airstrip.

Work History and Mining Cuts In 2003, Favron stripped and sluiced a large cut on the right limit of Quartz Creek beside the airport.

Equipment and Water Treatment Equipment included three Terex scrapers, two Caterpillar bulldozers (D9L and D8K) and a Bucyrus Erie excavator. The wash plant included a dozer-trap screened hopper over a 42-inch by 16-foot conveyor, which fed pay to the 5- by 10-foot double (1½-inch and ¾-inch) oscillating screen deck. Plus ¾-inch material was removed by a 36-inch by 30-foot radial stacking conveyor while minus ¾-inch material fed to six 32-inch by 16-foot sluice runs lined with angle iron riffles, expanded metal and Nomad matting. An old mining cut beside the Quartz Creek road

Favron Enterprises mining near the airstrip on Quartz Creek, 2003.

served as a settling pond and as a reservoir for recycling water back to the plant.

Surficial Geology and Stratigraphy White Channel gravel forms a terrace along the right limit of Quartz Creek from the mouth of Little Blanche Creek to the confluence of Quartz Creek with Indian River. The area of the airstrip on Quartz Creek has abundant tailings from mechanical mining, but some parts of the bench have been stripped and not mined. A large thickness of gravel was stripped and the lower gravel was sluiced.

Bedrock Geology Bedrock is mapped as quartz-muscovite schist.

QUARTZ CREEK, a tributary of Indian River

1150/14 2004: 63°49'06"N, 139°02'12"W

Tatlow Placer Mines Ltd., Ken Tatlow, Kevin Tatlow
Water license: PM03-332 (2014)
Active producer (2003-2006) **Operation no. 59**

Location The operation has been located in various places between the confluence of Little Blanche and Quartz creeks and upstream on Mack Fork, a left-limit tributary to Quartz Creek.

Work History and Mining Cuts The Tatlows began mining in this area in 1991 and mined until 2000, when rising fuel prices and low gold prices made the operation uneconomic. The operation resumed in 2003 and was active in subsequent years including 2006. A crew of 2 miners and 3 camp personnel worked a daily 10-hour shift. Most of the work was in upper Quartz Creek where black muck was stripped with a hydraulic monitor and bulldozers were used to push up pay gravel. Two cuts were done in 2006, one 80 by 200 feet (20 x 60 m) and one 80 by 420 feet (20 x 130 m).

Equipment and Water Treatment In 2006, equipment included a Caterpillar D9L bulldozer for stripping and sluicing and a Hitachi EX300 excavator to feed the wash plant. The

A collection of Pleistocene fossils recovered by Tatlow Placer Mines on Quartz Creek, 2003.

wash plant was fed at 120 loose cubic yards per hour and included a 5- by 10-foot double screen deck over three 4- by 8-foot sluice runs and one 4- by 6-foot sluice run, each lined with expanded metal. Water was acquired from the return pond on Quartz Creek and supplied by a Caterpillar 3408-powered 12- by 10-inch pump. Effluent was settled out-of-stream and 80% recycled from two ponds, one 500- by 100-foot (150 x 30 m) pond on Quartz Creek and one 1000- by 1500-foot (300 x 450 m) pond on Indian River.

Surficial Geology and Stratigraphy In 2006, the section consisted of 30 feet (10 m) of mixed gravel, sand and muck.

Bedrock Geology Bedrock is partially decomposed, fractured and unconsolidated. In 2006, it was reported as schist which was 50% blocky.

Gold Characteristics In 2006, the gold was reported as rounded, with 50% less than 25 mesh in size and having a fineness of 760.

LITTLE BLANCHE CREEK, a tributary of Quartz

1150/14 2003: 63°50'50"N, 139°05'40"W

Irvin D. Nafziger
Water license: PM98-055 (2009)
Active producer (2003-2006) **Operation no. 60**

Location The operation has been located between 2 miles (3 km) upstream from the confluence of Little Blanche Creek with Quartz Creek and upstream on a left-limit tributary of Little Blanche Creek.

Work History and Mining Cuts Mr. Nafziger and one other miner began work on the property in 1990. The operation has been active every year since then including 2006.

Equipment and Water Treatment Equipment included a Caterpillar D8H bulldozer, a Caterpillar D8L bulldozer and an O&K 2-cubic-yard bucket excavator. The wash plant

Irv Nafziger's wash plant and hoe on Little Blanche Creek, 2005.

included a 10- by 10-foot hopper with a grizzly over a Super Sluice IV screen deck and two 3- by 6-foot sluice runs lined with angle iron riffles. This led to 4 feet of slick plate and 2 more sluice runs each 4 by 12 feet and lined with expanded metal over Nomad matting. An 8-inch pump, powered by a GM 371 diesel engine, delivered approximately 1500 igpm of water, which was used to process about 85 cubic yards per hour. Effluent was settled in-stream and partially recycled from settling ponds constructed from old mining cuts.

Surficial Geology and Stratigraphy The section consisted of an average of 10 feet (3 m) of black muck overlying 4 to 6 feet (1 to 2 m) of gravel. Approximately 4 feet (1 m) of gravel was sluiced. The waste sections were stockpiled where possible for use in road work, water structures and/or reclamation.

Bedrock Geology Bedrock was described as wavy, blocky brown to decomposed, grey/yellow-clay altered schist.

Gold Characteristics Gold was described as fine-grained and dull, with 3% nuggets. The fineness was approximately 640.

LITTLE BLANCHE CREEK, a tributary of Quartz Creek

1150/14 2003: 63°51'01"N, 139°08'39"W

Dave Trainer, Barbara Coomes
Water license: PM01-221 (2011)
Exploration (2003) **Operation no. 61**

Location This operation was located on the right fork of Little Blanche Creek.

Work History and Mining Cuts Barbara Coomes and Dave Trainer had an operation on Carmack Fork and travelled to this property for a short period of time in 2002. The following year, Trainer and Coomes moved some equipment onto the site and began stripping on the left limit.

Equipment and Water Treatment A Caterpillar D6 bulldozer was used to perform stripping and trenching to prepare ground for mining. No wash plant was used; bulk samples were taken back to the operation at Carmack Fork for testing.

Surficial Geology and Stratigraphy At the confluence of the right fork with the tributary, testing indicated there was 20 feet (6 m) of black muck overlying 10 feet (3 m) of gravel. The bench ground upstream is 20 feet (6 m) above the creek and consists of 3 feet (1 m) of black muck overlying 6 to 8 feet (2 to 2.5 m) of gravel.

Bedrock Geology Bedrock was described as yellow, unconsolidated schist.

INDIAN RIVER, a tributary of Yukon River

1150/11 2006: 63°43'53"N, 139°04'42"W

Gimlex Enterprises Ltd., Jim Christie, Tara Christie, Dagmar Christie, Sheamus Christie
Water license: PM95-077 (2014)
Active producer (2004-2006) **Operation no. 62**

Location The operation was located at the mouth of McKinnon Creek in the Indian River valley.

Work History and Mining Cuts In 2004, the Christie family began moving to this new location while mining on Dominion Creek. By 2005, the reclamation at Dominion Creek was complete and this was the new minesite for Gimlex Enterprises Ltd. Mining continued in 2006.

Equipment and Water Treatment Equipment from 2004 to 2006 included one Komatsu D475 bulldozer, two Komatsu D355 bulldozers and one Komatsu D155 bulldozer. There were also two Komatsu WA 600 loaders, one Komatsu PCL400 excavator and one Caterpillar 235 excavator. The loaders were used to feed the hopper for the plant and remove tailings while the other equipment was used for stripping overburden and mining. Pay was processed using an El Russ feeder with two conveyors and a 4- by 16-foot screen deck on a custom built wash plant. The processing rate was 250 to 350 loose cubic yards per hour.

Surficial Geology and Stratigraphy The stratigraphic section consisted of 6 to 10 feet (2 to 3 m) of mixed sand, silt and organic material, overlying 3 to 6 feet (0.9 to 2 m) of fine rusty pebble gravel overlying 4 to 6 feet (1 to 2 m) of grey cobbly gravel. A total of 4 feet (1 m) of gravel plus 2 feet (0.6 m) of bedrock were sluiced.

Bedrock Geology Bedrock is decomposed to blocky schist.

Gold Characteristics The gold was reported as fine-grained and flat, with a fineness of approximately 810.

Gimlex Enterprises Ltd.'s mining operation on Indian River in 2006; view to the east.

INDIAN RIVER, a tributary of Yukon River

1150/10 2006: 63°41'36"N, 138°58'57"W

Klondike Star Mineral Corporation Ltd.
Water license: S3DD0026 (2007)
Exploration (2005-2006) **Operation no. 63**

Location The testing took place along the Indian River valley between Eureka Creek and Montana Creek, mainly in the area of the mouth of Montana Creek.

Work History and Mining Cuts A total of 51 auger holes were completed during an extensive program of test drilling which took place in the Indian River valley in the vicinity of the mouth of Montana Creek in the early spring of 2005 and 2006. In the fall of 2006, the company ran a bulk placer test program.

Equipment and Water Treatment The company used a Nodwell-mounted auger drill in the drilling program. Drill samples were weighed, washed on-site through a long tom, screened and the gold was weighed. The bulk placer test was conducted in a closed pit with no discharge.

Surficial Geology and Stratigraphy Surficial deposits of widely varying age occur in the vicinity, including Tertiary White Channel gravel, pre-Reid glaciofluvial and glaciolacustrine sediment, Pleistocene interglacial deposits, loess and modern alluvium. The company has been targeting buried White Channel gravel deposits as well as Pleistocene and modern gravel.

Auger drilling results showed that the average depth to bedrock was 23 feet (7.0 m), with 12 feet (3.6 m) of organic material and silty overburden overlying 11 feet (3.3 m) of gravel. All holes drilled contained visually identified gold.

Bedrock Geology The area lies near the contact between Cretaceous Carmacks Group volcanic and sedimentary rocks and Permian Klondike Schist. The McKinnon Creek quartz-pebble conglomerate is part of the Carmacks group, and it may be a paleoplacer deposit which acted as an intermediate

host for placer gold derived from local bedrock sources. It also may be a possible source of gold enrichment in the area which may have contributed to the richness of the younger alluvial deposits.

Gold Characteristics Gold is generally fine grained with occasional flakes and small nuggets.

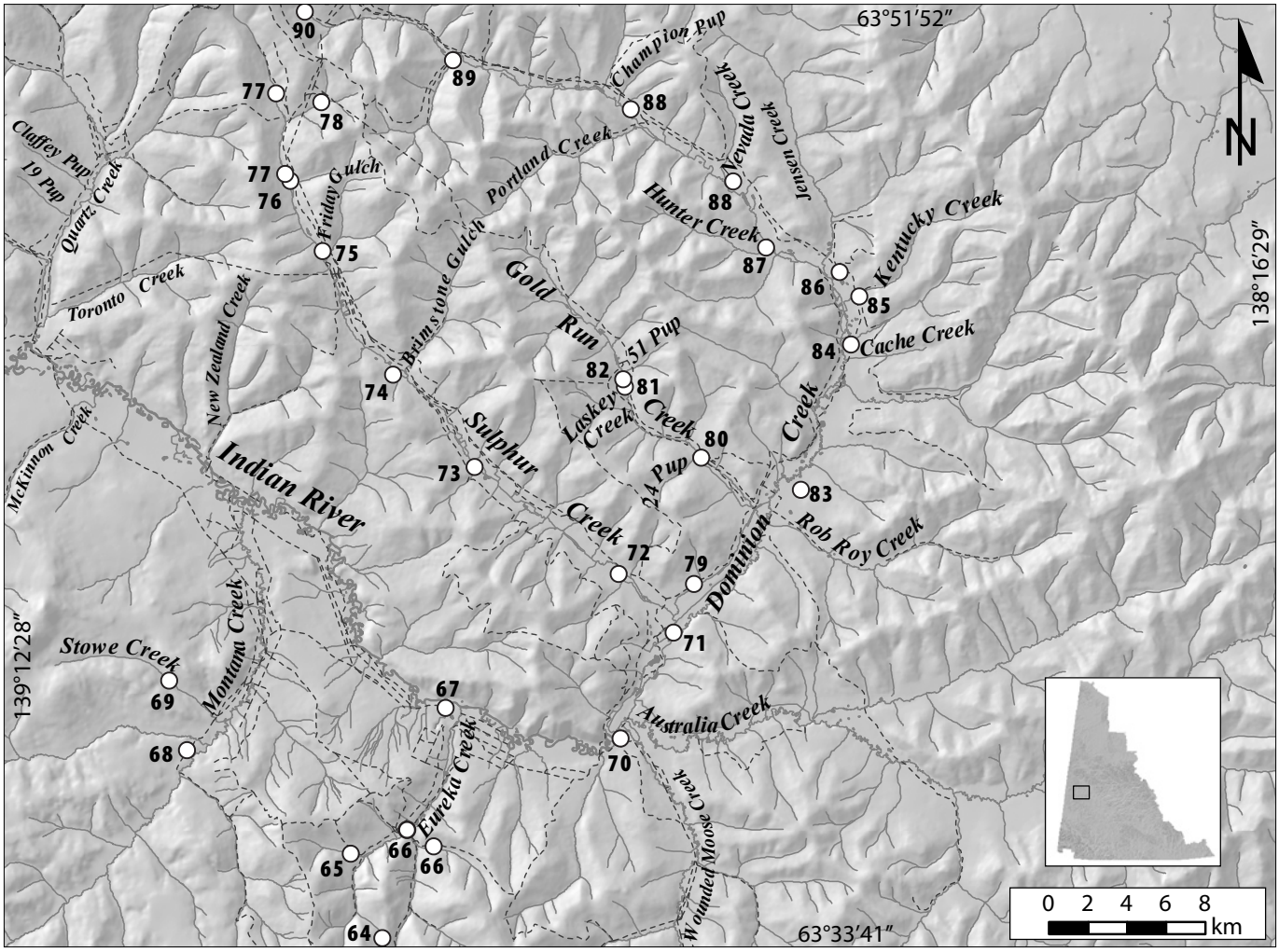
Klondike Star Mineral Corporation Ltd. auger drilling on Indian River, March 2006.

KLONDIKE:

DOMINION-SULPHUR

PLACER AREA

SITE NO. 64-90



LEGEND

64.....Ripper Mining/Cahoon
65.....Hamar Placers
66.....Eureka Placers Ltd.
67.....Tamarack Inc.
68.....Matkovich (19651 Yukon Inc.)
69.....Allen
70.....Abermeth
71.....Gatenby Mining
72.....Sulphur Dom Inc.
73.....Kruger
74.....Lucky Lady Placers
75.....Cross
76.....Coulee Resources Ltd.
77.....Sprokkreeff
78.....Morgan/ Coulee Resources Ltd.
79.....Gimlex Enterprises Ltd.
80.....Mary Ange Resources Ltd.
81.....D & P Mining Exploration Ltd.
82.....Alberta Gold Diggers Ltd.
83.....Ross Mining Services Ltd.
84.....A-1 Cats/365334 Alberta Ltd.
85.....Bodin
86.....Hollis
87.....Conklin
88.....Sailer
89.....Stuart
90.....Coles

EUREKA CREEK, a tributary of Indian River

1150/10 2005: 63°33'12"N, 138°52'49"W

Ripper Mining, Troy Cahoon
Water license: PM01-242 (2006)
Active producer (2003-2005) **Operation no. 64**

Location This operation was on an unnamed right-limit tributary of the right fork of Eureka Creek.

Work History and Mining Cuts Work was first conducted on this unnamed right-limit tributary of the right fork of Eureka Creek in 1998.

Between 2003 and 2005, a crew of two miners worked a daily 10-hour shift. One cut mined in 2003 was 60 by 120 feet (20 x 40 m) in size.

Equipment and Water Treatment Between 2003 and 2005, a Caterpillar 966 loader and a leased excavator were used for various duties while the wash plant was a small trommel with a generator and a hydraulic system. Water was supplied from the right-limit tributary and pumped by two Honda 3- by 3-inch gas-powered pumps rated at 500 igpm each. Approximately 40 loose cubic yards per hour were processed with this system. Effluent was 100% recycled from a 50- by 40-foot pond (15 x 10 m). Clean-ups were done with a Diester table and hand-panning.

Surficial Geology and Stratigraphy The stratigraphic section consisted of 25 feet (8 m) of black muck mixed with gravel, overlying 6 feet (2 m) of gravel on bedrock. All of the gravel plus 3 feet (1 m) of bedrock were sluiced.

Bedrock Geology Bedrock at this site is shattered, fragmented schist.

Gold Characteristics Gold was described as hackly and coarse, with a dull yellow colour and a fineness of 670.

Troy Cahoon collecting a pay sample at his operation on Eureka Creek, 2004.

Hamar Placers operation on Eureka Creek, 2003.

EUREKA CREEK, a tributary of Indian River

1150/10 2003: 63°34'54"N, 138°54'06"W

Hamar Placers, Troy Cahoon, Hiroaki Miyahama
Water license: PM01-241 (2006)
Active producer (2003-2005) **Operation no. 65**

Location This operation was located on an unnamed left-limit tributary of the right fork of Eureka Creek.

Work History and Mining Cuts The operators began mining here in 2002. Two miners worked one 8-hour shift per day. In 2003, the mining cut was 60 feet wide and 120 feet (20 x 40 m) long. In 2004, work was completed to stabilize the creek channel by pulling black muck away from the perimeter. In 2005, a small amount of sluicing was completed.

Equipment and Water Treatment A D9H Caterpillar bulldozer with ripper was used to strip material and push pay. A 690B John Deere excavator was rented in 2002 and a Hitachi excavator was used in 2005. The wash plant was a 5- by 40-foot trommel leading to a 4- by 10-foot sluice run with 1½-inch Hungarian riffles, expanded metal and Nomad matting. Approximately 80 loose cubic yards per hour were processed. Water was acquired from the tributary and pumped at 500 to 800 igpm by a New Zealand 'I' 6- by 6-inch pump powered by a 4-cylinder Detroit engine. Effluent was settled in-stream in a 60- by 100-foot (20 x 30 m) pond which was 100% recycled. Final clean-ups were performed by Don and Rose Kenzie using a jig and a Diester table.

Gold Characteristics Gold recovered was coarse and bright yellow, with some small nuggets. The fineness was 685.

EUREKA CREEK, a tributary of Indian River

1150/10

2005: 63°35'21"N, 138°51'35"W
2003: 63°35'00"N, 138°50'26"W

Eureka Placers Ltd., Don Marino, Richard Allen
Water licenses: PM01-236 (2006), PM03-327 (2005)
Active producer (2003-2006) **Operation no. 66**

Location In 2004, the operators worked on the right limit of the confluence of the right and left forks as well as on the main stem of Eureka Creek. In 2005, some work was done high on the left-limit bench of the right fork of Eureka Creek. In 2006, the operation was near the top of the left fork.

Work History and Mining Cuts Two miners worked a daily 10-hour shift. In 2003, the operators mined a cut 200 by 100 feet (60 x 30 m) on the upper right fork of Eureka Creek, and in 2004, a cut 1000 by 100 feet (300 x 30 m) was stripped and partially sluiced on the right limit of the confluence of the right and left forks and on the main stem of Eureka Creek. In 2005, a cut 400 by 150 feet (100 x 50 m) was stripped and mined high on the left-limit bench of the right fork of Eureka Creek. Waste was stockpiled with the bulldozers and excavators. In 2006, a cut on the upper end of the left fork was stripped and sluiced.

Equipment and Water Treatment Equipment included a Caterpillar D9 bulldozer and a Caterpillar D8 bulldozer with a ripper, and two Caterpillar excavators (235 and 225). The wash plant was a 6-foot-diameter trommel with 1-inch angle iron riffles and expanded metal, with a total recovery area of 128 square feet. Water was supplied from the right fork of Eureka by a Morris 10- by 12-inch pump powered by a Caterpillar 3406 engine rated at 2000 igpm, enough to process 90 loose cubic yards per hour. Effluent was settled out-of-stream in downstream ponds which varied between 50 by 50 feet (15 x 15 m) and 300 by 100 feet (100 x 30 m) in size. Clean-ups were done with a long tom.

Surficial Geology and Stratigraphy In 2005, the stratigraphic section on the left-limit bench on the right fork consisted of 50 feet (15 m) of frozen washed gravel on wavy bedrock. The bottom 3 feet (1 m) plus 3 feet (1 m) of bedrock were sluiced.

Eureka Placers' pit on the left-limit bench of the right fork of Eureka Creek, 2005.

Bedrock Geology Bedrock at this site is decomposed chlorite schist.

Gold Characteristics In 2005, the gold was reported to be less than 30 mesh in size, bright and red-stained, and having a fineness of 740.

INDIAN RIVER, a tributary of Yukon River

1150/10 — 2005: 63°38'17"N, 138°52'09"W; 2003: 63°37'43"N, 138°49'43"W

Tamarack Inc., Tony Beets
Water licenses: PM04-422 (2010), PM98-071 (2003)
Active producer (2003-2005) — **Operation no. 67**

Location The operation was located at the mouth of Eureka Creek on the right limit of the Indian River.

Work History and Mining Cuts Aurion Placers mined claims that had been leased from Tamarack Inc. from 1994 to 1998, and Tamarack began mining in this area in 1999. The crew between 2003 and 2005 consisted of 12 miners and one camp personnel working two 12-hour shifts. In 2003, three cuts were mined: one was 300 by 1800 feet (100 x 550 m), and the other two were 300 by 600 feet (100 x 200 m). In 2004, two cuts were mined: 150 by 3000 feet (50 x 1000 m), and 1200 by 300 feet (400 x 100 m). In 2005, five cuts were mined, with a total size of 300 by 3000 feet (100 x 1000 m). The operation moved to Paradise Hill at the end of the 2005 season.

Equipment and Water Treatment Between 2003 and 2005, equipment included two Caterpillar D10 bulldozers for stripping, two Caterpillar D9 bulldozers for sluicing, a Caterpillar 245 excavator for loading scrapers, four Caterpillar 657 scrapers for hauling pay, a Caterpillar 988 loader for hauling tailings, and a Hitachi 181 excavator to feed the wash plant. The wash plant consisted of a Pearson box with five runs: one for coarse material and four for fine material. The four fine runs were 4 feet wide by 20 feet long with the first 4 feet containing 1½-inch hydraulic riffles and the rest expanded metal with Nomad matting. The coarse run was 3 feet wide and 20 feet long and contained punch plate with ¾-inch screen over 1½-inch Hungarian riffles over Nomad matting. Water was acquired from a screened intake ditch to the out-of-stream pond and was pumped by a Morris 10- by 12-inch, 3406 Caterpillar-powered pump with a capacity of 5000 to 6000 igpm. The plant processed 300 loose cubic yards per hour. Effluent was settled out-of-stream in a pond which began at 100 by 300 feet (30 x 100 m) and grew with each mined out cut. Clean-ups were done with a two-cell 'Propulse' clean-up jig.

Tamarack Inc. operation on Indian River, 2004.

Surficial Geology and Stratigraphy Between 2003 and 2005, the section consisted of 6 feet (2 m) of muck overlying 8 feet (2.5 m) of gravel on bedrock. The lowest 2 feet (0.6 m) of gravel along with 2 feet (0.6 m) of bedrock were sluiced.

Bedrock Geology The bedrock at this site varies between decomposed and fractured schist.

Gold Characteristics The gold recovered was fine grained (flour to sugar-sized), dark yellow and had a fineness of 820 to 830.

MONTANA CREEK, a tributary of Indian River

1150/10, 1150/11 — 2003: 63°37'02"N, 139°01'11"W

19651 Yukon Inc., Vern Matkovich
Water license: PM02-268 (2007)
Active producer (2003) — **Operation no. 68**

Location In 2003, the operation was located upstream of Stowe Creek near the mouth of Bismark Creek.

Work History and Mining Cuts Vern Matkovich has been working on Montana Creek since 1993. In 2003, Mr. Matkovich sluiced bench gravel along the left limit of Montana Creek upstream from Stowe Creek. That season was used to process a large bulk test to confirm mineable reserves for the future.

Equipment and Water Treatment Equipment on-site included an excavator and Caterpillar D8 bulldozer. The wash plant was a 3- by 10-foot double screen deck over an 8-foot by 32-inch sluice run equipped with angle iron riffles, which in turn fed two 8-foot by 24-inch sluice runs lined with expanded metal. A full recycle sluicing system was used with no discharge.

19651 Yukon Inc. (Vern Matkovich) operating on Montana Creek, 2003.

Surficial Geology and Stratigraphy In 2003, the section consisted of 6 feet (2 m) of silt and organic material overlying 3 to 6 feet (1 to 2 m) of subangular sandy cobble pay gravel. Wood in the overlying silt was carbon dated at >45 800 years old.

Bedrock Geology Bedrock at this site is green chloritic or graphitic schist.

STOWE CREEK, a tributary of Montana Creek

1150/10, 1150/11 2003: 63°38'25"N, 139°01'54"W

Richard Allen
Water license: PM98-070 (2009)
Active producer (2003) **Operation no. 69**

Location This operation started at the mouth and worked upstream on Stowe Creek.

Work History and Mining Cuts This operation began mining on Stowe Creek in 2002 and mining continued for the early part of 2003, but Mr. Allen ceased operations in mid-summer.

Equipment and Water Treatment Equipment included Caterpillar D9G and D8H bulldozers with rippers which were used to strip cuts, prepare settling facilities and ramp tailings. The wash plant was a converted Clinton Creek screen deck, built by Tom Nichol, measuring 5 by 11 feet and screening to ¾-inch minus. The sluice trays consisted of two 6 by 2-foot-wide runs lined with expanded metal riffles and Nomad matting. Water for the plant was supplied by a Caterpillar 3406-powered Morris pump rated at 2000 igpm. Material was processed at approximately 80 loose yards per hour.

Surficial Geology and Stratigraphy The section consisted of 15 to 30 feet (5 to 10 m) of black muck and silt overlying 1½ feet

Richard Allen's operation on Stowe Creek, 2003.

(0.5 m) of cobble-pebble gravel. All the gravel was sluiced along with 2 to 3 feet (0.6 to 0.9 m) of bedrock.

Bedrock Geology Bedrock at this site is sandy decomposed granite, and some conglomerate.

Gold Characteristics Gold was reported as fine grained with a purity of 770.

WOUNDED MOOSE CREEK, a tributary of Indian River

1150/10 2003: 63°37'00"N, 138°42'01"W

George Abermeth
Water license: PM03-311 (2008)
Exploration (2003) **Operation no. 70**

Location Abermeth's exploratory operation was located on Wounded Moose Creek, a tributary of the Indian River.

Work History and Mining Cuts The Wounded Moose property was acquired by Abermeth in 2003. In the same year, some stripping was accomplished, and a trench was established over previously mined areas.

Equipment and Water Treatment A bulldozer, excavator and test plant were used, with a pump rated at 600 igpm.

Bedrock Geology Bedrock is mapped as Pelly gneiss.

DOMINION CREEK, a tributary of Indian River

1150/10 2006: 63°39'03"N, 138°39'31"W

Gatenby Mining, Lisle Gatenby
Water license: PM04-407 (2012)
Active producer (2003-2006) **Operation no. 71**

Location Mining on this operation took place at an area of Dominion Creek known as Granville, at the confluence of Dominion and Sulphur creeks.

Work History and Mining Cuts Work began at this site by Gatenby Mining in 1998 and the mine has operated each season since. Between 2003 and 2006, the crew consisted of three miners working 1½ shifts for 18 hours a day. Four cuts were mined each year in that time, each with the dimensions approximately 300 feet long by 150 feet wide (100 x 50 m) . Approximately 60,000 to 70,000 bank cubic yards (46 000 to 55 000 bank m^3) were processed through the plant each year. The 2006 cut was 300 feet long and 150 feet wide (100 x 50 m).

Equipment and Water Treatment Equipment between 2003 and 2006 consisted of Caterpillar D9L and Caterpillar D8H bulldozers with U-blades and rippers; a Kawasaki 957 III loader with a 7½-cubic-yard bucket, and a John Deere 844 loader with a 5½-cubic-yard bucket. Two Hitachi excavators

Aerial view of Gatenby Mining's operation, Dominion Creek, towards the northwest, 2006.

(EX400 and EX200) were also on site. The wash plant consisted of a 36-inch El-Russ feeder with a 42-inch belt, a 6- by 20-foot double horizontal rubber-coated screen deck which classified first to 1 inch and then to ½ inch, and four 4- by 16-foot sluice runs at 12% slope. The sluice runs were lined with 5 lb grating expanded metal and Nomad matting. Water was acquired from the Dominion 'Miners ditch' and pit dewatering water, and pumped by a Cummins-powered 8- by 10-inch Gould's pump rated at 2000 igpm. Approximately 100 bank cubic yards per hour (or 130 to 150 loose cubic yards per hour) were processed and effluent was settled out-of-stream in a 100% recycled 400- by 200-foot (120- x 60-m) pond. Clean-ups of the trommel feed (⅛ inch) were done using a two-stage mechanical jig with stainless steel ragging in the first hutch followed by iron ragging in the second hutch.

Gatenby Mining's wash plant, Dominion Creek, 2004.

Surficial Geology and Stratigraphy The stratigraphic section consisted of 8 to 10 feet (2 to 3 m) of peat and silt overlying 5 to 15 feet (1.5 to 5 m) of rusty orange gravel, overlying 5 to 15 feet (1.5 to 5 m) of white, kaolinite and quartz-clast rich gravel.

The bottom 4 to 6 feet (1 to 2 m) of the white gravel were sluiced along with 2 to 3 feet (0.6 to 0.9 m) of bedrock. The rusty orange gravel is known locally as the 'Dominion' gravel, and the white, kaolinite and quartz-clast-rich gravel is locally called the 'EL' gravel. The EL gravel is immediately downstream of the 'Ross' gravel described by Froese *et al.* (2000) and may be a product of both the Gold Run Creek paleochannel and the Ross gravel. The Ross Gravel is greater than 780 000 years old as indicated by paleomagnetism studies by Froese *et al.* (2000). It was likely originally reworked from the older 'White Channel' gravel which is found on higher level terraces. The 'Dominion' gravel is normally polarized and therefore younger than 780 000 years old.

Bedrock Geology The bedrock was described as decomposed chloritic schist with cross-cutting quartz veins.

Gold Characteristics Between 2003 and 2006, the gold was mainly fine grained ('flat, pounded-out flakes') with the majority between 30 and 100 mesh and less than 5% greater than 10 mesh in size. Locally, angular gold was found. The gold was bright, with a fineness of 865-870.

SULPHUR CREEK, a tributary of Dominion Creek

1150/10 2003: 63°40'14"N, 138°41'52"W

Sulphur Dom Inc.
Water license: PM00-203 (2006)
Active producer (2003) **Operation no. 72**

Location The operation was located on lower Sulphur Creek.

Work History and Mining Cuts Some stripping was performed early in the 2002 season on the right limit of the valley, at the upstream end of the area previously mined by Murray Conner. The operation remained active throughout the 2003 season.

Bedrock Geology Bedrock is mapped as Klondike Schist.

SULPHUR CREEK, a tributary of Dominion Creek

1150/10, 1150/15 2005: 63°42'26"N, 138°48'05"W

Henry Kruger
Water license: PM04-358 (2007)
Active producer (2003-2006) **Operation no. 73**

Location The operation was located on the right limit of Sulphur Creek valley.

Work History and Mining Cuts Henry Kruger has mined on Sulphur Creek since 1975. Mr. Kruger worked 8 hours per day, beginning sluicing each year near the end of June. Each season from 2003 to 2006, he processed a cut 150 feet (50 m) long on each side and 15 feet (5 m) deep.

Equipment and Water Treatment Equipment included a Caterpillar 955K loader, two Caterpillar bulldozers (D7 and D9), a Caterpillar 225 excavator, two Hough 120C loaders and a Koehring 605 dragline. The wash plant was a dump box with a punch plate screen deck feeding to two sluice runs, each 4 feet wide by 20 feet long and lined with Coco matting, expanded metal and Nomad matting. Water was acquired from Sulphur Creek and seepage, and pumped by a Murphy 8- by 8-inch 671 Detroit-powered pump supplying between 1500 and 2000 igpm. Approximately 50 loose cubic yards per hour were processed. Clean-ups were conducted once a season with a long tom, gold wheel and panning. Effluent was settled out-of-stream and 50% recycled from a 20-foot-wide, 1-mile-long (6 m x 2 km) old miner's ditch on the lower claims.

Surficial Geology and Stratigraphy The stratigraphic section consisted of 15 feet (5 m) of frozen black muck overlying 15 to 20 feet (5 to 6 m) of various gravel layers. These gravel units had 'White Channel' rocks, oxidized rounded rocks and flat slide rocks, and were comprised of a 4-foot (1-m) rusty layer, a 4-foot (1-m) yellow layer and a 4-foot (1-m) grey layer on bedrock. From 15 to 20 feet (5 to 6 m) of gravel were sluiced along with ½ to 1 foot (0.2 to 0.3 m) of bedrock.

Henry Kruger's pit and dragline on Sulphur Creek, 2005.

Lance Gibson's automatic monitor on Sulphur Creek, 2003.

Bedrock Geology The bedrock at this site is decomposed schist.

Gold Characteristics Between 2003 and 2006, the gold was fine grained and bright yellow with a fineness of 790 to 820.

SULPHUR CREEK, a tributary of Dominion Creek

1150/10, 1150/15 2006: 63°44'18"N, 138°51'34"W
2005: 63°44'20"N, 138°51'05"W

Lucky Lady Placers, Lance Gibson
Water license: PM01-263 (2014)
Active producer (2003-2006) **Operation no. 74**

Location The operation was located on Sulphur Creek near its confluence with Brimstone Gulch.

Work History and Mining Cuts The property has been mined continuously since the early seventies by the Gibson family. In the mining seasons 2003 to 2006, a crew of two to four miners worked a daily 10- to 12-hour shift. In 2003, a 300- by 300-foot (90- x 90-m) cut at Brimstone was mined. In 2004, another cut 300 by 300 feet (90 x 90 m) was mined and in 2005 two cuts were mined, one 400 by 120 feet (120 x 35 m) and one 200 by 150 feet (60 x 45 m). Operations continued in 2006 and were relocated to a right-limit bench above camp.

Equipment and Water Treatment Between 2003 and 2006, equipment included three Caterpillar D9 bulldozers, two Caterpillar 980 loaders, one Caterpillar 977 loader, one Caterpillar 245 excavator, a Caterpillar 621 Scraper, two 35-tonne Terex rock trucks and one Caterpillar 12E grader. An automatic hydraulic monitor was used to strip overburden. The wash plant included a 5- by 14-foot double

inclined deck, a 60-foot by 42-inch conveyor, two 80-foot by 36-inch feed conveyors, an 8-foot by 36-inch dozer trap feeder, a 65-foot by 36-inch tailings stacking conveyor, and two 4- by 20-foot sluice runs lined with angle iron riffles and Nomad matting. Pumps for monitoring and supplying the wash plant included a Cornell 6- by 8-inch-powered by Detroit Jimmy V671 and rated at 1800 igpm, a Gorman Rupp 12- by 12-inch-powered by Caterpillar 3406 rated at 3500 igpm, and a Cornell 10- by 10-inch-powered by Caterpillar 3406 rated at 3500 igpm. Approximately 100 to 125 loose cubic yards per hour were processed. Water was acquired from Sulphur Creek and settled both in-stream and out-of-stream. A pre-settling pond 1500 by 3000 feet (500 x 1000 m) in size was established in the creek downstream of previous pond locations and was being used as a conduit to assist in sluicing, monitoring and draining the area. Clean-ups were done with a double-breasted jig, gold wheel and Diester table every 40 hours.

Surficial Geology and Stratigraphy The section encountered between 2003 and 2006 was 30 to 60 feet (9 to 20 m) of black muck overlying 6 to 8 feet (2 to 3 m) of gravel on bedrock. Localized pockets of black sand were found on bedrock, and the gravel deposits were well-sorted pebbles with localized quartz boulders. All of the gravel plus 4 feet (1 m) of the slabby bedrock were sluiced.

Bedrock Geology Bedrock is schist.

Gold Characteristics In 2005 and 2006, the gold was mostly fine grained and dark yellow with little quartz. Some coarse nuggets were found at Brimstone Gulch. The fineness was 810 to 840.

FRIDAY GULCH, a tributary of Sulphur Creek

1150/15 2006: 63°46'46"N, 138°54'32"W

Neil Cross
Water license: PM04-373 (2015)
Exploration (2006) **Operation no. 75**

Location This operation was located at the mouth of Friday Gulch, a left-limit tributary of Sulphur Creek.

Work History and Mining cuts Work was first conducted on this property in 1989 and continued into the early 1990s. The property was largely inactive until 2006, when Mr. Cross stripped cuts on both the left and right limits of Friday Gulch.

Equipment and Water Treatment Mr. Cross used a bulldozer for stripping. No water was acquired or discharged.

Surficial Geology and Stratigraphy Previous work on the property exposed a section which consisted of 12 feet (3.6 m) of black muck with gravel lenses, overlying 4 feet (1.2 m) of washed gravel with many schist and quartz pebbles. The lower gravel and 2 feet (0.6m) of bedrock were sluiced.

Bedrock Geology Bedrock at this site is Klondike schist.

Gold Characteristics The gold recovered in past seasons was fine grained, porous, flaky, and angular. Quartz was attached to most of the gold and fineness was between 790 and 810.

SULPHUR CREEK, a tributary of Dominion Creek

1150/10, 1150/15 2003: 63°48'10"N, 138°55'53"W

Coulee Resources Ltd., Joel White, Sulphur Gold Placers
Water licenses: PM04-355 (2014, Licensee: Coulee Resources Ltd.),
PM99-125, LP00059 (2009, Licensee: Sulphur Gold Placers)
Active producer (2003-2006) **Operation no. 76**

Location From 2002 to 2004, this property was located on Sulphur Creek at the mouth of Meadow Gulch. In late October 2006, the operation was located just downstream of Henry Kruger's operation.

Work History and Mining Cuts In 2002, Coulee Resources mined three cuts at this site working under Sulphur Gold Placers' water license. In 2003, most equipment was moved from this site to Black Hills Creek, and Sulphur Gold Placers ran a monitoring program in the beginning of June. Coulee Resources returned to the site in mid-August and completed a cut 100 by 500 feet (30 x 150 m). They sluiced until the end of October. In 2004, Coulee Resources Ltd. had a crew of four miners and one camp person. They completed two cuts, one 1000 by 100 feet (300 x 30 m) and one 350 by 50 feet (100 x 15 m). In 2005, Coulee Resources conducted restoration at this site and worked under Darrell Morgan's water license on Green Gulch. For most of 2006, Coulee Resources' operation was on Green Gulch, but in October it moved downstream of Henry Kruger's operation and began a stripping program. Sluicing was planned if the weather remained warm.

Equipment and Water Treatment In 2003 and 2004, equipment included a Caterpillar D8L bulldozer, a Komatsu D455A bulldozer, a Komatsu PC400 excavator and a Komatsu PC1000 excavator. Two Caterpillar loaders were used (980 and 980B) as well as two Caterpillar 740 rock trucks. The wash plant consisted of an El Russ 6- by 16-foot inclined double screen deck with four 4- by 16-foot oscillating sluice runs, lined with Nomad matting and No. 8 expanded metal. The gradient was 1.5 inches per foot. Water for the plant was supplied by a Caterpillar 3406 diesel engine-powered Morris 10- by 12-inch pump capable of approximately 2300 igpm. Approximately 140 loose cubic yards per hour were processed. Water was pumped from the creek in 2003 but

100% recycled in 2004 from an out-of-stream pond. Clean-ups were conducted with a single cell jig, long tom and gold wheel. Various pieces of equipment were used to conduct restoration in 2005.

Surficial Geology and Stratigraphy In 2003 and 2004, the stratigraphic section consisted of 35 feet (10 m) of frozen black muck overlying 5 feet (2 m) of gravel. All of the gravel plus 2½ feet (1 m) of bedrock were sluiced. Various bones, oldtimers' workings and ivory were also found.

Bedrock Geology The bedrock was described as soft and decomposed unconsolidated schist which alternated in colour from orange to blue grey. Orange bedrock had better gold values.

Gold Characteristics In 2003 and 2004, the gold was reported as all fine-grained with a fineness of 790.

SULPHUR CREEK, a tributary of Dominion Creek

1150/15

2006: 63°48'19"N, 138°56'05"W
2005: 63°49'54"N, 138°56'23"W

Neils Sprokkreeff
Water license: PM04-444 (2015)
Active producer (2003-2006)

Operation no. 77

Location The property was situated along the upper portion of Sulphur Creek, upstream from the mouth of Green Gulch.

Work History and Mining Cuts Neils Sprokkreeff first mined on this property in 1979. In the 2003 to 2005 seasons, a crew of two miners worked daily 12-hour shifts. In 2003, stripping and sluicing was conducted at two locations on upper Sulphur Creek, for a total of 9000 cubic yards (7000 m^3) processed in 300 hours of sluicing. In 2004, 260 hours were spent sluicing 7800 cubic yards (6000 m^3), and in 2005, 240 hours were spent sluicing 7200 cubic yards (5500 m^3). Over this period, the total minecut size was 500 by 150 feet (150 x 45 m). In 2006, the crew included two miners and two camp personnel working a daily minimum 12-hour shift. A total of 60 hours were spent sluicing 1800 cubic yards (1300 m^3) from an existing mining cut on the left limit.

Equipment and Water Treatment From 2003 to 2005, equipment used included a Caterpillar D8K bulldozer, an American 35A excavator, an Ensley 3500 and a Caterpillar 980 loader. The wash plant consisted of a 30-foot-long, 4-foot-diameter hopper-fed trommel with a 5- by 16-foot recovery box lined with expanded metal and Hungarian riffles. Water was pumped by a 371 Jimmy-powered pump rated at 3000 igpm, enough to process 30 loose cubic yards per hour. Water was acquired from Sulphur Creek and effluent was settled in a 400- by 150-foot (120- x 45-m) in-stream 50% recycled pond with a seasonal bypass. Clean-ups were conducted with a long tom and gold wheel. In 2006, equipment consisted of Caterpillar D9G and D835A bulldozers, Ensley 3500 and American 35A excavators, a Koehring 466 loader and International Pay scraper. The wash plant was a hopper-fed 30-foot trommel with a 6- by 14-foot sluice run. Water acquired from Sulphur Creek was supplied by a 371 Jimmy-powered 12-inch pump rated at 3000 igpm, enough to process 30 loose cubic yards per hour. Effluent was settled in-stream on ponds located on Sulphur Gold Placers' claims downstream, a facility used by two other active operations. Clean-ups were done with a long tom and gold wheel every 20 hours.

Neil Sprokkreeff's trommel and excavator on his Sulphur Creek property, 2005.

Surficial Geology and Stratigraphy Sulphur Creek valley is approximately 500 feet (150 m) wide in this area. Previous mining cuts consisted of 40 feet (10 m) of frozen mud, on 5 feet (2 m) of gravel on flat bedrock. All of the gravel and 2 to 5 feet (1 to 2 m) of bedrock were sluiced. The area of the settling pond was composed of old dredge tailings with medium to large boulder gravel. The section between 2003 and 2006 consisted of 30 feet (9 m) of black muck overlying 5 to 8 feet (2 to 3 m) of sandy pebbly gravel. All of the gravel plus 2 feet (0.6 m) of bedrock were sluiced.

Bedrock Geology Bedrock at this site is decomposed schist.

Gold Characteristics In 2005 and 2006, the gold was reported as fine grained with some granular pieces, and dull yellow in colour with a fineness of 800.

GREEN GULCH, a tributary of Sulphur Creek

1150/15 2005: 63°49'42"N, 138°54'24"W

Darrell Morgan, Coulee Resources Ltd., Joel White
Water licenses: PM98-027; LP00211 (2008)
Active producer (2003-2006) **Operation no. 78**

Location The property was located approximately 2600 feet (800 m) upstream from the confluence of Sulphur Creek and Green Gulch, which is a left-limit tributary of Sulphur Creek near its headwaters.

Work History and Mining Cuts Darrell Morgan began working at this location in 1979. Morgan's crew consisted of one to two miners working a five-hour shift between 2003 and 2005. Limited testing occurred in 2003. In 2004, some stripping occurred above Morgan's camp in a small area about 30 by 50 feet (10 x 15 m), and in 2005 a cut 100 by 100 by 30 feet (30 x 30 x 10 m) was stripped and mined. Sluicing this material took 50 hours. In 2005, some of this property was optioned to Coulee Resources Ltd., who mined a cut 700 by

Coulee Resources Ltd's pit on Darrell Morgan's Green Gulch property; view to the southwest, 2006.

50 feet (200 x 15 m). Crew consisted of four miners and one camp person working a 12-hour shift. Coulee Resources Ltd. also mined a cut on the left limit in 2006.

Equipment and Water Treatment Between 2003 and 2005, Morgan's equipment included a Caterpillar D8K bulldozer, a Caterpillar D4 bulldozer and a Bantam Koehring ½-cubic-yard excavator. Mr. Morgan's wash plant was a double-run sluice box with 2½-inch riffles, expanded metal and Coco matting. An 8- by 20-foot dump box was lined with 1-inch punch plate. Water was supplied by a 10- by 10-inch Gorman Rupp GM-powered pump rated at 3000 igpm. Approximately 60 loose yards per hour were processed. Water was acquired from Green Gulch and 90% recycled using two in-stream ponds, one 200 by 150 feet (60 x 45 m) and a second pond 250 by 150 feet (75 x 45 m). Clean-ups were conducted with a long tom and gold wheel.

In 2005, part of the property was optioned by Coulee Resources Ltd. Their equipment included a D8L Caterpillar bulldozer as well as a Komatsu D455A bulldozer. Excavators included a Komatsu PC400 and a Komatsu PC1000 with 48-inch 'superwide' pads and a 6-yard bucket. A Caterpillar 980 loader and 980B loader were also used, as well as two Caterpillar 740 rock trucks. Coulee Resources' wash plant consisted of an El Russ 6- by 16-foot inclined double screen deck with four 4- by 16-foot oscillating sluice runs, lined with Nomad matting and No. 8 expanded metal. The gradient was 1½ inches per foot. The plant was run by a Morris 10- by 12-inch pump, powered by a Caterpillar 3406 diesel engine, capable of approximately 2300 igpm. Approximately 140 loose cubic yards per hour were processed. Water was 100% recycled from an out-of-stream pond 1200 by 150 by 4 feet (350 x 45 x 1 m) deep. Clean-ups were conducted with a single cell jig, long tom and gold wheel.

Surficial Geology and Stratigraphy The Green Gulch valley is narrow, with steep slopes. Between 2003 and 2005, Darrell Morgan encountered 8 to 10 feet (2.5 to 3 m) of black muck overlying 20 feet (6 m) of mixed gravel and muck which was overlying 6 feet (2 m) of gravel. All of the gravel was sluiced. In 2005 and 2006, the stratigraphic section mined by Coulee Resources Ltd. was 35 feet (10 m) of black muck overlying 5 feet (1.5 m) of frozen gravel. All the gravel plus 2½ feet (0.8 m) of bedrock were sluiced.

Bedrock Geology The bedrock at this site is Klondike Schist.

Gold Characteristics Gold recovered by Morgan in 2005 was reported to be 80% fine and 20% coarse. The occasional nugget was found and the gold was bright yellow and brassy.

DOMINION CREEK, a tributary of Indian River

1150/10 2004: 63°39'59"N, 138°38'32"W

Gimlex Enterprises Ltd., Jim Christie, Tara Christie, Dagmar Christie, Sheamus Christie

Water license: PM01-246 (2006)

Active producer (2003-2004) **Operation no. 79**

Location This operation was located on Dominion Creek between Gold Run and Sulphur creeks.

Work History and Mining Cuts The Christie family mined on Dominion Creek from 1994 to 2004. In 2003, a large new pit was opened up adjacent to the Dominion Creek road. Black muck was stripped hydraulically and pushed aside with

Gimlex Enterprises Ltd.'s operation on Dominion Creek in 2004.

bulldozers to use for future reclamation. The gravel in the pit was processed in 2003 and 2004. Later in the 2004 mining season, the mine continued to operate at this location, but Gimlex Enterprises began moving to their new minesite on Indian River. By 2005 this location was completely reclaimed and the Indian River location was active.

Equipment and Water Treatment Equipment included four Komatsu bulldozers (one D475, two D355s and one D155). There were also two Komatsu WA 600 loaders, one Komatsu PCL400 excavator and one Caterpillar 235 excavator. The loaders were used to feed the wash plant and remove tailings while the other equipment was used for stripping overburden and mining. Pay was processed using an El Russ feeder with two conveyors and a 4- by 16-foot screen deck on a custom-built wash plant. The 4000 to 5000 igpm of water required was supplied using a 10 by 12-inch Morris pump, powered by a Caterpillar 3406 engine. The processing rate was from 175 to 250 loose yards per hour. Concentrates from the wash plant were cleaned daily, first being screened to minus 12 mesh on a home-made mini-screen plant over a long tom. Plus 12 mesh concentrate was collected and run through a jig, while the minus 12 mesh fraction was cleaned on three 3-foot-diameter gold wheels. Process water was obtained from a drainage ditch from the upstream operation of Ross Mining Ltd., which was extended to bring water to within 500 feet (150 m) of where it was required. Effluent was recycled from a 600- by 200-foot pond (200 x 60 m).

Surficial Geology and Stratigraphy The section consisted of frozen gravel from 3 to 12 feet (1 to 4 m) thick, overlain by 40 to 60 feet (10 to 20 m) of frozen black silt, ice and sandy muck. The sluice section included the gravel and 1 to 2 feet (0.3 to 0.6 m) of decomposed bedrock.

Bedrock Geology Bedrock was variably decomposed grey and green schist.

Gold Characteristics Most of the gold was finer than 12 mesh. The fineness was 850.

GOLD RUN CREEK, a tributary of Dominion Creek

1150/10

2005: 63°42'28"N, 138°38'01"W
2004: 63°42'03"N, 138°36'37"W
2003: 63°42'34"N, 138°38'13"W

Mary Ange Resources Ltd., Gerald Klein, Richard Klein, Michael Klein, Grant Klein

Water licenses: PM98-020, LP00002 (2008)

Active producer (2003-2005) **Operation no. 80**

Location Mary-Ange Resources Ltd. was located on Gold Run Creek, 37.3 miles (60 km) from the Klondike turn-off at Hunker Creek through the Dominion Creek road. Various locations have been mined in the valley.

Work History and Mining Cuts Areas of this property have been hand-mined, dredged (1914-1923) and bulldozer-mined previously, with prior activity by Teck Mining Group Ltd. and the most recent activity by MAR (Mary-Ange Resources Ltd.), which began operations in 2001 and mined until 2005. In 2003, the crew of five worked two 10- to 12-hour shifts per day stripping and sluicing. An estimated volume of 479,629 cubic yards (366 702 m^3) of material was stripped mechanically and 205,556 cubic yards (157 158 m^3) were hydraulically stripped. One cut was mined in a 120- by 1700-foot (35 x 520 m) previously dredged area, with 41,100 cubic yards (31 400 m^3) of pay gravel sluiced in 358 hours. In 2004, two cuts were stripped and mined, 1500 by 250 by 70 feet (450 x 75 x 20 m), and 100 by 200 by 70 feet (30 x 60 x 20 m). A volume of 290,629 cubic yards (222 201 m^3) of waste were mechanically stripped and 205,110 cubic yards (156 800 m^3) were hydraulically stripped. A total of 42,124 cubic yards (32 200 m^3) were sluiced in 363.5 hours. In 2005, three cuts were mined, 420 by 160 by 22 feet (128 x 50 x 6.7 m), 320 by 270 by 22 feet (98 x 82 x 6.7 m), and 500 by 150 by 40 feet (150 x 45 x 10 m). A volume of 180,778 cubic yards (138 215 m^3) of waste was mechanically stripped. A total of 55,488 cubic yards (42 424 m^3) were sluiced over 407.5 hours. At the end of 2005, the operation was sold to Dave Marsters of Grew Creek Ventures.

Equipment and Water Treatment Equipment from 2003 to 2005 included a Caterpillar D9N bulldozer with a multishank ripper, a Caterpillar D10N with a single-shank ripper and U-blade, a Caterpillar 330BL excavator with a 54-inch clean-up bucket and a Caterpillar 966D loader with a 4-cubic-yard bucket. A Terex TA35 Haul Truck which was used in 2003 and 2004 was replaced by two rental scrapers (a Terex S-24 and a Euclid TS-18) in 2005. A Cornell 6- by 8-inch pump powered by a Caterpillar 3306 engine was used for hydraulic stripping with a monitor at 3500 igpm. The wash plant was a hopper and conveyer-fed Hewitt Robbins screen deck with 1-inch punch plate and outdoor matting. It was powered by

a Caterpillar D60P1 Olympian generator rated at 54 KW. Water for the plant at a rate of 3500 igpm was supplied by an 8- by 10-inch Cornell pump powered by a Caterpillar 3406 engine. The processing rate was 143 loose cubic yards per hour in 2003, 116 loose cubic yards per hour in 2004 and 136 loose cubic yards per hour in 2005. Water was obtained from Gold Run Creek and 100% recycled from a 1000- by 300-foot pond (300 x 90 m). Clean-ups were done with a jig and gold wheel.

Surficial Geology and Stratigraphy Gold Run Creek was one of the first creeks in the Klondike to be dredged, by YCGC (Yukon Consolidated Gold Company) dredge Number 6 from 1914 to 1923. At the time YCGC did very little stripping, and as a consequence, 30- to 45-foot- (9- to 10-m) high faces were normal working conditions during dredging. As the dredge dug the face, large slough-ins would occur, pushing paydirt under the bucket chain, and this paydirt was lost to the dredge. In addition, the frozen ground during that time was not thawed correctly; any frozen gravel could not be dug out and was also lost to the dredge (up to 15% of the gravel was lost). This gravel was the main pay material for Mary Ange Resources Ltd. Hydraulic water cannons were used to reduce black mud and gravel, the concentrated gravel was then sluiced to recover any gold left by the dredge.

In 2003, the section consisted of 40 to 50 feet (10 to 15 m) of thawed waste material, bedrock fragments and oldtimers' workings overlying 10 feet (3 m) of pay material. The waste material consisted of Teck's tailings, as well as both coarse and fine tailings from the dredge. The pay material, as in past years, consisted of a mixture of black mud (80 to 90%) and gravel (10 to 20%) which was a result of remnants left by the dredge, or spillage from the dredge buckets. In 2004, the section consisted of 25 to 30 feet (7 to 9 m) of waste overlying 10 to 25 feet (3 to 7 m) of gold-bearing black mud. Five feet (2 m) of pay material and 3 feet (1 m) of bedrock were sluiced. In 2005, the section consisted of 22 to 40 feet (6 to 12 m) of waste overlying 10 feet (3 m) of gold-bearing black mud. A total of 5 feet of pay material and 3 feet (1 m) of bedrock were sluiced.

Gold Characteristics From 2003 to 2005, the gold was 75% fine-grained and 25% small to medium-sized nuggets which were bright and chunky and occasionally crystalline. The fineness was 840 to 850.

GOLD RUN CREEK, a tributary of Dominion Creek

1150/10, 1150/15 2004: 63°43'55"N, 138°41'18"W

D & P Mining Exploration Ltd., Dan Cuevas, Peggy Cuevas
Water license: PM99-065 (2009)
Active producer (2003-2004) **Operation no. 81**

Location The property was located in the valley bottom approximately 5 miles (10 km) upstream from its confluence with Dominion Creek.

Work History and Mining Cuts The owners were active here from 1993 to 2004, when the operation was sold to Alberta Gold Diggers Ltd. In 2003, two cuts were mined, 270 by 60 by

Mary Ange Resources Ltd. monitoring on Gold Run Creek, 2004.

5 feet (80 x 20 x 2 m) and 105 by 120 by 8 feet (30 x 35 x 2.5 m). In 2004, one cut was mined with dimensions 400 by 120 by 10 feet (120 x 35 x 3 m).

Equipment and Water Treatment Equipment in 2003 and 2004 included a Caterpillar D9G bulldozer equipped with a U-blade and ripper to rip and push frozen mud overburden and stockpile pay gravel, a Caterpillar 235C excavator with a 3.5-cubic-yard bucket for digging drains, cleaning up bedrock and feeding the sluice plant, and a Caterpillar 966C loader with a 4-cubic-yard bucket to remove and stockpile tailings. The wash plant was a 4-yard hopper with a belt feeder, which fed to a 4- by 10-foot double screen deck. The screen deck classified material from ¾ inch to ⅜ inch and ⅜ inch minus. The larger material was processed in a 3- by 20-foot sluice run with expanded metal and a Nomad carpet set at a slope of 2½ inches per foot. The majority of the gold recovered in the run classified to ⅜-inch minus was processed through two in-line 4- by 4-foot jig cells. Out-of-stream reservoir and settling ponds were used. The flow of Gold Run Creek bypassed the settling system.

Surficial Geology and Stratigraphy The stratigraphic section consisted of 35 to 40 feet (10 to 12 m) of mud above 2 to 5 feet (0.6 to 1.5 m) of gravel. The composition was uniform and frozen with particle sizes ranging from small sand and gravel to rocks with a diameter from 1 to 2 feet (0.3 to 0.6 m). The rocks were mostly quartz. The sluice section consisted of an average of 3 feet (1 m) of gravel along with 3 feet (1 m) of decomposed bedrock.

Bedrock Geology The bedrock is wavy blue and green, fractured and decomposed sericite and chlorite schist.

Gold Characteristics Gold at this site was mostly round, smooth, and chunky with some flat, angular and rough pieces and some wires. About 20% percent was plus 10 mesh, 70% was minus 10 to plus 60 mesh and 10% was minus 60 mesh. Some quartz-rich ¼ ounce (8 g) and smaller nuggets were obtained. The fineness was 840.

GOLD RUN CREEK, a tributary of Dominion Creek

1150/10 2005: 63°44'04"N, 138°41'22"W

Alberta Gold Diggers Ltd., Wayne Paddock
Water license: PM99-065 (2009)
Active producer (2005-2006) **Operation no. 82**

Location This operation was located on Gold Run Creek approximately 5 miles (8 km) from the confluence with Dominion Creek. It was bought from D&P Mining Exploration Ltd.

Work History and Mining Cuts Two cuts were mined in 2005, 400 by 120 by 20 feet (120 x 35 x 6 m), and 690 by 225 by 10 feet (210 x 70 x 3 m). Operations continued at a location farther upstream in 2006.

Equipment and Water Treatment Equipment included a Caterpillar D9G bulldozer, a Caterpillar D8H bulldozer, a Caterpillar 966C loader and a Caterpillar 235 excavator. The wash plant was a 4-yard hopper with a belt feeder, which fed to a 4 by 10-foot double screen deck. The screen deck

Alberta Gold Diggers Ltd.'s operation on Gold Run Creek, 2006.

classified material from ¾ inch to ⅜ inch and ⅜ inch minus. The larger material was processed in a 3- by 20-foot sluice run with expanded metal and a Nomad carpet set at a slope of 2½ inches per foot. The majority of the gold recovered in the run classified to ⅜ inch minus was processed through two in-line 4- by 4-foot jig cells.

Surficial Geology and Stratigraphy In 2005, the stratigraphic section consisted of 35 to 40 feet (11 to 12 m) of mud above 2 to 5 feet (0.6 to 1.5 m) of gravel. The composition was uniform and frozen with particle sizes ranging from small sand and gravel to rocks with a diameter from 1 to 2 feet (0.3 to 0.6 m). The sluice section consisted of an average of 3 feet (0.9 m) of gravel along with 3 feet (0.9 m) of decomposed bedrock.

Bedrock Geology The bedrock is wavy blue and green, fractured and decomposed sericite and chlorite schist.

Gold Characteristics Gold at this site was chunky, bright and medium grained.

DOMINION CREEK, a tributary of Indian River

1150/10 2005: 63°41'46"N, 138°33'39"W

Ross Mining Services Ltd., Norm Ross, Jon Rudolph
Water license: PM97-047 (2013)
Active producer (2003-2006) **Operation no. 83**

Location Between 2003 and 2006, the operation was located just upstream of the mouth of Gold Run Creek.

Work History and Mining Cuts The property on Dominion Creek was first mined by Ross Mining Services Ltd. in 1980 and has been mined continuously since then. During the 2003, 2004 and 2005 seasons, a crew of eight to twelve miners worked along with three to six camp personnel. Shifts varied from once to twice a day and were 10.5 hours. The operation was subsequently bought by Jon Rudolph, but continued to be operated under Ross Mining Services Ltd. for the 2006 mining season. That year, the crew was increased to 20 miners and several camp personnel sharing two 10-hour shifts per day. Mining cuts averaged 1 million bedrock square feet (93 000 m^2) each year, with the 2003 mining

Aerial view of Ross Mining Ltd.'s pit on Dominion Creek, 2004.

Loading pay at Ross Mining's operation, Dominion Creek, 2005.

cut totalling 1,080,000 square feet (100 300 m^2); the 2004 mining cut totalling 980,000 square feet (91 000 m^2); the 2005 mining cut totalling 1,110,000 square feet (103 000 m^2) and the 2006 mining cut totalling 1,200,000 square feet (110 000 m^2).

Equipment and Water Treatment Between 2003 and 2006, equipment included four Caterpillar bulldozers (D10L, D10N, D9L, D8L) with blade capacities from 25 to 42 cubic yards, three excavators (Hitachi EX-1100, Caterpillar 245, Komatsu PC400) with capacities from 9 cubic yards to 4 cubic yards, five Terex rock trucks (three Model 3309, 60-ton; two Model TA40, 40-ton), three loaders (Caterpillar 980, 988, 992) with capacities from 5 cubic yards to 12.5 cubic yards, and a Caterpillar 16G grader. In addition, in 2006 a Caterpillar D11R bulldozer, Hitachi ZX850 excavator, two Caterpillar 777B rock trucks, two Komatsu 330 rock trucks and three Caterpillar 631D scrapers were added.

The wash plant consisted of a grizzly hopper feeder with a conveyor to the plant, which had a 6- by 20-foot double screen deck and six oscillating sluice runs lined with angle iron riffles, expanded metal and Nomad matting. Water was supplied from run-off and Rob Roy Creek by a Berkley 12- by 14-inch Cummins-powered pump processing 3000 to 4000 igpm. Approximately 250 to 350 loose cubic yards per hour were processed by the wash plant. Effluent was 100% recycled and settled out-of-stream. Two ponds were used in 2003, one 400 by 300 feet (120 x 90 m) and one 300 by 740 feet (90 x 225 m). In 2004, three ponds were used: 500 by 400 feet (150 x 120 m), 200 by 400 feet (60 x 120 m) and 300 by 740 feet (90 x 225 m). In 2005, the ponds were 250 by 500 feet (75 x 150 m), 100 by 400 feet (30 x 120 m) and 300 by 740 feet (90 x 225 m). In 2006, the ponds were 500 by 700 feet (150 x 210 m), 400 by 500 feet (120 x 150 m) and 200 by 300 feet (60 x 90 m). Clean-ups were done with a small trommel and tables.

Surficial Geology and Stratigraphy The bleached, quartz-rich Ross gravel commonly forms the main pay gravel for the middle reaches of Dominion Creek. It is paleomagnetically reversed and thus is greater than 780 000 years old. It forms the lowest unit stratigraphically in the main valley and is overlain by the younger, commonly iron-stained Dominion gravel. The contact between the two units has a paleosol with organic materials that is well-preserved in some areas. From 2003 to 2006, the stratigraphic section consisted of 10 to 20 feet (3 to 6 m) of black muck overlying 8 to 10 feet (2 to 3 m) of Dominion gravel and sand, overlying 8 to 12 feet (2 to 4 m) of Ross gravel. From 5 to 8 feet (1.5 to 2 m) of gravel were sluiced along with 2 to 6 feet (0.6 to 2 m) of bedrock.

Bedrock Geology Bedrock consists of Klondike Schist.

Gold Characteristics The gold was reported to be 50% less than 50 mesh in size, with a fineness from 825 to 853.

DOMINION CREEK, a tributary of Indian River

1150/10

2005: 63°44'33"N, 138°31'05"W
2003: 63°44'17"N, 138°31'11"W

A-1 Cats, 365334 Alberta Ltd., Ross Edenoste
Water license: PM02-283 (2012, Licensee: 365334 Alberta Ltd.)
Active producer (2003-2006) **Operation no. 84**

Location In 2003, the operation was located at the west and east side of Dominion Creek valley bottom at locations 100 to 600 yards (90 to 550 m) downstream from the confluence of left-limit tributary Arkansas Creek. In 2004 and 2005, the pits were located in Dominion Creek valley across from the confluence of Cache Creek. In 2006, operations moved downstream from camp in the centre of the valley and along the left-limit portion of the Dominion Creek road.

Work History and Mining Cuts A-1 Cats began mining at the former location of the operation of Miles and Vicki Johnson in 2002. From 2003 to 2006, personnel included up to eight miners and four camp employees working one 12-hour shift per day. Two Caterpillar D11N bulldozers ran for two 12-hour shifts during stripping periods (in 2005 this was occasionally one shift). During sluicing, the wash plant was run for 12 hours in the day in addition to a 5-hour night shift (6 hours in 2005). Two mining cuts were completed in 2003. The cut on the west side of Dominion Creek road was 37,650 square yards (31 500 m^2) which contained 284,000 bank cubic yards (220 000 m^3) of overburden and 84,200 loose cubic yards (64 400 m^3) of pay material. The cut on the east side of Dominion Creek

road was 52,700 square yards (44 000 m^2) and contained 532,800 bank cubic yards (407 355 m^3) of overburden and 138,000 loose cubic yards (105 500 m^3) of sluiced material. In 2004, the cut on the west side of Dominion Creek road was 24,300 square yards (20 300 m^2) and contained 174,000 bank cubic yards (133 000 m^3) of overburden and 59,600 loose cubic yards (45 500 m^3) of pay material. The cut on the east side of Dominion Creek road was 40,000 square yards (33 400 m^2) and contained 393,000 bank cubic yards (300 500 m^3) of overburden and 126,000 loose cubic yards (96 300 m^3) of pay material. In 2005, the cut on the west side of Dominion Creek road was 24,000 square yards (20 000 m^2) which contained 168,000 bank cubic yards (128 000 m^3) of overburden and 56,750 loose cubic yards (43 300 m^3) of pay material. The cut on the east side of Dominion Creek road was 45,600 square yards (38 100 m^2) and contained 364,800 bank cubic yards (279 000 m^3) of overburden and 120,000 loose cubic yards (92 000 m^3) of pay material.

One cut, located between the east and west cuts mined between 2002 and 2004, was prepared for mining in the 2006 season. A thickness of up to 18 feet (5.5 m) and 408,000 bank cubic yards (312 000 m^3) of waste mud was stripped in the 68,000 square yard (57 000m^2) cut measuring 800 by 85 yards wide (700 x 80 m). A 1000-yard (900-m) section of Dominion Creek road was moved 100 yards (90 m) to the east to accommodate the cut. All cuts mined between 2002 and 2005, and the cut prepared for 2006, are contiguous. A total of 56 auger drill holes were drilled in May 2005 to investigate gold resources along a 650-yard (600-m) length of Dominion Creek valley floor at a location downstream from current workings.

Equipment and Water Treatment In 2003, 2004 and 2005, equipment included two Caterpillar D11N bulldozers, one equipped with a 20-foot (6-m) U-blade and one with a 22-foot (7-m) U-blade and single-shank rippers which were used to strip overburden. A Caterpillar D9H bulldozer equipped with a U-blade and a ripper was used for fine and coarse tailings removal, road construction and maintenance, pay gravel stockpiling, and also assisted in the removal of overburden. A Caterpillar D8K equipped with a U-blade and winch was added for coarse tailings removal in 2005. Pay gravel was loaded into two Caterpillar 300B rock trucks by a Caterpillar 235C excavator and a second 235C excavator was used to load the wash plant. A third 235C excavator and a third 300B rock truck were available on-site as standby units and were also used for the disposal of thawed waste gravel. The excavators were utilized during the later stages of

A-1 Cats/365334 Alberta Ltd.'s operation on Dominion Creek, 2006.

overburden stripping to construct pre-ripped perimeter and cross-drainage ditches to enhance waste-gravel and pay-gravel thaw. A Caterpillar LPG D6H bulldozer equipped with a winch and a straight blade was used for grooming purposes over soft ground conditions during ongoing reclamation of disturbed areas. A Caterpillar 966C wheeled loader was used on-site for a variety of work.

Pay gravel was fed into a 15-cubic-yard hopper feeder consisting of a variable speed belt measuring 3½ feet wide by 16 feet long. A second conveyor belt, measuring 4 by 50 feet, elevated the material to a 5- by 16-foot Clemro horizontal double screen wash deck. A rotating rock kicker was utilized on this conveyor to discard boulders exceeding 12 inches in diameter. The upper deck screened the material to 1½-inch minus and the lower deck screened to ⅝-inch minus, both using rubber screens. A side-mounted bottom-slotted boil box distributed the screened slurry into a primary sluice run. The primary sluice (2003 and 2004, sloped at 2 inches per foot; 2005, sloped at 1.88 inches per foot), was made up of two 4-foot-wide by 10-foot-long boxes containing 1-inch angle iron riffles. The second run (2003 and 2004, sloped at 1.75 inches per foot; 2005, sloped at 1.62 inches per foot), consisted of four 4- by 20-foot oscillating (160 RPM) sluices containing expanded metal. A 3- by 40-foot conveyor was used to stack coarse tailings and fine tailings were dispersed into an old mine cut. All sluice runs were lined with non-backing heavy traffic Nomad carpet. Gold was separated from the concentrate with the use of a long tom and a 4½- by 9-foot Wilfley table. Approximately 200 loose cubic yards per hour were processed in the plant, which was supplied with 3000 igpm of water by a 10 by 8-inch Berkley pump powered by a 250 horsepower Isuzu engine. Water was obtained from existing reservoirs in previous mine cuts with surface areas between 30,000 and 40,000 square yards (25 000 to 33 400 m^2). The operation recycled 100% of the process water.

Surficial Geology and Stratigraphy In 2003 and 2004, the stratigraphic section on the east side of the valley consisted of black muck (sometimes layered with greyish tan silt) from 13 to 21 feet thick (4 to 6.5 m) (13 to 18 feet [4 to 5.5 m] in 2005), overlying reddish-brown sand and gravel ranging from 4 to 12 feet thick (1 to 4 m) (8 to 12 feet [2 to 4 m] in 2005). On the west side of the valley, the section consisted of 10 to 25 feet (3 to 8 m) of mud and silt overlying 7 to 13 feet (2 to 4 m) of sand and gravel. All sediments were frozen except beneath an 80-yard (70-m) natural pool of water. Bedrock ranged in depth from 29 to 37 feet (8.8 to 11 m) deep on the east side of the valley to 25 to 26 feet (7.6-7.9 m) deep on the west side of the valley. Economic concentrations of gold were mostly confined to the lowermost 3 feet (1 m) of cobble/boulder gravel units and 1 foot (0.3 m) of bedrock. Between 3 and 5 feet (1 and 1.5 m) of gravel and 1 to 3 feet (0.3 to 1 m) of bedrock were sluiced, and overburden of mud, silt and upper sand and gravel deposits varied from 27½ to 30 feet (8.3 to 9.1 m) in the east cut. Average overburden thickness was 21½ feet (6.5 m) in the west mine cut.

Bedrock Geology Bedrock is generally flat-lying with some wide dished areas up to 2 feet (0.6 m) deep. It consisted of a dark-grey and greenish-grey, garnet-rich, micaceous schist which was highly decomposed in an area proximal to Arkansas Creek. Some thin layers of white siltstone were exposed in the east pit.

Gold Characteristics The gold was fine grained, flat, dull-coloured and smooth, with a fineness of 830. In 2003 and 2004, the size distributions for the east pits were 38% minus 30 mesh, 48% minus 20 mesh, 11% minus 10 mesh and 3% plus 10 mesh. In the west pits, the gold was 52% minus 30 mesh, 46% minus 20 mesh, 1.7% minus 10 mesh and 0.3% plus 10 mesh.

KENTUCKY CREEK, a tributary of Dominion Creek

1150/15 2006: 63°45'32"N, 138°30'46"W

Peter Bodin
Water license: PM99-071 (2009)
Active producer (2000-2006) **Operation no. 85**

Location Kentucky Creek is a left-limit tributary of Dominion Creek. The operator worked an area upstream of the Dominion Creek road.

Work History and Mining Cuts Mr. Bodin began working here in 2001. In 2003, Mr. Bodin stripped 300 by 285 by 6 feet (90 x 87 x 2 m) to allow thawing. In 2004, three cuts were stripped; one 50 by 40 by 2 feet (15 x 10 x 1 m), one 70 by 10 by 5 feet (20 x 3 x 2 m), and another 30 by 20 by 3 feet (9 x 6 x 1 m). Some sluicing was completed, but was interrupted by the forest fires in July.

In 2005, 1175 cubic yards (900 m^3) were sluiced and a cut 40 by 30 by 4 feet was stripped (12 x 10 x 1 m). In 2006, Mr. Bodin worked a daily 8-hour shift alone. A cut 270 feet (80 m) long and 180 feet (55 m) wide was stripped.

Equipment and Water Treatment Equipment consisted of two Caterpillar bulldozers (D8H and D6), a Caterpillar 977H front-end loader and a Caterpillar 215 excavator, which fed the wash plant. A Caterpillar 966 loader was added in 2006. A 50-foot conveyor belt from the dump box fed the 36-inch drum trommel. Sluice runs measuring 3 by 16 feet were lined with expanded metal and Nomad matting. Water was supplied using a Dietz engine-powered 4-inch Monarch pump at 1400 igpm, enough to wash 25 cubic yards per hour. Water was obtained from Kentucky Creek and almost 100%

Stripping at Peter Bodin's operation on Kentucky Creek, 2005.

was recycled due to low flow. The pond doubled as a reservoir and settling facility and measured about 120 by 100 feet (35 x 30 m) in size.

Surficial Geology and Stratigraphy The section consists of up to 40 feet (10 m) of frozen black muck overlying 3 to 6 feet (1 to 2 m) of gravel on bedrock.

Bedrock Geology Bedrock is muscovite and chlorite schist.

Gold Characteristics Gold recovered was fine, flaky and bright coloured, with a fineness of 800 to 825.

DOMINION CREEK, a tributary of Indian River

1150/10, 1150/15 2005: 63°46'01"N, 138°31'36"W

Adrian Hollis
Water license: PM05-471 (2008)
Active producer (2003-2006) **Operation no. 86**

Location From 2003 to 2006, this operation was on the left limit of Dominion Creek downstream of the confluence with Jensen Creek.

Work History and Mining Cuts In 2003 and 2004, the crew of two miners worked a daily 12-hour shift. For 2005 and 2006, the crew was increased to four miners working 12 hours daily. Mr. Hollis continued to mine and strip ground on Dominion Creek in the area near the mouth of Jensen Creek for the 2003 to 2006 seasons. In 2003, the area stripped and mined was 150 feet (45 m) wide. In 2006, the area mined was 750 by 360 feet (230 x 110 m).

Equipment and Water Treatment Equipment from 2003 to 2006 included a Komatsu PC 400-3 excavator for feeding the wash plant and a rented Caterpillar D9L bulldozer for stripping. In 2004, a Komatsu PC300-5 excavator and Komatsu PC400-5 excavator were added. In 2005, a 120- by 4-foot mobile conveyor mounted on a Hitachi EX450-LCH was added. Muck was stripped by the bulldozer and two of the excavators which fed the mobile conveyor. An extension 'slinger' on the conveyor allowed an additional throw of 45 feet. The wash plant consisted of an 8- by 8-foot dump box over a 5- by 11-foot oscillating screen deck with 7/16-inch screen, leading to three, 8- by 3-foot sluice runs with hydraulic riffles. Two rubberized screens with ½-inch openings were added in 2005. Water was supplied to the plant by a Caterpillar 3208-powered 10- by 5-inch Cornell pump rated at 1000 igpm, enough to process 90 to 100 loose cubic yards per hour. Water was acquired from Dominion Creek and effluent was settled out-of-stream into six ponds, 50% to 75% recycled and eventually discharged to Kentucky Creek after a retention period of two days. Clean-ups were done every 100 hours using a long tom and gold wheel.

Adrian Hollis' track-mounted tailings stacker, Dominion Creek, 2005. This conveyor can move 500 yd³ per hour.

Surficial Geology and Stratigraphy In 2003, the section consisted of 20 to 25 feet (6 to 8 m) of black muck overlying bedrock. From 2 to 6 feet (1 to 2 m) of bedrock were sluiced. In 2004, the section consisted of interbedded thawed muck

Aerial view of Adrian Hollis operation, Dominion Creek, 2006.

and gravel from 20 to 30 feet (6 to 9 m) thick, on bedrock. From 2 to 6 feet (1 to 2 m) of bedrock were sluiced. In 2005, the section consisted of 30 feet (10 m) of thawed muck and gravel overlying bedrock. From 2 to 6 feet (1 to 2 m) of bedrock were sluiced. The section in 2006 was frozen in places and thawed in places. From 32 to 34 feet (9 to 10 m) of black muck and gravel were stripped off. The sluiced section consisted of 4 to 5 feet (1 to 1.5 m) of fractured and decomposed bedrock.

Gold Characteristics The gold was described as fine grained, flat and bright yellow, with a fineness from 825 to 860.

DOMINION CREEK, a tributary of Indian River

1150/15 2005: 63°46'33"N, 138°34'49"W

Jim Conklin, Shirley Conklin
Water license: PM05-460 (2015)
Active producer (2003-2006) **Operation no. 87**

Location This operation was located on a moderately wide section of Dominion Creek on the right limit of the valley at the mouth of Hunter Creek.

Work History and Mining Cuts Jim and Shirley Conklin began mining here in 1998. In 2003, the crew of two miners worked a daily 8-hour shift. In 2004 and 2005, the crew increased to three personnel working 8 hours a day. In 2006, two miners and three camp personnel worked 10 hours per day. From 2003 to 2006, a mining cut was expanded during each season. In 2006, the cut was 400 by 400 by 20 feet (120 x 120 x 6 m) deep.

Equipment and Water Treatment From 2003 to 2006, equipment consisted of a Caterpillar D9H bulldozer for stripping, a Michigan 175B loader for feeding the wash plant, and a Bucyrus Erie 350 excavator for digging pay and stripping. An International 350 rock truck with a 45-cubic-yard capacity was added for hauling pay in 2004. The wash plant was a 4- by 8-foot screen deck with ¾-inch punch plate and four 8- by 4-foot oscillating sluice runs lined with expanded metal and Nomad matting. Water for the plant was supplied at 800 igpm by a Gorman Rupp 6-inch pump powered by a 4-cylinder Perkins engine, and from 80 to 100 loose cubic yards per hour were processed. Water was supplied by an intake on Hunter Creek and effluent was settled out-of-stream and 100% recycled from two ponds,

Jim Conklin's operation at the mouth of Hunter Creek on Dominion, 2005.

100 by 150 feet (30 x 45 m) and 100 by 250 feet (30 x 75 m). Clean-ups were done with a long tom and an 18-inch gold wheel.

Surficial Geology and Stratigraphy From 2003 to 2006, the section consisted of 5 to 8 feet (1.5 to 2 m) of frozen muck overlying 16 to 17 feet (4.8 to 5.2 m) of gravel. A total of 4 feet (1.2 m) of gravel plus 3 to 4 feet (0.9 to 1.2 m) of bedrock were sluiced.

Bedrock Geology Bedrock is fractured green schist.

Gold Characteristics Between 2003 and 2006, the gold was reported as fine grained and yellow, with 80% minus 60 mesh and 20% plus 60 mesh. Much of the gold was minus 200 mesh. The fineness was 823.

DOMINION CREEK, a tributary of Indian River

1150/15

2006: 63°47'53"N, 138°36'11"W
2005: 63°49'22"N, 138°40'38"W

Arthur Sailer, Noreen Sailer
Water licenses: PM04-421 (2015), PM98-040 (2009)
Active producer (2003-2006)

Operation no. 88

Location Arthur Sailer mined on three properties on Dominion Creek, including Nevada Creek and Champion Pup. From 2003 to 2006, the locations varied between 15 and 25 miles (25 and 40 km) from the confluence. The pits on Dominion Creek at Champion Pup and the pits on Dominion Creek at Nevada Creek were on the left-limit bench. There was also a pit in the creek valley on Dominion Creek at Champion Creek.

Work History and Mining Cuts The Sailer family has been working on their various properties on Dominion Creek and tributaries since 1990. The crew from 2003 to 2006 consisted of six miners and one camp person working a daily 10-hour shift. In 2003, five cuts were stripped and sluiced on Dominion at the mouth of Champion Creek, with an approximate volume of 198,000 cubic yards (150 000 m^3). In

Art Sailer's operation on Dominion Creek, 2005.

2004, six cuts were stripped and sluiced on Dominion Creek at the mouth of Champion, and Dominion at the mouth of Nevada Creek. The total volume was 255,000 cubic yards (195 000 m^3). Drilling was carried out in both locations. In 2005, three cuts were stripped and sluiced on Dominion Creek at the confluences of both Champion Pup and Nevada Creek. The total volume was 230,000 cubic yards (175 000 m^3). Drilling was carried out on Dominion Creek at the mouth of Lombard Pup. In 2006, four cuts were stripped and sluiced in two locations, on Dominion Creek at the mouth of Champion Pup and Dominion Creek the mouth of Nevada Creek. The total volume was 200,000 cubic yards (150 000 m^3).

Equipment and Water Treatment Equipment consisted of four Caterpillar bulldozers (D9G with U-blade and ripper, D9H with U-blade and ripper, D8-14A with U-blade and ripper, D8-14A with S-blade and winch), four Caterpillar 980B loaders with 5-cubic-yard buckets, three Caterpillar excavators (225 with 1¼-cubic-yard bucket, 235 with 2½-cubic-yard bucket, EL300 with 1¾ and 2½-cubic-yard buckets), and an International Payhauler rock truck with a 35-cubic-yard capacity. The plants consisted of a 10- by 20-foot Derocker (Dominion/Champion), a 5- by 14-foot screen deck (Dominion/Nevada), and a 5- by 20-foot trommel (Dominion/Nevada). The screen plant had a 10- by 10-foot sluice run with expanded metal and Nomad matting. The trommel had a 4- by 18-foot sluice run with expanded metal, angle iron and hydraulic riffles. Pumps included a Byron Jackson 12- by 14-inch powered by a Caterpillar D1300, a Dayton Dowd 10- by 12-inch powered by a Caterpillar D1300, and a Marlow 8- by 10-inch powered by a 6-cylinder Deutz engine. The processing rate was 100 to 150 loose cubic yards per hour. Water was acquired from Dominion, Nevada and Champion creeks. Effluent was settled out-of-stream and acquired from in-stream reservoirs in Dominion Creek and Dominion and Champion creeks.

Surficial Geology and Stratigraphy Deposits on the bench and in the valley had a total depth from 30 to 50 feet (9 to 15 m). Of the total depth, 10 to 40 feet (3 to 10 m) was reported to be muck and 5 to 15 feet (1.5 to 5 m) was gravel. From 6 to 12 feet (2 to 4 m) of the gravel and up to 5 feet (1.5 m) of the bedrock were sluiced. Gravel grain sizes were varied and bedrock types ranged from soft gumbo to slabby and hard.

Gold Characteristics From 2003 to 2006, gold on Dominion Creek at the mouth of Nevada Creek was fine and flaky with some spongy and quartz-rich nuggets. The sizes were 1% 10 mesh, 50% minus 10 mesh to plus 60 mesh, and 49% minus 60 mesh. Gold on Dominion Creek at the mouth of Champion Pup was similar but slightly coarser. The fineness was 820.

CARIBOU CREEK, a tributary of Dominion Creek

1150/15 2005: 63°50'27"N, 138°48'28"W

Jim Stuart

Water licenses: PM04-451 (2009), PM98-049 (2005)

Active producer (2003-2005) **Operation no. 89**

Location From 2003 to 2005, the operation was on Dominion Creek at the mouth of Caribou Creek.

Work History and Mining Cuts The Stuart family moved to Caribou Creek from Allgold Creek in 1977, and mined in the area between upper Caribou Creek and Dominion Creek until 2005. From 2003 to 2005, two miners worked between 10 and 11 hours per day. In 2003, one cut 800 feet (240 m) long and 100 feet (30 m) wide was mechanically stripped on the left limit of Dominion Creek across from Caribou Creek. In 2004, the previously stripped cut was mined to a depth of 20 feet (6 m). In 2005, a cut 200 by 500 feet (60 x 150 m) was mined. Most of that cut had been mined by oldtimers and hundreds of cribbing logs were encountered in the mud and gravel.

Equipment and Water Treatment Equipment included a Caterpillar D9G bulldozer with a U-blade for stripping and building haul roads, a Caterpillar D8H bulldozer with a U-blade for pushing tailings, a Case 125B excavator with a 1¼-cubic-yard bucket, a Caterpillar 966C loader for loading the wash plant, and a Terex 350 Payhauler 50-ton rock truck. In 2005, an additional Terex 350B Payhauler rock truck was added as well as a Hitachi EX300LC excavator. The wash plant was a trommel with a 52-inch-diameter barrel, 1-inch screen and two 5- by 8-foot sluice runs lined with expanded metal and hydraulic riffles. Water for the plant was supplied by a Monarch 6- by 8-inch pump powered by a 671 GM engine. The processing rate was 50 to 60 loose cubic yards per hour. Water was acquired from Caribou and Dominion creeks and stored in a reservoir beside the cut. Effluent was settled out-of-stream into previous mine cuts. Clean-ups were done with a single-cell jig.

Surficial Geology and Stratigraphy In 2004, the section consisted of an average of 15 feet (5 m) of mud overlying 3 to 5 feet (1 to 2 m) of gravel on bedrock. In some places 10 to 15 feet (3 to 5 m) of dredge tailings were overlying the top 15 feet (5 m) of mud. From 2 to 3 feet (0.6 to 0.9 m) of gravel and 1 foot (0.3 m) of bedrock were sluiced. In 2005, the section consisted of 40 to 50 feet (12 to 15 m) of black muck overlying 3 to 5 feet (1 to 2 m) of gravel. From 2 to 3 feet (0.6 to 0.9 m) of gravel and 1 foot (0.3 m) of bedrock were sluiced.

Bedrock Geology Bedrock at this site is quartz-sericite schist, which is partially decomposed and partially slabby.

Sluicing at Jim Stuart's operation on Dominion Creek at the mouth of Caribou Creek, 2005.

Gold Characteristics In 2004, the gold was described as fine, flat and shiny with a fineness of 805. In 2005, the gold varied from flour gold to 1-ounce (30-g) nuggets, with a bulk fineness of 810.

UPPER DOMINION CREEK, a tributary of Dominion

1150/15

2005: 63°51'52"N, 138°55'18"W
2003: 63°51'25"N, 138°54'43"W

Tim Coles, Colonial Gold
Water license: PM04-390 (2009)
Active producer (2003-2005) **Operation no. 90**

Location This property was located at the headwaters of Dominion Creek at the confluence of the right and left forks.

Work History and Mining Cuts Tim Coles started mining this property in June, 2002 and he mined until 2005. Part of the property was leased to Colonial Gold in 2004. In 2003,

Angela Johnson and Sarah Newman (geology students, Yukon Geological Survey) checking the riffles at Tim Coles' operation, Upper Dominion, 2004.

a crew of three miners and three camp personnel worked a daily 12-hour shift. Three cuts were mined: 200 by 100 feet (60 x 30 m), 60 by 450 feet (20 x 130 m), and 400 by 24 feet (120 x 8 m). In 2004, the crew of six miners processed two cuts: 30 by 600 feet (10 x 180 m) and 900 by 100 feet (300 x 30 m). In 2005, two cuts were mined: 120 by 300 feet (40 x 100 m), and 50 by 300 feet (15 x 100 m). The property was inactive in 2006 as Tim Coles was developing a property on Bonanza Creek.

Equipment and Water Treatment Between 2003 and 2005, Mr. Coles' equipment included a Caterpillar EL300 excavator, a Caterpillar D9H bulldozer and a John Deere 890 excavator. In 2004, Mr. Coles leased some ground upstream and those operators brought two Hitachi EX200 excavators and a Caterpillar D8K bulldozer. Mr. Coles' plant from 2003 to 2005 was a 4-foot-diameter trommel with 8-foot-wide sluice runs. Water for this plant was supplied by a Cummin's-powered 8- by 10-inch Paco pump with a throughput of 1500 igpm. The processing rate was 75 loose cubic yards per hour. Colonial Gold's plant in 2004 was a 5-foot-diameter New Zealand trommel with hydraulic riffles. Water was supplied by a 6- by 6-inch Isuzu pump rated at 1200 igpm. The processing rate was 100 loose cubic yards per hour. Water for both plants was acquired from an in-stream series of three to four ponds, each 40 by 100 by 8 feet (10 x 30 x 2 m). The effluent recycling rate was 90%. Clean-ups were done with a long tom and gold wheel.

Surficial Geology and Stratigraphy In 2003 to 2005, the section consisted of 15 to 20 feet (5 to 6 m) of black muck overlying 5 feet (2 m) of gravel. All of the gravel and 2 feet (1 m) of bedrock were sluiced.

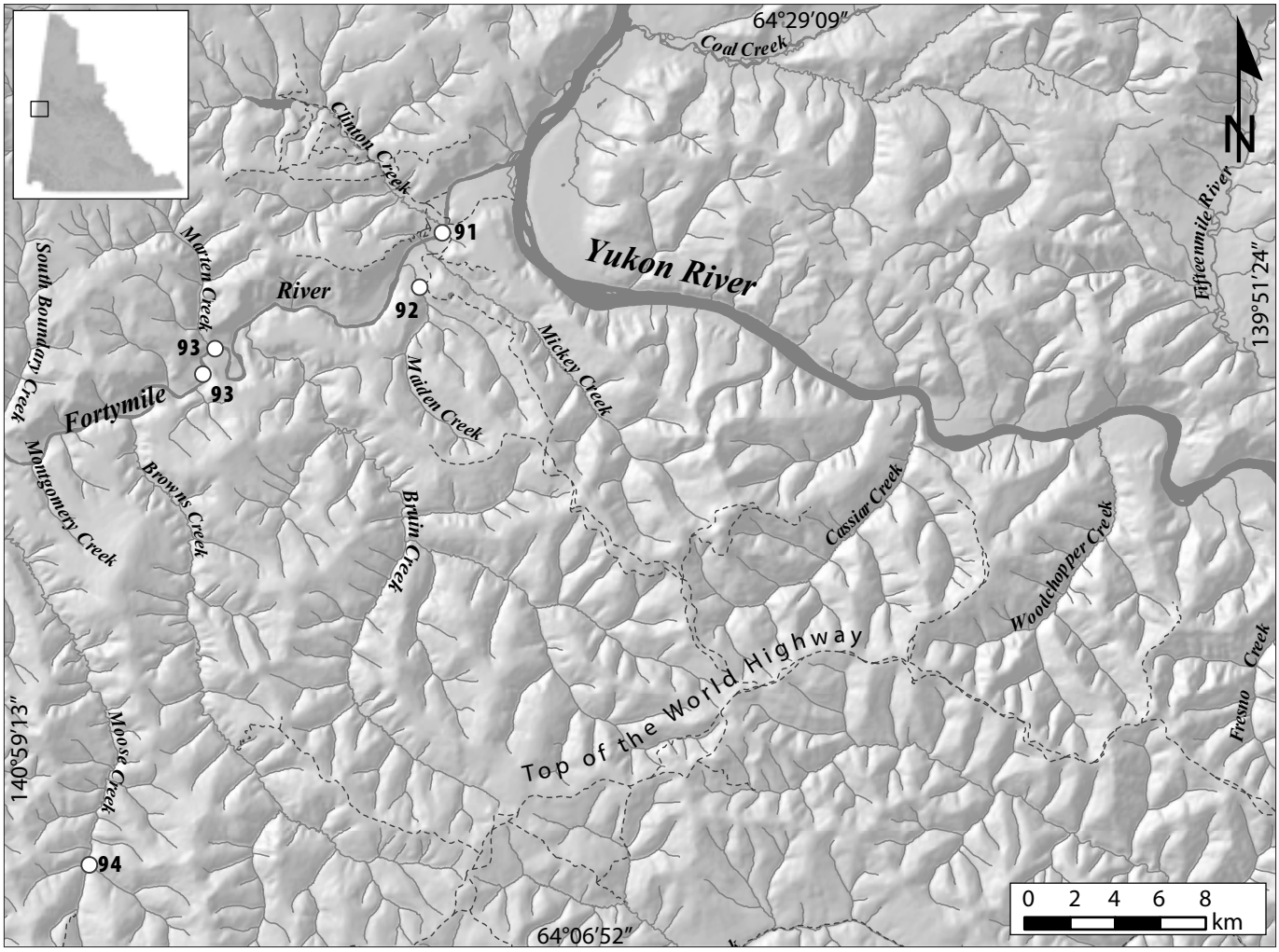
Bedrock Geology Bedrock is blocky weathered schist, very decomposed with beige and green colouring.

Gold Characteristics From 2003 to 2005, gold was reported to be coarse, jagged and not very pretty. Approximately 1% was dendritic. The fineness was 770 to 790.

Tim Coles' sluicing operation on Upper Dominion, 2004.

FORTYMILE
PLACER AREA

SITES 91-94



LEGEND

91.....Lindsay
92.....Groundhog Exploration Co. Ltd.
93.....Fortymile Placers
94.....Jones

FORTYMILE RIVER, a tributary of Yukon River

116C/7 2003: 64°23'58"N, 140°35'03"W

Joseph Lindsay
Water license: PM02-301 (2007)
Active producer (2003) **Operation no. 91**

Location The operation was located on the right limit of the Fortymile River just upstream of the Clinton Creek bridge.

Work History and Mining Cuts Some mining took place in the 2002 season, and in 2003, stripping to hardpan occurred at a previous sluice site, with some material excavated from the right bank of the river.

Surficial Geology and Stratigraphy A bleached gravel similar to White Channel gravel was exposed to bedrock, and overlain by several feet of silt and muck.

Bedrock Geology Bedrock consists of Nasina series micaceous quartzite, quartz-mica schist, graphitic schist and scattered occurrences of serpentinized ultramafic rocks.

MAIDEN CREEK, a tributary of Fortymile River

116C/7 2005: 64°22'39"N, 140°37'16"W

Angus Woodsend, Cam Woodsend, Groundhog Exploration Co. Ltd.
Water license: PM02-287 (2007, Licensee: Stanley Stempien)
Active producer (2003-2006) **Operation no. 92**

Location The operation was located on the right limit of Maiden Creek, a tributary of Fortymile River.

Work History and Mining Cuts Angus Woodsend and his son, Cam, drilled, stripped and sluiced ground on the Maiden Creek during the 2003 to 2006 seasons. A cut was put in each year, and a stream diversion was built in 2005. Sluicing operations continued in a downstream location in 2006.

Equipment and Water Treatment The property was drilled using an 8-inch auger. Black muck was stripped with a Hitachi EX200 excavator, which also fed the plant. The plant consisted of a New Zealand-style trommel with a 3½-foot-diameter and a conveyor for stacking tailings. A 1½-inch pump with a rotating fish screen installed on the pump intake was used to acquire make-up water from the creek,

Groundhog Exploration Co.'s operation on Maiden Creek, 2005.

and a 4½-inch pump was used in the cut to dewater. A single out-of-stream pond was used for settling and recycling water.

Surficial Geology and Stratigraphy Depths of black muck range between 0 to 6 feet (0 to 2 m) with a gravel layer from 12 to 18 feet (3 to 6 m); the bottom 10 feet (3 m) were processed.

Bedrock Geology Bedrock is mapped as Nasina group graphitic quartzite and muscovite quartz-rich schist.

FORTYMILE RIVER, a tributary of Yukon River

116C/7

2006: 64°21'13"N, 140°48'26"W
2003: 64°20'37"N, 140°49'05"W

Fortymile Placers, Leslie Chapman, Bill Claxton
Water licenses: PM97-071 (2008), PM97-072 (2008)
Active producer (2003-2006) **Operation no. 93**

Location From 2003 to 2006, operations were on the left limit in two locations, on a low bench and on a river gravel bar at the mouth of Marten Creek.

Work History and Mining Cuts Bill Claxton and Leslie Chapman began working on the Fortymile River in 1987. They have mined in the area nearly continuously since then, although only a small amount of mining was done between 2003 and 2006. Activity was focused on a low left-limit bench on the Fortymile River, as well as on a river gravel bar at the confluence of Fortymile and Marten Creek.

Equipment and Water Treatment Equipment included a Caterpillar D6C bulldozer for ground preparation and for levelling tailing piles, and a Hitachi UH10 excavator to excavate gravel and to feed the wash plant. A Caterpillar 920 loader was used as backup and to feed the wash plant. The wash plant was a 4-foot-diameter, 12-foot-long floating trommel with $^{5}/_{16}$-inch punch plate and two 4- by 6-foot sluice runs with hydraulic riffles. Tailings were stacked with a 30-foot-long conveyor. Mining was carried out during low water periods only, with no discharge of effluent other than by seepage. Restoration and stabilization of the gravel bar and bank was completed at the end of each season.

Fortymile Placers operation on a bar of the Fortymile River, 2004.

Surficial Geology and Stratigraphy On the river gravel bar, the depth of gravel to bedrock varied from 6 to 18 feet (2 to 5.5 m). All of the gravel plus 2 to 3 feet (0.6 to 0.9 m) of bedrock were sluiced.

Bedrock Geology Bedrock consists of Nasina series micaceous quartzite, quartz-mica schist and graphitic schist.

Gold Characteristics Gravel bar gold recovered was mostly fine grained with only 5% coarser than 10 mesh. The fineness was approximately 840.

MOOSE CREEK, a tributary of Fortymile River

116C/2 2003: 64°09'02"N, 140°55'19"W

Daniel Joseph Jones
Water licenses: PM04-359 (2014), PM99-145 (2010)
Active producer (2003-2005) **Operation no. 94**

Location This operation was located near the upper end of Moose Creek, a trans-boundary tributary to the Fortymile River, near the Alaska border. In 2005, the operation moved to a downstream location.

Work History and Mining Cuts Daniel Jones first mined on Moose Creek in 1995. The operation was active near the headwaters in 2003, and in 2004, the operators mechanically stripped some ground at a downstream location while they sluiced at the upstream location. In 2005, they sluiced at the upstream location and then moved downstream to sluice at the new site under a new water license. The new location was near the site of the old McMillan mine.

Equipment and Water Treatment A Case 1187B excavator was used to dig pay gravel, feed the wash plant, remove tailings and construct dams. The wash plant included a 10- by 10-foot grizzly with iron bars 4 inches apart over a 10- by 2-foot oscillating sluice run lined with angle iron riffles and miner's moss matting. Approximately 70 cubic yards per hour of pay was processed. Water was recycled and out-of-stream ponds were used for primary settling, with final settling in in-stream ponds. Settling pond dam spillways were protected with large rock and plastic liners.

In 2005, at the new location downstream, they sluiced with out-of-stream settling and seepage discharge only.

Surficial Geology and Stratigraphy Organic overburden was less than 3 feet (0.9 m) deep; gravel was frozen and varied in depth from 8 feet (2.5 m) downstream to 4 feet (1 m) upstream.

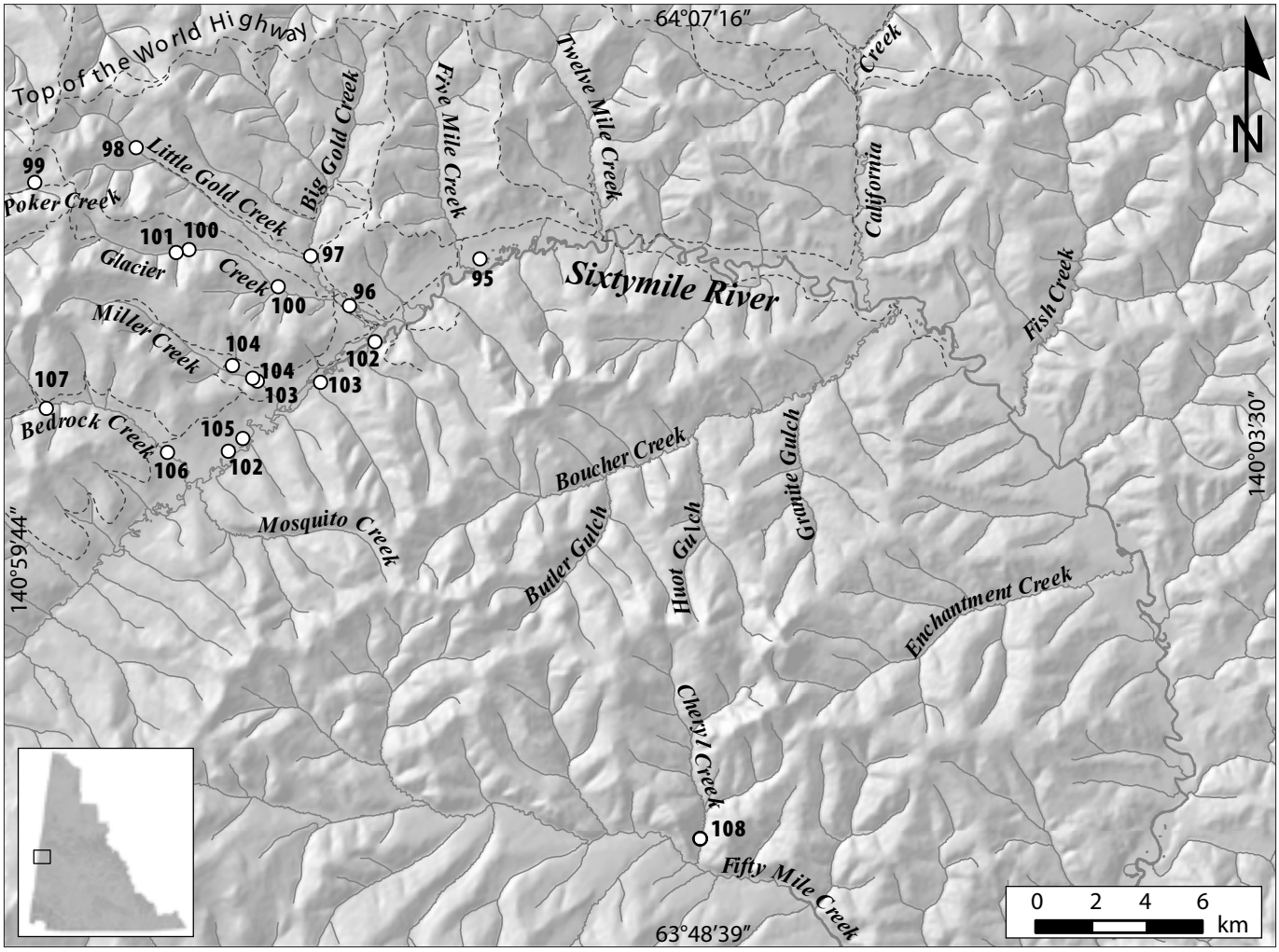
Bedrock Geology Bedrock is clay and shale.

Gold Characteristics Gold was reported as mostly coarse with 50% larger than 10 mesh and some nuggets up to ¼ ounce. The larger-sized gold was dull-coloured and covered with a blackish coating. The fineness was around 855.

Daniel Jones' operation on Moose Creek, 2004.

SIXTYMILE
PLACER AREA

SITES 95-108



LEGEND

95.....Eldorado Placers/Hawk Mining
96.....Prohaszka - Big Gold Creek
97.....Dredge Master Gold Ltd.
98.....Laurenson
99.....Payne
100.....Midas Rex Mining Inc.- Glacier Creek
101.....Travis
102.....Midas Rex Mining Inc. - Sixtymile
103.....Tri Kay/Hawker/Midas Rex
104.....J.M.Mining
105.....Northway Mining & Exploration Inc.
106.....Prohaszka - Bedrock
107.....Stewart
108.....Rudis and Nordling

SIXTYMILE RIVER, a tributary of Yukon River

116C/1, 116C/2 2005: 64°02'13"N, 140°38'31"W

Eldorado Placers Ltd., Greg Hakonson, Hawk Mining Ltd., Pat Glazier, Mike Church

Water license: PM03-342 (2014)

Active producer (2003-2006) **Operation no. 95**

Location The operation was mining low-level gravel from the left-limit floodplain of the Sixtymile River, just above Five Mile Creek.

Work History and Mining Cuts Eldorado Placers Ltd. began working in Sixtymile River area in 1989. From 2003 to 2005, a crew of four miners worked a daily 12-hour shift. Four cuts were processed in 2003, with stripping of 506,844 cubic yards (387 510 m^3) and 124,302 cubic yards (95 035 m^3) sluiced. In 2004, four cuts were mined, with a total of 483,247 cubic yards (369 470 m^3) of stripping and 177,444 cubic yards (135 665 m^3) sluiced. In June 2005, the operation was sold to Mike Church and Pat Glazier (Hawk Mining Ltd.). That season, six cuts were mined. A total of 706,894 cubic yards (540 460 m^3) were stripped and 184,756 cubic yards (141 256 m^3) were sluiced. In 2006, stripping began in March and ended in late October. Sluicing was conducted from June 4 to September 24. Four cuts were sluiced for a total of 180,000 cubic yards (140 000 m^3) processed and 360,000 cubic yards (275 000 m^3) stripped.

Equipment and Water Treatment Equipment consisted of three Caterpillar D9L bulldozers and a Caterpillar 245 excavator. The wash plant was a 5- by 18-foot double screen deck, which processed material at a rate of 225 to 340 loose cubic yards per hour. Water for the plant was supplied at 4000 to 5000 igpm by a Peerless 10 by 12 pump powered by a 3206 Cat engine. Water was obtained from out-of-stream ponds and effluent was settled out-of-stream in ponds up to 2000 by 300 feet (600 x 100 m). Recycling rate was up to 100%. Concentrates were removed from the wash plant every shift and final clean-ups were performed with jigs.

Surficial Geology and Stratigraphy The stratigraphic section consisted of 9 to 15 feet (3 to 5 m) of muck overlying 12 feet (4 m) of gravel. A total of 3 feet of gravel (1 m) and 3 feet (1 m) of bedrock were sluiced.

Aerial view of Eldorado Placers/Hawk Mining's pit on Sixtymile River, 2005.

Eldorado Placers Ltd. wash plant on Sixtymile River, 2004.

Bedrock Geology Bedrock at this site is fragmented and decomposed schist with localized clay and quartz boulders.

Gold Characteristics The gold was fine grained with a fineness of 840.

BIG GOLD CREEK, a tributary of Sixtymile River

116C/2 2005: 64°01'18"N, 140°44'22"W

Steve Prohaszka
Water license: PM98-038 (2009)
Active producer (2003-2006) **Operation no. 96**

Location This operation was located upstream from the confluence of Big Gold and Glacier creeks, near the Sixtymile River.

Work History and Mining Cuts Steve Prohaszka has operated in this area since 1989. From 2003 to 2006, Mr. Prohaszka continued the operation by himself. In 2003, a cut 200 by 200 feet (60 x 60 m) was mined and in 2005, a cut 150 by 150 feet (45 x 45 m) was mined. Exploration and assessment work was done in 2004. In 2005, stripping and sluicing were done on the property, and in 2006, some cuts were mechanically stripped.

Equipment and Water Treatment Equipment in 2003 and 2004 included a Caterpillar D9H bulldozer and a Drott 50 excavator. A Caterpillar 988 loader was used in 2005. The wash plant in 2003 consisted of a 3- by 6-foot shaker with a 5- by 6-foot sluice run. A 6-inch submersible electric-powered pump rated at 1600 igpm supplied water to the plant, to process 90 loose cubic yards per hour. Water was acquired from Glacier Creek and settled out-of-stream. The wash plant in 2005 was a 20-foot trommel with two 12-foot sluice runs. The same pump was used and the processing rate was 150 loose cubic yards per hour. Water was acquired from Big Gold Creek and settled out-of-stream. Clean-ups were done with a jig. In 2006, some stripping was done on the property.

Surficial Geology and Stratigraphy In 2003, the section consisted of 30 feet (10 m) of muck overlying 7½ feet (2 m) of gravel. A total of 3 feet (1 m) of gravel and 2½ feet (0.8 m) of bedrock were sluiced. In 2005, the section consisted of 28 feet (8.5 m) of mixed tailings, all of which were sluiced.

Bedrock Geology Bedrock at the creek mouth is decomposed andesite and andesite breccia.

Gold Characteristics In 2003, the gold was 10% fine grained and the fineness was 804. In 2005, the gold was 65% fine grained and the fineness was 804.

Prohaszka's operation on Big Gold Creek, 2005.

BIG GOLD CREEK, a tributary of Sixtymile River

116C/2 2003: 64°02'17"N, 140°46'07"W

Dredge Master Gold Ltd.
Water license: PM96-022 (2005)
Exploration (2003) **Operation no. 97**

Location This operation was located on Big Gold Creek.

Work History and Mining Cuts Activity first took place here in 1996, when the property was mined by Dave and Vern Trainer. Dave Cachelin mined an area in 2002. In 2003, assessment work and a small amount of excavation occurred.

Bedrock Geology Bedrock at the creek mouth is decomposed andesite and andesite breccia.

Gold Characteristics Gold recovered in prior years was fine grained with a fineness of 720.

LITTLE GOLD CREEK, a tributary of Big Gold Creek

116C/2 2005: 64°04'26"N, 140°53'56"W

Dave Laurenson , Sarah Laurenson
Water license: PM03-315 (2014)
Exploration (2005) **Operation no. 98**

Location This operation was located on Little Gold Creek.

Work History and Mining Cuts Dave Laurenson and his wife Sarah moved to this location in September, 2005 and worked a daily 12-hour shift. A cut 200 by 100 feet (60 x 30 m) was processed.

Equipment and Water Treatment Equipment consisted of a Caterpillar D8H bulldozer equipped with a ripper and U-blade and a Terex 72-51 loader. Test sluicing was done with the wash plant which included a 10-yard hopper feeding into a 4-foot-wide by 14-foot-long double screen deck.

Dave and Sarah Laurenson's workings on Little Gold Creek, 2005.

The classified gravel was then washed through sluice runs totalling 7 by 21 feet, which were lined with a combination of angle iron riffles, expanded metal and Nomad matting. Tailings were stacked with a 40-foot conveyor. Water acquired from Little Gold Creek was supplied by an English 6-cylinder diesel-powered Ford 5- by 4-inch pump rated at 1200 igpm, enough to process 100 loose cubic yards per hour. Effluent was settled out-of-stream and 100% recycled from a 125- by 100-foot (40- x 30-m) pond. Clean-ups were done with a long tom.

Surficial Geology and Stratigraphy The section consisted of 6 feet (2 m) of muck overlying 3 feet (1 m) of gravel on bedrock. All of the gravel and 3 feet (1 m) of bedrock were sluiced.

Gold Characteristics The gold was reported as fine grained with a purity of 780.

POKER CREEK, a tributary of Fortymile River

116C/2 2003: 64°03'45"N, 140°58'29"W

Duane K. Payne
Water license: PM01-225 (2006)
Active producer (2003) **Operation no. 99**

Location The property was located on Poker Creek, less than 1 mile (2 km) upstream from the Alaska/Yukon border.

Work History and Mining Cuts Duane K. Payne began working in the area in 1993. In 2003, mining and sluicing occurred a short distance downstream on the Alaska side of the border. Some stripping also took place immediately downstream from the camp on the right-limit hillside.

Equipment and Water Treatment An Allis Chalmers HD6 bulldozer with a 9-foot-wide blade and ripper was used to strip overburden and dig and stockpile gravel. A Hine Werner C14 excavator with a 1-cubic-yard bucket fed the wash plant, and a Case W80 loader with a 1-cubic-yard bucket removed tailings. A shaker screen deck 5 feet wide by 9 feet long classified pay to 1¼ inch minus. This was followed by a single sluice run 24 inches wide by 8 feet long, with 3-inch sawtooth riffles over shovel matting, sloped at 2¼ inches per foot. Approximately 15 cubic yards per hour were processed using 600 igpm of water supplied by a Homelite 4-inch pump, powered by a Briggs & Stratton engine. Water was obtained from an in-stream reservoir and recycled in four out-of-stream settling ponds.

Surficial Geology and Stratigraphy Overburden was 2 feet to 6 feet (1 to 2 m) deep in the centre of the valley bottom. Gravel units averaged 4 to 5 feet (1.2 to 1.5 m) deep and were mainly reddish and sandy, with no clay. Bedrock was flat. All gravel units were sluiced.

Bedrock Geology The bedrock at this site is flat and composed of Nasina quartzite.

Gold Characteristics The gold was reported as rough, angular, fine, and reddish and dull coloured. Approximately 98% was less than 10 mesh and greater than 60 mesh. Fineness was 873.

GLACIER CREEK, a tributary of Big Gold Creek

116C/2 2005: 64°02'25"N, 140°51'34"W
2003: 64°01'41"N, 140°47'35"W

Midas Rex Mining Inc., Stuart Schmidt
Water license: PM97-026 (2006, Licensee: K-1 Mining Services)
Active producer (2003-2005) **Operation no. 100**

Location This operation was located on Glacier Creek, both in the valley bottom and on a left-limit bench.

Work History and Mining Cuts In 2003 and 2005, a crew of eight miners was mining both at this location and at Sixtymile River. This location was inactive in 2004. Between both areas, a total of 25 to 35 cuts were mined each year, with each cut averaging 50,000 square feet (4600 m^2) of bedrock. At this location in 2003, a total of 275,000 square feet of bedrock (25 500 m^2) were mined for a total of 81,480 cubic yards (62 290 m^3). In 2005, 54,000 bedrock square feet (5000 m^2) or 16,000 cubic yards (12 200 m^3) were mined.

Equipment and Water Treatment In 2003 and 2005, equipment included two Caterpillar D10N bulldozers with U-blades and rippers for stripping, pushing pay to the sluice plant, stacking tailings and testing. A Hitachi EX700 hydraulic excavator with 3½-cubic-yard bucket was used to feed the sluice plant, dig drains and test. A Nodwell-mounted Mobil Drill auger was used for exploration and testing. The wash plant consisted of an 8-foot-diameter Gray Brothers trommel plant with 8-foot-wide, 1- by 1-inch riffles leading to a 24-foot-wide section of expanded metal runs and a 100-foot by 36-inch tailings stacker. The wash plant was driven by a Caterpillar 3306 diesel engine driving hydraulic pumps to power the trommel, stacker and hydraulic winches to position the sluice tables. The plant was mounted on a modified, non-powered Caterpillar 245 excavator track frame and was moved using a tow hitch to a Caterpillar D10N tractor. Water was supplied from Glacier Creek via a large recycle pond, and pumped at 3000 igpm by a Caterpillar 3408 diesel-powered 10- by 12-inch Goulds Model JC pump. The plant processed 250 loose cubic yards per hour. Effluent was settled in-stream, and recycled at 100% due to low water availability. The pond size was 500 by 250 feet (150

Midas Rex Mining Inc. sluicing on Glacier Creek, 2003.

x 75 m) on average. Clean-ups were done daily with a long tom, gold wheel and Deister table.

Surficial Geology and Stratigraphy In 2003, the stratigraphic section encountered in the valley was a 'technogenic' deposit, which consisted of 4 to 12 feet (1 to 4 m) of frozen mud which had been pushed on top of a layer of 8 to 15 feet (2.5 to 5 m) of gravel tailings from previous mining in the 1950s. All of the gravel was sluiced, along with up to 6 feet (2 m) of bedrock. On the bench, the section consisted of 0 to 2 feet (0 to 0.6 m) of frozen mud overlying 10 to 12 feet (3 to 4 m) of muddy colluvium overlying 20 to 50 feet (6 to 15 m) of gravel. From 2 to 4 feet (0.6 to 1 m) of the gravel was sluiced, along with up to 6 feet (2 m) of bedrock.

Gold Characteristics The purity of the gold recovered was 820 fine; a large amount of amalgam was reportedly encountered. Gold varied from coarse and chunky to fine-grained.

GLACIER CREEK, a tributary of Big Gold Creek

116C/2 2005: 64°02'22"N, 140°52'09"W

Floyd Travis
Water license: PM02-305 (2008)
Active producer (2003-2005) **Operation no. 101**

Location This property was located approximately 1.9 miles (3 km) upstream from the mouth of Glacier Creek.

Work History and Mining Cuts Floyd Travis mined alone at this site. He worked on the bench and the valley of Glacier Creek, and processed a small trench excavated further upstream. Over the course of three years, he moved between mining the thawed bench and valley ground, and opening new cuts to strip thaw. Two areas were mined on the bench: 60 by 60 by 15 feet (20 x 20 x 5 m) and 100 by 250 by 3 feet (30 x 75 x 1 m). A cut 150 by 150 by 4 feet (45 x 45 x 2 m) was mined on the valley bottom.

Equipment and Water Treatment Equipment included a P&H excavator and Komatsu P31 track loader to strip and move material. The wash plant was a 30- by 30-inch shaker screen

Floyd Travis' operation on Glacier Creek, 2003.

deck attached to a single 25-foot sluice run lined with Nomad matting, one riffle and expanded metal. Water for the plant was supplied by a Gorman Rupp 4-inch pump powered by a Deutz diesel engine and rated at 1500 igpm. The processing rate was approximately 25 loose cubic yards per hour. Water was acquired from a large reservoir pond 100 by 60 feet (30 x 20 m) and effluent was settled out-of-stream in a 10- by 10- by 6-foot (3 x 3 x 2 m) pond. Clean-ups were done with a long tom, with final concentrates delivered to Ruth and Don Kenzie for processing on their Deister table.

Surficial Geology and Stratigraphy On the left bench, a thawed stripped area 60 feet square (6 m^2) contained average-sized rock with a few large boulders.

A 4-foot (1.2-m) layer of gravel was overlying the bedrock. In frozen ground, there was 12 feet (4 m) of overburden and 3 feet (0.9 m) of gravel. Between 3 and 4 feet (0.9 to 1.2 m) of gravel was sluiced.

Bedrock Geology Bedrock at this site is purple decomposed shale and phyllite.

Gold Characteristics On the bench, gold was described as coarse, dark particles shaped like ball-bearings. The valley-bottom gold was brighter, very fine grained and shiny. The fineness was 850.

SIXTYMILE RIVER, a tributary of Yukon River

115N/15, 1150/12, 116C/2

2005: 64°00'36"N, 140°43'15"W
2004: 63°58'42"N, 140°49'10"W

Midas Rex Mining Inc., Stuart Schmidt
Water license: PM04-438 (2013)
Active producer (2003-2005) **Operation no. 102**

Location Between 2003 and 2005, this operation was at several locations in the upper Sixtymile River valley.

Work History and Mining Cuts In 2003 and 2005, a crew of eight miners worked at the upper Sixtymile River and at Glacier Creek. In 2004, only the upper Sixtymile River location was active. At the mine on the upper Sixtymile River, the total mined area was 1,225,000 bedrock square feet (113 800 m^2) or 363,000 cubic yards (278 000 m^3) in 2003; 1,500,000 bedrock square feet (140 000 m^2) or 450,000 cubic yards (344 000 m^3) in 2004; and 1,446,000 bedrock square feet (134 300 m^2) or 428,450 cubic yards (327 570 m^3) in 2005. An average cut was 50,000 bedrock square feet (5000 m^2).

Equipment and Water Treatment Equipment included two Caterpillar D10N bulldozers with U-blades and rippers for stripping, pushing pay to the sluice plant, stacking tailings and testing. A Hitachi EX700 hydraulic excavator with 3½-cubic-yard bucket was used to feed the sluice plant, dig

Midas Rex Mining Inc.'s operation on the Sixtymile River, 2004.

drains and test. A Nodwell-mounted Mobil Drill auger drill was used for exploration and testing. The wash plant consisted of an 8-foot-diameter Gray Brothers trommel plant with 8-foot-wide, 1- by 1-inch riffles leading to a 24-foot-wide section of expanded metal runs and a 100-foot by 36-inch tailings stacker. The wash plant was driven by a Caterpillar 3306 diesel engine driving hydraulic pumps to power the trommel, stacker and hydraulic winches to position the sluice tables. The plant was mounted on a modified, non-powered Caterpillar 245 excavator track frame and was moved using a tow hitch on a Caterpillar D10N tractor.

Water was supplied from Sixtymile River via a trenched opening to the pump pond. A Caterpillar 3408 diesel-powered 10- by 12-inch Gould's Model JC pump supplied 3000 igpm. The plant processed 250 loose cubic yards per hour. Effluent was settled out-of-stream and 20% recycled in 2004. The pond size was 500 by 250 feet (150 x 75 m) on average. Clean-ups were done daily with a long tom, gold wheel and Deister table.

Surficial Geology and Stratigraphy From 2003 to 2005, the section consisted of 0 to 4 feet (0 to 1.2 m) of frozen mud overlying 8 to 10 feet (2.4 to 3 m) of gravel on bedrock. From 2 to 4 feet (0.6 to 1.2 m) of gravel and up to 6 feet (2 m) of bedrock were sluiced. Some tailings from previous mining were also processed.

Bedrock Geology Bedrock consists of schist.

Gold Characteristics The gold was reported as mainly fine-grained and the fineness was 820 to 860.

SIXTYMILE RIVER, a tributary of Yukon River

115N/15, 116C/2

2005: 63°59'50"N, 140°48'31"W
2003: 63°59'48"N, 140°45'42"W

Tri Kay Properties, Frank Hawker, Midas Rex Resources
Water licenses: PM03-336 (2014, Licensee: Frank Hawker), PM01-249 (2006)
Active producer (2003-2005) **Operation no. 103**

Location From 2003 to 2005, mining took place in dredged areas in the Sixtymile River valley near the mouth of Big Gold Creek on a strip of a left-limit bench. One cut was also mined on Miller Creek.

Work History and Mining Cuts Frank and Karen Hawker began mining on the Sixtymile River in 1993 and they mined in the area until 2005. In 2003, a crew of three miners and one camp person worked a daily 12-hour shift to mine seven cuts, each 100 by 300 feet (30 x 100 m). One cut was stripped on the left-limit bench for 2004. In 2004 and 2005, the crew of two miners and one camp person worked a daily 11-hour shift. In each of those years, a cut on Sixtymile River 1000 feet (300 m) long and 120 feet (35 m) wide was mined. One small cut on Miller Creek was mined in 2005. In 2006,

Midas Rex Mining Inc.'s operation on the Sixtymile River, 2005.

the Hawkers moved their operation to Lindow Creek, a tributary of Bear Creek.

Equipment and Water Treatment Equipment included a Komatsu D375 A2 bulldozer for stripping, a Hitachi EX200 excavator with a 1½-cubic-yard bucket for feeding the wash plant and a Hitachi EX300 excavator with a 1-cubic-yard bucket for moving tailings. A Caterpillar D10N bulldozer for stripping was added for 2004 and 2005. The wash plant consisted of a 5-foot-diameter, 20-foot-long trommel leading to sluice runs 14 feet wide and 8 feet long, lined with hydraulic riffles. Water was supplied to the plant at 1200 igpm by an Indeng 6-inch pump powered by a Caterpillar 3306 engine, which was enough to process 80 loose cubic yards per hour. Water was acquired from a drainage ditch on the Sixtymile River, and effluent was settled in a 1000- by 100-foot (300- x 30-m) out-of-stream pond. Clean-ups were done with a long tom and gold wheel.

Surficial Geology and Stratigraphy The section consisted of tailings from previous bench mining overlying dredge tailings. A total of 40 feet (10 m) of waste was stripped off and 5 feet (2 m) of pay material (bedrock and gravel remnants) were sluiced.

Bedrock Geology Bedrock was reported as fractured quartzite and schist.

Gold Characteristics The gold was reported as mostly fine grained, with a fineness of 830.

MILLER CREEK, a tributary of Sixtymile River

115N/15, 116C/2

2005: 64°00'08"N, 140°49'38"W
2003: 63°59'53"N, 140°48'44"W

J.M. Mining, Jayce Murtagh
Water license: PM04-439 (2015)
Active producer (2003-2006)

Operation no. 104

Location The property was located in the narrow valley bottom of Miller Creek and on the left-limit bench, within 2 miles (3 km) of the confluence with Sixtymile River.

Work History and Mining Cuts Jayce Murtagh began mining on Miller Creek in 1991. During 2003, a cut was mechanically stripped upstream from the Brisebois Bros. property, which was formerly mined by Walter Yaremcio. Murtagh also mined upstream under Sixty Mile Enterprises' license. The crew of three miners worked a single 12-hour shift daily in 2003. Three cuts were mined, two at 150 by 200 feet (45 x 60 m) and one at 100 by 300 feet (30 x 100 m). In 2004 and 2005, the crew was reduced to two miners working a daily 11-hour shift. In 2004, three cuts were mined, 50 by 100 feet (15 x 30 m), 75 by 100 feet (20 x 30 m), and 60 by 300 feet (18 x 100 m). In 2005, five cuts were mined, 50 by 250 feet (15 x 75 m), 50 by 350 feet (15 x 105 m), 50 by 100 feet (15 x 30 m), 50 by 250 feet (15 x 75 m), and 35 by 200 feet (10 x 60 m). In 2006, Mr. Murtagh mined a cut downstream of the old Miller Creek townsite.

Equipment and Water Treatment Equipment consisted of a Hitachi EX300LC excavator with a 2-cubic-yard bucket for

Tri Kay/Hawker mining on left-limit bench of Sixtymile River, 2003.

stripping and digging drains, a Hitachi EX700H excavator with a 5-cubic-yard bucket for stripping and digging drains and moving tailings, a Caterpillar D9L bulldozer for stripping, and a Caterpillar 980B loader for sluicing. In 2005, a Terex Payhauler 350C rock truck with a 50-ton (35 cubic yards) capacity was added. The wash plant consisted of a 4- by 12-foot single vibrating screen deck with ¾-inch punch plate, fed by a 15-cubic-yard hopper with a shuffle board feeder. Two sluice runs were 8½ feet wide and 8 feet long and lined with hydraulic riffles. Water for the plant was supplied in 2003 at 1600 igpm by a Morris 8- by 10-inch pump powered by a Caterpillar 3306 engine, enough to process 100 loose cubic yards per hour. In 2004, the process rate was 90 loose cubic yards per hour and in 2005, the pump was replaced by a Berkley 6- by 8-inch Isuzu-powered pump which at 1600 igpm allowed 80 loose cubic yards to be processed. Water was acquired out-of-stream and effluent was settled out-of-stream into ponds 300 by 50 feet (90 x 15 m) and 150 by 200 feet (45 x 60 m) in 2003; 100 by 300 feet (30 x 100 m), 50 by 100 feet (15 x 30 m) and 150 by 200 feet (45 x 60 m) in 2004; and 150 by 200 feet (45 x 60 m) in 2005. In 2005, effluent was 50% recycled. Clean-ups were done with a jig.

Surficial Geology and Stratigraphy In 2003, the section consisted of 19 feet (6 m) of dredge tailings and old settling pond mud overlying 6 feet (2 m) of virgin (side pay) gravel on bedrock. All of the virgin gravel was sluiced along with 2 feet (0.6 m) of bedrock. In 2004 and 2005, an 80-foot-thick (25 m) bench was mined on the left limit of the creek. The section consisted of 8 feet (3 m) of mud overlying 72 feet (22 m) of gravel on bedrock. A total of 8 feet (3 m) of gravel and 2 feet (0.6 m) of decomposed bedrock were sluiced.

Bedrock Geology Bedrock is wavy decomposed schist.

Gold Characteristics In 2003, the gold was 10% minus 35 mesh, 80% minus 10 mesh to plus 35 mesh and 10% over 10 mesh. The coarse fraction had some nuggets with quartz attached. The fineness was 810. In 2004 and 2005, the gold was 10% minus 20 mesh, 70% minus 10 mesh to plus 20 mesh and 20% over 10 mesh. The fineness was 820.

SIXTYMILE RIVER, a tributary of Yukon River

115N/15 2003: 63°58'27"N, 140°49'49"W

Northway Mining & Exploration, Don Sandberg
Water license: PM99-119 (2004)
Active producer (2003) **Operation no. 105**

Location The operation was located on Sixtymile River, just downstream from Bedrock Creek.

Work History and Mining Cuts Mining began at this operation in 2000 and continued until 2003.

Jayce Murtagh's operation on Miller Creek, 2005.

Northway Mining and Exploration Inc. stockpiling pay, Sixtymile River, 2003.

Equipment and Water Treatment Equipment included a Caterpillar D9L bulldozer for stripping, a Caterpillar 988B loader to excavate pay and feed the plant, and a Caterpillar 245 excavator to excavate pay. During later seasons, two Caterpillar D550 rock trucks and a Caterpillar D7 bulldozer were added to the operation. The wash plant was a 5-foot-diameter by 20-foot-long trommel that screened material to ⅝ inch. The sluice runs were 14 feet wide by 7 feet long with pulsating riffles. Process water was 100% recycled in mined-out cuts. The typical pond size was 300 feet (100 m) wide by 600 feet (200 m) long. A long drain discharged groundwater seepage to the Sixtymile River.

Surficial Geology and Stratigraphy The section consisted of 5 feet to 6 feet (1.5 to 2 m) of sand and organic silt overlying 12 feet (4 m) of pebble-cobble gravel. The bottom 3 feet (0.9 m) of gravel was sluiced.

Bedrock Geology Bedrock is variably decomposed and competent andesite with disseminated sulphide minerals.

Gold Characteristics The gold was reported to be fine grained with a purity of 830.

BEDROCK CREEK, a tributary of Sixtymile River

115N/15 2003: 63°58'26"N, 140°52'33"W

Steve Prohaszka
Water license: PM04-430 (2010), PM98-037 (2009)
Exploration (2003) **Operation no. 106**

Location The property was situated on Bedrock Creek, approximately 3 miles (5 km) east of the Alaska border.

Work History and Mining Cuts Mr. Prohaszka has held claims on Bedrock Creek since 1971, and he mined there intermittently in the 1970s and 1980s. In 2003, he used a bulldozer to strip a small area on the left limit of the valley downstream from the camp.

Equipment and Water Treatment Prohaszka's equipment included Caterpillar D9H and Caterpillar D8H bulldozers with rippers.

Bedrock Geology The bedrock is Nasina quartzite and Klondike Schist.

BEDROCK CREEK, a tributary of Sixtymile River

115N/15 2004: 63°59'18"N, 140°57'58"W

Jack M. Stewart
Water licenses: PM05-466 (2011), PM00-152 (2005)
Exploration (2004-2005) **Operation no. 107**

Location This operation was located near the upper forks of Bedrock Creek, approximately 4 miles (6 km) upstream from its confluence with the left limit of the Sixtymile River.

Work History and Mining Cuts Mining began on the property in 1989 and continued in 1990, 1995 and 1996. In 2004 and 2005, Mr. Stewart had the ground drilled for assessment purposes.

Surficial Geology and Stratigraphy Near the upper forks of the creek, overburden is sandy and averages 3 to 4 feet (0.9 to 1 m) deep. Gravel averages 8 to 10 feet (2 to 3 m) deep to bedrock, and the bottom 2 or 3 feet (0.6 to 0.9 m) of gravel plus approximately 1 foot (0.3 m) of bedrock were tested.

Bedrock Geology Bedrock in the lower reaches includes quartzite, schist and andesite. Towards the head of the creek, rhyolite and rhyolitic tuffs occur.

Gold Characteristics Gold recovered in tests was a mixture of fine- and coarse-grained gold, but no nuggets.

FIFTY MILE CREEK, a tributary of Sixtymile River

115N/16 2005: 63°50'46"N, 140°28'50"W

Ralph Nordling, Al Rudis
Water license: PM02-284 (2012)
Active producer (2005) **Operation no. 108**

Location This operation was located on an unnamed left-limit tributary to Fifty Mile Creek, unofficially named Cheryl Creek.

Work History and Mining Cuts In 2005, a crew of four miners and one camp person worked a daily 10-hour shift. Two cuts were mined, each approximately 100 by 200 feet (30 x 60 m).

Equipment and Water Treatment Equipment in 2005 consisted of a Hitachi 300 excavator and a Hitachi 200 excavator for stripping and feeding the plant. A Caterpillar D8L bulldozer was used for pushing pay and stripping. The Hitachi 200 was used for clearing tailings. The wash plant consisted of a 6- by 14-foot screen deck feeding 16 by 8 feet of sluice run with hydraulic riffles. Water was acquired from Cheryl Creek and pumped by a Cato 75KW-powered 6- by 8-inch Dentze 912 pump rated at 2500 igpm. From 100 to 150 loose cubic yards per hour were processed, depending on the type of material and fluctuations in the water supply. Effluent was settled out-of-stream in two ponds during start-up, one 100 by 150 feet (30 x 45 m) and one 100 by 200 feet (30 x 60 m). Clean-ups were done with a long tom and Diester table.

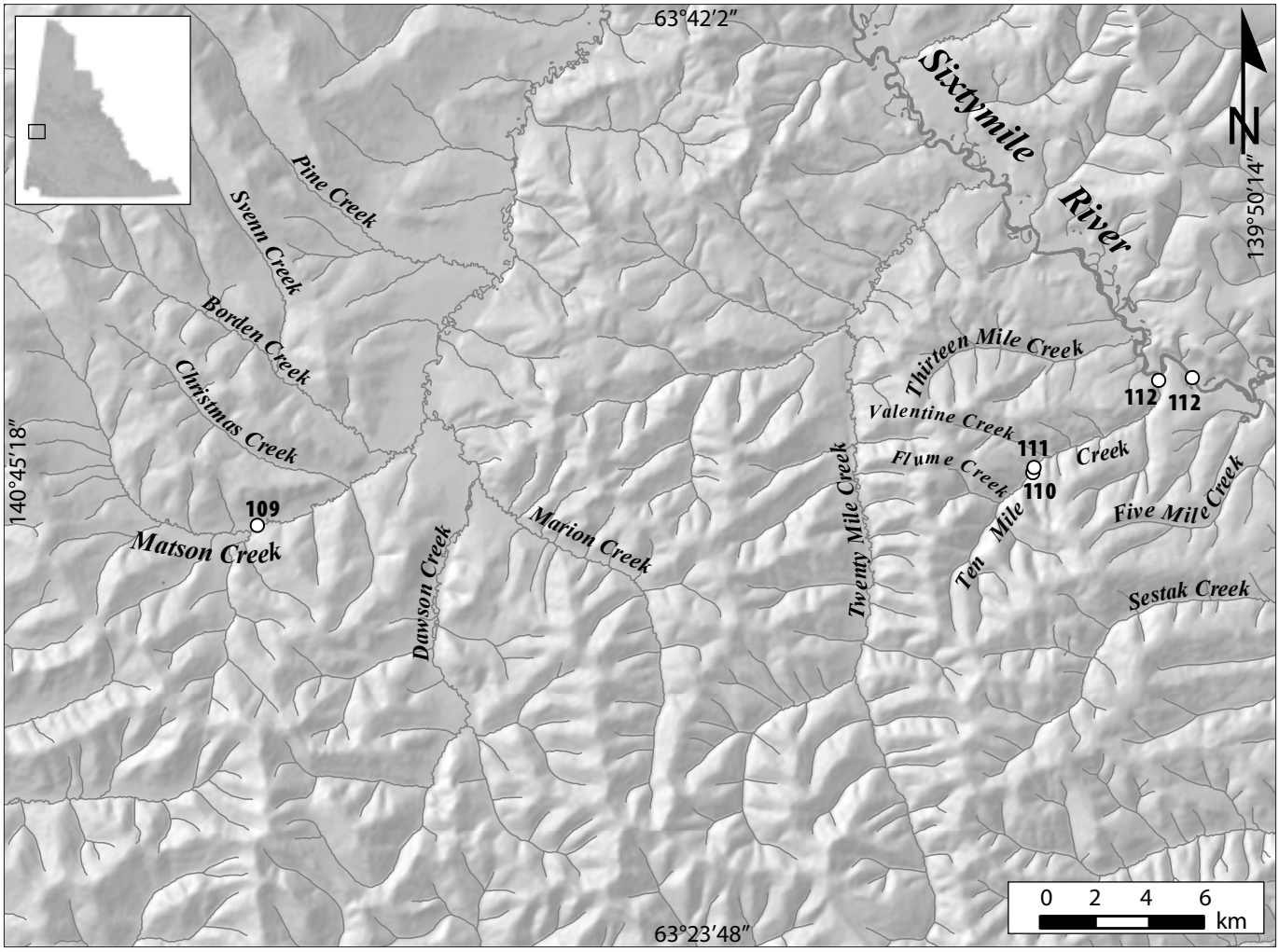
Surficial Geology and Stratigraphy The stratigraphic section consisted of a vegetation mat with moss and dirt up to 2 feet (0.6 m) thick, covering waste gravel from 0 to 6 feet (0 to 2 m) thick, overlying pay gravel from 1.5 to 5 (0.5 to 1.5 m) feet thick on multicoloured bedrock. The bedrock was scraped during the excavation of pay gravel.

Gold Characteristics The gold recovered was bright and yellow, with a fineness of 890 to 910.

Rudis and Nordling's operation on Cheryl Creek, a left-limit tributary to Fifty Mile Creek, 2005.

MATSON CREEK
PLACER AREA

SITES 109-112



LEGEND

109.....Powers & Long, Magna North Gold Ltd.
110.....Ganter
111 .....No Name Resources Inc.
112.....Midas Rex Mining Inc.

MATSON CREEK, a tributary of Sixtymile River

115N/10, 115N/7

2006: 63°29'59"N, 140°34'48"W
2005: 63°29'52"N, 140°37'30"W
2003: 63°30'04"N, 140°39'11"W

Powers & Long, Magna North Gold Ltd., Allan Radford, Shannon Radford
Water licenses: PM04-450 (2015, Licensee: Powers/Long),
PM04-425 (2015, Licensee: Magna North)
Active producer (2003-2006) **Operation no. 109**

Location Between 2003 and 2006 this operation was located at various locations in the centre of the valley on the left and right limits of Matson creek, and on both the right and left-limit bench.

Work History and Mining Cuts Allan Radford began test mining on Matson Creek in 2002. From 2003 to 2005, the crew consisted of up to eleven miners and one camp cook. The operation ran two shifts a day of 12 hours each. In 2006, the operation downsized to five miners and one camp person working a daily 12-hour shift. In 2003, a 3000- by 150- by 400-foot (900- x 45- x 120-m) cut was mined at the downstream location with a further 800- by 400-foot (240- x 120-m) cut completed in early 2004. At the end of 2004 and in 2005, the operation moved upstream to complete a 2000- by 450- by 600-foot (600- x 135- x 180-m) wide cut. In 2006, two cuts were completed, one 150 by 200 feet (45 x 60 m) and one 400 by 300 feet (120 x 90 m).

Equipment and Water Treatment Equipment included a Komatsu 475A bulldozer, a Caterpillar D10N bulldozer, two Volvo EC360 excavators each with 3-cubic-yard buckets, one 35-cubic-yard capacity Volvo rock truck and a Caterpillar 980C loader. The loader was used to push tailings and haul fuel barrels to equipment. A Caterpillar 12F grader was used to maintain roads. The wash plant consisted of a 14- by 10-foot hopper attached to an El Russ 6- by 16-foot screen deck

Volvo excavator and Caterpillar bulldozer on Matson Creek, Powers & Long/Magna North Gold Ltd., 2004.

Excavator feeds wash plant on Matson Creek, Powers & Long/Magna North Gold Ltd, 2006.

lined with the New Era riffle system and Nomad matting. The pump was a Berkley 12- by 10-inch powered by a Caterpillar 3306 three-phase diesel electric motor rated at 100 horsepower. It was capable of pumping 3300 igpm and allowed the processing of 300 loose cubic yards per hour. Water acquisition was from Matson Creek and effluent was settled out-of-stream in a 1500- by 200-foot (500- x 60-m) pond provided by a previous mining cut. Approximately 90% of the effluent water was recycled. Clean-ups were done with a two-cell jig every day that sluicing occurred.

Surficial Geology and Stratigraphy From 2002 to 2005, the stratigraphic section in the valley consisted of up to 32 feet (9.8 m) of black muck overlying 3 to 10 feet (0.9 to 3 m) of gravel. On the bench, up to 8 feet (2 m) of black muck was overlying 10 to 16 feet (3 to 5 m) of gravel. Two to three feet (0.6 - 0.9 m) of the gravel deposits were sluiced and overburden varied from 11 to 35 feet (3 to 10 m) thick. In 2006, the overburden thickness averaged 15 feet (5 m) over 4 feet (1 m) of gravel on bedrock. A total of 2 feet (0.6 m) of gravel and 2 feet (0.6 m) of bedrock were sluiced.

Bedrock Geology The upper portion of Matson Creek is underlain by sericitic and chloritic schist and granite gneiss. The mining operation encountered various types of bedrock including rose-coloured, orange and blue-grey shale, and dark brown to beige Klondike Schist. Slabby bedrock pieces were up to 4 feet square (0.4 m^2).

Gold Characteristics Gold was coppery-coloured and flaky. Slightly less than 5% of the gold was nugget-sized (averaging ½ ounce or 15 g). The largest nugget found was 1½ ounces (45 g). The fineness was 895. In 2006, the gold was very fine-grained with no nuggets, and the fineness was 860.

TEN MILE CREEK, a tributary of Sixtymile River

115N/9, 1150/12 2003: 63°30'51"N, 140°00'38"W

Jonathan M. Ganter
Water licenses: PM96-074 (2005)
Active producer (2003) **Operation no. 110**

Location In 2003, an area which had been stripped in 1998 was mined just downstream of the mouth of Flume Creek.

Work History and Mining Cuts This operation had been active since 1994. In 2003, although the operation shut down early, some mining was completed. A large area had been stripped and left exposed to thaw black muck. The operation was subsequently sold to new owners.

Equipment and Water Treatment In 2003, a Caterpillar D9H bulldozer was used to strip the vegetation and black muck. An excavator was used for feeding the sluice plant and a Caterpillar 966D loader removed tailings. A 10-foot-wide Derocker classified the pay gravel before being washed through a single sluice run 4 feet wide by 37 feet long. The run was lined with 1-inch angle iron riffles and Nomad matting. Effluent was treated in both in-stream and out-of-stream settling ponds comprised of old mining cuts.

Surficial Geology and Stratigraphy In 2003, the section averaged 10 feet (3 m) of frozen black muck over 6 feet (2 m) of gravel. The best gold values were associated with a thin clay layer which cross-cut the valley floor at the bedrock contact. A total of 3 feet (0.9 m) of gravel and 2 to 3 feet (0.6 to 0.9 m) of bedrock were sluiced.

Bedrock Geology Bedrock at this site consists of wavy to blocky schist.

Jonathan Ganter's operation on Ten Mile Creek, 2003.

TEN MILE CREEK, a tributary of Sixtymile River

115N/9 2005: 63°30'57"N, 140°00'34"W

No Name Resources Inc., Brent Pasareno
Water license: PM04-378 (2015)
Active producer (2004-2006) **Operation no. 111**

Location This operation was located on Ten Mile Creek.

Work History and Mining Cuts The operation was purchased from Jonathan Ganter in 2003. In 2004 and 2005, a crew of three miners and one camp person worked a daily 11-hour shift. A total of 117,333 cubic yards (89 707 m^3) were moved in 2004 and 48,635 cubic yards (37 184 m^3) in 2005. No major sluicing was done in 2006, although some tailings were reprocessed. Several test pits were excavated on nearby Thirteen Mile Creek and some leases were converted to claims.

Equipment and Water Treatment In 2004 and 2005, mechanical stripping and sluicing was accomplished with two Caterpillar (D9H and D8K) bulldozers, a Caterpillar 988A loader, a Caterpillar 235 excavator and a Terex TA30 rock truck. A Koehring Bantam excavator was added in 2005. The wash plant was a modified Derocker with a boil box, punch plate and hydraulic riffles and two 4-foot-wide by 25-foot-long sluice runs. Water was supplied by Ten Mile Creek and pumped by a Cat 3208 diesel-powered 10- by 12-inch pump. Approximately 100 loose cubic yards per hour were processed. In 2006, equipment used for testing included a Proclain backhoe with a 1-cubic-yard bucket and a 6-inch Auger drill mounted on an R65 Nodwell. A small (10 cubic yards per hour) test sluice and Keene box fed with

No Name Resources Inc. mining on Ten Mile Creek, 2005.

5-gallon pails were used for testing samples. Water was pumped by a 3-inch Honda gas-powered pump.

Surficial Geology and Stratigraphy The sections mined in 2004 and 2005 consisted of 4 to 5 feet (1 to 1.5 m) of black muck overlying 6 to 9 feet (2 to 3 m) of fine sandy gravel. A total of 2 feet (0.6 m) of gravel and 2 feet (0.6 m) of bedrock were sluiced. In 2006, some tailings were reprocessed. The tailings consisted of blocky boulders of schist and other bedrock with abundant black sand and some gold.

Bedrock Geology Bedrock is decomposed schist with limestone stringers.

Gold Characteristics From 2004 to 2005, gold was described as generally fine-grained, but with nuggets up to 3 ounces (90 g). In 2006, in addition to fine gold, some nuggets less than ¼ inch (0.6 cm) in size were recovered. The fineness was 830 to 840.

SIXTYMILE RIVER, a tributary of Yukon River

115N/15, 1150/12, 116C/2 — 2006: 63°32'40"N, 139°53'32"W

Midas Rex Mining Inc., Stuart Schmidt
Water license: PM05-492 (2015)
Active producer (2006) — **Operation no. 112**

Location In 2006, the operation moved from upper Sixtymile to the lower Sixtymile River valley between the mouth of Ten Mile Creek and the confluence of Sixtymile River and Yukon River.

Midas Rex Mining Inc.'s operation on the Sixtymile River, at the mouth of Ten Mile Creek, 2006; view to the east.

Work History and Mining Cuts In 2006, the crew of eight miners and one camp person shared two daily 12-hour shifts. An access road and airstrip were constructed from the Yukon River to the operation. At the mouth of Ten Mile Creek on the right limit of Sixtymile River, a cut 1000 by 200 feet (300 x 60 m) was processed. Another cut, located approximately 1.2 miles (2 km) downstream on the left limit of Sixtymile River, was mined with dimensions of 2000 by 200 feet (600 x 60 m).

Equipment and Water Treatment Equipment included two Caterpillar D10N bulldozers with U-blades and rippers for stripping, pushing pay to the sluice plant, stacking tailings and testing. A Hitachi EX700 Hydraulic excavator with a 3½-cubic-yard bucket was used to feed the sluice plant, dig drains and test. A Nodwell-mounted Mobil Drill auger drill was used for exploration and testing. The wash plant consisted of an 8-foot-diameter Gray Brothers trommel plant with 8-foot-wide, 1- by 1-inch riffles leading to a 24-foot-wide section of expanded metal runs and a 100-foot by 36-inch tailings stacker. The wash plant was driven by a Caterpillar 3306 diesel engine driving hydraulic pumps to power the trommel, stacker and hydraulic winches to position the sluice tables. The plant was mounted on a modified, non-powered Caterpillar 245 excavator track frame and was moved using a tow hitch to a Caterpillar D10N tractor. Water at the lower Sixtymile location was supplied from either the Sixtymile River, or groundwater. A Caterpillar 3408 diesel-powered 10- by 12-inch Gould's Model JC pump supplied 3000 igpm. The plant processed 250 loose cubic yards per hour. Effluent was settled out-of-stream and 80% recycled. The ponds were 1000 by 200 feet (300 x 60 m) and 2000 by 200 feet (600 x 60 m). Clean-ups were done daily with a long tom, gold wheel and Deister table.

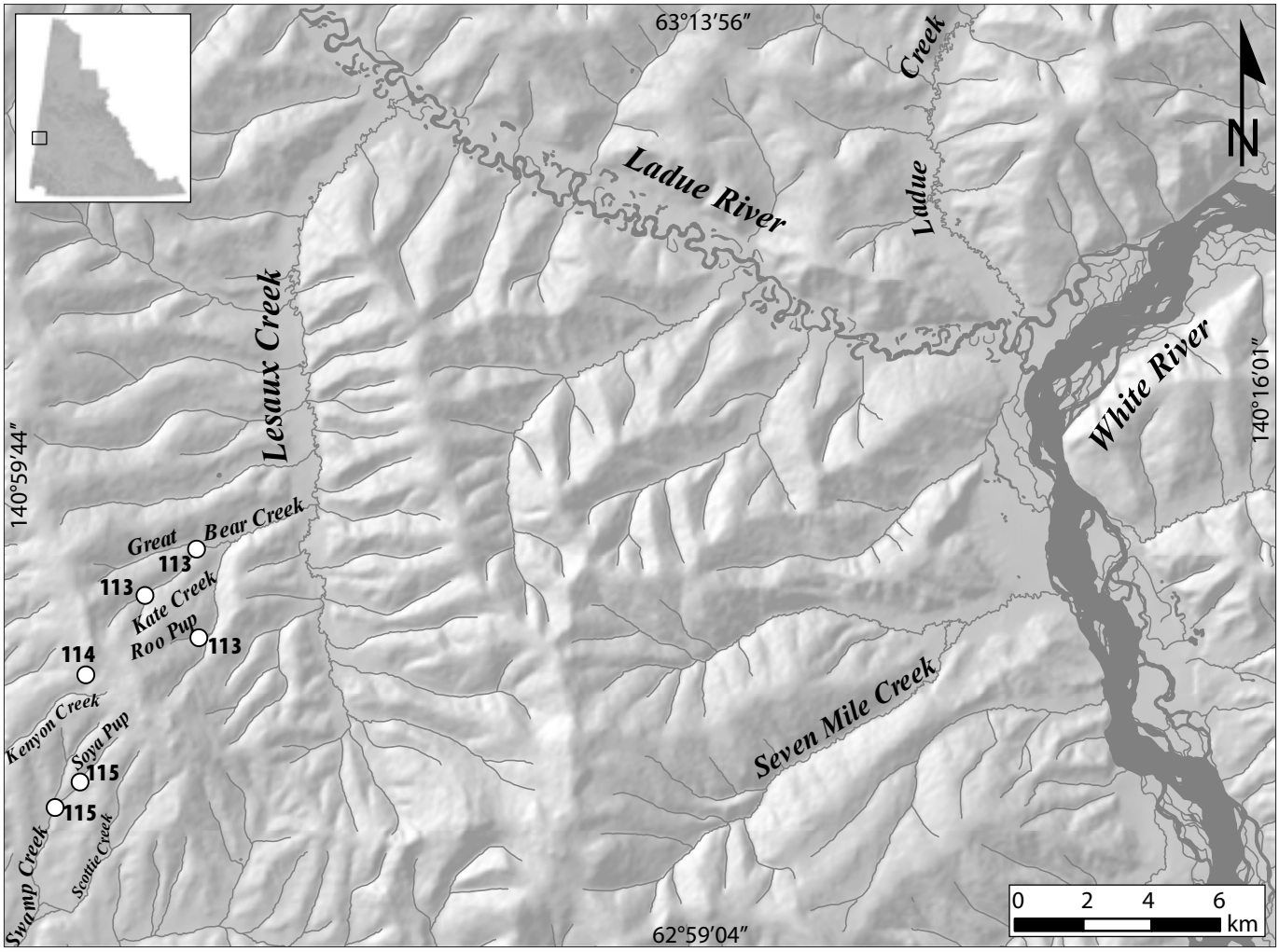
Surficial Geology and Stratigraphy The half-frozen/half-thawed section consisted of 0 to 2 feet (0 to 0.6 m) of sand, silt or mud overlying 4 to 8 feet (1 to 2 m) of gravel on bedrock. A total of 3 feet (0.9 m) of gravel and 2 to 4 feet (0.6 to 1 m) of bedrock were sluiced.

Bedrock Geology Bedrock at this site is schist and limestone.

Gold Characteristics The gold was fine grained and bright yellow with a fineness of 820.

MOOSEHORN
PLACER AREA

SITES 113-115



LEGEND

113.....Moosehorn Exploration Ltd., Kate Creek, Roo Pup
114.....Moosehorn Exploration Ltd., Diana Creek
115.....Moosehorn Exploration Ltd., Swamp Creek

KATE CREEK, a tributary of Great Bear Creek

115N/2

2006: 63°05'37"N, 140°53'11"W
2005: 63°04'13"N, 140°53'06"W
2003: 63°04'53"N, 140°54'58"W

Moosehorn Exploration Ltd., Ian Warrick, Kate Warrick
Water licenses: PM97-002 (2007), PM99-044 (2007), PM98-018 (2008)
Active producer (2003-2006) **Operation no. 113**

Location Between 2003 and 2006, mining took place on Kate Creek and Roo Pup, as well as Swamp, Soya and Diana creeks on the other side of the Moosehorn ridge.

Work History and Mining Cuts The Warricks began working this area in 1989 and have mined nearly continuously each year since. In 2003 and 2004, a lack of precipitation caused problems, however, one cut was mined each year. Mr. Warrick worked on Soya and Swamp creeks for much of the time. In 2005, precipitation was much greater and one cut was mined with a dimension of 225 by 60 by 15 feet (70 x 20 x 5 m). In 2006, two to four miners and one camp person worked a daily 11-hour shift. Two cuts were stripped: one cut 225 by 60 by 15 feet (70 x 20 x 5 m) and one cut 225 by 60 by 3 feet (70 x 20 x 1 m). Most of this material was sluiced.

Equipment and Water Treatment From 2003 to 2006, equipment included a Caterpillar D9H bulldozer for stockpiling pay, a Caterpillar 980C loader for feeding the sluice and removing tailings, a Caterpillar D7 bulldozer for road maintenance, and a Caterpillar 225LC excavator for general support. The wash plant was a wet dump box with ¾-inch grizzly feeding into a 4-run sluice with hydraulic, angle-iron and expanded metal riffles. A Morris 10- by 12-inch Caterpillar-powered pump supplied 2000 igpm for processing 75 loose cubic yards per hour. Water was acquired from in-stream ponds and effluent was settled in-stream and 100% recycled. Clean-ups were done with a jig and gold wheel.

Surficial Geology and Stratigraphy In the seasons 2003 to 2006, the section consisted of 60 feet (20 m) of gravel with very little overburden. All of the gravel was pay and was sluiced.

Bedrock Geology Bedrock at this site is deeply weathered granodiorite.

Gold Characteristics The gold was mainly fine-grained, with rare 4-mesh-sized nuggets. Some gold was rounded, locally with quartz attached. The fineness was 820. Gold recovered from 2003 to 2006 was frothy and crystalline, with a fineness of 800.

Moosehorn Exploration mining on Kate Creek, 2005.

Moosehorn Exploration's wash plant on Kate Creek, 2005.

DIANA CREEK, a tributary of Kenyon Creek

115N/2 2006: 63°03'38"N, 140°57'01"W

Moosehorn Exploration Ltd.
Water license: PM05-469 (2010)
Exploration (2005-2006) **Operation no. 114**

Location Diana Creek is a right-limit tributary to Kenyon Creek.

Work History and Mining Cuts In 2005, Diana Creek was explored for placer potential and Swamp and Soya creeks were explored for their hard-rock potential. The total crew was three miners and one camp person working a daily 11-hour shift. In 2006, two to four miners and one camp person worked on Swamp Creek, Kate Creek and Diana Creek. Two cuts were stripped and trenched: one cut 300 by 75 by 4½ feet (100 x 20 x 2 m), and one cut 225 by 90 by 12 feet (70 x 30 x 4 m).

Equipment and Water Treatment In 2005 and 2006, Moosehorn Exploration Ltd.'s equipment consisted of Caterpillar D8 and D7 bulldozers, two Caterpillar 225LC excavators and two Caterpillar 966C loaders. Various pieces of machinery were brought to the property from the Kate Creek and Swamp Creek localities to conduct stripping and testing.

SWAMP CREEK, a tributary of Scottie Creek

115N/2

2006: 63°01'33"N, 140°58'06"W
2003: 63°01'57"N, 140°57'14"W

Moosehorn Exploration, Ian Warrick, Kate Warrick
Water license: PM98-018 (2008)
Active producer (2003-2006) **Operation no. 115**

Location The operation was located on the west side of the Moosehorn Range. Moosehorn Exploration mined Swamp, Soya and Diana creeks under this license.

Work History and Mining Cuts The Warricks began mining here in 1998. In 2003 and 2004, the crew consisted of two miners and one camp person working a daily 11-hour shift. One cut was made on the left limit of Soya Creek and one cut was made on the left limit of Swamp Creek. A lack of water for these two years, less than 6 inches (15 cm) of precipitation each year including snow melt, caused the creeks to dry up. Exploration was conducted when mining was not taking place. In 2005, Diana Creek (an unnamed right-limit tributary of Kenyon Creek) was explored for placer potential and Swamp and Soya creeks were explored for their hard-rock potential. The total crew was three miners and one camp person working a daily 11-hour shift. In 2006, two to four miners and one camp person worked both on this property and on Kate Creek. Two cuts were stripped: one 300 by 90 by 3 feet (100 x 30 x 1 m) on Swamp Creek, and one 300 by 45 by 15 feet (100 x 15 x 5 m) at the confluence of Swamp and Soya creeks. No sluicing took place.

Equipment and Water Treatment From 2003 to 2006, equipment consisted of Caterpillar D8 and D7 bulldozers, two Caterpillar 225LC excavators, and two Caterpillar 966C loaders. The Caterpillar D8 and D7 bulldozers were used for stripping and mining, while the two Caterpillar 225LC excavators were used for trenching and test pits, and the two Caterpillar 966C loaders were used for feeding the sluice and tailings removal. A scraper was used for hauling test pit samples. The wash plant consisted of a wet dump box, ¾-inch grizzly and sluice run with hydraulic riffles, hydraulic angle iron riffles and expanded metal. The Monarch 6- by 6-inch pump powered by Isuzu supplied the 1000 igpm needed to process 45 loose cubic yards per hour. Water was acquired through an in-stream reservoir and effluent was 100% recycled. Clean-ups were done with a jig and wheel.

Surficial Geology and Stratigraphy In 2003 and 2004, from 6 to 30 feet (2 to 10 m) of frozen black muck was overlying up to 20 feet (6 m) of gravel on bedrock. From 1 to 20 feet (0.3 to 6 m) of gravel was sluiced along with 1 foot (0.3 m) of bedrock.

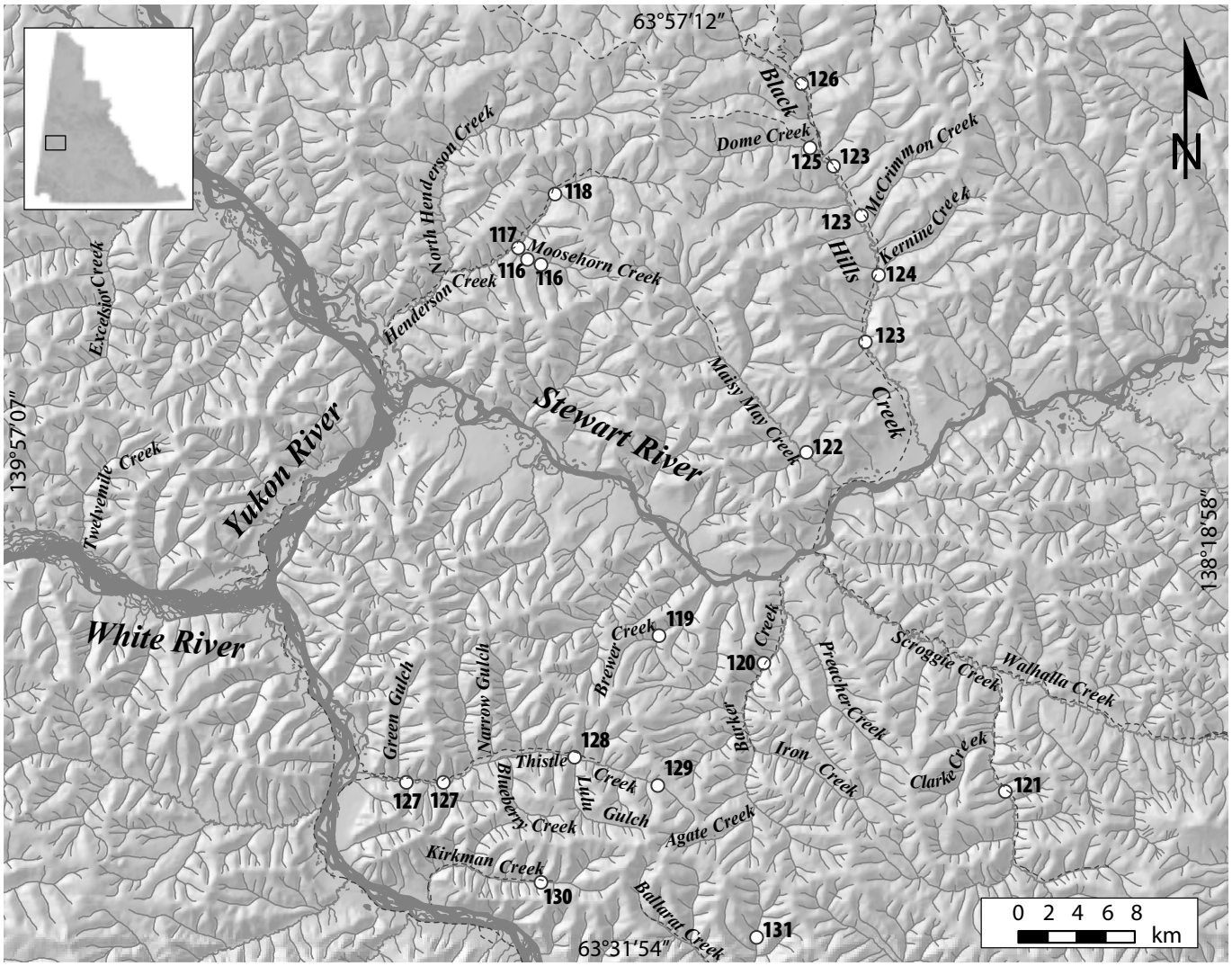
Bedrock Geology The bedrock at this site is decomposed *in-situ* intrusive rock.

Gold Characteristics Gold was frothy and crystalline, with a fineness of 800.

Kate and Ian Warrick's operation on Swamp Creek, 2003.

SOUTH KLONDIKE
PLACER AREA

SITES 116-131



LEGEND

116.....H.C. Mining Ltd. - Moosehorn Creek
117.....H.C. Mining Ltd. - Henderson Creek
118.....Shellbrite Placers Ltd.
119.....KTX Mining Co. Ltd.
120.....Midas Rex Mining Inc.
121.....Bidrman
122.....35249 Yukon Inc. (Goodwill)
123.....Coulee Resources Ltd.
124.....Laurenson
125.....Armstrong
126.....Paydirt Holdings Ltd.
127.....Midas Rex Mining Inc.
128.....Sager
129.....Fell Hawk Placers - Thistle Creek
130.....Fell Hawk Placers - Kirkman Creek
131.....Fell Hawk Placers - Ballarat Creek

MOOSEHORN CREEK, a tributary of Henderson Creek

1150/6 2006: 63°22'45"N, 139°12'41"W
2005: 63°22'57"N, 139°13'49"W

H.C. Mining Ltd., Hayden Cowan
Water license: PM03-310 (2013)
Active producer (2005-2006) **Operation no. 116**

Location The operation was located on Moosehorn Creek, a left-limit tributary of Henderson Creek.

Work History and Mining Cuts A crew of four to five miners and one camp person worked 12 hours per day, each in two shifts, 5 days a week. In 2006, one camp person was added. In 2005, one cut with dimensions 3000 by 100 feet (900 x 30 m) was mined, and in 2006, two cuts were mined: 500 by 80 feet (150 x 25 m) and 2100 by 100 feet (650 x 30 m).

Equipment and Water Treatment Equipment in 2005 consisted of a Caterpillar D9L bulldozer, a Komatsu D155A bulldozer, a Hitachi UH143 excavator and a Hitachi EX300 excavator. In 2006, a Caterpillar D9N bulldozer and Hitachi EX350 excavator were added. The wash plant included a 10- by 10-foot hopper feeding a Simplicity 5- by 14-foot double screen deck. This fed to an 11- by 7.5-foot primary sluice run and two 8- by 14-foot secondary sluice runs with angle iron riffles. Water was supplied by a 3208 Caterpillar-powered Paco 10- by 12-inch pump rated at 2000 igpm, enough to process between 120 and 220 loose cubic yards of pay material through the wash plant. In 2006, the Paco pump was replaced by a Detroit 60 series-powered Pioneer 8- by 10-inch pump rated at 2500 igpm. Tailings were stacked with a 32-inch by 50-foot conveyor. Water was acquired from Moosehorn and Henderson creeks, settled into a 150- by 60-foot (45- x 20-m) pond and 100% recycled. Clean-ups were done using a long tom and a gold wheel.

Surficial Geology and Stratigraphy The section encountered in 2005 and 2006 consisted of 8 to 12 feet (2 to 3 m) of muck overlying 3 feet (0.9 m) of gravel. All of the gravel and 2 feet (0.6 m) of bedrock were sluiced.

Bedrock Geology Bedrock at this site is biotite gneiss.

Gold Characteristics Gold was a mixture of fine and coarse grain sizes and purity ranged from 790 to 820.

HENDERSON CREEK, a tributary of Stewart River

1150/6 2006: 63°23'21"N, 139°14'29"W

H.C. Mining Ltd., Hayden Cowan
Water license: PM03-310 (2013)
Active producer (2004-2006) **Operation no. 117**

Location The operation was located on Henderson Creek upstream of Moosehorn Creek.

Work History and Mining Cuts Between four and five miners and one camp person worked a daily 12-hour shift, five days a week. Two cuts were processed in 2004: one 1500 by 120 feet (500 x 35 m) and one 1200 by 80 feet (260 x 25 m). In 2006, four to five miners and two camp personnel worked 12 hours each in two daily shifts, five days a week.

A cut 1700 by 80 feet (520 x 25 m) was processed on Henderson Creek.

Equipment and Water Treatment Equipment in 2004 consisted of a Caterpillar D9L bulldozer, a Komatsu D155A bulldozer, a Hitachi UH143 excavator and a Hitachi EX300 excavator. In 2006, a Caterpillar D9N bulldozer and Hitachi EX350 excavator were added. The wash plant in 2004 consisted of a land-based New Zealand trommel with a 5-foot-diameter barrel. Two sluice runs, each 9 feet wide and 6 feet long, were lined with hydraulic riffles. Tailings were stacked with a 36-inch by 40-foot conveyor. Between 40 and 60 loose cubic yards per hour were processed. Water was supplied by an Isuzu-powered Indeng 6- by 6-inch pump rated at 1000 igpm and settled in a 50- by 40-foot pond. In 2006, the wash plant included a 10- by 10-foot hopper which was fed between 120 and 220 loose cubic yards of pay per hour. This fed into a Simplicity 5- by 14-foot double screen deck and an 11- by 7.5-foot primary sluice run followed by two 8- by 14-foot secondary sluice runs with angle iron riffles. Water was supplied by a Detroit 60 series-powered Pioneer 8- by 10-inch pump rated at 2500 igpm. Tailings were stacked with a 32-inch by 50-foot conveyor. Water was acquired from Moosehorn and Henderson creeks, settled into a 150- by 60-foot (45- x 20-m) pond and 100% recycled. Clean-ups were done using a long tom and a gold wheel.

Surficial Geology and Stratigraphy The section in 2004 and 2006 consisted of 8 to 10 feet (2 to 3 m) of mud overlying 3 feet (1 m) of gravel. All of the gravel and 3 feet (1 m) of bedrock were sluiced.

Bedrock Geology Bedrock at this site is blocky schist.

Gold Characteristics In 2004 and 2006, the gold was fine-grained and the fineness was 700 to 750.

H.C. Mining on Moosehorn Creek, 2006

HENDERSON CREEK, a tributary of Stewart River

1150/6 2003: 63°25'19"N, 139°11'23"W

Shellbrite Placers Ltd., Dave McInroe, Hayden Cowan
Water license: PM96-043 (2005)
Active producer (2003) **Operation no. 118**

Location The mining was done on Henderson Creek mainly upstream of the left-limit tributary Moosehorn Creek.

Work History and Mining Cuts In 1996, mining at this operation began on Henderson Creek, continuing under Dave McInroe and Shellbrite Placers Ltd. until 2002. Hayden Cowan took over the entire operation in the 2003 season, and continued stripping and sluicing a section of valley below the forks along the left limit.

Equipment and Water Treatment Equipment included a Hitachi UH143 excavator and a Komatsu 155 bulldozer. The wash plant was a hopper-fed, New Zealand-style 5-foot-diameter trommel with ½-inch screen over 12- by 10-foot sluice runs lined with hydraulic riffles. Tailings were stacked with a 35-foot conveyor. Process rate was from 70 to 100 cubic yards per hour. Hayden Cowan sluiced with both in-stream and out-of-stream settling in 2003; the creek was used as a conduit to the final in-stream settling pond.

Surficial Geology and Stratigraphy The cuts had an average of 2 feet (0.6 m) of moss and black muck overlying 3 feet (0.9 m) of silt and 4 feet (1 m) of mixed gravel. The lower 2 feet (0.6 m) of gravel and a small amount of the bedrock were sluiced.

Bedrock Geology Bedrock at this site is flat and slabby schist.

Gold Characteristics The gold was reported as primarily fine with a few small nuggets, and the purity ranged from 730 to 800 fine. It was brightly coloured, round and smooth.

Shellbrite Placers sluicing pay gravel on Henderson Creek, 2003.

BREWER CREEK, a tributary of Stewart River

1150/3 2003: 63°09'00"N, 139°03'52"W

KTX Mining Co. Ltd., Bernie Kreft, Erwin Kreft
Water licenses: PM97-053 (2004)
Exploration (2003) **Operation no. 119**

Location The property was located on the left limit of Brewer Creek, just downstream of the main forks.

Work History and Mining Cuts Bernie and Erwin Kreft first worked this creek in 1994. In 2003, some stripping was conducted on the left limit approximately 1.2 miles (2 km) downstream of camp.

Bedrock Geology Bedrock is mapped as Devonian Nasina assemblage graphitic quartzite.

BARKER CREEK, a tributary of Stewart River

1150/2 2006: 63°07'53"N, 138°55'35"W

Stuart Schmidt
Water license: PM02-293 (2008)
Exploration (2004-2006) **Operation no. 120**

Location The operation was located on Barker Creek on the left-limit bench downstream of Dixie Gulch.

Work History and Mining Cuts Equipment was mobilized for one month each season by barge from Midas Rex Mining Ltd. operations on Thistle Creek. The total area stripped between 2004 and 2006 was 5000 by 200 by 6 feet (1500 x 60 by 2 m).

Equipment and Water Treatment A Caterpillar D10N was used to strip ground which was left to thaw each season. A Nodwell 6-inch auger was used to drill test samples and to determine the depth to bedrock.

Surficial Geology and Stratigraphy The section consisted of 4 to 6 feet (1 to 2 m) of black muck overlying 6 to 8 feet (2 to 2.4 m) of angular coarse gravel.

Bedrock Geology Bedrock at this site was described as rocky and blocky schist.

Gold Characteristics The gold was coarse, bright yellow and had a purity of 860.

SCROGGIE CREEK, a tributary of Stewart River

115J/15, 1150/2 2005: 63°02'51"N, 138°36'18"W

Zdenek Bidrman
Water license: PM04-360 (2015)
Active producer (2003-2006) **Operation no. 121**

Location In 2005 and 2006, the operation was 3.2 miles (5 km) downstream of the confluence of Scroggie and Mariposa creeks.

Work History and Mining Cuts Zdenek Bidrman has been mining on Scroggie Creek since 1989. Between 2003 and 2005, three miners working a daily 12-hour shift mined 3 cuts every season, each cut averaging 500 by 330 feet (150 x 100 m). In 2006, the crew was increased to four miners and one camp person working 12 hours each daily. One cut measuring 1000 by 300 feet (300 x 100 m) was processed.

Equipment and Water Treatment Between 2003 and 2006, equipment included a Komatsu 375 bulldozer for stripping and two Komatsu WA500 loaders for feeding the plant and removing tailings. An Allis Chambers 10- by 10-inch pump powered by an 80 HP electric motor supplied 2500 igpm to the wash plant, enough to process 150 loose cubic yards per hour.

The wash plant consisted of a 5-cubic-yard capacity 22-foot-long by 4-foot-wide Vibrating Grizzly Feeder (VGF) over a screen deck which classified to ¾-inch, and 24 feet of sluice runs lined with angle iron, hydraulic riffles and Nomad matting. Water was acquired from Scroggie Creek and settled out-of-stream into two ponds, one 500 by 300 feet (150 x 100 m) and one 200 by 200 feet (60 x 60 m). Clean-ups were done by jig and hand-panning.

Surficial Geology and Stratigraphy Between 2003 and 2006, the stratigraphic section was frozen and consisted of 2 to 8 feet

Sluicing pay gravel at Zdenek Bidrman's operation on Scroggie Creek, 2004.

Aerial view of Bidrman's operation on Scroggie Creek, 2005.

(0.6 to 2 m) of black muck and 4 feet (1 m) of pebbly gravel. A total of 1 foot (0.3 m) of gravel and 3 to 6 feet (1 to 2 m) of bedrock were sluiced.

Bedrock Geology Underlying the creek is a Jurassic syenite which contains abundant garnet in places.

Gold Characteristics Between 2003 and 2006, the gold was rich yellow in colour, 90% coarse grained and 10% fine grained. The fineness was 900.

MAISY MAY CREEK, a tributary of Stewart River

1150/7 2003: 63°15'33"N, 138°51'31"W

35249 Yukon Inc., Clifford Goodwill Sr.
Water license: PM99-151 (2010)
Active producer (2003) **Operation no. 122**

Location The operation was located on Maisy May Creek, approximately 3.5 miles (5 km) upstream from its confluence with the Stewart River.

Work History and Mining Cuts Exploration of this property began in 2001 and some sluicing was done in 2002. Sluicing continued in the 2003 season near the top of the ground that was opened by Goodwill in 2001 and 2002.

Equipment and Water Treatment Two Caterpillar D9N bulldozers equipped with rippers and U-blades were used to strip overburden. A Hitachi EX200 excavator was used to dig pay and feed the wash plant. A Caterpillar 966 loader was used to remove tailings. A large steel hopper fed into a 3-foot-wide by 8-foot-long screen deck which classified the pay gravel

35249 Yukon Inc.'s operation on Maisy May Creek, 2003.

down to minus 2 inch. The classified gravel was directed into a 3½-foot-diameter by 20-foot-long trommel with reverse spirals and sluice runs 1½ feet wide by 12 feet long. A 6-inch water pump powered by a 5.9-litre Cummings engine supplied water to process approximately 60 cubic yards per hour. Water was pumped from Maisy May Creek and the effluent was settled in an out-of-stream settling pond.

Surficial Geology and Stratigraphy An average of 6 feet (2 m) of frozen black muck overburden was stripped off 12 feet (4 m) of gravel. The bottom 2 feet (0.6 m) of gravel and about 1 foot (0.3 m) of bedrock were sluiced.

Bedrock Geology Bedrock was mapped as shale.

Gold Characteristics The gold was reported to be flat, smooth and bright.

BLACK HILLS CREEK, a tributary of Stewart River

1150/7

2005: 63°19'32"N, 138°46'20"W
2004: 63°26'02"N, 138°48'27"W
2003: 63°24'10"N, 138°46'20"W

Coulee Resources Ltd., Joel White
Water license: PM99-043 (2010)
Active producer (2003-2005) **Operation no. 123**

Location From 2003 to 2005, Coulee Resources Ltd. worked upstream on the left-limit bench and in the valley, and downstream on the bench on the right limit.

Work History and Mining Cuts Mining at this operation began on Black Hills Creek in 1995, and continued until 2002, when they moved to Sulphur Creek. In 2003, the operation returned with 12 miners working until July, and afterward 10 miners worked a double shift. One cut was mined on the bench and one cut was mined in the valley. The bench cut was 1000 by 60 feet (300 x 20 m) and the valley cut was 2700 by 350 feet (800 x 105 m). In 2004, the crew dropped to 4 miners and one cook working a 12-hour shift. A valley cut 800 by 60 feet (250 x 20 m) and a bench cut of 100 by

100 feet (30 x 30 m) were mined. In 2005, the same crew mined a valley cut of 900 by 120 feet (300 x 35 m).

Equipment and Water Treatment From 2003 to 2005, equipment included a Komatsu 455 bulldozer, two Caterpillar bulldozers (D8L and D9H), two Komatsu excavators (PC1000 and PC400), two Caterpillar loaders (980 and 980C), a Caterpillar 992 DLC excavator, and two Caterpillar 740 articulated rock trucks. A Byron Jackson 14- by 12-inch 397 Caterpillar-powered pump supplied 5000 igpm to the wash plant, which consisted of a 6- by 20-foot Clemro deck screening to ¾-inch minus and feeding six 5- by 20-foot oscillating runs with #8 expanded metal. Approximately 300 loose cubic yards per hour were processed. Water was supplied direct from Black Hills Creek and settled into a 3000- by 200-foot (1000- x 60-m) pond.

Surficial Geology and Stratigraphy In 2003 and 2004, the section in the lower valley consisted of 8 feet (2.4 m) of muck overlying 7 feet (2.1 m) of gravel. The bench mined in 2004 consisted of 6 feet (1.8 m) of muck overlying 19 feet (6 m) of gravel with large boulders, while the upper valley cut mined in 2005 consisted of 8 feet (2.4 m) of muck and 7 feet (2.1 m) of gravel. In the valley, most of the gravel was sluiced, while on the bench, only the bottom 10 feet of gravel was sluiced.

Bedrock Geology The bedrock at this site consists of muscovite schist and quartzite.

Gold Characteristics Between 2003 and 2005, the gold was generally coarse with round, smooth nuggets and a fineness of 790.

BLACK HILLS CREEK, a tributary of Stewart River

1150/7 2003: 63°22'00"N, 138°45'04"W

Dave Laurenson, Sarah Laurenson

Water license: PM99-043 (2010, Licensee: Coulee Resources Ltd.)

Active producer (2003) **Operation no. 124**

Location The operation was located on Black Hills Creek and used Coulee Resources Ltd.'s water license.

Work History and Mining Cuts Dave and Sarah Laurenson moved to this location from Childs Gulch. In 2003, they worked a daily 12-hour shift and processed a cut 500 by 200 feet (150 x 60 m).

Equipment and Water Treatment Equipment consisted of a Caterpillar D8H bulldozer equipped with a ripper and U-blade for stripping, preparing pay gravel, clearing tailings and reclamation. A Terex 72-51 loader fed the sluice plant and did miscellaneous jobs. The wash plant included a 10-yard

Coulee Resources Ltd.'s operation on lower Black Hills Creek, view to the south, 2003.

hopper which fed into a 4-foot-wide by 14-foot-long double screen deck. The classified gravel was then washed through sluice runs totalling 7 by 21 feet, which were lined with a combination of angle iron riffles, expanded metal and Nomad matting. Tailings were stacked with a 40-foot conveyor. Water from Black Hills Creek was supplied by an English 6-cylinder diesel-powered Ford 5- by 4-inch pump rated at 1200 igpm, enough to process 100 loose cubic yards per hour. Effluent was settled out-of-stream in a 100- by 150-foot (30- x 45-m) pond. Clean-ups were done with a long tom.

Surficial Geology and Stratigraphy The section consisted of 20 feet (6 m) of black muck overlying 10 feet (3 m) of gravel on bedrock. Three feet (0.9 m) of gravel and 3 feet (0.9 m) of bedrock were sluiced.

Gold Characteristics Gold was described as fine-grained with a purity of 780.

Washing pay at Paydirt Holdings on Black Hills Creek, 2004.

DOME CREEK, a tributary of Black Hills Creek

1150/7 2003: 63°26'44"N, 138°50'19"W

William F. Armstrong
Water license: PM00-184 (2005)
Exploration (2003) **Operation no. 125**

Location This small-scale exploratory operation was located on Dome Creek, a tributary to Black Hills Creek.

Work History and Mining Cuts William Armstrong started operations on Dome Creek in 2002 and some small-scale testing occurred the following year.

Bedrock Geology Metamorphic and volcanic rocks dominate the drainage. Biotite-quartz schist, biotite-feldspar schist, as well as micaceous quartzite are common.

BLACK HILLS CREEK, a tributary of Stewart River

1150/10, 1150/7 2006: 63°29'05"N, 138°50'47"W

Paydirt Holdings Ltd., Tim Nixdorf, Carl Jonas
Water licenses: PM04-445 (2015), PM99-118 (2004)
Active producer (2003-2006) **Operation no. 126**

Location The operation continued working upstream on Black Hills Creek. In 2006, the operation was on a left-limit bench upstream of camp.

Work History and Mining Cuts Paydirt Holdings Ltd. has been working on Black Hills Creek and its tributaries since 1983. In 2003, the operation stripped and sluiced at the mouth of Dome Creek. In 2004, pay gravel was sluiced at a cut near the downstream extent of the property. In 2005, an area was worked upstream from the 2004 mine pit. Side cuts were prepared downstream from the main camp and sluicing and stripping took place near the camp location.

In 2006, operations continued with sluicing and stockpiling of pay gravel.

Equipment and Water Treatment From 2003 to 2006, three Caterpillar D9H Caterpillar bulldozers were used for stripping the cuts and stockpiling the pay gravel. A Caterpillar 235 excavator fed the sluice plant, and a Caterpillar 980C loader removed tailings. A 6- by 8-foot dump box fed into a 10-foot-long Derocker over a 40-foot-long sluice run lined with expanded metal riffles and Nomad matting. A Cornell 10-inch water pump, powered by a Caterpillar 3208 diesel engine, supplied about 2500 igpm of water which was used to process about 100 cubic yards per hour. Clean-ups were done using a jig, gold wheel and by hand-panning. Water was acquired from an in-stream reservoir and effluent was settled in three out-of-stream ponds built from mined-out cuts.

Surficial Geology and Stratigraphy In 2006, the left-limit bench consisted of 3 feet (0.9 m) of pebble cobble pay gravel overlain by 3 feet (0.9 m) of fine sand, overlain by 3 feet (0.9 m) of sandy colluvium. The bedrock contact was very undulating and all of the gravel was sluiced, along with 2 feet (0.6 m) of bedrock.

Bedrock Geology The bedrock in 2006 at this site was muscovite schist.

Gold Characteristics The gold in 2006 was flat to chunky and orange-yellow in colour. Quartz was attached to some grains.

Aerial view of Paydirt Holdings left-limit bench cut on Black Hills Creek, 2006; view to the east.

THISTLE CREEK, a tributary of Yukon River

1150/3

2005: 63°03'51"N, 139°24'47"W
2003: 63°03'51"N, 139°21'47"W

Midas Rex Mining Inc., Stuart Schmidt
Water licenses: PM02-292 (2007), PM97-070 (2007)
Active producer (2003-2006) **Operation no. 127**

Location Stuart Schmidt has been mining on Thistle Creek since 1993. In 2003, Schmidt's operation concentrated on mining the main valley bottom and hydraulic stripping Edas Bench. Both upper valley and lower valley cuts were mined in 2004, 2005 and 2006.

Work History and Mining Cuts Between 2003 and 2006, the operation employed eight miners and one camp person, working two 12-hour shifts.

An estimated 25 to 35 cuts were mined each year from 2003 to 2005 for an annual total of 1,500,000 bedrock square feet (140 000 m^2) or 450,000 cubic yards (345 000 m^3) at 8 feet (2 m) thickness. In 2006, the total was slightly lower and 400,000 cubic yards (300 000 m^3) were mined.

Equipment and Water Treatment Between 2003 and 2006, two Caterpillar D10N bulldozers with U-blades and rippers were used for stripping, pushing pay to the sluice plant and stacking tailings. A Hitachi EX700 excavator with a 3.5 cubic yards digging bucket was used to feed the sluice plant and dig drains. The wash plant was a 6- by 20-foot El Russ screen deck with 'Z' style riffles and expanded metal runs with a total width of 22 feet. The screen deck was powered by a small diesel motor. Water was supplied from Thistle Creek via a trenched opening to a pump pond, and pumped by a Goulds Model JC 10- by 12-inch pump with a throughput of 2500 igpm and powered by a Caterpillar 3408 diesel engine. The plant processed 250 loose cubic yards per hour. Effluent was treated in a 250- by 180-foot (75- x 55-m) out-of-stream pond which was recycled up to 100% at times. In 2003, the ponds were 30% recycled due to low water from August to October, while in 2004 the rate was 70% due to low water from June to September. In 2005, recycling wasn't necessary because of an abundance of water the whole season. In 2006, water was 50% recycled. Clean-ups were done daily with a long tom to upgrade the sluice concentrates, followed by a gold wheel and Deister table.

Surficial Geology and Stratigraphy An intermediate-level gravel terrace is located on the left limit of Thistle Creek. The terrace is approximately 30 feet (10 m) above the present creek level and is incised into muscovite schist and graphitic quartzite. It is capped by 15 feet (5 m) of sandy, pebble-cobble gravel and 10 to 13 feet (3 to 4 m) of muck. Between 2003 and 2006, the upper valley sections consisted of 0 to 2 feet (0 to 0.6 m) of frozen mud overlying 8 to 10 feet (2 to 3 m) of gravel. Bench sections had 25 to 60 feet (8 to 20 m) of frozen mud overlying 10 to 12 feet (3 to 4 m) of gravel, and lower valley sections had 4 to 6 feet (1 to 2 m) of frozen mud overlying 18 to 25 feet (5 to 8 m) of gravel. From 2 to 4 feet (0.6 to 1 m) of gravel and up to 6 feet (2 m) of bedrock were sluiced.

Gold Characteristics In 2005 and 2006, gold was described as variable in character up to coarse jewelry-size grade in areas. The fineness varied from 800 to 860.

THISTLE CREEK, a tributary of Yukon River

1150/3 2004: 63°04'38"N, 139°11'03"W

Merrit Sager

Water licenses: PM99-002 (2008), PM99-016 (2009)

Active producer (2003-2006) **Operation no. 128**

Location The operation was located on the right limit of Thistle Creek at the confluence with Lulu Gulch. In 2006, sluicing took place on Lulu Gulch.

Work History and Mining Cuts Mr. Sager worked ground on Thistle Creek in the 2000, 2001 and 2004 seasons. There was no activity in the 2002, 2003 or 2005 seasons. Previous mining on some claims has left much thawed ground available for mining. Some sluicing was done in the 2006 season.

Equipment and Water Treatment Two Caterpillar bulldozers and an excavator were used to strip ground and feed the wash plant, which consisted of a screen deck attached to a hopper with a single sluice run. Water was acquired by pump with the intake in an in-stream reservoir. A Caterpillar diesel engine powered the pump at a rate of 1500 igpm. Settling was out-of-stream with no discharge to Thistle Creek.

Midas Rex Mining Inc. on Thistle Creek, 2005.

Merritt Sager's operation on Lulu Gulch near the confluence with Thistle Creek, 2004.

Surficial Geology and Stratigraphy Approximately 6 to 8 feet (2 to 3 m) of boulder-rich, sandy, coarse-cobble gravel was overlain by 2 to 6 feet (0.6 to 2 m) of black muck.

Bedrock Geology Bedrock at this site consists of blocky gneiss.

Gold Characteristics Gold was reported as generally bright and shiny with no quartz.

THISTLE CREEK, a tributary of Yukon River

1150/3 2003: 63°03'30"N, 139°04'23"W

Fell Hawk Placers, Joe Fellers, Wendy Fellers
Water license: PM00-170 (2005)
Active producer (2003-2004) **Operation no. 129**

Location This operation was located on Thistle Creek, a tributary of the Yukon River. In 2003, the operation was 10 miles (16 km) upstream from the confluence of Thistle Creek and the Yukon River.

Work History and Mining Cuts Joe and Wendy Fellers moved from Kirkman Creek during the 1999 season, and mined here until 2004. The upper reaches of Thistle Creek were worked in the early part of 2003 by three miners supported by two camp personnel, all working a daily 10-hour shift. Four cuts covering a length of 1500 feet (450 m) and width of 70 feet (20 m) were completed. Late in the 2003 season, the operation was shut down and moved to Kirkman Creek. Reclamation was conducted in 2004.

Equipment and Water Treatment In 2003, Caterpillar D9L and D8L bulldozers were used to strip and push in the cut and two Caterpillar 235 excavators were used to stack overburden and feed the wash plant. The wash plant was a screen deck which processed 120 loose cubic yards per hour. Water was supplied from Thistle Creek by a 3208 diesel-powered 8- by 10-inch pump rated at 2000 igpm. Effluent was 100% recycled from 3 out-of-stream settling ponds, each approximately 300 feet (100 m) long and 100 feet (30 m) wide. Clean-ups were done every two days.

Surficial Geology and Stratigraphy The downstream ground was composed of 2 to 6 feet (0.6 to 2 m) of frozen black muck, overlying 7 to 8 feet (2.1 to 2.4 m) of 'average' sized gravel deposits, while the upstream gravel layer was from 5 to 9 feet (1.5 to 3 m) in depth. Two feet (0.6 m) of the gravel and 4 feet (1 m) of the decomposed bedrock were sluiced. In 2003, the section consisted of 15 feet (5 m) of mud overlying 18 feet (6 m) of gravel. From 2 to 3 feet (0.6 to 0.9 m) of gravel and 2 to 3 feet (0.6 to 0.9 m) of bedrock were sluiced.

Bedrock Geology Bedrock at this site is mostly blocky schist which contains some quartz veins.

Gold Characteristics The pay gravel yielded beautiful, bright gold, with smooth, rounded edges. There were a number of nuggets with no quartz. Mesh sizes on the gold recovered from upper Thistle Creek were 18% at plus four, 10% at plus six, 27% at plus ten, 25% at plus sixteen and 20% at minus sixteen. The lower valley produced 16% at plus four, 13% at plus six, 31% at plus ten, 18% at plus sixteen and 22% at minus 16. Fineness ranged between 850 and 870.

KIRKMAN CREEK, a tributary of Yukon River

1150/3 2005: 63°00'04"N, 139°14'05"W

Fell Hawk Placers, Joe Fellers, Wendy Fellers
Water licenses: PM05-488 (2009), PM99-134 (2009)
Active producer (2003-2006) **Operation no. 130**

Location This operation was located on Kirkman Creek approximately 6 miles (10 km) from the confluence with Yukon River. In the fall of the 2006 season, the operation was moved downstream of camp.

Work History and Mining Cuts Fell Hawk Placers mined here from 1990 to 1992, and again from 1998 to 1999. The intervening years they mined on Thistle and Ballarat creeks. In 2003, the beginning of the season was spent closing down the operation on Thistle Creek and moving back to Kirkman Creek. A crew of two miners worked a 10-hour shift to mine three cuts, each with approximate dimensions of 300 by 120 feet (100 x 35 m). From 2004 to 2006, a crew of three miners and two camp personnel worked a daily 11-hour shift. Five mining cuts were completed each year; in 2004, these were approximately 300 feet (100 m) long by 100 feet (30 m) wide and 25 feet (8 m) to 40 feet (10 m) deep, while in 2005 and 2006 the cuts were each 300 by 100 by 20 feet (100 x 30 x 6 m) deep.

Fell-Hawk Placers mining operations at Kirkman Creek, 2005.

Equipment and Water Treatment In 2003, equipment at the start of the season consisted of a Caterpillar D8L bulldozer and a Caterpillar 235 excavator, which were used to mine the first two cuts. The wash plant was a Derocker, and water, supplied via an intake ditch from Kirkman Creek and ground seepage was pumped by a 3208, 8- by 10-inch diesel-powered pump rated at 2000 igpm. Effluent was settled in two to four out-of-stream ponds and not recycled. In September, the remaining equipment was brought over from Thistle Creek, including a Caterpillar D9L bulldozer, a Caterpillar 966 loader, an additional Caterpillar 235 excavator, a screening plant and various other pieces.

From 2004 to 2006, equipment included Caterpillar D7, D8, D8L and D9L bulldozers, two Caterpillar 235 excavators, a Caterpillar 966 loader, and a grader. The Caterpillar D8L and D9L were used for stripping and pushing in the mining cut and the Caterpillar 235 excavators were used for stacking overburden on the hillsides and feeding the wash plant. A Caterpillar D300E rock truck was added in 2005, which saved fuel by cutting bulldozer pushing time. The wash plant consisted of 10- by 20-foot Derocker and a 5- by 16-foot single screen deck fed at 100 loose cubic yards per hour in 2004, 120 loose cubic yards per hour in 2005, and 180 loose cubic yards per hour in 2006. Tailings were stacked by a 30-foot conveyor. Water was supplied from Kirkman Creek plus mine cut seepage and pumped by a 3208 diesel-powered 8- by 10-inch pump at 2000 igpm. Effluent was settled into two to five out-of-stream ponds averaging 300 feet (100 m) long and 120 feet (40 m) wide — 80% recycled in 2004 and 2006 but not in 2005. Clean-ups were done every second day or 30 hours, with the sluice box concentrates run through a Spriggs four-cell jig, mini-trommel and two centrifugal wheels. Final concentrates were then screened, magnetized and hand picked clean.

Surficial Geology and Stratigraphy In 2003, the section consisted of 10 feet (3 m) of mud overlying 20 feet (6 m) of gravel. Two feet (0.6 m) of gravel and 4 feet (2 m) of bedrock were sluiced. In 2004, the section varied from 4 to 10 feet (2 to 3 m) of mud overlying 20 to 30 feet (6 to 10 m) of gravel, to 15 feet (5 m) of mud overlying 8 feet (3 m) of gravel. A total of 2 to 3 feet (0.6 to 0.9 m) of gravel and 2 to 4 feet (0.6 to 2 m) of bedrock were sluiced. Many very large ('fridge-sized') boulders were encountered in some areas, and seepage water was abundant in some mine cuts. In 2005, the section consisted of 15 feet (5 m) of mud overlying 20 feet (6 m) of gravel. Two feet (0.6 m) of gravel and 4 feet (2 m) of bedrock were sluiced. A well hole had 7 feet (3 m) of mud and 22 feet (7 m) of gravel. A layer of 'false' bedrock was encountered in some areas. In 2006, the section was partly thawed and partly frozen. A total of 12 to 30 feet (4 to 10 m) of gravel was overlying 15 feet (5 m) of muck. A total of 2 feet (0.6 m) of gravel and 4 to 6 feet (1 to 2 m) of bedrock were sluiced.

Bedrock Geology The outcrops along Kirkman Creek include mainly mica schist intruded by granitic and related pegmatitic rocks.

Gold Characteristics From 2003 to 2006, the gold was described as mostly coarse, rough and with a fair amount of quartz. The fineness was 863 to 870.

BALLARAT CREEK, a tributary of Yukon River

115J/14, 115J/15 2004: 62°57'49"N, 138°56'37"W

Fell Hawk Placers, Joe Fellers, Wendy Fellers
Water licenses: PM03-340 (APO03340 2014)
Active producer (2004) **Operation no. 131**

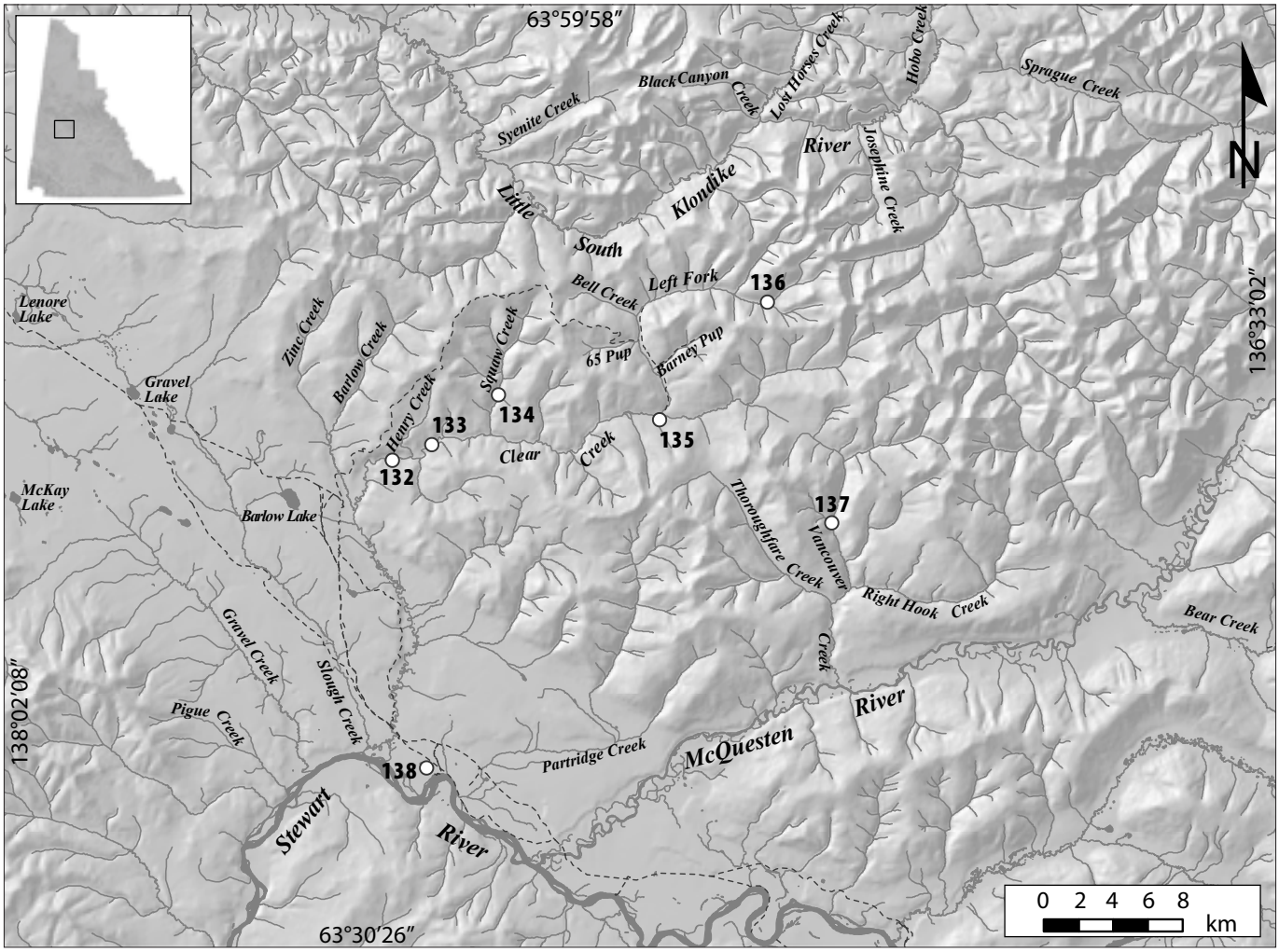
Location The operation was located on Ballarat Creek, a left-limit tributary of the Yukon River.

Work History and Mining Cuts Joe and Wendy Fellers first worked on Ballarat Creek in 1991 and mined until 1998, when they began to concentrate their activity on Kirkman and Thistle creeks. In 2004, a small stripping operation was initiated on Ballarat Creek. Equipment was moved between Ballarat and Kirkman creeks.

Bedrock Geology Steeply dipping schist and gneiss of the Lower Paleozoic Pelly Gneiss Group underlie Ballarat Creek.

SOUTH McQUESTEN
PLACER AREA

SITES 132-138



LEGEND

132.....Wasylenko
133.....Kosuta
134.....Scott
135.....S&S Gold Mines Ltd.
136.....Blackstone Placer Mining Ltd.
137.....Pratt
138.....Stirling

CLEAR CREEK, a tributary of Stewart River

115P/13 2006: 63°46'03"N, 137°35'29"W

William S. Wasylenko
Water license: PM02-302 (2013)
Active producer (2003-2006) **Operation no. 132**

Location The property was located in the valley bottom, on both the left and right limits of Clear Creek upstream from its confluence with Barlow Creek.

Work History and Mining Cuts Bill Wasylenko began mining in this area in 1993. During 2003, Wasylenko and one other miner continued moving upstream, and a cut 125 by 300 feet (40 x 100 m) was processed. From 2004 to 2006, the operator continued to strip along the left limit of Clear Creek.

Equipment and Water Treatment Equipment included a Caterpillar D8 bulldozer, John Deere 690 excavator and a 2-run sluice box with hopper. A sump pump was employed to assist in drainage.

Surficial Geology and Stratigraphy The sluice section averaged 6 feet (2 m) gravel and 2 feet (0.6 m) of bedrock.

Bedrock Geology Bedrock at this site is mostly decomposed schist with patches of yellow clay.

Gold Characteristics Gold recovered was fine-grained.

William Wasylenko's operation on Clear Creek, 2004.

CLEAR CREEK, a tributary of Stewart River

115P/13 2006: 63°46'29"N, 137°32'36"W

David Kosuta
Water licenses: PM05-467 (2015), PM95-068 (2005)
Exploration (2003, 2006) **Operation no. 133**

Location This operation was located on the main branch of Clear Creek, about 3 miles (5 km) below Squaw Creek.

Work History and Mining Cuts Mr. Kosuta began working on Clear Creek in 1995 and continued in 1996. No further activity occurred until 2003 when a small amount of stripping was done for assessment purposes only. In 2006, an area upstream of camp was stripped.

Equipment and Water Treatment One Caterpillar D5 bulldozer was used for stripping and pushing gravel; one Caterpillar 920 front-end loader was used to feed the wash plant and to remove stack tailings. An 8- by 14-foot dump box fed double sluice runs lined with expanded metal riffles over Nomad matting. Approximately 30 cubic yards per hour were processed. Water was pumped from Clear Creek and was settled in out-of-stream ponds.

Surficial Geology and Stratigraphy From 4 to 8 feet (1 to 2 m) of frozen black muck lay on top of gravel up to 8 feet (2 m) deep with mixed sand, gravel and boulders up to 4 feet (1 m) in diameter. All gravel plus about 1 foot (0.3 m) of bedrock were sluiced.

Bedrock Geology Predominant bedrock in the upper reaches of Clear Creek includes calcareous phyllite and schist.

Gold Characteristics Flat, fine gold was recovered with a fineness of approximately 855.

SQUAW CREEK, a tributary of Clear Creek

115P/14 2006: 63°47'56"N, 137°27'41"W
2005: 63°48'33"N, 137°27'22"W

John Scott, Joyce Scott, Gordon Scott
Water license: PM99-112 (2009)
Active producer (2003-2006) **Operation no. 134**

Location The operation was located on Squaw Creek, a right-limit tributary to Clear Creek.

Work History and Mining Cuts In 1998, John and Joyce Scott moved to this location from 65 Pup. Their son, Gordon Scott, joined the operation in 2002. From 2003 to 2005, Mr. Scott and son Gordon continued mining one cut approximately 150 feet wide and 500 feet long (45 x 150 m). John and Joyce Scott sluiced at the same location during the beginning of the 2006 season, but moved downstream later in the summer.

The Scott family operation on Squaw Creek, 2005.

Equipment and Water Treatment Equipment from 2003 to 2006 included a Caterpillar 225 excavator for feeding pay, a Caterpillar D9G for stripping and overburden removal, a Kobelco 907 excavator for removing tailings and a John Deere 690 excavator as a backup machine. The wash plant consisted of a 7- by 50-foot hydraulic-driven trommel powered by a 4-cylinder Deutz diesel and fed by a 5- by 7-foot dump box. The two sluice runs (6 by 2 feet, and 12 by 4 feet) had hydraulic riffles. Water was supplied by a Gorman Rupp 6- by 6-inch pump powered by a Ford 300 diesel engine, and pumped from a small out-of-stream pond. Sixty to 80 loose cubic yards per hour were processed, and clean-ups were done with a home-made hydraulic system.

Surficial Geology and Stratigraphy In 2003, 6 to 8 feet (2 to 2.5 m) of gravel was sluiced. The valley appeared to overlay a much older, wider riverbed where gold was located trapped in old sandbars. Black muck ranged from 6 to 8 feet (2 to 2.5 m) in thickness and was frozen solid. In 2004 and 2005, the section consisted of 2 feet (0.6 m) of moss and mud overlying 6 to 8 feet (2 to 2.5 m) of washed gravel. A total of 2 feet (0.6 m) of gravel and 1 foot (0.3 m) of bedrock were sluiced.

Bedrock Geology Bedrock consists of fractured, red Hyland Group metamorphic clast rocks.

Gold Characteristics The gold was reported to have a fineness of 920, 70% of which was less than 14 mesh in size. Two types of gold were present: a shiny, chunky and pitted gold, and gold which was smooth and flat.

CLEAR CREEK, a tributary of Stewart River

115P/14 2004: 63°46'51"N, 137°16'20"W

S&S Gold Mines Ltd.
Water license: PM04-380 (2015)
Active producer (2004-2005) **Operation no. 135**

Location The operation was located upstream of the airstrip near the confluence of the left and main forks of Clear Creek.

Work History and Mining Cuts The operation was bought from Dean Klassen (4757 Yukon Ltd.) in early 2004. In 2004, a small amount of ground on the left limit upstream of camp was test-mined and other areas were prospected. In 2005, mining continued on a larger scale just upstream of camp. In 2006, the ownership of the mine was in dispute and no mining took place.

Equipment and Water Treatment Equipment which was acquired by S&S Gold Mines from 4757 Yukon Ltd. included two Caterpillar D9H bulldozers, a Caterpillar 235 excavator, Caterpillar 966 loaders and a Caterpillar 980 loader. Two wash plants were also included: a 10-foot Derocker and a New Zealand-style floating trommel. The floating trommel was used to mine a left-limit cut, but was mounted on a low-boy later in 2004.

Surficial Geology and Stratigraphy The section mined in 2004 had 10 feet (3 m) of organic material and silt overlaying 4 feet

S & S Gold Mine Ltd.'s wash plant at Clear Creek, 2004.

Aerial view of S&S Gold Mine's upstream pit and camp at Clear Creek, 2004.

of red gravel and 1 foot (0.3 m) of grey gravel on bedrock. The bottom 4 feet (1 m) of gravel plus 2 feet (0.6 m) of bedrock were sluiced.

Gold Characteristics The gold was fine-grained, flat and stained red.

CLEAR CREEK, a tributary of Stewart River

115P/14 2004: 63°50'21"N, 137°08'10"W

Blackstone Placer Mining Ltd., Nelson Harper
Water license: PM98-034 (2009)
Active producer (2004-2006) **Operation no. 136**

Location The property was located along the upper reaches of the left fork of Clear Creek.

Work History and Mining Cuts Nelson and Madeleine Harper began mining on Clear Creek in 1978, and mined until 2000 when the operation was suspended due to high fuel prices and low gold prices. They resumed mining in 2004, and that year, processed a cut in the centre of the valley upstream from camp. In 2005 and 2006, they continued stripping upstream. No sluicing was done in 2005, but the operation sluiced in 2006. Some pay was stockpiled.

Equipment and Water Treatment Equipment used by the Harpers included 2 Caterpillar D8 bulldozers and a Hough 90E loader. The wash plant included a wet hopper over a 5-foot-diameter trommel feeding a double screen deck over two sluice runs. Plus ½-inch material was fed to a 2- by 20-foot sluice run with angle iron riffles, nugget trap and expanded metal riffles on Nomad matting, while minus ½-inch material fed a 4- by 20-foot sluice run lined with expanded metal riffles.

Process rate was 35 to 40 cubic yards per hour. Effluent was settled out-of-stream.

Surficial Geology and Stratigraphy The section consisted of a poorly sorted mixture of coarse boulders, sand, clay and angular bedrock. The depth to bedrock was 20 to 30 feet

Blackstone Placer's operation on the left fork of Clear Creek, 2004.

(6 to 10 m), and the bottom 8 feet (2 m) of coarse boulder gravel and a foot of bedrock were sluiced.

Bedrock Geology Bedrock at this site consists of decomposed schist.

Gold Characteristics A mixture of fine-grained and coarse gold has been recovered, with some nuggets. The fineness is approximately 820.

VANCOUVER CREEK, a tributary of McQuesten River

115P/11 2003: 63°43'18"N, 137°04'33"W

Ken Pratt
Water license: PM99-111 (2004)
Active producer (2003) **Operation no. 137**

Location This operation was located on the upper reaches of Vancouver Creek.

Work History and Mining Cuts Property exploration was done in 2000 and 2001, and a section was mined in 2002 on the lower claims. In 2003, the operation continued mining on the right limit of Vancouver Creek. Additional testing was conducted on the lower claims.

Equipment and Water Treatment A Hitachi 077 excavator was used for feeding pay. The wash plant included a 3- by 8-foot double screen deck and a 4- by 15-foot oscillating sluice run. Coarse tailings were stacked by a 50-foot conveyor. Water was supplied by a Honda 4-inch sludge pump from the recirculated groundwater in the mine cut and the operation had no stream discharge. The stream channel was diverted for a total of 200 yards (180 m) to the far left limit to allow access to the stream gravel.

Surficial Geology and Stratigraphy A false bedrock of blue clay has been reported in this mining operation with 6 feet (2 m) of boulders and 2 feet (0.6 m) of gravel reaching to a marginal topsoil layer at the surface. The blue clay layer

Ken Pratt's operation on Vancouver Creek, 2005.

was located 2 to 3 feet (0.6 to 0.9 m) above the bedrock. Pay values were found only in the vicinity of the clay layer.

Bedrock Geology The intervening ridges between Vancouver, Right Hook and Thoroughfare creeks are composed largely of schist, quartzite and phyllite, with some small local intrusions of granite and granodiorite. Vancouver Creek contains a massive granitic intrusion at its headwaters.

Gold Characteristics The gold was reported as granular to fine.

STEWART RIVER, a tributary of Yukon River

115P/12 2006: 63°36'19"N, 137°34'14"W

Robert Stirling
Water license: PM98-014 (2008)
Exploration (2003-2006) **Operation no. 138**

Location The property was located downstream of the McQuesten airstrip, approximately 800 feet (250 m) from the right limit of the Stewart River.

Work History and Mining Cuts Robert Stirling first prospected the area in 1985, and the first claims were staked in 1990. Ampex Mining mined the claims under an agreement in 1993 and 1994. From 2003 to 2005, minor exploration activities were conducted for several weeks a year within the confines of the previous mining disturbances. In 2006, a total field magnetometer survey was conducted on the claims.

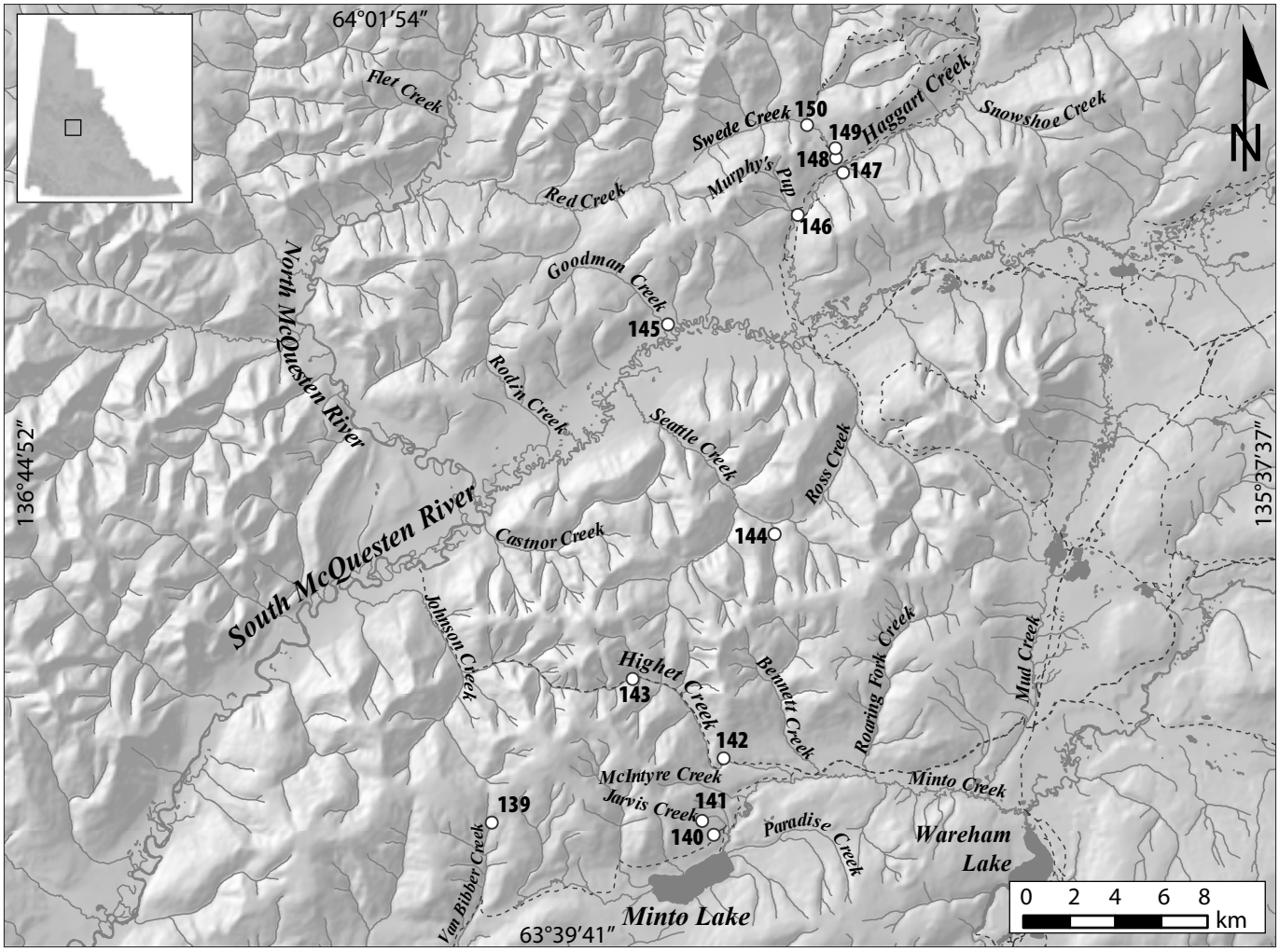
Equipment and Water Treatment A Nodwell-mounted auger drill was used to test the ground. A Kubota KH-41 excavator was used for test pits. During testing, ground water from the mining cut was used for sluicing and was recirculated through the mine cut.

Surficial Geology and Stratigraphy The deposit is an abandoned oxbow channel of the Stewart River. Flood gold in the ancient stream gravel was the main target which was near the present surface. Bedrock was not reached, and mining was concentrated on the upper gravel. The mining cut generally consisted of 3 feet (0.9 m) of silt and organic material overlying 4 feet (1 m) of mixed pebble gravel and cobbles, which were sluiced.

Gold Characteristics The gold recovered was typical fine-grained 'bar' gold, mostly less than 25 mesh in size. Gold smaller than 200 mesh was recovered in testing. The fineness was 780.

MAYO
PLACER AREA

SITES 139-150



LEGEND

139.....Tyerman
140.....Jardine
141.....Mueller
142.....Wilf's Contracting Ltd.
143.....Erl Enterprises
144.....Klippert, D.
145.....Klippert, K.
146.....Johnson/Livingstone Placers Ltd.
147.....Mountain Top Mining
148.....Velocity Resources Canada Ltd.
149.....Livingstone Placers Ltd.
150.....Malicky

VAN BIBBER CREEK, a tributary of North Bear Creek

115P/9 2003: 63°42'51"N, 136°20'17"W

Peter Tyerman, Grace Tyerman
Water license: PM00-194 (2006)
Active producer (2003) **Operation no. 139**

Location This operation was located on Van Bibber Creek, a tributary to North Bear Creek in the McQuesten area.

Work History and Mining Cuts Mr. Tyerman first worked on this creek in 1995, and he mined a minimum of one cut nearly every season thereafter, including 2003.

Equipment and Water Treatment A Komatsu bulldozer was used for stripping and pushing tailings while a JSW 70 excavator was used to feed the wash plant. The excavator and a Komatsu loader were used for some stripping. A Caterpillar D7 bulldozer was used to move the sluice plant. The wash plant included a 20-foot-long by 8-foot-wide dump box with a wet grizzly over a 2-foot-wide by 24-foot-long sluice run. Approximately 100 loose cubic yards of pay was processed per hour. Water was acquired from Van Bibber Creek and effluent was treated through a series of small in-stream settling ponds.

Surficial Geology and Stratigraphy The depth to bedrock in 2003 varied from 12 to 20 feet (4 to 6 m), and the section was comprised of glacial till overlying poorly sorted coarse gravel. The bottom 5 feet (2 m) of gravel was sluiced.

Bedrock Geology Bedrock at this site is schist.

Gold Characteristics Approximately 50% of the gold recovered was coarse-grained, and the fineness varied from 840 to 860.

Peter Tyerman's operation on Van Bibber Creek.

JARVIS CREEK, a tributary of Minto Creek

115P/9 2004: 63°42'10"N, 136°08'33"W

William Jardine
Water licenses: PM04-381 (2009), PM97-038 (2005)
Exploration (2003-2006) **Operation no. 140**

Location This operation was located on a bench above Minto Lake.

Work History and Mining Cuts Bill Jardine worked this property alone since he began at the Jarvis Creek location in 1998. From 1998 through 2002, Mr. Jardine developed a number of cuts and continued stripping upslope towards the headwaters of Jarvis Creek. The property was largely inactive from 2003 to 2005. In 2006, Jardine worked on the water supply ditch and tested several areas on the property with an excavator.

Equipment and Water Treatment A P&H excavator with a ¾-cubic-yard bucket was used for all material processing and a Caterpillar D8 bulldozer was contracted for stripping and reclamation work. A 4- by 10-foot vibrating screen deck classified materials for the sluice run with slick plates and hydraulic riffles. Spring runoff was captured and was supplemented by a surface spring located uphill from the mining operation. No water discharge occurred during mining and the settling ponds were allowed to dewater every fall to ensure site stability.

Surficial Geology and Stratigraphy The section consists of glacial gravel, boulders and clay layers. The operation never reached

Bill Jardine's exploratory operation on a bench above Minto Lake in 2005.

bedrock. A total of 8 feet (2 m) of overburden was stockpiled by bulldozer; the remaining gravel was processed through the wash plant.

Bedrock Geology Bedrock consists of quartz schist, mica schist and minor sheared conglomerate intruded by reddish granite-porphyry.

Gold Characteristics All gold was fine-grained, with two distinct types defined by their colour differences. Some angular gold was recovered during the 2002 season.

JARVIS CREEK, a tributary of Minto Creek

115P/9 2003: 63°42'31"N, 136°09'07"W

Roy Mueller
Water license: PM03-324 (2013)
Exploration (2003) **Operation no. 141**

Location This operation was located on a bench overlooking Jarvis Creek.

Work History and Mining Cuts Mr. Mueller acquired the Jarvis Creek property in 1998 and completed some test stripping in 2002. In 2003, Mueller continued to strip the 2002 test area on the right limit of Jarvis Creek.

Equipment and Water Treatment A Caterpillar D7 bulldozer was used to strip the ground.

Bedrock Geology Various granitic intrusions occur including biotite muscovite granite and quartz monzonite.

HIGHET CREEK, a tributary of Minto Creek

115P/16, 115P/9 2003: 63°43'57"N, 136°07'43"W

Wilf Tuck, Don Ruman
Water license: PM04-402 (2015, Licensee: Wilf's Contracting Ltd.), PM99-023 (2005)
Exploration (2003-2004) **Operation no. 142**

Location This property was located on the lower end of Highet Creek on a left-limit bench.

Work History and Mining Cuts Wilf Tuck first mined at this location in 1983. Some mining occurred in the late 1990s. In 2002 and 2003, some stripping was conducted on the left limit of the creek, on the downstream end of the canyon.

In 2004, Don Ruman conducted some testing on the ground.

Equipment and Water Treatment In 2003, a large, deep, single-cell settling facility was constructed below the mining cut for mining activities.

Equipment brought in by Don Ruman in 2004 included a Hitachi EX-16 excavator and a Komatsu D355A bulldozer. Mr. Ruman's wash plant was a Derocker over a dump box with two 20-foot sluice runs and a nugget trap; and water was supplied by a diesel 6- by 6-inch pump. His processing rate was 150 loose cubic yards per hour. Effluent was settled in an out-of-stream pond.

Surficial Geology and Stratigraphy The section consisted of approximately 80 feet (25 m) of silt overlying 16 to 18 feet (5 to 6 m) of pay gravel on bedrock. Very little rock was encountered. Two old drifts were encountered in the bottom of the cut.

Bedrock Geology Bedrock at this site is biotite schist, quartz-sericite schist, blocky sericite schist and quartzite.

Gold Characteristics Fine gold was recovered in past mining with fineness of 800.

HIGHET CREEK, a tributary of Minto Creek

115P/16, 115P/9 2005: 63°45'59"N, 136°12'14"W

Erl Enterprises, Frank Erl, Don Ruman
Water licenses: PM04-389 (2014), PM96-038 (2005)
Active producer (2003-2006) **Operation no. 143**

Location Mining occurred in successive cuts following the creek channel upstream, at the mouth of Harvey Gulch, and on a right-limit bench.

Work History and Mining Cuts Frank Erl worked at this location part-time from 1961 to 1979, and began mining full-time in 1980. In 2003, he worked 10 hours a day mining two separate areas: the first cut (60 by 100 feet (20 x 30 m)) was on a bench behind camp on the right limit, and the second cut (30 by 100 feet (10 x 30 m)) was on the claim upstream from the camp on the right limit. In 2004, Mr. Erl tested several areas while numerous hot spots were mined by Mr. Don Ruman under an option agreement. In 2005, Frank Erl prospected on Harvey Gulch on the first 1000 feet (300 m) and completed one mining cut (100 by 60 feet (30 x 20 m)) at the mouth of Harvey Gulch within the Highet Creek channel. He also processed a third tier bench behind camp on the lower claims (Claim P3740) and cleaned up exposed deposits from 2004 activities. All activities on the lower claims were conducted on the right limit of Highet Creek. In 2006, Frank Erl mined the right limit of Highet creek a half mile (1 km) downstream of Harvey Gulch.

Equipment and Water Treatment From 2003 to 2006, the equipment used by Frank Erl included a Caterpillar 951 loader, a Caterpillar D8K bulldozer, a 1946 Caterpillar D8 bulldozer and a Caterpillar 955 loader, which he used to explore and mine the property. Mr. Erl's wash plant was a grizzly for classification after a dump box with a single 20-foot sluice run with Hungarian riffles; water was gravity-

Erl Enterprises' operation on Highet Creek, 2005.

fed via pipeline. He processed 15 loose cubic yards per hour. In 2004, the property was also explored and mined, under an option agreement with Don Ruman, with a John Deere 992D-LC loader, a Hitachi EX-16 excavator and two Komatsu D355A bulldozers. Don Ruman's plant in 2004 was a Derocker over a dump box with a single run sluice and a nugget trap, and water was supplied by a diesel 6- by 6-inch pump recirculating water from an in-stream, 40- by 100-foot (10- x 30-m) settling pond. His processing rate was 120 loose cubic yards per hour.

Surficial Geology and Stratigraphy In 2003, the section on the cut behind camp consisted of oldtimers' workings and a virgin unworked bench deposit with natural bedrock riffles. The gold values were pursued by ripping 2 to 3 feet (0.6 to 0.9 m) into the fractured bedrock. Overburden thickened towards the rim rock on the edge of the valley. A second cut on the claim upstream from the camp on the right limit was a small unworked hot spot surrounded by oldtimers' workings. In 2004, numerous hot spot areas were on both stream limits and were found in the stream channel and bench deposits on the right limit. The gold was associated with large boulders. The Harvey Gulch cut varied in thickness from 8 to 15 feet (2 to 4 m), and as pay values were found from the surface, the entire cut was sluiced.

Bedrock Geology Bedrock at this site is biotite schist and quartzite.

Gold Characteristics Magnetite, scheelite, wolframite, and minor amounts of stibnite were recovered along with gold. Sapphire corundum was also positively identified in concentrates by the Yukon Geological Survey in 2006. The gold recovered between 2003 and 2006 was described as coarse grained.

SEATTLE CREEK, a tributary of South McQuesten River

115P/16, 115P/9 2004: 63°49'08"N, 136°04'05"W

Dan Klippert
Water license: PM99-082 (2009)
Active producer (2003-2004) **Operation no. 144**

Location The property was located on Seattle Creek approximately 1 mile upstream from Morrison Creek. In 2003 and 2004, the operation was on an unnamed left-limit tributary of Seattle Creek.

Work History and Mining Cuts Dan Klippert first mined on this creek in 1993 and mined each year until 2004. In 2003, a crew of two miners and one camp person worked a 10-hour shift daily. One cut was sequentially mined on the valley bottom in three sections, each measuring approximately 125 by 100 feet (40 x 30 m). In 2004, the crew was reduced to one miner and one camp person working 8 hours a day. One cut was mined with dimensions 75 by 100 feet (20 x 30 m). The site was stabilized and reclaimed and equipment was removed at the end of the season.

Equipment and Water Treatment Equipment included two Caterpillar 992 loaders, a Caterpillar 235 excavator, a Caterpillar D6 bulldozer and a Caterpillar D8K bulldozer. The wash plant was a New Zealand trommel with a radial 15° stacker and ¾-inch screen, over a 10- by 12-foot sluice run lined with hydraulic riffles and rubber matting. The processing rate was 50 to 75 loose cubic yards per hour. Water was acquired from a reservoir on Seattle Creek and supplied by a 4- by 6-inch diesel-powered pump. Effluent was settled out-of-stream in two ponds in 2003 (300 by 150 feet (100 x 45 m) and 150 by 100 feet (45 x 30 m)) and one pond (150 by 100 feet (45 x 30 m)) in 2004.

Surficial Geology and Stratigraphy In 2003 and 2004, on the unnamed tributary, the bedrock was approximately 30 feet (10 m) below surface. An average of 10 to 15 feet (3 to 4 m) of organic material and gravel overburden was overlying 10 feet (3 m) of pay gravel on bedrock.

Bedrock Geology Bedrock at this site consists of a decomposed yellow-orange phyllite.

Gold Characteristics In 2003 and 2004, a mixture of coarse (60%) and fine (40%) gold was recovered, with a fineness of 820.

Dan Klippert's operation on an unnamed left-limit tributary of Seattle Creek, 2003.

GOODMAN CREEK, a tributary of South McQuesten River

115P/16

2005: 63°54'16"N, 136°08'56"W
2003: 63°54'48"N, 136°09'52"W

Kim Klippert, Don Ruman
Water license: PM01-248 (2006)
Active producer (2003-2004)

Operation no. 145

Location Two separate areas of the creek have been mined; one area was approximately 1 mile (2 km) upstream from Goodman Creek's confluence with the McQuesten River, and a second area was on a left-limit tributary approximately 8 miles (5 km) from the McQuesten River.

Work History and Mining Cuts Kim Klippert began testing this area in 1993. Some testing was also conducted in 2003. In 2004, under an agreement with Kim Klippert, Don Ruman brought in equipment to do testing and hot spotting on the lower claims. No deal options were completed, and restoration and equipment removal was completed late in 2004.

Equipment and Water Treatment Equipment brought in by Don Ruman in 2004 included a Hitachi EX-16 excavator and a Komatsu D355A bulldozer.

The wash plant was a Derocker over a dump box with two 20-foot sluice runs and a nugget trap, and water was supplied by a diesel 6- by 6-inch pump. His processing rate was 150 loose cubic yards per hour. Effluent was settled in a 160- by 80-foot (50- x 20-m) out-of-stream pond.

Bedrock Geology Bedrock is mapped as upper Proterozoic to lower Cambrian limestone, shale, sandstone, quartz-pebble conglomerate and minor marble.

Gold Characteristics The gold was fine grained with a fineness of 820. Gold in 2004 was flattened 'glacial' gold, locally with nuggets.

Kim Klippert's operation on Goodman Creek, 2003.

Aerial view of Johnson's operation on Murphy's Pup, 2005.

MURPHY'S PUP, a tributary of Haggart Creek

115P/16 2005: 63°56'36"N, 136°01'32"W

Steven Johnson, Livingstone Placers Ltd., Max Fuerstner
Water licenses: PM04-437 (2007), PM02-269 (2007)
Active producer (2004-2005) **Operation no. 146**

Location This operation was located on Murphy's Pup, a tributary of Haggart Creek.

Work History and Mining Cuts The Johnsons conducted a small exploratory mining program from 1995 to 2002. In 2004, the area was actively mined and effluent was discharged to Haggart Creek. In the fall of 2004, the operator used a full recycling processing system. In 2005, Max Fuerstner (Livingstone Placers Ltd.) worked the right limit of Murphy's Pup under an option agreement with Steven Johnson.

Equipment and Water Treatment Equipment used by the Johnsons included a Hymac 580 excavator, and a Clark 125 loader with a 4.5-cubic-yard bucket. The wash plant was a 3-foot-diameter trommel over a 2- by 8-foot sluice run lined with punch plate and hydraulic riffles. Effluent was settled out-of-stream. In 2005, Livingstone Placers Ltd. had equipment including a Terex D800, a Terex 72-61 loader with a 5-yard bucket, a Komatsu 1100 excavator and two Terex 33-09 rock trucks. The wash plant that Livingstone Placer used included a Derocker which fed minus 2-inch material to a 5- by 12-foot trommel. Classified pay gravel was then washed into four sluice runs totalling 10 by 12 feet, lined with hydraulic riffles.

Surficial Geology and Stratigraphy The ground was frozen and consisted of boulders up to 2 feet (0.6 m) in diameter, gravel, sand and clay. All of the material was sluiced to a depth of 30 feet (10 m). Bedrock was not reached.

Gold Characteristics The gold was fine-grained, mainly less than 100 mesh, and flat. A 1 gram (0.03 oz) nugget was also recovered. The fineness was 800 to 900.

SWEDE CREEK, a tributary of Haggart Creek

105M/13 2006: 63°57'31"N, 135°58'57"W

Mountain Top Mining, George Lewans, Brent Walden

Water License: PM05-468 (2010, Licensee: Brent Walden

Active Producer (2005-2006) **Operation no. 147**

Location The operation was located at the mouth of Swede Creek.

Work History and Mining Cuts In 2005, George Lewans (Mountain Top Mining) began some testing of these claims under an option agreement with Brent Walden. In 2006, a crew of two miners and three camp personnel worked a daily 12 hour shift. One cut 100-foot (30.5 m) square and 30-foot (9.1 m) deep was processed.

Equipment and Water Treatment Equipment included a Caterpillar D8H with a U-blade and ripper for stripping ground and moving tailings, and a Caterpillar 966C loader for feeding the sluice box and removing tailings. The wash plant included a 10-foot by 12-foot dump box feeding a 4-foot by 8-foot single deck which screened to ¾ inch minus, and a single 4-foot by 12-foot sluice run lined with 6 feet of hydraulic riffles and 10 feet of expanded metal. The plant was fed at a rate of 40 loose cubic yards per hour. Water was acquired from Swede Creek and pumped by a 4-cylinder diesel Ford-powered 4 inch pump at a rate of 600 to 800 igpm. Effluent was settled out-of-stream into two 100-foot by 250-foot ponds. Clean-ups were done with a 1-foot by 6-foot long tom every 3 to 4 shifts.

Surficial Geology and Stratigraphy The section was thawed and described as 10 to 20 feet (3.0 to 6.1 m) of fine "outflow" gravel, of which 6 to 8 feet (1.8 to 2.4 m) were sluiced.

Gold Characteristics Gold was variable from very fine-grained up to nuggets ¼ inch in size. Some flat and wire gold was also recovered. The fineness was 890.

Mountain Top Mining's operation at the mouth of Swede Creek, 2005.

SWEDE CREEK, a tributary of Haggart Creek

105M/13 2006: 63°57'52"N, 135°59'14"W

Velocity Resources Canada Ltd., Frank Plut
Water license: PM05-464 (2015, Licensee: Frank Plut)
Active producer (2006) **Operation no. 148**

Location The operation was located on the right limit of Swede Creek, adjacent to the ground that Livingstone Placers previously mined in 2002-2004.

Work History and Mining Cuts In 2006, the property was optioned from Frank Plut by Velocity Resources Canada Ltd. The crew of four miners and five camp personnel worked a daily 10-hour shift. Two mining cuts were processed, one 150 by 60 feet (45 x 20 m) and one 200 by 50 feet (60 x 15 m). A total of 40,000 cubic yards (30 600 m^3) of overburden were stripped and 13,000 cubic yards (9900 m^3) were sluiced.

Equipment and Water Treatment Equipment included a Caterpillar D8H bulldozer, a John Deere excavator with a 2½-cubic-yard bucket and a Komatsu WA500 loader with a 6½-cubic-yard bucket. The wash plant was a Derocker feeding a single 4- by 30-foot sluice run lined with angle iron riffles, expanded metal and carpet matting. Water for the plant was acquired from Swede Creek and supplied by a Caterpillar 333D-powered 8-inch pump, enough to process 100 loose cubic yards of pay material per hour. Effluent was settled and 70% to 75% recycled from a series of five to eight multi-stage settling ponds, each with approximate dimensions of 50 by 80 feet (15 x 25 m).

Surficial Geology and Stratigraphy The stratigraphic section was thawed and 3 feet (0.9 m) of waste gravel was stripped. The remaining thickness of gravel was sluiced down to bedrock.

Gold Characteristics The gold was described as fine-grained with a fineness of 880.

SWEDE CREEK, a tributary of Haggart Creek

105M/13 2004: 63°58'06"N, 135°59'14"W

Livingstone Placers Ltd., Max Fuerstner, Frank Plut
Water license: PM00-165 (2005)
Active producer (2003-2004) **Operation no. 149**

Location This operation was located on Swede Creek, a tributary of Haggart Creek.

Work History and Mining Cuts Frank Plut tested in 2000 and 2001 and then optioned the ground to Livingstone Placers Ltd., who began mining in 2002. Sluicing continued in 2003 and 2004. In 2005, Livingstone Placers Ltd. moved downstream to mine on Murphy's Pup.

Equipment and Water Treatment Livingstone Placers' equipment included a Terex D800 bulldozer, a Terex 72-61 loader with

Livingstone Placers' operation on Swede Creek.

a 5-yard bucket, a Komatsu 1100 excavator and two Terex 33-09 rock trucks. The wash plant included a Derocker which screened the materials to minus 2 inches and subsequently fed a 5- by 12-foot trommel. The classified pay gravel was then washed in a 10- by 12-foot sluice run divided into four separate runs, each utilizing hydraulic riffles. Effluent was settled out-of-stream.

Surficial Geology and Stratigraphy The section in the middle of the valley had been stripped prior and consisted of 6 feet (2 m) of manganese and iron-stained cobble-boulder gravel on bedrock overlain by 3 feet (0.9 m) of rusty pebble gravel and 3 feet (0.9 m) of sand and silt. On the left limit near the mouth was a 20-foot (6-m) thick mixture of glacial till and cobbly washed gravel, while on the right limit, 2 to 3 feet (0.6 to 0.9 m) of grey cobbly gravel was overlain by 3 to 4 feet (0.9 to 1 m) of rusty gravel and 6 feet (2 m) of organic material and silt.

Bedrock Geology Swede Creek is underlain by quartzite and quartz-mica schist.

Gold Characteristics Gold was mainly fine grained with a fineness of 750.

SWEDE CREEK, a tributary of Haggart Creek

115P/16 2003: 63°58'42"N, 136°00'40"W

Walter Malicky
Water license: PM04-448 (2015)
Exploration (2005-2006) **Operation no. 150**

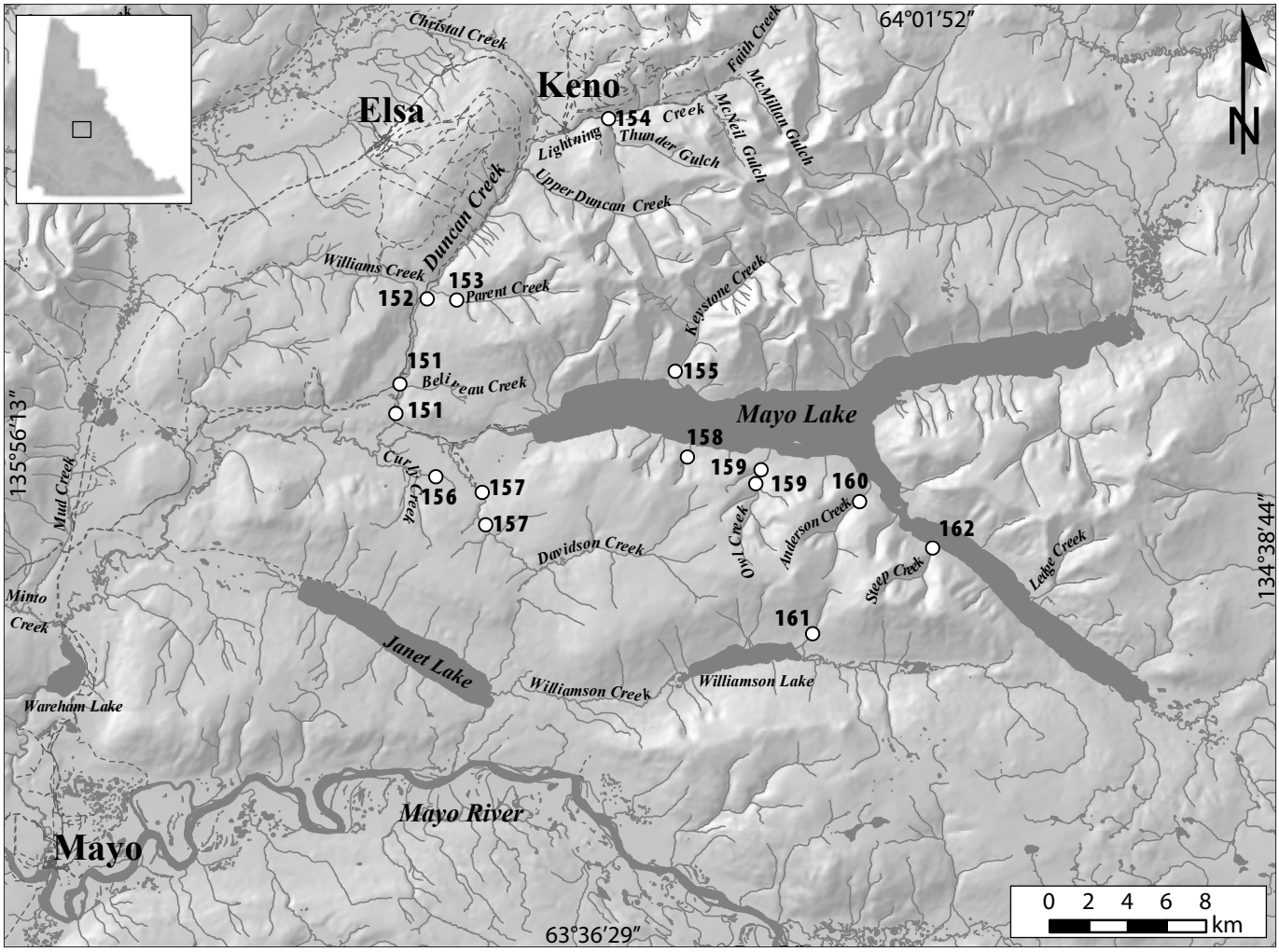
Location This property was located on Swede Creek at the mouth of Secret Creek.

Work History and Mining Cuts In 2005, Walter Malicky conducted some stripping and testing on the right limit of Swede Creek at the mouth of Secret Creek. In 2006, Mr. Malicky constructed a diversion channel near the mouth of Secret Creek and dug several test pits.

Equipment and Water Treatment Equipment included an excavator.

DUNCAN CREEK
PLACER AREA

SITES 151-162



LEGEND

151.....Duncan Creek Golddusters Ltd. – Duncan Creek
152.....Zeiler - Duncan Creek
153.....Zeiler - Parent Creek
154.....Bardusan Placers Ltd.
155.....Duncan Creek Golddusters Ltd. – Keystone Creek
156.....Plut
157.....Klippert/Rivest
158.....Wozniak
159.....Barchen - Owl Creek
160.....20861 Yukon Inc.
161.....Dublenko
162.....Barchen - Steep Creek

DUNCAN CREEK, a tributary of Mayo River

105M/13, 105M/14

2006: 63°47'9"N, 135°30'10"W
2003: 63°47'57"N, 135°29'45"W

Duncan Creek Golddusters Ltd., Frank Taylor, Troy Taylor
Water license: PM03-312 (2015)
Active producer (2005-2006) **Operation no. 151**

Location This property is located on Duncan Creek, between 1.2 miles (2 km) and 4.3 miles (7 km) from the confluence of Duncan Creek and Mayo River.

Work History and Mining Cuts The Taylor family has mined in this location since 1975, the ground being held since the 1950s. The crew from 2003 to 2005 consisted of three miners and one camp person, working a daily 12-hour shift. In 2006, this was reduced to two miners. Mining progressed in 2003 on the left limit of Duncan Creek in shallow modern gravel, a few claims below camp. A shallow bedrock bench was also mined in this area. Mining continued in the 2004 and 2005 seasons, and in October, 2005 the operation moved downstream to a location just upstream of the Duncan Creek bridge. Duncan Creek was diverted from its location on the left limit and the shallow modern gravel was mined adjacent to the former creek channel in 2005 and 2006. From 2003 to 2005, a significant amount of gravel was also sluiced from a buried placer deposit located to the west of the modern drainage.

Equipment and Water Treatment Equipment consisted of a Hitachi UH30 excavator with a 5-cubic-yard bucket for stripping and to lift pay closer to the plant; a Komatsu D355 bulldozer for stripping and pushing pay; a Caterpillar 330BL excavator with a 2-cubic-yard bucket for feeding the wash plant; and a Caterpillar 988B loader for removing tailings. The wash plant included a modified, wet vibrating grizzly feeder (VGF), two 3-foot-wide by 9-foot-long sluice runs with 1-inch angle iron riffles, and four 3-foot-wide by 9-foot-long sluice runs lined with expanded metal riffles. A 6-inch Gorman Rupp trash pump supplied water to the wash plant. The processing rate varied from 95 to 125 loose cubic yards per hour. Previously mined cuts were used for settling out-of-stream with no recycling. Clean-ups were conducted using a jig.

Duncan Creek Golddusters' operation in 2003.

Aerial view of Duncan Creek Golddusters on Duncan Creek in 2005.

Surficial Geology and Stratigraphy The section exposed by mining to the west of the modern drainage from 2003 to 2005 consisted of 10 to 25 feet (3 to 7.5 m) of silt/sand and pebbles with some organic material overlying 6 to 15 feet (2 to 4.5 m) of boulder pay gravel resting on bedrock. In 2006, the section near the Duncan Creek bridge consisted of 0 to 3 feet (0 to 1 m) of organic material, silt/sand and pebbles overlying 6 to 10 feet (2 to 3 m) of boulder pay gravel resting on bedrock on the left limit. Towards the valley centre, the boulder pay gravel was overlying glacial till.

Bedrock geology Bedrock is decomposed schist and siliceous schist.

Gold Characteristics The size of the gold was generally fine-grained (mainly less than 18 mesh) but highly variable, and most nuggets were thin, flat and fairly smooth. Some nuggets as large as one ounce (31 g) were found. Fineness ranged between 770 and 800.

DUNCAN CREEK, a tributary of Mayo River

105M/14 2005: 63°50'13"N, 135°27'36"W

Mel Zeiler
Water license: PM04-318 (2014)
Exploration (2003-2005) **Operation no. 152**

Location Testing operations were located on Duncan Creek, a tributary to the Mayo River.

Work History and Mining Cuts In 2003 and 2004, a crew of up to two personnel conducted trenching programs on Duncan Creek. A standard test hole measured 4 by 10 by 22 feet (1 x 3 x 6 m). In 2005, a drill program was undertaken, and holes were drilled throughout the property to determine bedrock depths.

Equipment and Water Treatment A Caterpillar 225 hoe was used for excavating test holes and a Nodwell Track with an 8-inch bit and 7-inch auger was used in the drilling program.

Mel Zeiler standing beside his Nodwell-mounted auger drill at his camp on Duncan Creek, 2005.

Surficial Geology and Stratigraphy The drill program was designed around earlier test trench programs with the intention of defining a previously discovered buried channel. Frozen ground was encountered throughout the property with glacial till overlying approximately 50 feet (15 m) of clay. Bedrock was not reached and large boulders were frequently intersected in the drilling.

Gold Characteristics Gold was described as light and flaky.

PARENT CREEK, a tributary of Duncan Creek

105M/14 2005: 63°50'07"N, 135°25'47"W

Mel Zeiler
Water licenses: PM05-474 (2014), PM03-319 (2014)
Exploration (2003-2005) **Operation no. 153**

Location This property was tested in several locations including Parent, Duncan and Williams creeks.

Work History and Mining Cuts In 2003 and 2004, a crew of up to two personnel conducted trenching programs on Parent Creek and Williams Creek. A number of holes were excavated and sampled using a Caterpillar 225 hoe. A standard test hole measured 4 by 10 by 22 feet (1 x 3 x 6 m) and bedrock was reached in only two locations on Parent Creek. A total of 27 holes were drilled throughout the property to establish bedrock depths wherever possible.

Equipment and Water Treatment A Caterpillar 225 hoe was used for excavating test holes and a Nodwell Track with an 8-inch bit and 7-inch auger was used in the drilling program.

Surficial Geology and Stratigraphy The left limit of Parent Creek was frozen to bedrock and well-washed gravel was located under extensive frozen clays on the right limit. Bedrock was not reached on the right limit.

Gold Characteristics Light flaky gold was found in samples.

LIGHTNING CREEK, a tributary of Duncan Creek

105M/14 2006: 63°54'43"N, 135°15'21"W

Bardusan Placers Ltd., Hans Barchen, Claus Barchen
Water licenses: PM02-297 (2013), PM98-043 (2004)
Active producer (2003-2006) **Operation no. 154**

Location In 2006, the property was approximately a half mile (1 km) upstream of the mouth of Thunder Gulch.

Work History and Mining Cuts Bardusan Placers first mined on Lightning Creek in 1991 and 1992, and returned again to mine from 1998 to present. In each of the seasons from 2003 to 2006, approximately 60,000 cubic yards (46 000 m^3) were stripped and 30,000 cubic yards (23 000 m^3) were sluiced. In 2005, stripping and mining took place along the right limit of Lightning Creek upstream from the mouth of Thunder Gulch. Gravel was stockpiled for sluicing in the 2006 season. In 2006, stockpiled gravel was sluiced, and mining continued upstream of Thunder Gulch along the left limit of Lightning Creek.

Equipment and Water Treatment Equipment included a Hitachi UH 20 excavator, a Caterpillar 980 loader and a Caterpillar 988 loader. The wash plant was a 10- by 20-foot Derocker over a 3- by 24-foot-long, double run sluice box. From 80 to to 100 cubic yards of material were processed per hour. The mine cut was below the water table which, when pumped to drain the cut, provided the water for the wash plant. Effluent was settled out-of-stream in two ponds, each 400 feet (120 m) long and 80 feet (25 m) wide.

Surficial Geology and Stratigraphy The section exposed from 2003 to 2006 was 60 to 70 feet (18 to 20 m) of angular, manganese and iron-stained cobble-boulder gravel mixed with localized silt and sand lenses, overlying 20 to 30 feet (6 to 10 m) of grey, compact, boulder pay gravel on bedrock.

Bedrock Geology Bedrock at this site is quartzite and quartz-sericite schist.

Gold Characteristics From 2003 to 2006, the gold was 90% less than 12 mesh in size.

Bardusan Placers' operation on Lightning Creek, 2005.

KEYSTONE CREEK, a tributary of Mayo Lake

105M/14 2005: 63°47'38"N, 135°12'38"W

Duncan Creek Golddusters Ltd., Frank Taylor, Troy Taylor
Water licenses: PM01-260 (2008)
Exploration (2003-2006) **Operation no. 155**

Location Testing was conducted at several locations along the length of Keystone Creek.

Work History and Mining Cuts Duncan Creek Golddusters have tested several locations on Keystone Creek. In 2004, a bedrock drain was started near the apex of the alluvial fan delta which empties into Mayo Lake.

Equipment and Water Treatment Equipment for testing included a Caterpillar 330BL excavator brought in from the nearby Duncan Creek property. A settling pond is in place for future water treatment.

Bedrock Geology Bedrock is interbedded muscovite-talc schist and micaceous quartzite.

CURLY CREEK, a tributary of Mayo River

105M/14 2004: 63°45'19"N, 135°28'02"W

Frank Plut
Water license: PM00-186 (2006)
Exploration (2003-2005) **Operation no. 156**

Location The operation was located primarily on the left limit of Curly Creek, a tributary to Mayo River.

Work History and Mining Cuts Stripping took place in 2003 on several areas on the left limit. In 2004 and 2005, more areas were stripped and a small testing program was conducted.

DAVIDSON CREEK, a tributary of Mayo River

105M/11

2005: 63°43'53"N, 135°25'13"W
2003: 63°44'47"N, 135°25'14"W

Kim Klippert, Paul Rivest
Water license: PM03-341 (2014, Licensee: J.P. Rivest)
Active producer (2003-2006) **Operation no. 157**

Location The operation was located above the canyon on the right limit, and moved upstream progressively each year including 2006.

Work History and Mining Cuts The creek was first tested by the Rivest family in 1995. Cam Arkinstall mined here in 1998 and 1999, and in 2001, Kim Klippert optioned the ground. Kim Klippert's operation with a crew of up to 5 personnel continued mining above the canyon in each of the mining seasons from 2003 to 2006. In 2003, one cut mined was 75 by 100 by 12 feet (20 x 30 x 4 m) or 3333 cubic yards (2550 m^3) and another was 150 by 30 by 25 feet (45 x 10 x 8 m) or 4546 cubic yards (3475 m^3). In 2004, four cuts were mined: 130 by 80 by 14 feet (40 x 25 x 5 m), 125 by 80 by 10 feet (38 x 25 x 3 m), 100 by 75 by 12 feet (30 x 20 x 4 m), and 135 by 75 by 12 feet (40 x 20 x 4 m), for a total of 13,596 cubic yards (10 395 m^3). In 2005, three cuts were mined: 170 by 120 by 24 feet (50 x 40 x 7 m), 190 by 120 by 14 feet (60 x 40 x 4 m), and 120 by 70 by 10 feet (40 x 20 x 3 m), for a total of 33,066 cubic yards (25 280 m^3). In addition, four test areas were completed for advance mine plans, from the top end of the canyon upstream to the top of the claim block held by Paul Rivest. In 2006, the operation sluiced upstream of the 2005 mine cut.

Equipment and Water Treatment Equipment between 2003 and 2006 included a Caterpillar D8H bulldozer with U blade and ripper, as well as a Hitachi UH12 excavator with a 1½-cubic-yard bucket and a Michigan 275 loader. A Hitachi UH16 excavator with a 2¼-cubic-yard bucket was added in 2005. The wash plant consisted of a 5- by 12-foot double screen deck with 2-inch and ⅝-inch holes in punch plate and a 40- by 36-foot tailings stacker. Fine tailings were pumped with a 6-inch ASH gravel pump using a hose alongside the conveyor. Water was supplied with a diesel-powered Detroit 6- by 6-inch pump rated at 600 igpm, enough to process 75 loose cubic yards per hour. Water was acquired from Davidson Creek and settled out-of-stream in a pond 100 by 160 feet (30 x 50 m). Clean-ups were done with a long tom and #13 Wilfley table.

Surficial Geology and Stratigraphy Between 2003 and 2005, the section consisted of gravel from 4 to 16 feet (1 to 5 m)

Kim Klippert's operation above the canyon on Davidson Creek, 2005.

in thickness from surface to bedrock. Large water-washed boulders were found throughout, and only the narrow valley bottom was thawed. Old mine workings were found in a few places. Any gravel units higher than 5 feet (2 m) above bedrock were considered waste and the best gold values were in the lowest 2 to 3 feet (0.6 to 0.9 m) above bedrock.

Bedrock Geology Bedrock at this site is decomposed, wavy schist. Across the valley bottom, the bedrock is flat.

Gold Characteristics Between 2003 and 2005, the gold was reported to be flat, smooth and bright with a fineness of 840, and varying in size from fine up to #4 Tyler mesh.

UNNAMED CREEK, a tributary of Mayo Lake

105M/14 2006: 63°45'15"N, 135°12'21"W

Manfred Wozniak
Water license: PM04-366 (2014)
Exploration (2005-2006) **Operation no. 158**

Location This property was located on an unnamed tributary of Mayo Lake between Dawn Gulch and Owl Creek.

Work History and Mining Cuts Mr. Wozniak dug several test holes and constructed settling ponds and a creek diversion on the right limit. Camp facilities were set up and access up to the canyon was constructed.

Surficial Geology and Stratigraphy The creek forms an alluvial fan delta into Mayo Lake, and the fan is comprised of reworked glacial deposits with boulders, sand, silt and clay.

Bedrock Geology Bedrock has been mapped as Hyland Group rocks including sandstone and conglomerate, minor limestone and phyllite.

Gold Characteristics Gold from this creek has been reported to be angular and show little wear.

OWL CREEK, a tributary of Mayo Lake

105M/11 2005: 63°44'43"N, 135°07'53"W
2003: 63°44'21"N, 135°08'16"W

Ralph Barchen
Water licenses: PM03-351 (2014), PM01-247 (2006)
Active producer (2003-2006) **Operation no. 159**

Location This operation is located on Owl Creek, a tributary of Mayo Lake.

Work History and Mining Cuts Mr. Barchen began mining here in 2001. In 2003, mine site preparation (stripping, drain and settling pond construction) defined the bulk of work until July. The mine cut progressed upstream in the steep valley walls of Owl Creek. The main channel was mined while the stream was temporarily diverted to the left limit of the valley

Ralph Barchen sluicing on Owl Creek, 2005.

Aerial view of Ralph Barchen's Owl Creek operation, 2005.

and perched above the mine cut. Mining continued upstream on the creek in 2004, 2005 and 2006.

Equipment and Water Treatment Equipment included a Caterpillar D9H bulldozer which was used for stripping and stockpiling of materials, and a Caterpillar 988B loader which was used to remove tailings. In 2005, a John Deere EX16 excavator was being used to feed the wash plant. A Kubota KX080 excavator was used for digging test pits. The plant included a 10- by 17-foot Derocker which fed minus 2-inch material to an undercurrent sluice run. The processing rate was 150 cubic yards per hour. An 8- by 8-inch Gorman Rupp trash pump provided water to the wash plant. The settling ponds were established out-of-stream on the left limit of Owl Creek downstream of the alluvial fan apex, with no discharge to Mayo Lake.

Surficial Geology and Stratigraphy The ground was 20 feet (6 m) to bedrock near the apex of the alluvial fan and the lower 10 feet (3 m) were processed as pay gravel. The top 4 feet (1 m) of material were described as coarse, rounded diorite boulders overlying cobble gravel and clay.

Bedrock Geology Locally, bedrock consists of pyritic mica-schist and quartzite which dips steeply to the south.

Gold Characteristics Gold was described as coarse, well-rounded nuggets with a fineness of 840. The largest nugget, recovered in 2002, weighed 1 ounce (30 g).

ANDERSON CREEK, a tributary of Mayo Lake

105M/11 2003: 63°43'35"N, 135°01'58"W

20861 Yukon Inc., Raymond Brosseuk
Water license: PM99-120 (2004)
Active producer (2003) **Operation no. 160**

Location This property was located downstream of the apex of the alluvial fan delta on Anderson Creek, a tributary of Mayo Lake. Some work was done in the canyon upstream of the apex.

Work History and Mining Cuts In 2000, Ray Brosseuk (20861 Yukon Inc.) acquired the property from Manfred Wozniak. Activity was initially focused on the area downstream of the alluvial fan apex on the left limit of the stream. In 2003, mining shifted to a higher grade zone upstream of the fan apex in the narrow canyon.

Equipment and Water Treatment On-site equipment included, at various times, a Caterpillar D9R bulldozer, a Caterpillar 950G loader, a Caterpillar 335DL excavator, two Caterpillar 988B loaders with 9-yard buckets, a Case 220B excavator with a 3-yard bucket, and two Fiat Allis D-31 loaders. Two wash plants were used, both reverse-spiral trommels which concentrated pay gravel to minus 1 inch through a 3- by 20-foot tail sluice run and a feedback loop to an 18-inch by 16-foot side sluice run. In each plant, an estimated 8 yards per hour of minus 1-inch concentrate were processed by the side run and 225 cubic yards per hour were processed in the main sluice run. Water supply was provided by Anderson Creek through a 471 Jimmy 6-inch Monarch water pump operating at 1300 igpm. Effluent was treated in three out-of-stream settling ponds measuring 50 by 80 feet (15 x 25 m).

Surficial Geology and Stratigraphy This deposit is an alluvial fan delta, consisting of coarse, boulder-gravel layers overlain by interbedded sand and gravel. Glaciolacustrine clay lies in a layer upstream of the fan apex, where it overlies an interglacial creek channel. Depths to bedrock on the fan varied from 40 feet (10 m) on the left limit to 70 feet (20 m) on the right limit. Mining downstream of the fan apex exposed a section consisting of 10 feet (3 m) of sand and gravel overlying large boulders in a layer 8 to 10 feet (2 to 3 m) thick. The boulder layer contained reasonable gold values, and was sluiced. The boulder layer was overlying 18 feet (5 m) of compact, clay matrix-filled coarse gravel, overlying 6 feet (2 m) of bright orange/yellow and black gravel deposits on bedrock. The orange gravel deposits on bedrock had the best gold grades. The clay-buried interglacial creek channel mined upstream in the canyon in 2003 also proved to have very good gold grades.

Bedrock Geology Bedrock was described as clay-altered blue schist.

Gold Characteristics Gold was described as granular with 40% 4 mesh or larger, but ranging to 300 mesh. Fineness of the gold was 890 to 910.

20861 Yukon Inc.'s operation on Anderson Creek in 2003.

UNNAMED CREEK, a tributary of Williamson Lake

105M/11 2005: 63°40'05"N, 135°05'37"W

Lawrence and Constance Dublenko
Water licenses: PM05-480 (2015), PM99-076 (2005)
Exploration (2003-2005) **Operation no. 161**

Location The property was located approximately 3000 feet (900 m) northeast of the east end of Williamson Lake, on an alluvial fan delta.

Work History and Mining Cuts In July 1994, Constance and Lawrence Dublenko located a co-discovery claim on this creek, an unnamed and unmined tributary to Williamson Lake located along the northeast shore. In 2004 and 2005, assessment work was done upstream of previously mined cuts on the left limit along the access route.

Equipment and Water Treatment In 2003 to 2005, assessment work was done with the Case 850 crawler.

Surficial Geology and Stratigraphy The sections in trenches consisted of mixed fluvial gravel and glacial till throughout. Bedrock was not reached.

Bedrock Geology Bedrock is mapped as limestone, thin to thick shale, fine- to coarse-grained quartz-rich sandstone grit and quartz-pebble conglomerate, phyllite and minor marble.

Gold Characteristics Between 1998 and 2005, only flour gold was recovered in limited quantities.

Lawrence Dublenko's mining cut on an unnamed tributary to Williamson Lake in 2005.

STEEP CREEK, a tributary of Mayo Lake

105M/10, 105M/14 2003: 63°42'08"N, 134°57'43"W

Ralph Barchen
Water license: PM00-191 (2006)
Exploration (2003) **Operation no. 162**

Location This operation was located on the alluvial fan of Steep Creek on Mayo Lake.

Work History and Mining Cuts Mr. Barchen extensively tested various locations on the Steep Creek fan from 2000 to 2003. The Steep Creek site was decommissioned in 2004, after Mr. Barchen had moved his operations to Owl Creek.

Equipment and Water Treatment A Caterpillar D9H bulldozer was used for stripping and stockpiling of material. A Caterpillar 988B loader fed the box and removed the tailings. A 10- by 17-foot Derocker fed minus 2-inch material to an undercurrent sluice run 16 feet long by 4 feet wide. The processing rate was 150 cubic yards per hour. An 8- by 8-inch Gorman Rupp trash pump pumped water to the wash plant at a rate of 1000 igpm.

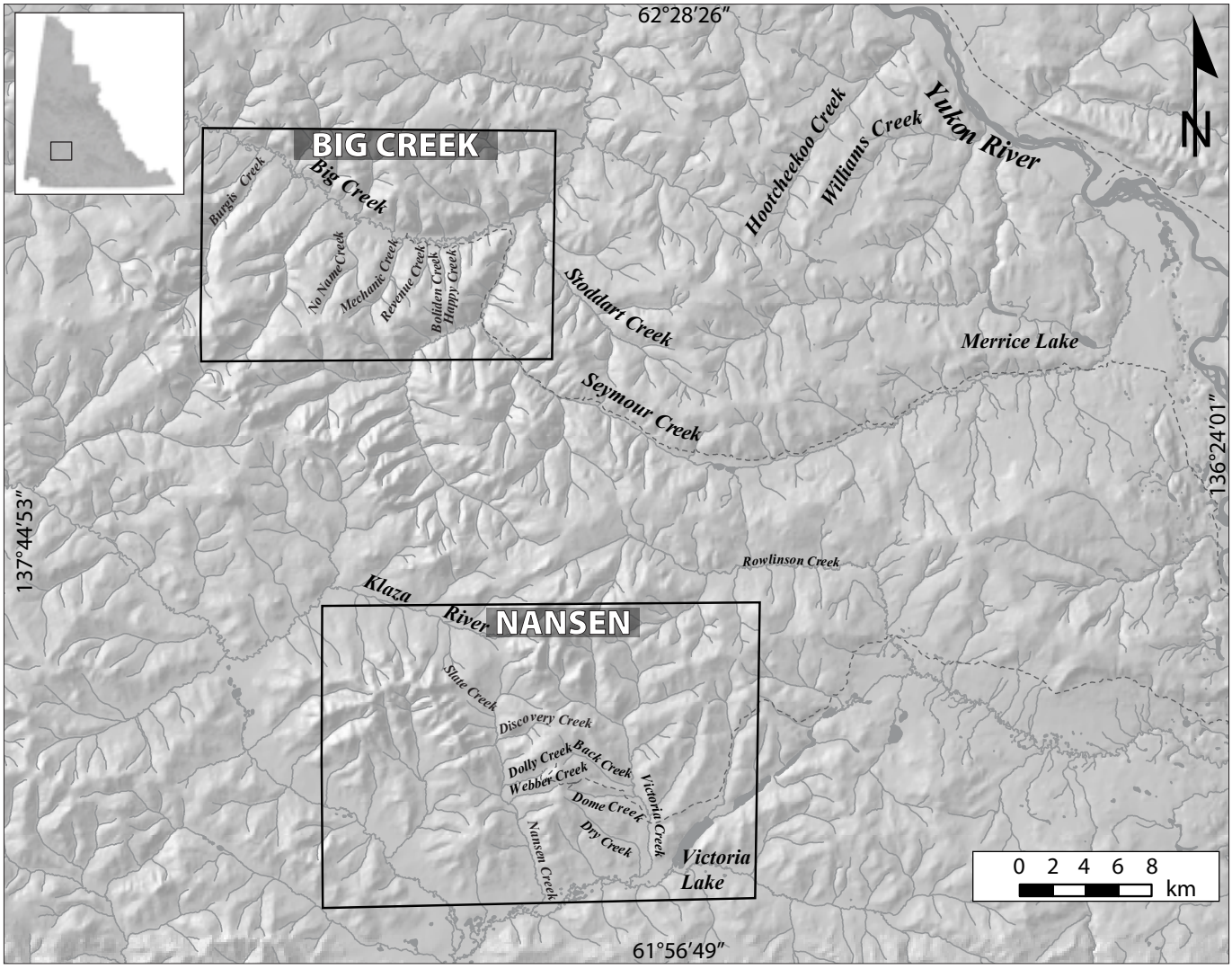
Surficial Geology and Stratigraphy Steep Creek forms an alluvial fan delta into Mayo Lake. The fan is comprised of reworked glacial boulders, sand and clay. The areas mined and tested showed a depth to bedrock of 45 feet (15 m).

Bedrock Geology At the apex of the gravel fan, bedrock is graphitic muscovite schist. The steeply dipping bedrock forms natural riffles. Numerous bull quartz veins cut the schist.

Gold Characteristics Gold was reported to be angular and fine-grained with a fineness value ranging from 890-910.

DAWSON RANGE DRAINAGES

SITES 163-176

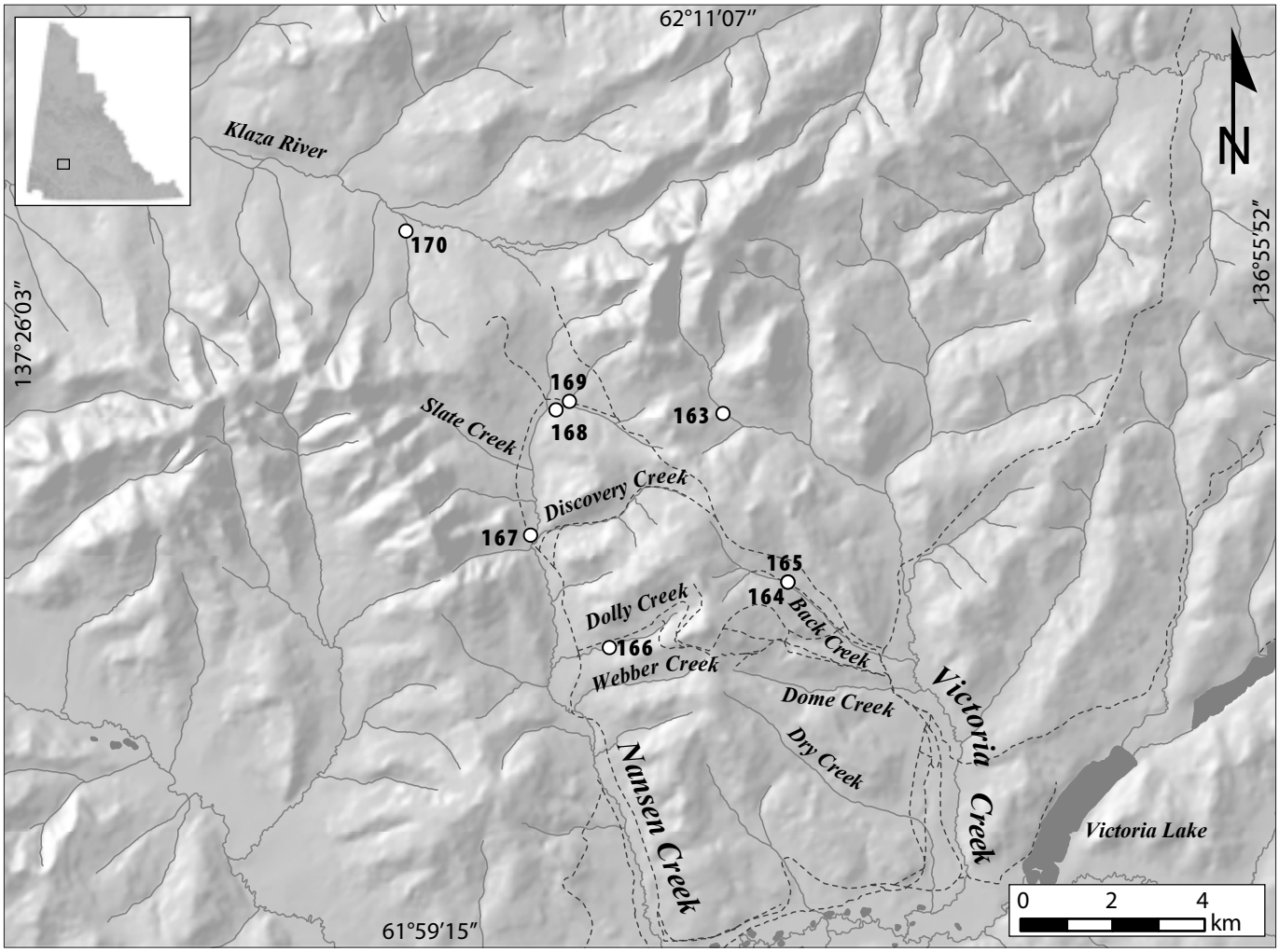


Inset maps are shown on pages following.

DAWSON RANGE DRAINAGES

NANSEN
PLACER AREA

SITES 163-170



LEGEND

163.....Trout
164.....Trerice - Back Creek
165.....38557 Yukon Inc.
166.....Frizzell
167.....Johnson Exploration
168.....Coghlin
169.....38241 Yukon Inc.
170.....Trerice - unnamed tributary

VICTORIA CREEK, a tributary of Nisling Creek

115I/3 2004: 62°05'50"N, 137°08'41"W

John Trout, Bud Davis
Water license: PM99-133 (2005)
Active producer (2003-2004) **Operation no. 163**

Location The property was located on the left limit of Victoria Creek, across from its confluence with Eva Creek, locally known as upper West Victoria Creek.

Work History and Mining Cuts John Trout began operating here in 1994 and mined for a time each summer until he passed away in September, 2004. In 2003 and 2004, a crew of three miners worked single 10-hour shifts. Six cuts were processed each year, each with dimensions of 100 by 100 feet (30 x 30 m). Lloyd Wade purchased the operation from the Trout estate and began testing ground in 2006.

Equipment and Water Treatment Equipment included a Caterpillar D8H with U-blade and ripper, a Caterpillar D7E with a straight blade and winch, an Insley 875 excavator with a ¾-cubic-yard bucket and a Caterpillar 966 loader with a 5-cubic-yard bucket. The wash plant consisted of a Simmons 4- by 8-foot screen deck classifying to minus 1 inch and feeding to a 24-inch-wide sluice run with an active water riffle section, an 8-foot riffle section and 8 feet of expanded metal. A 4- by 4-inch pump supplied enough water to process 45 loose cubic yards per hour. Water was acquired from Victoria Creek and settled out-of-stream. Clean-ups were done with a pulsating jig, followed by classifying screens and pans.

Surficial Geology and Stratigraphy The section was from 15 to 20 feet (5 to 6 m) thick with the localized frozen lens. The largest rocks were boulders 2 feet (0.6 m) in diameter with the average size less than 1 foot (0.3 m) in diameter. The lowest 10 feet (3 m) of gravel plus 1 to 2 feet (0.3 to 0.6 m) of bedrock were sluiced.

Bedrock Geology At this site, Cretaceous felsic volcanic and granitic plutonic rocks lie in fault contact with each other. The fault runs roughly parallel to the creek in the location of the operation.

Gold Characteristics The gold was reported as flat with some angular and wire pieces. Approximately 15% of the gold was plus 10 mesh-size rounded nuggets, some containing quartz. Considerable black sand was encountered and the fineness was 770 to 780.

John Trout's property on Victoria Creek showing reclamation in the foreground, Ensley excavator and washplant in the background. Photo taken in 2006 after the ground was purchased by Lloyd Wade.

BACK CREEK, a tributary of Victoria Creek

115I/3 2005: 62°03'48"N, 137°07'18"W

Bill Trerice
Water license: PM99-047 (2009)
Active producer (2003-2005) **Operation no. 164**

Location The area of mining activity was in the valley and on the left limit of Back Creek approximately 2 miles (3 km) upstream of the confluence with Victoria Creek.

Work History and Mining Cuts Bill Trerice began mining here in 1999, and mined until 2005. In 2003, a crew of two miners worked a single 9-hour shift daily to process two cuts: one 100 by 150 feet (30 x 45 m) and one 50 by 150 feet (15 x 45 m). The operation concentrated approximately 100 feet (30 m) from the valley centre on the left limit, near the confluence of an unnamed side pup. In 2004, the same crew worked a daily 8-hour shift to mine a cut 130 by 200 feet (40 x 60 m). In 2005, a crew of three miners worked a daily 9-hour shift to mine one cut 150 by 450 feet (45 x 140 m).

Equipment and Water Treatment In 2003 and 2004, a Komatsu D355A bulldozer with U-blade and ripper and a Caterpillar D8H with U-blade and ripper were used for stripping, while a Komatsu 220 excavator with a ¾-cubic-yard bucket was used to feed the wash plant. A Case 125B excavator with a ¾-cubic-yard bucket was used for ditching and stockpiling pay. Mr. Trerice also had a churn drill on the site for testing. The wash plant consisted of a 4- by 26-foot Beaver trommel, supplied with 1200 igpm by a Monarch 6-inch pump powered by a 30 hp electric motor. The processing rate was 35 loose cubic yards per hour. Effluent was settled in-stream and recycled. Due to low water supply, only 300 hours were spent sluicing in 2004. In 2005, the Komatsu D355A bulldozer was used for stripping while a Komatsu WA250 loader was used for hauling overburden, moving pay to the wash plant and feeding the wash plant. The Komatsu 220 excavator was used for ditching and stockpiling and the Caterpillar D8H was used for stockpiling. The same wash plant was used but the processing rate was reduced to 30 loose cubic yards per hour. Effluent was settled in-stream and

Aerial view of Bill Trerice's operation on Back Creek, 2003.

recycled. A total of 600 hours were spent sluicing. Clean-ups were done each year with the 'Green Machine'.

Surficial Geology and Stratigraphy From 2003 to 2005, the section consisted of 30 to 45 feet (10 to 15 m) of frozen glacial till overlying 10 to 15 feet (3 to 5 m) of pay gravel on bedrock. All of the material below the glacial till was sluiced.

Bedrock Geology Bedrock at this site is decomposed schist.

Gold Characteristics In 2003, the gold was described as angular with 80% minus 12 mesh, but with some nuggets up to 2 ounces, including a few with attached quartz. The fineness was 820. Gold recovered in 2004 was finer grained with very few nuggets, and the fineness was 820. In 2005, the gold became coarser on the upstream end of the cut, and was similar to that recovered in 2003. The fineness was 815.

BACK CREEK, a tributary of Victoria Creek

115I/3 2006: 62°03'48"N, 137°07'18"W

38557 Yukon Inc.
Water license: PM99-047 (2009, Licensee: Bill Trerice)
Active producer (2006) **Operation no. 165**

Location The area of mining activity was in the valley and on the left limit of Back Creek approximately 2 miles (3 km) upstream of the confluence with Victoria Creek.

Work History and Mining Cuts The operators bought this property from Bill Trerice in 2005. They had sluiced approximately 1800 cubic yards (1400 m^3) as of September 6, 2006.

Equipment and Water Treatment In 2006, equipment on site included a loader, Caterpillar D8H bulldozer and wash plant. The operator was recycling water for sluicing and used a total of four ponds.

Surficial Geology and Stratigraphy The section consisted of 30 to 45 feet (10 to 15 m) of frozen glacial till overlying 10

Bill Trerice sluicing on Back Creek, 2004.

to 15 feet (3 to 5 m) of pay gravel on bedrock. All of the material below the glacial till was sluiced.

Bedrock Geology Bedrock at this site is decomposed schist.

Gold Characteristics Gold was described as a mixture of fine and coarse grains. The fineness was 815 to 820.

DISCOVERY CREEK, a tributary of Nansen Creek

115I/3 2005: 62°03'09"N, 137°11'53"W

Don Frizzell
Water license: PM98-058 (2008)
Active producer (2003-2005) **Operation no. 166**

Location This operation was located on Discovery Creek, a left-limit tributary to Nansen Creek.

Work History and Mining Cuts Don Frizzell began mining on Discovery Creek in 2002. No mining was conducted in 2003, although some access road repairs were done. In 2005, mining was done on weekends over the summer. Two areas were stripped as a test and improvements were made to settling ponds. One small cut was mined at the confluence of Eliza Creek with Discovery Creek.

Equipment and Water Treatment In 2005, equipment included a Caterpillar D7E bulldozer, a Caterpillar 966 loader, and a Caterpillar 235 excavator. The wash plant consisted of a grizzly feeding into a 4- by 19-foot trommel which screened to minus ¾-inch and fed two 2- by 12-foot oscillating sluice runs. Tailings were stacked with a 32-foot conveyor. Water was pumped at 1000 igpm by a GM671-powered 8- by 6-inch pump and material was processed at 40 to 50 loose cubic yards per hour. Water was acquired from Discovery Creek, groundwater and permafrost melt and effluent was settled into an in-stream pond with some recirculation. Clean-ups were done with a two-cell jig.

Surficial Geology and Stratigraphy The area of mining activity was in a steep, narrow valley with 2 to 6 feet (0.6 to 2 m) of partly frozen overburden which contained boulders to a depth of up to 3 feet (1 m). In 2005, the operator exposed some clay layers on north-facing slopes.

Bedrock Geology Bedrock along the main stream varies from fractured to decomposed quartz feldspar porphyry and granodiorite. On the South Fork the bedrock is yellow decomposed schist.

Gold Characteristics In 2005, the gold was very fine grained with some small flat nuggets ½ inch to ¾ inch (1 to 2 cm). Black sand was abundant and some mercury was noted. The fineness was 850.

NANSEN CREEK, a tributary of Nisling Creek

115I/3 2005: 62°04'32"N, 137°13'42"W

Johnson Exploration, Brian Johnson, Loren Johnson
Water license: PM04-449 (2015)
Active producer (2003-2006) **Operation no. 167**

Location The property was located on the left limit of Nansen Creek, between just downstream of the mouth of Dolly Creek and just upstream of the mouth of Discovery Creek.

Work History and Mining Cuts Brian and Loren Johnson have been mining on Nansen Creek since 1994. From 2003 to 2006, the Johnson brothers continued daily 12-hour shifts to mine cuts averaging 200 by 325 feet (60 x 100 m) each year.

In 2003, extensive reclamation work was conducted on the property and sluicing operations continued. In 2004, operators stripped the lower claim to a depth of approximately 30 feet (10 m). Pay material was transported by loader upstream to the sluice plant. In 2005, they started stripping the claims on the left limit of Nansen Creek above the mouth of Discovery Creek. In 2006, they diverted Discovery Creek to the left limit of Nansen Creek and began mining the upper claim area.

Equipment and Water Treatment Equipment consisted of a Caterpillar D9H for stripping, stacking pay and reclamation; a Caterpillar 235 excavator for stripping, establishing drainage and stacking pay; a Caterpillar 988B loader for stripping, hauling pay and tailings; a Caterpillar 980C loader for stripping, hauling pay and tailings; and a Caterpillar 966D loader for hauling pay and tailings. The wash plant consisted of a 16-foot belt feeder which fed pay to a 7-foot-diameter by 40-foot-long trommel which classified to minus 1 inch. The two 26-foot sluice runs, each had 10 feet of live bottom riffles followed by 16 feet of 2½-inch expanded metal screens. Water was supplied from Nansen Creek and pumped by a 4- by 4-inch Cummins-powered pump at 800 igpm, enough to process 100 loose cubic yards per hour. Effluent was treated in two large ponds and discharged back to Nansen Creek. Clean-ups were done with an IRD Duplex clean-up jig with two 12- by 12-inch cells, and final concentration was done with a magnet and gold wheel.

Surficial Geology and Stratigraphy The section consisted of 4 to 6 feet (1 to 2 m) of organic material overlying 12 to 16 feet (4 to 5 m) of sandy gravel overburden overlying 6 feet (2 m) of clay-rich cobbly gravel. Most of the lower gravel was sluiced.

Gold Characteristics The majority of the gold was 50 mesh and finer, but with localized nuggets weighing less than 12 grams (0.4) oz). The fineness was 800.

Johnson Exploration mining on Nansen Creek at the mouth of Discovery, 2003.

EAST FORK OF NANSEN, a tributary of Nansen Creek

115I/3 2003: 62°05'57"N, 137°12'36"W

Jack Coghlin, Beryl Potter
Water licenses: PM98-069 (2009), PM97-051 (2008)
Active producer (2003) **Operation no. 168**

Location This operation was located on the East Fork of Nansen Creek.

Work History and Mining Cuts Jack Coghlin and Beryl Potter began mining on the East Fork of Nansen Creek in 1995, after moving from Back Creek. They operated every season until 2004. In 2003, Coghlin began the season stripping an area on the left limit of East Fork of Nansen Creek, just upstream from the previous seasons' mining area. Overburden was stripped on the right limit of the south fork of Nansen Creek, above the settling facilities. This operation was sold in 2004 to Frank Yan (38241 Yukon Inc.).

Equipment and Water Treatment Caterpillar D9H and D7F bulldozers, both equipped with U-blades and rippers, were utilized for stripping and pushing pay. A 6-cubic-yard Trojan loader was used to feed the sluice plant and move tailings. The wash plant included a 10- by 16-foot hopper over a 6- by 24-foot trommel with a ½-inch screen, feeding a 2- by 24-foot sluice run lined with 2 feet of riffles. The

amount of pay material processed was 30 to 40 cubic yards per hour. Effluent was settled out-of-stream in a series of ponds, the largest of which measured 100 by 50 by 12 feet. During periods of low water, the operator recycled 100% of the process water and during periods of normal water flows, a 40% recycle rate was employed. Water was acquired from the East Fork and provided to the sluice plant by a GM electric motor-powered 6-inch Flyte pump at a rate of 800 igpm.

Surficial Geology and Stratigraphy Overburden was 2 to 4 feet (0.6 to 1 m) in thickness overlying about 4 feet (1 m) of gravel. The pay zone was generally 3 to 4 feet (0.9 to 1 m) thick and the size of material ranged from pebble size to small boulders. Bedrock near the mouth was between 25 to 30 feet (8 to 9 m) from surface.

Gold Characteristics Gold ranged from very fine-grained dust to rough-textured nuggets. The majority of gold was in the range of 35 mesh to 50 mesh. Fineness ranged from 790 to 820.

EAST FORK OF NANSEN, a tributary of Nansen Creek

115I/3 2004: 62°06'05"N, 137°12'31"W

38241 Yukon Inc., Frank Yan
Water licenses: PM98-069 (2009), PM97-051 (2008)
Active producer (2005-2006) **Operation no. 169**

Location This operation was located on the East Fork of Nansen Creek, and was bought by Frank Yan from Jack Coghlin in 2004.

Work History and Mining Cuts Frank Yan bought this property from Jack Coghlin in 2004 and began mining in 2005.

A crew of two miners worked a daily 10-hour shift to process two cuts: one 150 by 40 by 10 feet (45 x 10 x 3 m) or 2222 cubic yards (1700 m^3), and one 200 by 100 by 6 feet (60 x 30 x 2 m) or 4444 cubic yards (3400 m^3). In 2006, a series of test holes were excavated along the bottom end of the East Fork of Nansen Creek.

Equipment and Water Treatment Equipment consisted of a Caterpillar D9H with U-blade and ripper, a Trojan loader with a 6-cubic-yard bucket, a Michigan loader with a 4-cubic-yard bucket and a Hitachi excavator with a 1-cubic-yard bucket. The wash plant consisted of a 6- by 24-foot trommel with a hopper and two 2- by 24-foot sluice runs with expanded metal, active water riffles and Nomad matting. Water was acquired from the East Fork of Nansen and supplied by a 16-inch Flyte electric pump with a throughput of 400 igpm. Effluent was settled in four out-of-stream ponds. Clean-ups were done with a long tom and gold wheel.

Surficial Geology and Stratigraphy The section consisted of 2 feet (0.6 m) of organic material overlying 4 feet (1 m) of overburden and 4 to 6 feet (1 to 2 m) of pay gravel. The gravel was frozen, orange and brown, and ranged in size from pea gravel to 12 inches (30 cm), with the average 1 inch (2 cm) in size. The section was above the water table.

Gold Characteristics The gold was described as rough, and mainly 35 to 60 mesh in size but ranging down to 100 mesh. It was dull in colour and the fineness was 800.

UNNAMED CREEK, a tributary of Klaza River

115I/3 2006: 62°08'12"N, 137°16'23"W

Bill Trerice
Water license: PM03-325 (2009)
Exploration (2006) **Operation no. 170**

Location This operation was located on an unnamed left-limit tributary of Klaza River in the vicinity of Ted Tullis' 1992 operation.

Work History and Mining Cuts Mr. Trerice worked a daily 10-hour shift drilling, stripping and testing in 2006. One cut 500 by 120 feet (150 x 40 m) was stripped along the right limit of the creek in preparation for slucing in 2007.

Equipment and Water Treatment Equipment consisted of a Case 125B excavator for stripping and testing, and a Hough 100 loader for stripping.

Surficial Geology and Stratigraphy From 2 to 3 feet (0.6 to 0.9 m) of black muck was exposed overlying a thin gravel. Bedrock was not reached.

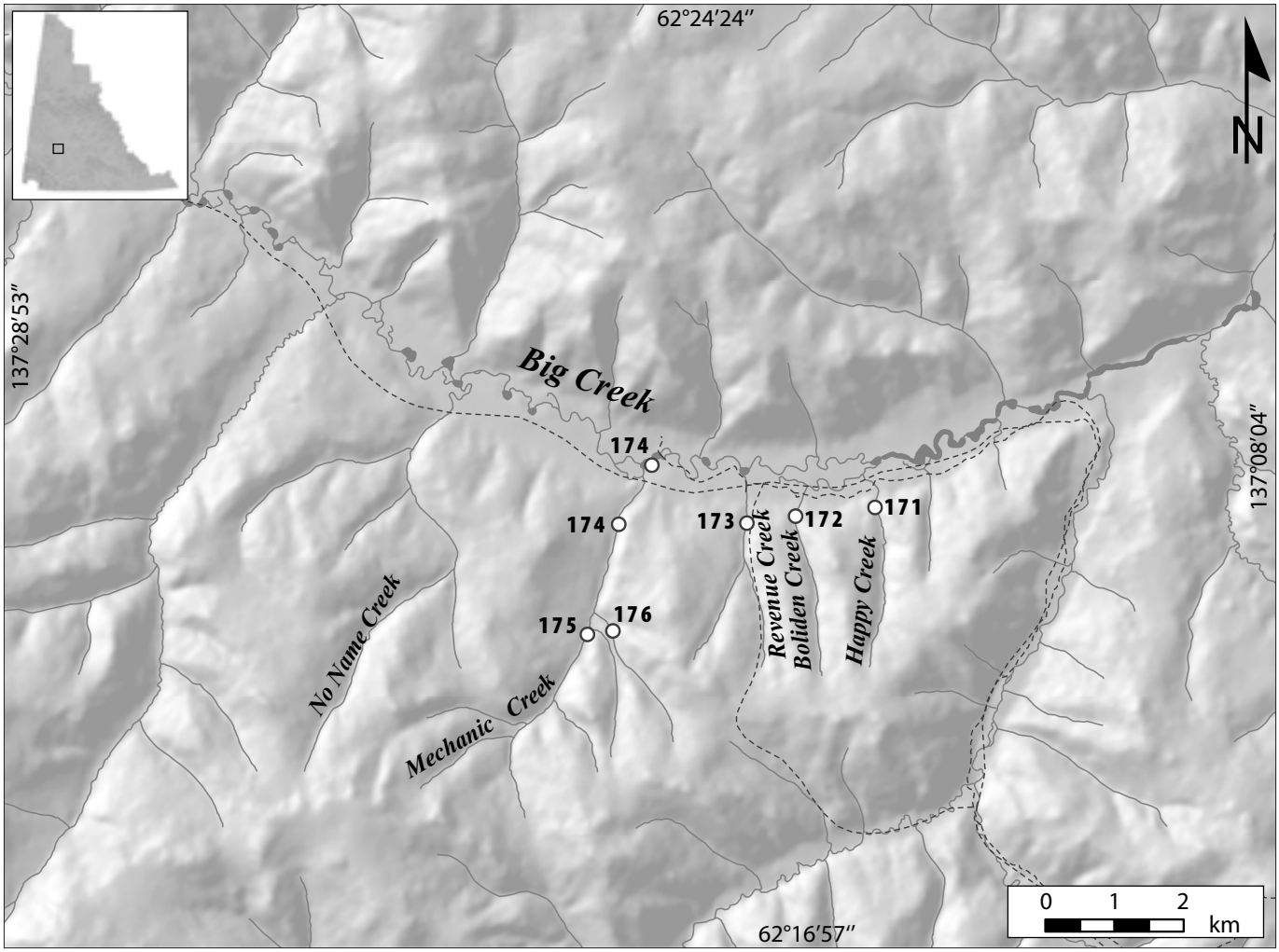
38421 Yukon Inc. mining on the East Fork of Nansen Creek, 2005; view looking northwest.

DAWSON RANGE DRAINAGES

BIG CREEK

PLACER AREA

SITES 171-176



LEGEND

171.....Acker
172.....Warde
173.....Right Fork Mining/ Gow - Revenue Creek
174.....Right Fork Mining/ Gow - Mechanic Creek
175.....Fehr
176.....Darling

HAPPY CREEK, a tributary of Big Creek

115I/6 2006: 62°20'34"N, 137°14'16"W

David Acker
Water licenses: PM03-343 (2013), PM97-043 (2003)
Active producer (2003-2006) **Operation no. 171**

Location The operation is located on Happy Creek, a tributary of Big Creek.

Work History and Mining Cuts Since 1998, Mr. Acker has concentrated his efforts of stripping and sluicing on the upper left-limit bench, as well as working upstream in the valley. In 2005, the operator sluiced material at the bank on the left limit and worked upstream.

Equipment and Water Treatment Several types and sizes of equipment have been utilized at this operation. A bulldozer was used to strip overburden and to push pay gravel, and a loader was used to feed the sluice plant. A small screen deck was utilized to process pay material. Water was obtained primarily by recirculation from the final settling pond. Total creek flow from Happy Creek was diverted in the settling pond system.

Bedrock Geology Bedrock consists of granite and decomposed schist.

BOLIDEN CREEK, a tributary of Big Creek

115I/6 2005: 62°20'32"N, 137°15'37"W

Mike Warde, Ella Baker
Water license: PM04-391 (2015)
Active producer (2003-2006) **Operation no. 172**

Location The operation was located at the confluence of Boliden Creek with Big Creek and farther upstream on Boliden Creek.

Work History and Mining Cuts Mike Warde began working here in 1999. In the 2003 to 2005 mining seasons, Mike Warde and Ella Baker worked a daily 10-hour shift to mine three cuts. Each of these was 300 feet (100 m) long by 30 to 40 feet (9 to 10 m) wide, tapering off upstream at the upper edge of

David Acker's operation on Happy Creek, 2003.

Mike Warde's operation on Boliden Creek, 2005.

the fan. Overburden was pushed to one side and the gravel and some silt layers were thawed with a monitor. In 2006, mining continued as an in-stream cut was excavated.

Equipment and Water Treatment Equipment included two Caterpillar D8 bulldozers which were used to strip, push pay and push tailings, and a Caterpillar 235 excavator with a 1.5-cubic-yard bucket used to feed the wash plant and clean the settling ponds. The wash plant consisted of a 4- by 8-foot double screen deck (1½-inch and 1⅝-inch openings) with one 4- by 12-foot sluice run lined with expanded metal and one 4- by 6-foot sluice run with active riffles. Water was pumped by a 4-cylinder diesel-powered 6- by 5-inch Vancouver pump with enough water to process 30 to 35 loose cubic yards per hour. Effluent was 100% recycled from 5 out-of-stream ponds each 40 by 80 feet (10 x 20 m) in size. Clean-ups were done with a long tom and Deister table.

Surficial Geology and Stratigraphy From 2003 to 2006, the operation concentrated on a paleo-alluvial fan which has a gentle slope on the upstream end, but drops sharply into Big Creek valley. The section consisted of 4 to 20 feet (1 to 6 m) of red-stained angular gravel interbedded with silt, black muck and bones, overlying up to 30 feet (10 m) of angular gravel with occasional boulders up to 3 feet (0.9 m) in diameter. Up to 30 feet (10 m) of the lowest gravel was sluiced, as well as 2 to 3 feet (0.6 to 0.9 m) of bedrock.

Bedrock Geology Bedrock consists of blocky and decomposed red and green stained granite.

Gold Characteristics The gold was reported as mostly fine and angular, with some wires. In the fan, 5% of the gold was plus 10 mesh, 20% was 20 to 40 mesh and 60% was minus 100 mesh. The fineness was 870 to 900. The gold was coarser at the top of the fan with nuggets from ¼ to ¾ ounce (8 to 20 g).

REVENUE CREEK, a tributary of Big Creek

115I/6 2003: 62°20'30"N, 137°16'27"W

Right Fork Mining, John Gow, Diane Gow, Buddy Gow
Water licenses: PM03-346 (2014), PM99-149 (2005), PM99-053 (2004)
Active producer (2003-2004) **Operation no. 173**

Location The operation was located in the right limit of Revenue Creek.

Work History and Mining Cuts The Gow family has been mining in this area since 1993. In 2003, stripping began on the right limit of Revenue Creek again, just upstream from the settling facilities. A cut was started which was subsequently monitored, drained and stockpiled through the summer and mined in the fall of 2003 and finished in 2004. This pit was 200 feet (60 m) long, 80 feet (20 m) wide and 20 feet (6 m) deep, for a total of 10,750 cubic yards (8220 m^3) sluiced during those two years. Hank Fehr, a miner from upper Mechanic Creek, moved his sluice plant to Revenue Creek in 2003 and assisted in sluicing stockpiled pay gravel in the fall of 2003 and for part of 2004.

Equipment and Water Treatment From 2003 to 2004, equipment included an 890 John Deere excavator with a 1¾-cubic-yard digging bucket for feeding the sluice plant, a Hitachi UH172 excavator with a 1¾-cubic-yard digging bucket for stripping, excavating pay gravel and cleaning out settling ponds, and a Caterpillar 980B loader for hauling tailings. In addition, a Caterpillar D9L bulldozer was used for stripping and recontouring tailings, and a Caterpillar D7 bulldozer was used to push pay material to the sluice plant. A hydraulic monitor mounted on a Bombardier Muskeg Carrier was used to monitor the cut.

The wash plant consisted of a 4-cubic-yard hopper attached to a vibrating screen deck measuring 4 feet wide by 10 feet long. Materials passed through a 4-inch screen, a 2-inch screen and a ⅝-inch screen before entering a triple-run sluice 10 feet wide by 20 feet long. The first 10 feet were lined with 6-pound expanded metal and the bottom 8 feet held Hungarian riffles. Nomad matting lined the entire sluice run, the expanded metal portion of which had a 1¾-inch per foot

slope. The riffle section was sloped at 3 inches to the foot. A 30 kilowatt generator powered by a Dorman engine ran the screening plant. Approximately 35 loose cubic yards of material were processed per hour. Water was acquired from in-stream recirculation ponds at a rate of 1000 igpm using a 6- by 5-inch Cornell pump powered by a 6-cylinder Deutz diesel engine. The effluent was treated in a series of these in-stream ponds before the final point of compliance. Clean-ups were done with a 'Green Machine', where concentrates were poured into a 1-cubic-foot hopper, which fed onto a 10- by 30-inch vibrating ⅛-inch screen and into a 1- by 4-foot sluice run with live bottom riffles. Tailings off the ⅛-inch screen fed into a boil box which retained gold that did not go through the ⅛-inch screen. Final concentrates were put through a gold wheel, dried and smelted.

Surficial Geology and Stratigraphy From 2003 to 2004, the section on Revenue Creek consisted of 10 feet (3 m) of layered sand, silt and fine gravel overlying 20 feet (6 m) of interbedded gravel, silt and black muck with rocks up to 6 feet (2 m) in diameter. A thin clay layer was draped on bedrock. The top 10 feet (3 m) were considered overburden and the bottom 20 feet (6 m) of gravel just above the clay layer were sluiced. Fine gold was found in all gravel layers up to 5 feet (1.5 m) from the surface.

Bedrock Geology Bedrock at this site is fractured to partially decomposed quartz-feldspar porphyry with abundant quartz veinlets.

Gold Characteristics In 2003 and 2004, the gold was a mixture of wires, beady round balls up to 0.19 oz (6 g) in weight, and fine-grained nuggets in a range of sizes. Of the fine gold, 50 to 60% was 40 to 50 mesh, 20% was 20 mesh and 20 to 30% was minus 80 to minus 200 mesh. Fineness was 890 to 910.

MECHANIC CREEK, a tributary of Big Creek

115I/6 — 2005: 62°20'33"N, 137°18'37"W; 2003: 62°21'00"N, 137°18'00"W

Right Fork Mining, John Gow, Diane Gow, Buddy Gow
Water license: PM03-347 (2014)
Active producer (2000-2006) — **Operation no. 174**

Location This operation was located at the mouth of Mechanic Creek and upstream.

Work History and Mining Cuts The Gow family has mined on Mechanic Creek since September 2000. In 2003, a mining cut which they had started in 2002 was finished, and another cut 350 by 80 by 20 feet (105 x 25 x 6 m) was completed, for a total of 16,700 cubic yards (12 800 m^3) sluiced. In 2004, a cut 350 by 90 by 10 feet (105 x 30 x 3 m) was processed for a total of 11,612 cubic yards (8872 m^3) sluiced. A cut measuring 160 by 33 by 4 feet (50 x 10 x 1 m) was stripped on the left limit and stockpiled for future reclamation work. In 2005, a cut 450 by 100 by 20 feet (140 x 30 x 6 m) was processed; the top 5 feet (1.5 m) were stripped and the bottom 15 feet (5 m) were sluiced, for a total of 20,000 cubic yards (15 000 m^3) sluiced. Some monitoring was also done. A cut on the left limit was stripped for a total of 5000 cubic yards (4000 m^3). In 2006, approximately 3000 cubic yards (2000 m^3) of material were processed. The Gows also rented out their Revenue Creek camp to a local hardrock exploration company.

Equipment and Water Treatment Equipment included a John Deere 890 excavator with a 1¾-cubic-yard digging bucket for feeding the sluice plant, a Hitachi UH172 excavator with a 1¾-cubic-yard digging bucket for stripping, excavating pay gravel and cleaning out settling ponds, and a Caterpillar 980B loader for hauling tailings. In addition, a Caterpillar D9L bulldozer was used for stripping and recontouring tailings, and a Caterpillar D7 bulldozer was used to push pay material to the sluice plant. A hydraulic monitor mounted on a Bombardier Muskeg Carrier was used to monitor the cut. The wash plant consisted of a 4-cubic-yard hopper attached to a vibrating screen deck measuring 4 feet wide by 10 feet long. In 2006, a Derocker was added to the screen deck because of the coarse boulders present. Materials passed through a 4-inch screen, a 2-inch screen and a ⅝-inch screen before entering a triple-run sluice 10 feet wide by 20 feet long. The first 10 feet were lined with 6-pound expanded metal and the bottom 8 feet held Hungarian riffles. Nomad matting lined the entire sluice run, the expanded metal portion of which had a 1¾ inch per foot slope. The riffle section was sloped at 3 inches to the foot. A 30-kilowatt generator powered by a Dorman engine ran the screening plant. Approximately 35 loose cubic yards of material were processed per hour. Water was acquired from out-of-stream

settling/recirculation ponds at a rate of 1000 igpm using a Gorman Rupp trash pump powered by a 5-cylinder Dorman diesel engine. The effluent was treated in these same ponds with no discharge to Mechanic Creek. Clean-ups were done with a 'Green Machine', where concentrates were poured into a 1-cubic-foot hopper, which fed onto a 10- by 30-inch vibrating ⅛-inch screen and into a 1- by 4-foot sluice run with live bottom riffles. Tailings off the ⅛-inch screen fed into a boil box which retained any gold that did not go through the ⅛-inch screen. Final concentrates were put through a gold wheel, dried and smelted.

Surficial Geology and Stratigraphy In 2003 and 2004, the area worked was thawed due to previous stripping activity. The section consisted of 10 feet (3 m) of gravel overlying a clay layer, lying directly on top of bedrock. The gravel varied in texture from well sorted, fine-grained gravel to poorly sorted coarse gravel with 50% boulders. All of the gravel down to the clay layer was sluiced. Large boulders ranging from 2 to 4 feet (0.6 to 1 m) in diameter were scattered on bedrock. In 2005, the section consisted of 5 feet (1.5 m) of moss, ash and silt overlying 15 feet (5 m) of gravel interlayered with black muck and silt. The gravel ranged in texture from fine grained to very coarse grained with large boulders. A clay layer lined the bedrock. Gold was found in all gravel layers, and all of the gravel was sluiced down to the clay layer.

Bedrock Geology Bedrock at this site is a fractured to partially decomposed quartz-feldspar porphyry with abundant quartz veinlets.

Gold Characteristics From 2001 to 2005, the gold was a mixture of wire gold and round balls up to 0.2 oz (6 grams) and nuggets with a range in sizes. Some gold had quartz attached. Approximately 50% to 60% was 40 to 50 mesh, 20% was 20 mesh, and 20% to 30% was from minus 80 to minus 200 mesh. The fineness was 870 to 900.

Right Fork Mining's operation on Mechanic Creek, 2005. The Gow family sometimes fed Hank Fehr's plant as well as their own.

MECHANIC CREEK, a tributary of Big Creek

115I/6 2003: 62°19'42"N, 137°19'15"W

Hank Fehr
Water license: PM04-400 (2015)
Active producer (2003) **Operation no. 175**

Location This operation was located on Mechanic Creek in the vicinity of an unnamed right-limit tributary.

Work History and Mining Cuts Hank Fehr began working on this creek in 1998. He mined the property alone, working a single 10-hour shift. A small amount of stripping was completed in 2003. Mr. Fehr worked with Right Fork Mining in 2004 and 2005.

Equipment and Water Treatment Equipment consisted of a bulldozer utilized for stripping, and an excavator and a front-end loader for feeding pay material to the sluice plant and for general site maintenance. The wash plant was a trommel with a single sluice run. Water was supplied to the plant from Mechanic Creek and effluent was treated through a series of both in-stream and out-of-stream settling ponds.

Bedrock Geology Bedrock is a fractured to partially decomposed quartz-feldspar porphyry with abundant quartz veinlets.

MECHANIC CREEK, a tributary of Big Creek

115I/6 2005: 62°19'52"N, 137°19'06"W

Wes Darling
Water license: PM00-195 (2010)
Exploration (2003-2005) **Operation no. 176**

Location This operation was located on an unnamed tributary of Mechanic Creek.

Work History and Mining Cuts A number of test pits were excavated and material was test sluiced in the summer seasons between 2001 and 2005.

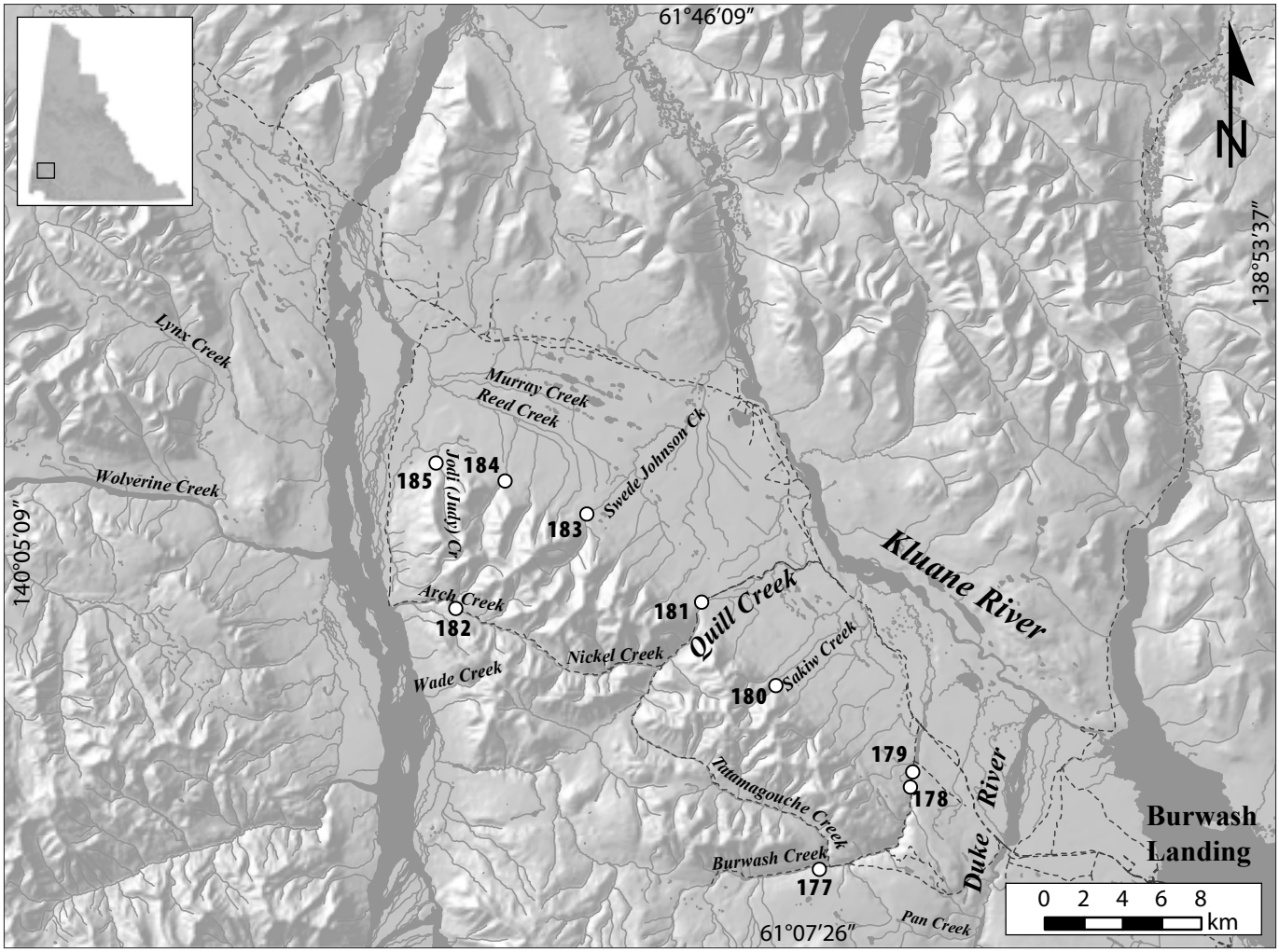
Equipment and Water Treatment A small test plant and bulldozer were used for the testing.

Surficial Geology and Stratigraphy The testing was conducted on a paleo-alluvial fan adjacent to Mechanic Creek.

Hank Fehr's bulldozer and two sluice plants on Mechanic Creek, 2003. Wes Darling's operation can be seen in the upper left background.

KLUANE
PLACER AREA

SITES 177-185



LEGEND

177.....Johnson
178.....Johnson, S. Jr.
179.....Hall/Northern Mineral Development Inc.
180.....Jeanson
181.....Nichols
182.....Dulac
183.....Smith
184.....Tremblay & Smith
185.....Mitchell

BURWASH CREEK, a tributary of Kluane River

115G/6 2006: 61°22'05"N, 139°19'22"W

Steve L. Johnson
Water license: PM04-453 (2010)
Active producer (2005-2006) **Operation no. 177**

Location The operation was located along Burwash Creek, immediately upstream of the mouth of Tatamagouche Creek.

Work History and Mining Cuts Steve Johnson has been active on Burwash Creek since 1993. In 2005, Johnson test mined approximately 130 cubic yards (100 m^3) of material. In 2006, Mr. Johnson conducted some stripping on the right limit of Burwash Creek across from the mouth of Tatamagouche Creek.

Surficial Geology and Stratigraphy The section in this area generally consists of 6 feet (2 m) of pay gravel on bedrock, overlain by 16 feet (5 m) of thawed creek gravel overburden.

Bedrock Geology This area is roughly the zone between a gabbro and latite porphyry, both igneous intrusive rocks. Minor amounts of pyrrhotite, pentlandite and chalcopyrite occur at the contact.

BURWASH CREEK, a tributary of Kluane River

115G/6 2004: 61°24'17"N, 139°14'02"W

Sam Johnson, Jr.
Water license: PM04-435 (2010)
Active producer (2004-2006) **Operation no. 178**

Location The operation was located on Burwash Creek on Kluane First Nation (KFN) Category A settlement land (R1A). Mr. Johnson had written permission from KFN. The operation was not on claims, but was between the downstream post of P03598 and the upstream post of P03915.

Work History and Mining Cuts Mr. Johnson mined briefly in 2004, and stripped and sluiced a small amount of ground in 2005 and 2006. The work was on both sides of the creek.

Equipment and Water Treatment Equipment included a Caterpillar 966 loader and small wash plant.

Sam Johnson Jr.'s sluicebox, loader and dog on Burwash Creek, 2005.

BURWASH CREEK, a tributary of Kluane River

115G/6 2003: 61°24'42"N, 139°13'52"W

Dale Hall, Charles Eikland Sr., Northern Mineral Development, Clarke Ashley
Water license: PM03-331 (2015, Licensee: Northern Mineral Development Inc.)
Active producer (2003-2006) **Operation no. 179**

Location This operation was located on the right limit of Burwash Creek.

Work History and Mining Cuts The property was first tested in 2001. Mining took place in 2002 and 2003 by Mr. Dale Hall with some stripping on the left limit. The property was largely inactive in 2004 and 2005. In 2006, Mr. Hall sold the claims to Mr. Clarke Ashley and Northern Mineral Development Inc. In 2006, the new operators, with a new water license, tested a new wash plant.

Equipment and Water Treatment A John Deere 690B excavator was used to feed the trommel and a Caterpillar D8H bulldozer was used to clear tailings and for pushing up pay gravel. A 6- by 8-foot hopper fed a 44-inch by 20-foot trommel which screened the material to ⅜-inch and ½-inch minus. Water was obtained from a ditch off of Burwash Creek with a Thompson 6-inch pump that was powered with a 635 Perkins diesel engine and was capable of providing 450 igpm. No water was returned to Burwash Creek as the four settling ponds were capable of total containment of the effluent. In 2003, this operation continued using a closed water use system.

Surficial Geology and Stratigraphy The section consisted of 3 feet (1 m) of organic material and silt, overlying 8 feet (2 m) of gravel with small boulders on a bedrock terrace. The area worked was not frozen and was relatively flat. Ground penetrating radar conducted in 2005 determined that bedrock in the valley was deeper than 60 feet (20 m).

Bedrock Geology The rocks exposed along Burwash Creek consist of mafic igneous rocks including diorite, andesite, basalt and gabbro, as well as sedimentary rocks such as shale, slate, chert, limestone and conglomerate.

Gold Characteristics The gold was reported as fine and flat and quite bright in colour, and described as well travelled. Fineness was 740.

Andre Jeanson's operation on Sakiw Creek, July 2005.

SAKIW CREEK, a tributary of Kluane River

115G/6 2003: 61°27'10"N, 139°21'36"W

Andre Jeanson
Water license: PM05-459 (2011)
Exploration (2003) **Operation no. 180**

Location This property was located on Sakiw Creek.

Work History and Mining Cuts Mr. Andre Jeanson dug some test holes in 2003.

Equipment and Water Treatment The operator used a wheeled Caterpillar 416 excavator.

QUILL CREEK, a tributary of Kluane River

115G/11, 115G/6 2004: 61°29'31"N, 139°25'44"W

Joe Nichols, Robert Hanson
Water license: PM99-042 (2005)
Active producer (2003-2004) **Operation no. 181**

Location The operation was located just downstream of the canyon at Quill Creek, where the valley widens.

Work History and Mining Cuts Willie Pfisterer began working on Quill Creek in the late 1980s, mining an average of 6000 cubic yards (4600 m^3) each year until he sold the operation in 2002 to Joe Nichols and Robert Hanson. Mr. Nichols and Mr. Hanson conducted a program of stripping, testing and some limited sluicing on the right limit of Quill Creek in 2002 and shifted to the left limit in 2003 and 2004. The operation shut down and was reclaimed in 2005.

Equipment and Water Treatment Equipment on-site included a Case 850 loader and a Link-belt 2800 excavator. Both pieces of equipment were used for testing, stripping and feeding the wash plant. The wash plant included a 4- by 8-foot grizzly with spray bar over a 12-foot-long single-run sluice, which

processed 10 loose cubic yards per hour. Water was obtained from Quill Creek with a pump that was equipped with two 3-inch suction hoses. The effluent was treated in a series of two to four settling ponds.

Surficial Geology and Stratigraphy The stratigraphic section generally consisted of 12 feet (4 m) of thawed, mixed layers of sand, silt and boulder-cobble gravel. Most coarse gravel layers contained gold values, but the highest grades were with the biggest boulders and at the bedrock contact.

Bedrock Geology Bedrock in the area consists of a mixture of various volcanic, ultramafic and sedimentary rocks.

Gold Characteristics The gold was a mixture of fine and coarse grains, with that recovered from the right limit tending to be chunkier, with round, ball-like nuggets 3 to 5 g (0.1 oz to 0.2 oz) in weight. Copper was found in the concentrate from cuts on either side of the stream. Fineness was 870.

ARCH CREEK, a tributary of Donjek River

115G/5 2005: 61°29'30"N, 139°39'55"W

Marcel Dulac
Water license: PM03-326 (2008)
Active producer (2004-2006) **Operation no. 182**

Location This operation was located in the canyon of Arch Creek.

Work History and Mining Cuts In 2004, a crew of three miners and one camp person worked a daily 8-hour shift. One cut was mined, 60 feet wide, 120 feet long and 6 feet deep (20 x 40 x 2 m). In 2005, the same crew mined four cuts, each 30 feet wide, 9 feet long and 6 feet deep (10 x 3 x 2 m). In addition, several test pits were dug upstream of the mining. The operation sluiced in 2006 with a smaller crew, on the left limit approximately 1500 feet (450 m) from the Arch.

Equipment and Water Treatment In 2004, the equipment on site consisted of a Case 125B excavator. In 2005, a Caterpillar 988A loader and Hitachi UH172 excavator were added. The wash plant for both years consisted of a shaking hopper with a screen deck (1½-inch classification), boil boxes for nugget traps and a 2-foot-wide double sluice run with ¾-inch punch

View of Joe Nichols' operation on Quill Creek, 2004.

plate. The 12- by 10-inch pump was Detroit-powered and supplied enough water to process 40 (in 2004) to 60 (in 2005) loose cubic yards per hour. Water was acquired from an in-stream pump pond and effluent was settled in-stream. Clean-ups were done with jigs and a gold wheel.

Surficial Geology and Stratigraphy In the narrow canyon with 300-foot (100-m) walls, the section consisted of many boulders the size of pickup trucks and small houses which made mining difficult. Depth to bedrock varied from 2 to 10 feet (0.6 to 3 m), and all material was sluiced.

Gold Characteristics The gold was very coarse and chunky, some smooth and some with quartz. The majority were nuggets, with 50% of the gold weighing 1 gram or more. The fineness was 870.

SWEDE JOHNSON CREEK, a tributary of Kluane River

115G/12 2006: 61°32'01"N, 139°32'14"W

Lorne E. Smith

Water licenses: PM05-491 (2011), PM04-399 (2009)

Exploration (2006) **Operation no. 183**

Location The operation was located midway up Swede Johnson Creek.

Work History and Mining Cuts Lorne Smith conducted intermittent test work and small-scale mining between the mid 1980s and early 1990s. In 2006, activity was limited to approximately 80 cubic yards (60 m^3) of material for testing purposes.

Surficial Geology and Stratigraphy Gold was said to occur in a winding pay streak.

Bedrock Geology Bedrock consists of Permian and earlier basic lava, banded cherty tuff, volcanic breccia, chlorite schist, minor greywacke, argillite and limestone. Gold values up to 0.25 oz/t (8.6 g/t) Au were obtained from specimens of quartz-carbonate altered volcanic rocks found near the headwaters (Yukon MINFILE 115G 027, Deklerk, 2006).

Marcel Dulac's operation in the narrow canyon of Arch Creek, 2005.

REED CREEK, a tributary of Donjek River

115G/12 2005: 61°32'59"N, 139°36'55"W

Lorne E. Smith, Larry Tremblay
Water license: PM02-288 (2007)
Active producer (2003-2006) **Operation no. 184**

Location The operation was located approximately 1000 feet (300 m) upstream from the mouth of the canyon.

Work History and Mining Cuts This operation was first active in 1989. Some sluicing was done in 2003 and 2004. In 2006, an area above the canyon that was worked five years prior was sluiced, as well as an area below the canyon. Mr. Smith moved to Swede Johnson Creek in 2006.

Equipment and Water Treatment Equipment included a Caterpillar D7 bulldozer and wheel-mounted excavator. Effluent was channeled down the left limit and seeped to ground with no discharge.

Bedrock Geology Bedrock is mapped as an assortment of volcanic rocks, chlorite schist, argillite and limestone.

Gold Characteristics The gold was reported to be mostly coarse, rough and angular. Many of the pieces found contain quartz and white and black quartz-carbonate material. Nuggets up to ¾ ounce (20 g) were recovered. Purity was from 889 to 896.

JODI CREEK, a tributary of Donjek River

115G/12 2003: 61°33'31"N, 139°40'52"W

Wayne Mitchell
Water license: PM02-266 (2008)
Exploration (2003) **Operation no. 185**

Location The operation was located at the mouth of the canyon.

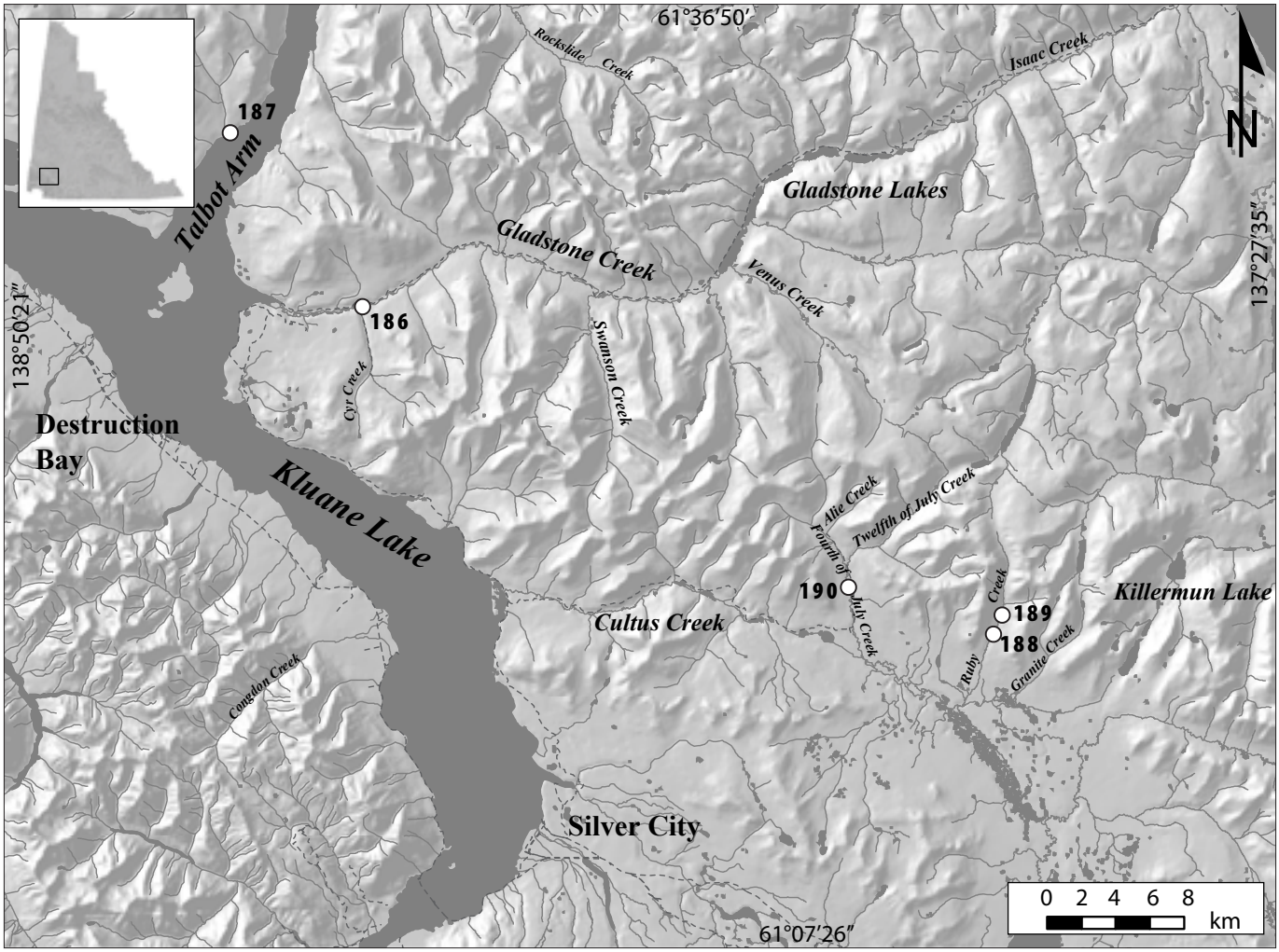
Work History and Mining Cuts In 2003, Mr. Mitchell mechanically excavated two trenches.

Equipment and Water Treatment Mr. Mitchell used an excavator.

Surficial Geology and Stratigraphy The creek empties from a canyon into the Donjek River floodplain. At the valley mouth are some glacial deposits likely derived from a cirque in the headwaters of Jodi Creek.

GLADSTONE
PLACER AREA

SITES 186-190



LEGEND

186.....Tic Exploration Ltd., Gladstone
187.....Tic Exploration Ltd., Talbot Arm
188.....Brewster & Strand
189.....MacKinnon
190.....Churchill Placers Ltd.

GLADSTONE CREEK, a tributary of Kluane Lake

115G/7

2006: 61°18'53"N, 138°33'50"W
2005: 61°18'52"N, 138°34'50"W
2003: 61°18'49"N, 138°34'13"W

Tic Exploration Ltd., Alan Dendys
Water licenses: PM06-510 (2015), PM05-481 (2015)
Active producer (2003-2006) **Operation no. 186**

Location Alan Dendys has mined on Gladstone Creek at various locations from approximately 1.5 miles (2 km) upstream from its confluence with Kluane Lake to just upstream of Cyr Creek.

Work History and Mining Cuts Al Dendys began working the property in 1992. He has built up the size of the operation in subsequent years and now operates two wash plants simultaneously each season. Early in the 2003 season, Mr. Dendys had one floating trommel working on the left limit of Cyr Creek and a second floating trommel working on the left limit of Gladstone Creek approximately 2 miles (3 km) downstream of Cyr Creek. By September, work ceased on Cyr Creek and both trommels were operating on the left limit of Gladstone Creek. Near the end of the season, operating began on the right limit immediately south of the unnamed creek. In 2004 and 2005, a crew of four miners and one camp person shared two 12-hour shifts. Both trommels continued to operate on Gladstone Creek on the right and left limits. Two cuts were completed in this period, each 1200 by 200 by 20 feet (360 x 60 x 6 m). In 2006, the 5-foot-diameter plant started work on the right-limit bench near camp, then moved to downstream of Cyr Creek on the left limit, then upstream to above the canyon. The 6-foot-diameter plant worked in the valley in the original creek channel up to the bottom of the canyon. The 5-foot-diameter plant processed a total cut size of 500 by 100 by 20 feet (150 x 30m x 6 m), and the 6-foot-diameter plant processed a cut 1200 by 200 by 15 feet (360 x 60 x 5 m).

Equipment and Water Treatment In the 2003 to 2006 seasons, equipment included two Caterpillar 330 excavators with 2-cubic-yard buckets, one Caterpillar 350 excavator with a 3-cubic-yard bucket, one Caterpillar D10N bulldozer with U-blade and ripper and two Caterpillar D9H bulldozers with U-blades and rippers. The bulldozers were used to mechanically strip the vegetation mat and top soil and reclaim the dredge tailings, while the excavators were used to process the glacial gravel. The wash plants were both floating trommels, one with a 6-foot-diameter and one with a 5-foot-

Tic Exploration's operations on Gladstone Creek in 2006. Channel diversion winds through photo while operation is in background; view looking east.

View of Tic Exploration's 5-foot-diameter trommel operating on the left limit of Gladstone Creek, 2006.

diameter. They both screened material to 1 inch minus which fed to hydraulic riffles followed by 2-inch flat bar riffles over Nomad matting. The 6-foot-diameter trommel processed 75 loose cubic yards per hour while the 5-foot-diameter trommel processed 50 loose cubic yards per hour. Each trommel was supplied water with a 6-inch pump; the pump for the 6-foot trommel was powered by a 6-litre Cummins diesel at 1200 igpm and the pump for the 5-foot trommel was powered by a 4-cylinder Lister at 1000 igpm. Water was acquired from Gladstone by seepage into the dredge ponds, and wastewater returned to Gladstone by seepage through the gravel. The out-of-stream dredge ponds were 200 by 50 feet (60 x 15 m) and 150 by 50 feet (45 x 15 m). Clean-ups were done with a Knudson bowl.

Surficial Geology and Stratigraphy The valley of Gladstone Creek has extensive glacial till, glaciolacustrine clay and glaciofluvial outwash from the most recent glaciation which occurred in the period between 30,000 and 10,000 years ago. This sedimentary package has been downcut by the modern stream to the current level of Gladstone Creek valley. The valley floor of Gladstone Creek is thawed, while the banks are usually frozen, especially the south (north-facing) bank. Deposits in the valley consist of up to 20 feet (6 m) of homogenous gravel, sand, cobbles and boulders on top of a clay layer, which acts as a false bedrock and traps placer gold in the same way. Low benches lie on each limit between the modern stream and the high clay banks. In the valley floor, most of the gravel and about 2 feet (0.6 m) of clay bedrock are usually sluiced. The section on the bench encountered from 2003 to 2005 consisted of 10 to 30 feet (3 to 9 m) of thawed glacial gravel with large boulders on a clay and schist bedrock. The bottom 10 to 20 feet (3 to 6 m) was sluiced.

Bedrock Geology Unconsolidated, wavy clay forms a false bedrock layer in the valley floor. Schist bedrock was exposed on the benches in 2005.

Gold Characteristics Between 2003 and 2006, the gold was reported as flat and angular as well as round, rough and chunky, with a fineness of 830.

UNNAMED CREEK, a tributary of Kluane Lake

115G/07 2005: 61°2 4'31"N, 138°42'03"W

Alan Dendys, Tic Exploration Ltd.
Water license: PM05-499 (2016)
Exploration (2005-2006) **Operation no. 187**

Location The testing occurred on two adjacent unnamed tributaries of Talbot Arm on Kluane Lake.

Work History and Mining Cuts Dendys first conducted limited testing in the summer of 2004. In the winter of 2004-2005, equipment was brought over, on the ice, from the Gladstone Creek operation to use in the 2005 season. Similarly, in the winter of 2005-2006, additional equipment was transported for testing in the summer of 2006. Mr. Dendys also began construction of an airstrip.

Equipment and Water Treatment Equipment used for testing included a Caterpillar 235 excavator, a Caterpillar 325L excavator, a Caterpillar D8H bulldozer, a Caterpillar 955 traxcavator and a test wash plant.

Surficial Geology and Stratigraphy The creek flows through a canyon and forms an alluvial fan delta into Kluane Lake. Fan gravel was a poorly sorted mixture of rounded boulders, cobbles and pebbles with sandy lenses and a calcite-cemented matrix. Similar placer deposit settings can be found on Mayo Lake in the Mayo Mining District.

RUBY CREEK, a tributary of Jarvis River

115H/4 2004: 61°07'45"N, 137°53'37"W

Dale Brewster, Diane Strand
Water license: PM00-208 (2005)
Active producer (2003-2004) **Operation no. 188**

Location This operation was located on the right limit of Ruby Creek.

Work History and Mining Cuts Mr. Brewster and Ms. Strand mined on the right limit of lower Ruby Creek from 1998 until 2004.

Equipment and Water Treatment A P&H excavator with a ¾-yard bucket was used for stripping and stockpiling, while a JCB wheeled backhoe with a ¼-yard bucket was used for feeding the sluice plant. The wash plant consisted of a 5- by 4- by 6-foot dump hopper over a 6- by 4-foot deck with ¾-inch screen, a 10-foot run of punch plate and a 16-inch by 3-foot riffle run. Water was obtained from Ruby Creek through the use of either a 5 horsepower 2-inch Honda pump, or a 16 horsepower 4-inch pump which produced 400 igpm. Effluent was settled out-of-stream with no discharge into Ruby Creek. In 2003, settling facilities consisted of three ponds over a distance of 1300 feet (400 m).

Surficial Geology and Stratigraphy The average overall depth of the mining section was 16 to 18 feet (5 to 5.5 m), and was

Tic Explorations' exploratory operation on an unnamed tributary of Talbot Arm (Kluane Lake) in 2006.

Brewster and Strand operation on Ruby Creek, 2005.

composed mostly of fine pebble-cobble gravel. Clay layers were exposed below the stream channel.

Bedrock Geology The bedrock at this site is wavy schist and quartzite.

Gold Characteristics Gold was reported to be bright in appearance with a mixture of flat, smooth and chunky textures. The average size was 60 mesh although some 0.06-ounce (2-g) nuggets were found.

RUBY CREEK, a tributary of Jarvis River

115H/4 2005: 61°08'21"N, 137°52'59"W

Brad MacKinnon
Water license: PM97-018 (2010)
Active producer (2003-2006) **Operation no. 189**

Location This operation was located on Ruby Creek upstream of the Brewster/Strand operation.

Work History and Mining Cuts Brad Mackinnon has been mining on Ruby Creek since 1998. From 2003 to 2006, approximately 5000 cubic yards (4000 m^3) per year were mined. The processing site was located on the right limit of Ruby Creek, immediately above camp.

Equipment and Water Treatment A Bucyrus Erie 15H excavator was used to feed the wash plant, while a John Deere 544 loader was used to remove tailings. A John Deere 750 bulldozer was used for ground preparation and recontouring. The wash plant was a 5-foot-diameter trommel feeding a sluice run with a 2-foot-wide section for coarse material and a 4-foot-wide section for fine material. Water was supplied by a Honda 4-inch pump and acquired from Ruby Creek. The

Brad MacKinnon sluicing at his Ruby Creek mine, 2005.

processing rate was 22 loose cubic yards per hour and effluent was settled out-of-stream. Clean-ups were done with a long tom and gold wheel.

Surficial Geology and Stratigraphy The section was described as glacial till intermixed with gravel. The depth to bedrock varied from 8 to 20 feet (2 x 6 m). The entire thickness was sluiced.

Bedrock Geology Bedrock at this site is schist and quartzite.

Gold Characteristics The gold recovered was coarse, rough and spongy with some crystals present. Quartz was commonly associated with the gold. The fineness was 835.

FOURTH OF JULY CREEK, a tributary of Jarvis River

115G/1 2004: 61°09'26"N, 138°02'54"W

Tom Churchill, Churchill Placers Ltd.
Water license: PM00-216 (2009)
Exploration (2004) **Operation no. 190**

Location The property was located on the Fourth of July Creek and extended a distance greater than 2 miles (4 km) below the left-limit tributary of Twelfth of July Creek to above the left-limit tributary of Snyder Creek.

Work History and Mining Cuts The property was mined by Sota Computing from 1999 to 2002. In 2003, the agreement with Sota Computing (John Fisher) expired, and property reverted back to Churchill Placers Ltd. In 2004, seven test drill holes were drilled for a total of 600 feet (180 m). All test sites were reclaimed prior to seasonal shut-down.

Equipment and Water Treatment In 2004, a Caterpillar D10N bulldozer, Caterpillar D8 bulldozer, Caterpillar 966 loader, drill truck, fuel tank, 6 by 6 truck, two rock trucks and a compressor truck were on site. A wash plant was located at the Alaska Highway.

Churchill Placers Ltd.'s camp and equipment, 2004.

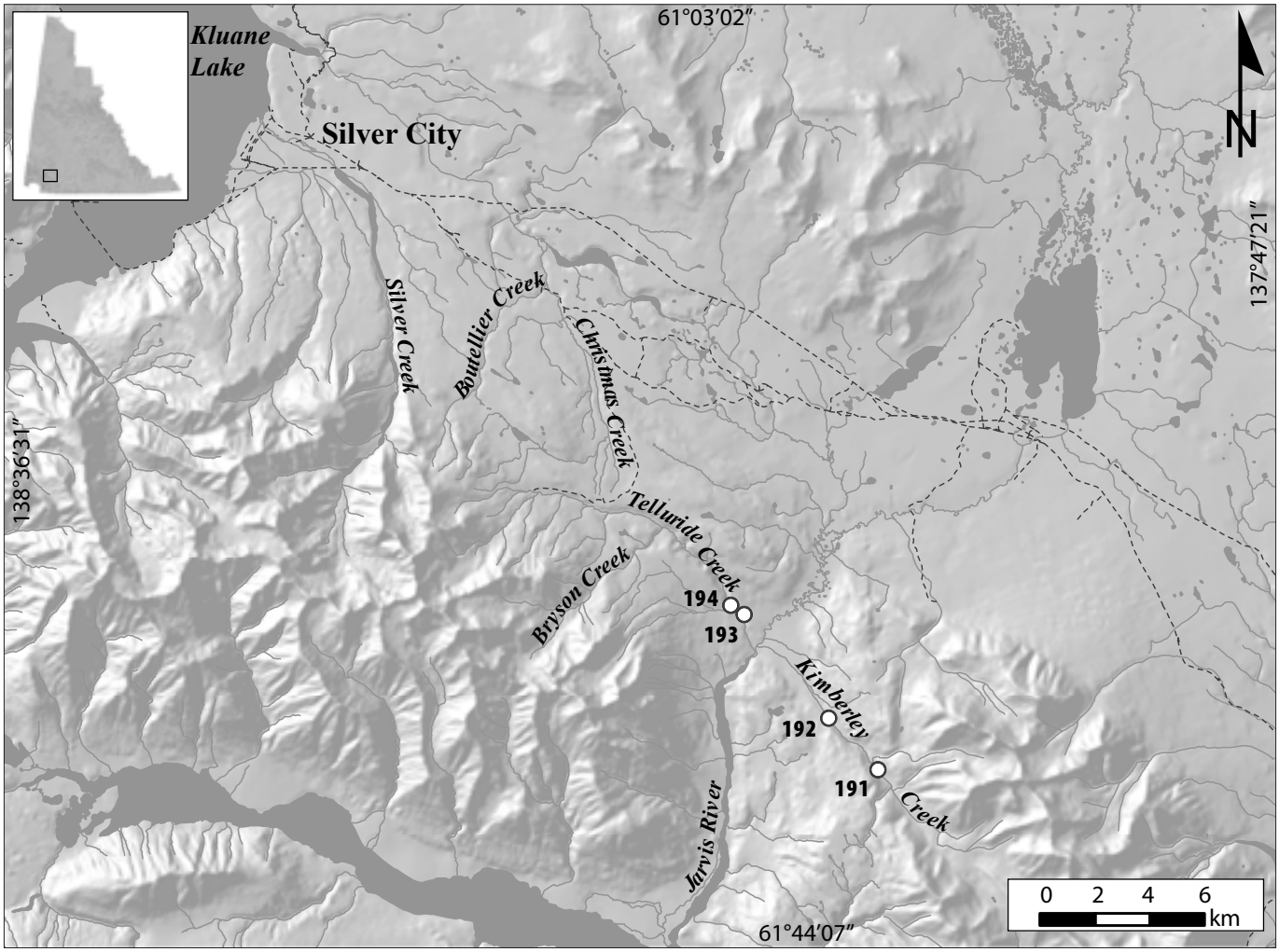
Surficial Geology and Stratigraphy Deposits consist of 1 foot (0.3 m) of muck overlying 12 to 20 feet (3.5 to 6 m) or more of gravel.

Bedrock Geology Bedrock consists of quartz-sericite-chlorite schist and minor quartzite.

Gold Characteristics Gold was reported as flat and rough-edged with local quartz. Approximately 95% was smaller than 14 mesh and fineness averaged 810.

KIMBERLEY
PLACER AREA

SITES 191-194



LEGEND

191.....Keller and Marty
192.....Sawyer
193.....Dulac
194.....Burton

KIMBERLEY CREEK, a tributary of Jarvis River

115A/13 2005: 60°49'00"N, 137°59'59"W

Hanspeter Keller, Josef Marty
Water license: PM04-442 (2015)
Active producer (2004-2006) **Operation no. 191**

Location This operation was located on Kimberley Creek upstream of Sawyer's operation.

Work History and Mining Cuts In 2004, one person hand mined and conducted limited testing with equipment. In 2005, a crew of two miners worked a daily 8-hour shift to mine four cuts; 235 by 30 by 14 feet (3655 cubic yards) (70 x 10 x 4 m; 2800 m^3), 125 by 10 by 14 feet (648 cubic yards) (40 x 3.5 x 4 m; 495 m^3), 25 by 10 by 14 feet (130 cubic yards) (8 x 3 x 4 m; 100 m^3), and 20 by 10 by 14 feet (104 cubic yards) (6 x 3 x 4 m; 80 m^3). In 2006, the operator worked on the right limit in the area of the access road.

Equipment and Water Treatment In 2004, a Caterpillar 931 backhoe was used to construct settling ponds and conduct limited testing. In 2005, a Link-belt 210 excavator was added and both machines were used for stripping and excavating. The recovery system consisted of a trommel and a jig. Water was pumped by a gas-powered Honda supplying 330 igpm, enough to process 20 loose cubic yards per hour. Water was supplied from Kimberley Creek and effluent was settled out-of-stream. In 2006, the operation employed four settling ponds with no discharge.

Keller and Marty's mining pits on Kimberley Creek, 2005.

Surficial Geology and Stratigraphy The section encountered was up to 14 feet (4 m) thick to bedrock, and contained gravel with abundant clay. The lower 2 feet (0.6 m) of gravel on bedrock was sluiced.

Gold Characteristics Gold consisted of smooth, dull nuggets weighing up to 0.19 oz (6 g).

KIMBERLEY CREEK, a tributary of Jarvis River

115B/16 2005: 60°50'03"N, 138°01'52"W

Pat Sawyer, Claire Sawyer
Water licenses: PM04-457 (2010), PM96-063 (2007)
Active producer (2003-2006) **Operation no. 192**

Location The property was located on Kimberley Creek, approximately 2 miles (3 km) above its confluence with the Jarvis River.

Work History and Mining Cuts The Sawyers began mining on Kimberley Creek in 1980, and have been back every year since. In 2003, they mined two cuts. The first was 768 cubic yards (587 m^3). The second, east bench cut, was 3500 cubic yards (2700 m^3). In 2004, three cuts were mined from both the east and west benches. One cut was 960 cubic yards (730 m^3), another was 768 cubic yards (587 m^3) and the final was 864 cubic yards (660 m^3). In 2005, two cuts totalling 2300 cubic yards (1800 m^3) were mined, one on the valley bottom and one on the bench. In 2006, the operation was set up on the right limit of Kimberley Creek, across from the 2005 site. Between June and August, the operation returned to the left limit.

Equipment and Water Treatment Equipment consisted of a Link-belt 5400 excavator for stripping, stockpiling and feeding the plant, and a Caterpillar D6 bulldozer for pushing tailings, building roads and ramps. The wash plant was a 4- by 14-foot trommel with a 3- by 30-foot stacker, with 4 feet of ¾-inch openings on the screen that fed into a 2-compartment jig. Water was supplied from a groundwater sump and direct from a pocket in the river bank, and pumped by a 4-cylinder engine powered by a 5- by 4-inch AC pump at a rate of 350 igpm. Approximately 40 loose cubic yards of material was processed per hour. Tailings were directed back into the mine cut. Clean-ups were done with a clean-up jig, which reduced the concentrate from the plant jigs.

Surficial Geology and Stratigraphy The section consisted of 4 feet to 10 feet (1 to 3 m) of loose gravel overburden overlying a lower thawed gravel layer with heavy clay content. From

Claire and Pat Sawyer's mining operation on Kimberley Creek, 2003.

6 inches to 4 feet (0.2 to 1 m) of the lower gravel were sluiced along with 1½ feet (0.5 m) of bedrock.

Bedrock Geology Bedrock is mapped as Pennsylvanian to lower Permian volcanic rocks overlain by conglomerate and minor limestone, as well as Miocene to Pliocene and younger Wrangell lavas.

Gold Characteristics The gold was reported as large, flat and smooth from the bench, but coarse and rough from the valley bottom. The gold was 20% minus 1 dwt. (1.6 g) with the remaining 80% comprised of nuggets up to 15 dwt. (23 g). The fineness was 860. Some platinum was reported in clean-ups.

TELLURIDE CREEK, a tributary of Jarvis River

115B/16 2003: 60°52'09"N, 138°05'20"W

Marcel Dulac
Water license: S3WR001 (2003)
Active producer (2003) **Operation no. 193**

Location This operation was located on Telluride Creek approximately 2 miles (3 km) from the confluence with the Jarvis River.

Work History and Mining Cuts In 2003, a crew of three miners worked a daily 8-hour shift to process six cuts. The first four cuts were each 30 feet wide, 60 feet long and 6 feet deep (10 x 20 x 2 m). The second two cuts were each 30 by 30 by 6 feet (10 x 10 x 2 m).

Equipment and Water Treatment Equipment used in the program included a Case 125B loader and a Caterpillar D7E bulldozer. The wash plant consisted of a dump box and grizzly feeding a 2- by 20-foot single sluice run with 1-inch angle iron riffles and expanded metal. Water was supplied

by a 4-inch pump which allowed the plant to process 25 loose cubic yards per hour. Water was acquired from two 100% recirculated out-of-stream settling ponds (each 10 yards square and 3 yards [8 m^2 x 3 m] deep) which were supplemented by groundwater seep. Clean-ups were done with a long tom and gold wheel.

Surficial Geology and Stratigraphy The section consisted of coarse-grained valley bottom gravel. The depth to bedrock varied from 8 feet (2 m) in the valley to 4 feet (1 m) in the canyon. The bottom 4 feet (1 m) of gravel plus 1 foot (0.3 m) of bedrock was sluiced.

Gold Characteristics The gold was mostly bright, fine and smooth, with a few nuggets weighing up to 0.2 oz (5 g). Fineness was not known.

TELLURIDE CREEK, a tributary of Jarvis River

115B/16 2003: 60°52'22"N, 138°05'37"W

William Robert Burton
Water license: PM99-035 (2009)
Active producer (2003) **Operation no. 194**

Location The operation was located on the lower reaches of Telluride Creek.

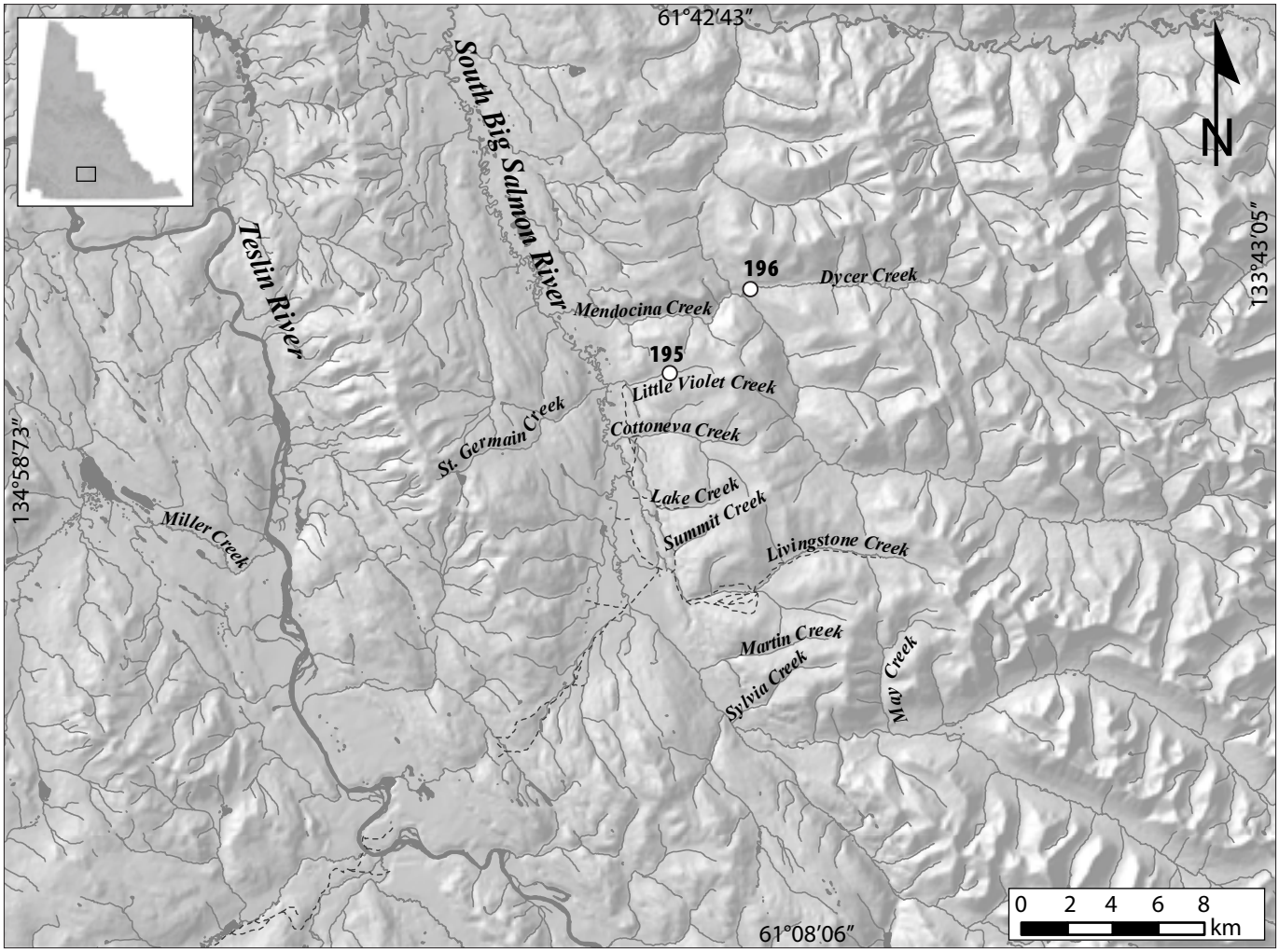
Work History and Mining Cuts Approximately 100 cubic yards (80 m^3) of material was processed in 2003.

Bedrock Geology Bedrock is mapped as various volcanic rocks, breccia, limestone, conglomerate and phyllite.

Burton's test operation on Telluride Creek, 2005

LIVINGSTONE
PLACER AREA

SITES 195-196



LEGEND

195.....Agamemnon Fishing Co. Ltd.
196.....Swaim

LITTLE VIOLET CREEK, a tributary of South Big Salmon

105E/8 2004: 61°25'01"N, 134°19'44"W

Wilf Phillips, Agamemnon Fishing Co. Ltd
Water license: PM98-021 (2009)
Active producer (2003-2006) **Operation no. 195**

Location This operation was located on Little Violet Creek, in the Livingstone Placer Area.

Work History and Mining Cuts Wilf Phillips first began mining here in 1998, and he mined until 2002, when the workshop burned down late in the season. In 2003, Mr. Phillips brought a crew on site in August to repair equipment and rebuild the workshop. The property was inactive in 2004; however, mining resumed on a smaller scale in 2005 and 2006.

Equipment and Water Treatment Mr. Phillips' equipment included a Proclain shovel, a Hitachi UH16 excavator, two Volvo 861 rock trucks, two Caterpillar loaders (950 and 966C) and two Caterpillar bulldozers (D8K and D9H). The processing plant in past years was a Torgerson 2.5-inch screen plant which fed a ¼-inch screen deck. Minus ¼-inch material was processed in a Knelson concentrator.

Surficial Geology and Stratigraphy The section consisted of 10 feet (3 m) of glacial till over 2 feet (0.6 m) of fine, orange sand, followed by 10 feet (3 m) of blue clay, with 30 feet (10 m) of gravel on bedrock.

Bedrock Geology Bedrock is mapped as gneiss, fine-grained amphibolite and greenstone.

Gold Characteristics Gold was reportedly mostly coarse grained and smooth, with a fineness of 866.

One of Stephen Swaim's exploration pits with coarse pay gravel on bedrock, Dycer Creek, 2005

DYCER CREEK, a tributary of Mendocina Creek

105E/8 2005: 61°26'48"N, 134°15'23"W

Steve Swaim
Water license: PM00-202 (2007)
Exploration (2003-2006) **Operation no. 196**

Location Various test pits were located upstream of the confluence of Dycer and Mendocina creeks.

Work History and Mining Cuts Several hand-test pits were excavated along Dycer Creek. Geophysical surveys are also conducted.

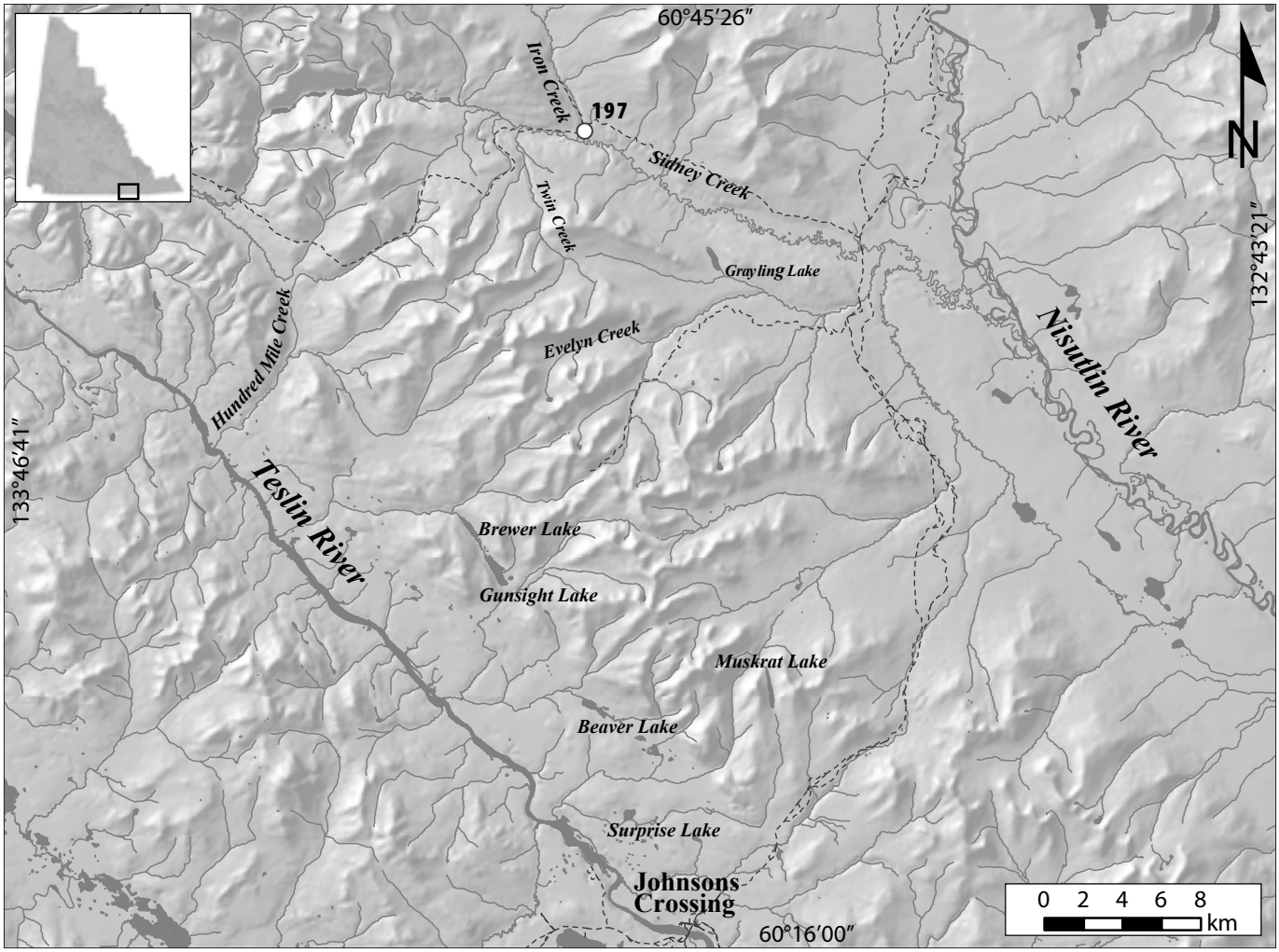
Equipment and Water Treatment Testing equipment included a 10-foot long tom sluice box and two Honda pumps.

Surficial Geology and Stratigraphy Testing encountered a coarse gravel layer 5 to 8 feet (2 to 3 m) thick overlying a clay layer of variable thickness.

Wilf Phillips' operation along Little Violet Creek, 2004.

SIDNEY CREEK
PLACER AREA

SITE 197



LEGEND

197.....Getaway Exploration

IRON CREEK, a tributary of Sidney Creek

105C/14 2005: 60°51'22"N, 133°18'40"W

Gateway Explorations, Carey Cook, Donald Hrehirchek
Water license: PM02-290 (2008)
Active producer (2003-2006) **Operation no. 197**

Location This operation was located on the left limit of Iron Creek, immediately upstream from the confluence with Sidney Creek, just below the lower falls. A second cut was located upstream on Edzerza's claims which were optioned in 2006.

Work History and Mining Cuts In 2003, two small cuts were opened up and mined for a total of 3200 cubic yards (2500 m^3). In 2004, limited testing was conducted. In 2005, a crew of three miners worked a daily 12-hour shift to process two cuts, one 300 by 100 feet (100 x 30 m), and one 500 by 100 feet (150 x 30 m). A total of 4000 cubic yards (3000 m^3) were sluiced. Work continued in 2006 on one cut downstream of the falls and one cut at the optioned Edzerza's claim upstream on the left limit.

Equipment and Water Treatment Equipment from 2003 to 2006 included a Komatsu 355 bulldozer for stripping and tailings removal, and a Link-belt 210 excavator for feeding the wash plant. A Mitsubishi 450 excavator with a 1¾-cubic-yard bucket replaced the Link-belt in 2004. The wash plant consisted of a 4- by 8-foot screen deck (5- by 14-foot in 2003) with a conveyor for tailings and a 2- by 8-foot sluice run lined with expanded metal and Nomad carpet. Water was supplied from Iron Creek and pumped by a 6- by 6-inch Ford pump powered by a 4-cylinder Ford engine. Effluent was settled out-of-stream in a 50- by 200-foot (15- x 60-m) pond. Clean-ups were done with a gold wheel after initial screening.

Surficial Geology and Stratigraphy The stratigraphic section from 2003 to 2005 consisted of 2 to 4 feet (0.6 to 1.2 m) of thawed

Getaway Explorations' wash plant above the falls on Iron Creek, 2006.

Aerial view of Getaway Explorations' pit on lower Iron Creek, 2005.

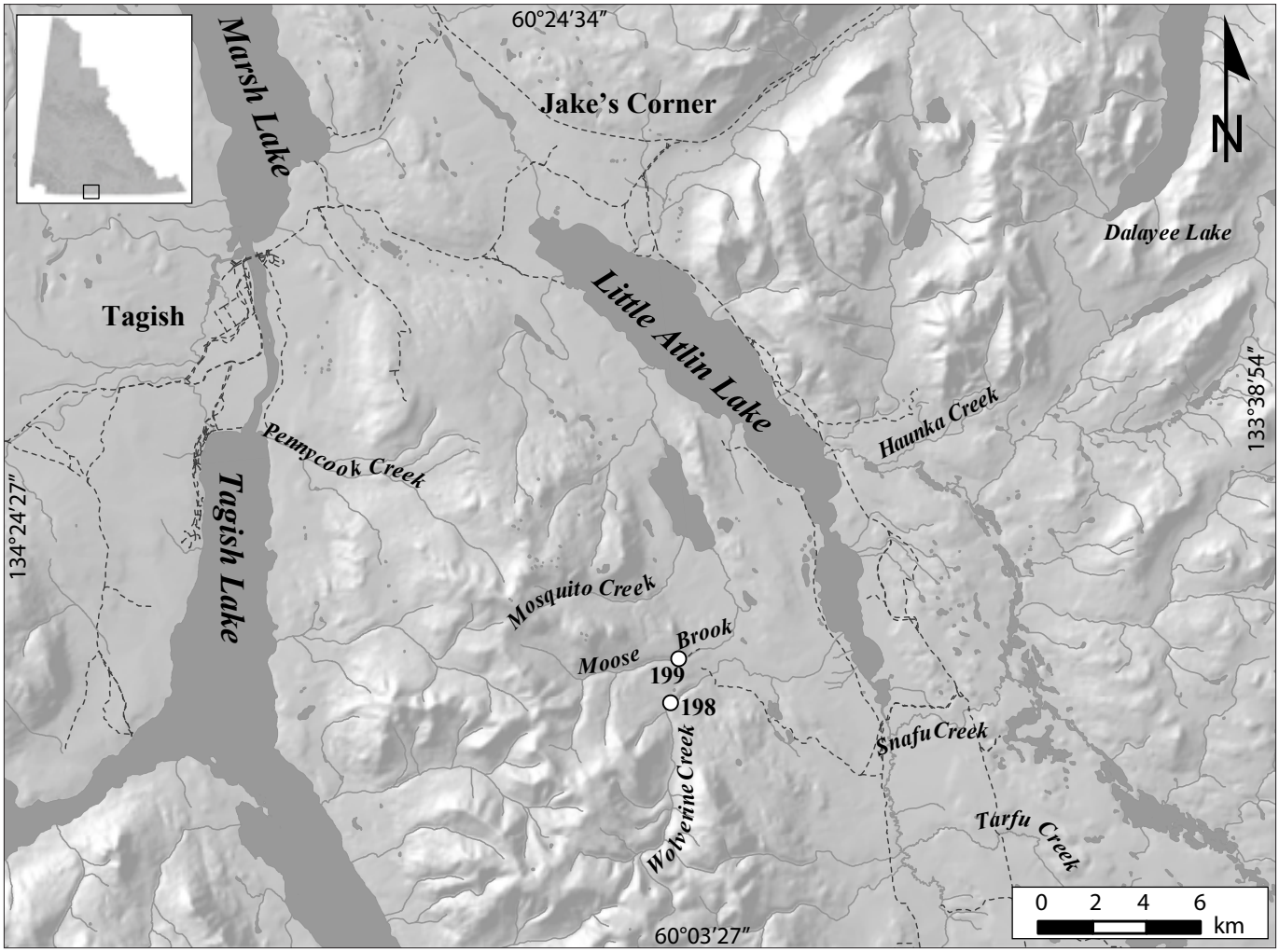
overburden overlying 4 to 6 feet (1.2 to 1.8 m) of sandy cobble-boulder pay gravel, on top of a 'false bedrock' of sand or clay. The upstream section in 2006 had 4 to 6 feet (1.2 to 1.8 m) of cobble-boulder pay gravel on surface in the creek valley.

Bedrock Geology The creek is underlain by schist, gneiss, quartzite and limestone of Cambrian or earlier age. These rocks are cut by a large Cretaceous intrusion of granite, granodiorite and diorite in the upper reaches of the creek.

Gold Characteristics The gold was reported as mainly flat and small with 90% from 28 to 35 mesh in size. Some pieces had attached quartz; and some bright yellow crystalline gold was recovered. A 6-gram nugget with attached quartz was found in 2003. The fineness was 850.

LITTLE ATLIN
PLACER AREA

SITES 198-199



LEGEND

198.....McKeown
199.....Tusk Exploration Ltd.

WOLVERINE CREEK, a tributary of Little Atlin Lake

105D/1 2006: 60°09'23"N, 134°01'22"W

Sid McKeown

Exploration (2005-2006) **Operation no. 198**

Location The operation ran several test cuts upstream of the canyon.

Work History and Mining Cuts In 2005, a program of test-pitting, auger drilling and bulk sampling was conducted.

Equipment and Water Treatment Equipment consisted of a 6-inch auger drill, a Hitachi UH07 excavator, and a 3- by 14-foot sluice with 1-inch angle iron riffles and expanded metal screen overlying 'miner's moss'. A TD15 bulldozer was used to improve access.

Surficial Geology and Stratigraphy Above the canyon, a layer of coarse boulders and gravel 6 feet (2 m) thick overlies a 10- to 60-foot (3 to 20 m) layer of silt and clay.

Yukon Geological Survey geologist Steve Traynor and miner Sid McKeown at Wolverine Creek, 2005

Sid McKeown's mobile drill for placer testing, Wolverine Creek, 2005.

MOOSE BROOK, a tributary of Little Atlin Lake

105D/1 2005: 60°10'14"N, 134°00'51"W

Tusk Exploration Ltd., Gary Crawford
Water licenses: PM98-050 (2003), PM04-357 (2014)
Active producer (2003-2005) **Operation no. 199**

Location The operation was located on the left limit of Moose Brook, a tributary of Little Atlin Lake.

Work History and Mining Cuts The operator mined a cut in each season from 2003 to 2005, working upstream on the left limit.

Equipment and Water Treatment Equipment on site included a Caterpillar D10N bulldozer, Caterpillar 245 excavator, and Caterpillar and IH Payhauler rock trucks. The wash plant was a 6-foot-diameter land-based trommel with two sets of sluice runs, each 8 feet wide and 10 feet long, lined with expanded metal and Nomad matting. In 2003, a large settling pond was constructed downstream of the operation in an area of old wood-lot land. A diversion channel was put in place to divert Moose Brook into the settling area.

Tusk Exploration loads pay gravel from Moose Brook, November, 2003.

Surficial Geology and Stratigraphy The stratigraphic section in 2005 consisted of 6 to 10 feet (2 to 3 m) of boulder gravel till overlying 6 to 15 feet (2 to 5 m) of glacial silt and clay overlying 10 to 15 feet (3 to 5 m) of mixed gravel, sand and clay, capping 6 feet (2 m) of compact cobble-pebble gravel on bedrock. The lowest 6 feet (2 m) of gravel was sluiced.

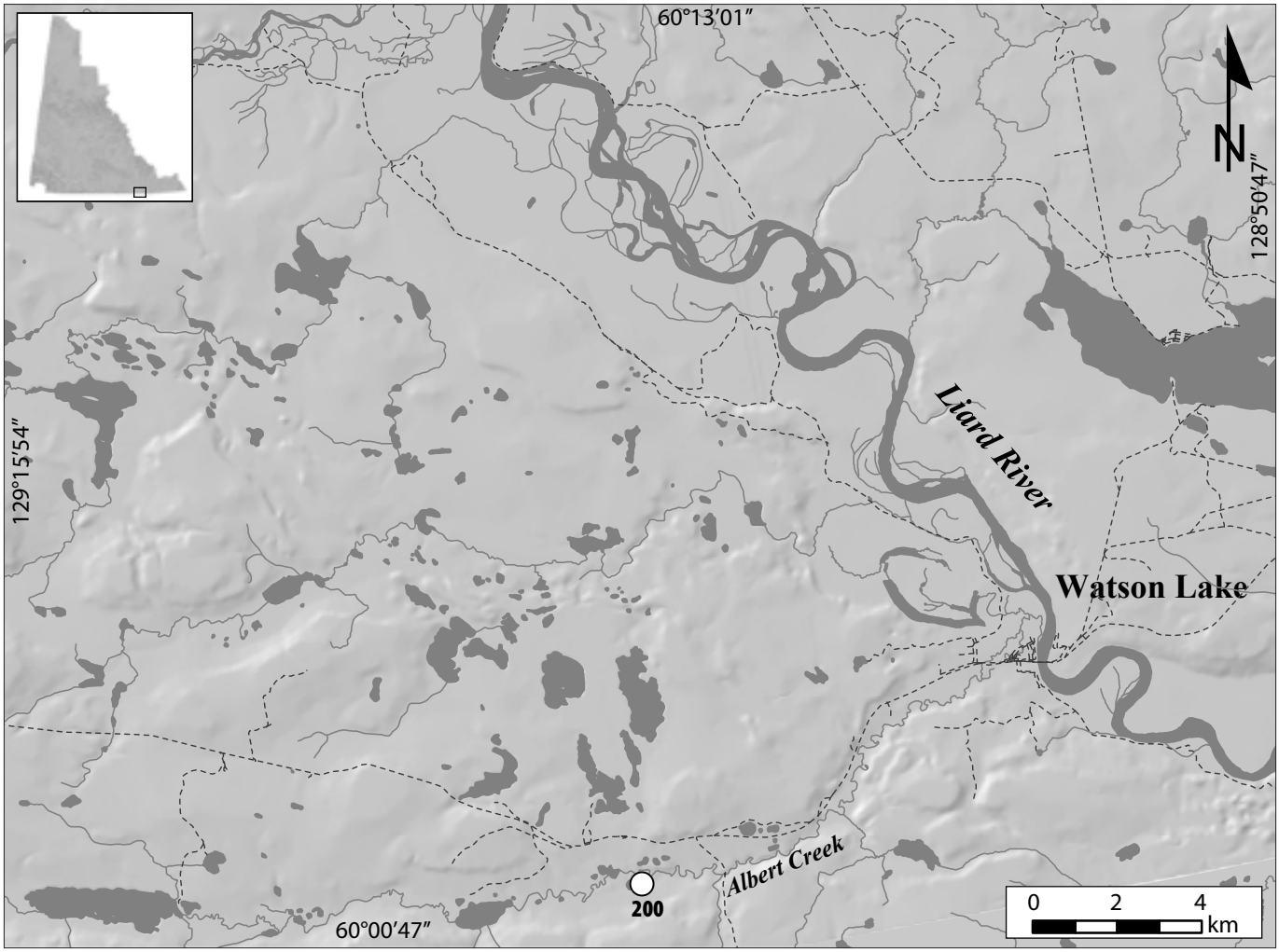
Bedrock Geology The bedrock at this site is a fractured chert and quartzite.

Gold Characteristics Gold was mainly fine grained, but locally chunky, and bright yellow.

Tusk Exploration's pit on Moose Brook in July, 2005. View to the east.

WATSON LAKE
PLACER AREA

SITE 200



LEGEND

200 .....Lee

ALBERT CREEK, a tributary of Liard River

105H/3 2005: 60°01'18"N, 129°05'17"W

Donald Lee
Water license: PM02-295 (2008)
Exploration (2005) **Operation no. 200**

Location Lee's exploratory operation was located on Albert Creek, a tributary to Liard River in the Watson Lake Mining District.

Work History and Mining Cuts In 2005, Mr. Lee excavated some test pits on the creek.

Yukon placer creeks: Baseline surveys from 1898 to 2006

Stream	Tributary to…	Year	Surveyor	Plan no.	Microplan no.
Adams Creek	Bonanza Creek	1901	McPherson	12066	2796
Agate Creek	Barker Creek	1901	Gibbon	34670	3899-902
Alberta Creek	Walhalla Creek	1912	Kitto	34676	2476
Allgold Creek	Klondike River	1902	Gibbon	9824	2809
	Flat Creek	1983	Thomson	68972	10243
American Gulch	Bonanza Creek	1901	McPherson	12069	2795
Back Creek	Nisling River	1912	Dickson	20050	2001
Barker Creek	Stewart River	1906	Gibbon	34669-70	2477,3892
Barlow Creek	Clear Creek	1913	Kitto	34673	2517
Barlow Creek (1-3)	Clear Creek	2001	Friesen	87086	
Barney Pup	Clear Creek	1905	Gibbon	18089	3043-44
Battleford Creek	Mayo Creek	1904	McPherson	11490	3414
Bear Creek	Klondike River	1902	Gibbon	9825	2810
Bear Creek (0-11)	Klondike River	1985	Thomson	70176	10575
Bedrock Creek	Sixtymile River	1907	Gibbon	17241	2454-56
Belcher Gulch	Klondike River	1907	Gibbon	17319	2794
Beliveau Creek	Duncan Creek	1903	Rinfret	10178	3447
Big Gold Creek	Sixtymile River	1907	Gibbon	17241	2454-56
		1980	Parnell	68648	10127
Bismark Creek	Montana Creek	1902	McPherson	10179	2483-84
Black Creek	Montana Creek	1902	McPherson	10179	2483-84
Black Hills Creek	Stewart River	1901	Gibbon	9542	2453
		1999	Lamerton	82131	14076
Blueberry Creek	Thistle Creek	1902	McPherson	10390	2457-58
Bonanza Creek	Klondike River	1897	Ogilvie	8284	3865
		1901	McPherson	10285	2799
			McPherson	10294	2800
		1933	Dickson	FB27150	7567-78
		1971	McDonald	58479	
		1979	Brennan	67119	9841
		1981	Aucoin	68163	3687
Bonanza Creek 67118	Klondike River	1989	Underhill	70252	10053
Bonanza Creek Station 7	Klondike River	1993	Iles	75022	12087
Boucher Creek	Sixtymile River	1902	Cautley	9558	7707
Boulder Creek	Bonanza Creek	1898	Gibbon	9603	2818
Bourdeleau Gulch	Hunker Creek	1902	Cautley	9558	7707
Box Creek	Steele River	1902	McPherson	10179	
Bullion Creek	Slims River	1904	Dickson	FB7856	7557
Burwash Creek	Kluane River	1906	Dickson	12759-61	1702-3,2819
Butler Gulch	Boucher Creek	1902	Cautley	9558	7707
Cabin Creek	Nansen Creek	1912	Dickson	20053	1712-13
California Gulch	Bonanza Creek	1902	McPherson	10179	2483-84
California Creek	Sixtymile River	1914	Kitto	34674	2753-84
Caribou Creek	Dominion Creek	1904	Gibbon	FB7857	7710-11

Stream	Tributary to…	Year	Surveyor	Plan no.	Microplan no.
Cascade Creek	Mayo Lake	1904	McPherson	11491	2561
Centre Creek	Nisling River	1912	Dickson	20053	1712-13
Childs Gulch	Black Hills Creek	1908	Gibbon	18090	2453
Christal Creek	McQuesten River	1903	McPherson	10239	3417
Clarke Creek	Scroggie Creek	1912	Kitto	34676	3476
Clear Creek	Stewart River	1905	Gibbon	18089,91	3052-3,3043-4
		1913	Kitto	34673	
Clear Creek,Left Fork	Stewart River	1985	Iles	70174	10576
Conglomerate Creek	Montana Creek	1902	McPherson	10179	2483-84
Cottoneva Creek	S. Big Salmon River	1902	McPherson	10359	1726
Courtland Creek	Nansen Creek	1912	Dickson	20053	1712-13
Cripple Creek	Yukon River	1986	Dupuis	70536	10711
Dago Gulch	Hunker Creek	1907	Green	FB9102	2822
Dion Gulch	Yukon River	1908	McPherson	FB11657	7748
Discovery Gulch	Black Hills Creek	1908	Gibbon	18090	2453
Dolly Creek	Nansen Creek	1912	Dickson	20053	1712-13
Dome Creek	Nisling River	1912	Dickson	20053	2001
Dominion Creek	Indian River	1900	Coté	9172	4643
		1902	Gibbon	10190	2770
		1918	Hawkins	FB15614	2813
		1981	Welter	68166	3688
		1983	Aucoin	69030	10241
		1984	Aucoin	69639	10377
Dominion Creek,Extension	Indian River	1986	Mitchell	70929	10776
Dublin Gulch	Haggart Creek	1903	McPherson	10289	3054
		1980	Parnell		
Duncan Creek	Mayo River	1903	McPherson	10177	3418
			Rinfret	10178	3447
			Barwell	58577	
Dutton Pup	Eighty Pup	1985	Gray	70167	10543
Edmonton Creek	Mayo Lake	1904	McPherson	11490	3414
Eight Pup	Mayo Lake	1901	Gibbon	9608,9613	2802,07
Eighty Pup	Hunker Creek	1901	Gibbon	9609	2803
Eighty and Dutton Pup	Hunker Creek	1985	Gray	70167	10543
Eldorado Creek	Bonanza Creek	1901	McPherson	9614-5	2808
			McPherson	9604	2873-74
		1905	Gibbon	180091	3052-53
		1933	Dickson	39900	
		1982	Aucoin	68494	10108
Eliza Creek	Nansen Creek	1912	Dickson	20052	2001
Eureka Creek	Indian River	1900	Coté	9394	2827-28
		1902	McPherson		7709
			McPherson	55028	7708
			McPherson	10614	2482
Eureka Creek, Left Fork	Indian River	1987	Underhill	71059	11145
Examiner Gulch	Bonanza Creek	1908	McPherson	FB11657	7748
Falconer Gulch	Yukon River	1908	McPherson	FB11657	7748

Stream	Tributary to…	Year	Surveyor	Plan no.	Microplan no.
Fifteen Pup	Last Chance Creek	1901	Gibbon	9613	2807
Fiftyone Pup	Barker Creek	1906	Gibbon	34669	2477
Fish Creek	Klondike River	1903	Gibbon	11494	2801
Fisher Creek	Montana Creek	1902	McPherson	10179	2483-84
Five Mile Creek	Sixtymile River	1914	Kitto	34674	2753-54
Flat Creek	Klondike River	1904	Gibbon	FB7857	7710-11
		1983	Thomson	68972	10243
Forty Pup	Duncan Creek	1903	McPherson	10177	3418
Fourth of July Creek	Jarvis River	1913	Dickson	34666-68	1863-64
Fox Gulch	Bonanza Creek	1901	McPherson	12069	2795
French Gulch	Eldorado Creek	1901	McPherson	9615	2808
Gay Gulch	Eldorado Creek	1901	McPherson	9614	2808
Gauvin Gulch	Bonanza Creek	1901	McPherson	12067	2796
Glacier Creek	Sixtymile River	1901	Dumais	FB9545	4443
		1907	Gibbon	17241	2454-46
		1980	Parnell	68648	10127
	Big Gold Creek	1980	Koepke	69154	10279
Gold Bottom Creek	Hunker Creek	1901	Gibbon	9612	2805-06
Gold Run Creek	Dominion Creek	1902	McPherson	10181	2797-98
		1981	Welter	68166	3688
		2000	Lamerton	83386	14646
Goring Creek	Klondike River	1910	McPherson		7560
Granite Creek	Boucher Creek	1902	Cautley	9558	7707
Guysboro Gulch	Klondike River	1907	Gibbon	17319	2794
Haggart Creek	McQuesten River	1903	McPherson	10289	3054
		1980	Parnell		
Hattie Gulch	Hunker Creek	1907	Gibbon	17319	2794
Hattie Gulch and 21 Pup	Hunker Gulch	1990	Aucoin	69640	10379
Henderson Creek	Yukon River	1901	Gibbon	9542	2485-86
Henry Gulch	Hunker Creek	1901	Gibbon	9607	2802
Hester Gulch	Hunker Creek	1901	Gibbon	9611	2804
		1984	Aucoin	69640	10379
Highet Creek	Minto Creek	1904	McPherson	11489	3055
		1996	Lamerton	78543	
Hunker Creek	Klondike River	1901	Gibbon	9606-07,11	2802-04
		1902	Gibbon	10180	2770
				8636,9824	2831-32,2809
		1967	Holt	53536	
		1977	Koepke	65451	9623
		1980	Aucoin	67557	944
		1982	Aucoin	68595	10150
Huot Gulch	Boucher Creek	1902	Cautley	9558	7707

Stream	Tributary to…	Year	Surveyor	Plan no.	Microplan no.
Indian River	Yukon River	1900	Coté	9172	4643
		1934	Dickson	39217-18	2474-75
		1936	Dickson	39321-22	692
		1938	Dickson	FB24271	7987
		1981	Koepke	FB8619	1011
			Welter	68166	3688
		1982	Koepke	68495	10110
		1984	Aucoin	69641	10380
		1986	Iles	70538	10713
Iron Creek	Barker Creek	1906	Gibbon	34669-70	2477,3899-902
Iron and Sidney creeks	Nisutlin River	1988	Lamerton	71815	11144
Isaacs Gulch	Flat Creek	1904	Gibbon	7857	7710-11
Italian Creek	Montana Creek	1902	McPherson	10179	2483-84
Jackson Gulch	Klondike River	1980	Aucoin	67132	9845
Jarvis River	Kaskawulsh River	1913	Dickson	34666-68	1863-64
Jones Gulch	Black Hills Creek	1908	Gibbon	18090	2453
Keystone Creek	Mayo Lake	1903	McPherson	10240	3417
Kitchener Creek	Steele River	1902	McPherson	10179	2483-84
Klaza River	Nisling River	1992	Aucoin	67133	9846
Klondike River	Yukon River	1902	White-Fraser	54370	
		1980	Aucoin	67133	9846
		1989	Dupuis	72345	11429
Lake Creek	S. Big Salmon River	1902	McPherson	10359	1726
Last Chance Creek	Hunker Creek	1901	Gibbon	9605,08,10	2802,03,07
		1983	Koepke	69106	10244
		1985	Gray	70168	10544
Ledge Creek	Mayo Lake	1904	McPherson	11492	2560
Lepine Creek	Rock River	1903	Gibbon	11494	2801,8018
Lightning Creek	Duncan Creek	1902	McPherson	10177	3418,7727
		1903	Barwell	58577	
Lindow Creek	Bear Creek	1902	Gibbon	9825	2810
Lion Gulch	Caribou Creek	1904	Gibbon	FB7857	7710-11
Little Blanche Creek	Quartz Creek	1909	McPherson	FB11660	1425
Little Gold Creek	Big Gold Creek	1980	Parnell	68648	10127
Little Skookum Pup	Bonanza Creek	1901	McPherson	9847	2811
Livingstone Creek	S. Big Salmon River	1902	McPherson	10359	1726
Lovett Gulch	Bonanza Creek	1901	McPherson	12069	2795
		1980	Brennan	67265	mylar
Lucky Creek	Allgold Creek	1902	Gibbon	9824	2809
Magnet Gulch	Bonanza Creek	1901	McPherson	12069	
Mariposa Creek	Scroggie Creek	1912	Kitto	34676	2476
McKay Gulch	Bonanza Creek	1901	McPherson	9847	2811
McRae Gulch	Highet Creek	1904	McPherson	11489	3055
		1906	Gibbon	34669-70	2477,3899
Miller Creek	Sixtymile River	1909	McPherson	FB11658	7436
		1981	Aucoin	67918	2463
Mint Gulch	Hunker Creek	1901	Gibbon	9606	2802

Stream	Tributary to…	Year	Surveyor	Plan no.	Microplan no.
Minto Creek	Mayo River	1912	Kitto	31763,65	3041-42
Montana Creek	Indian River	1902	McPherson	10179	2482-84
		2002	Kearney	85729	
Moose Creek	Fortymile River	1907	Gibbon	FB9545	4443
Nansen Creek	Nisling River	1912	Dickson	20051-53	2001,1712-14
Nelson Gulch	Sixtymile River	1902	Cautley	9558	7707
Nevada Creek	Dominion	1985	Gray	70169	10545
Newbauer Creek	Nisling River	1912	Dickson	20053	1712-13
Nigger Jim Gulch	Bonanza Creek	1901	McPherson	9847	2811
Nineteen Pup	Bonanza Creek	1901	McPherson	9847	2811
No Name Creek	Montana Creek	1902	McPherson	10179	2483-84
Nugget Gulch	Eldorado Creek	1901	McPherson	9614	2808
O'Neill Gulch	Bonanza Creek	1901	McPherson	9847	2811
Parent Creek	Duncan Creek	1903	Rinfret	10178	3447
Portland Creek	Dominion Creek	1986	Gray	70537	10712
Preacher Creek	Barker Creek	1906	Gibbon	34669-70	2477,3899-902
Quartz Creek	Indian River	1900	Coté	9172	4643
		1980	Welter	68165	mylar
			Wrzosek	68165	3020
Rabbit Gulch	Hunker Creek	1907	Gibbon	17319	2794
Randler Gulch	Boucher Creek	1902	Cautley	9558	7707
Rudolph Gulch	Highet Creek	1904	McPherson	11489	3055
Scroggie Creek	Stewart River	1912	Kitto	34676	2476
Seymour Creek	Big Creek	2001	Aucoin	85064	15103
Sharpe Creek	Scroggie Creek	1912	Kitto	34676	2476
Shaw Creek	Nansen Creek	1912	Dickson	20052	2001
Sidney Creek	Nisultin River	1988	Lamerton	71815	11144
Rusk Creek	Nisling River	1912	Dickson	2005	2001
Sixtymile River	Yukon River	1907	Gibbon	17241	2454-56
		1914	Dickson	34663-65	2755-57
			Kitto	34674	2753-54
		1981	Aucoin	67918	2463
Skookum Gulch	Bonanza Creek	1901	McPherson	9847	2811
Slate Creek	Nansen Creek	1912	Dickson	20049	2001
Sock Creek	Klondike River	1903	Gibbon	11494	2801
Spring Gulch	Bonanza Creek	1901	McPherson	9847	2811
Steele Creek	Montana Creek	1902	McPherson	10179	2483-84
Steep Creek	Mayo Lake	1904	McPherson	11493	3413
Stevens Creek	Scroggie Creek	1912	Kitto	34676	2476
Stowe Creek	Montana Creek	1902	McPherson	10179	2483-84
Sulphur Creek	Dominion Creek	1912	Kitto	8599-600	7561
Sulphur Creek (16-18)	Dominion Creek	1994	Aucoin	76041	12360
Summit Creek	S. Big Salmon River	1902	McPherson	10359	1726
	Nisling River	1912	Dickson	20053	1712-13
Ten Mile Creek	Sixtymile River	1912	Kitto	134675	2477
Thirteen Gulch	Eldorado Creek	1916	Brownlee	FB14861	2812
Thistle Creek	Yukon River	1902	McPherson	10390	2457-58

Stream	Tributary to…	Year	Surveyor	Plan no.	Microplan no.
Trail Gulch	Bonanza Creek	1901	McPherson	12069	2795
Twelvemile Creek	Sixtymile River	1914	Kitto	34674	2753-54
Twenty Gulch	Hunker Creek	1907	Gibbon	17319	2794
Twentyone Gulch	Hunker Creek	1907	Gibbon	17219	2794
Vermont Creek	Steele River	1902	McPherson	10179	2483-84
Victoria Gulch	Bonanza Creek	1901	McPherson	12068	2796
		1986	Thomson	70173	10578
Victoria Creek	Nisling River	1912	Dickson	20048	1715
Webber Creek	Nansen Creek	1912	Dickson	20053	1712-13
Walhalla Creek	Scroggie Creek	1912	Kitto	34676	2476
Williams Creek	Duncan Creek	1903	McPherson	10177	3418
			Rinfret	10178	3447
Wounded Moose Creek	Indian River	2004	Aucoin	89650	

Conversions and equivalents

LENGTH	
1 centimetre (cm)	= 0.394 inch (in)
1 metre (m)	= 39.4 inches = 1.094 yards (yd)
1 kilometre (km)	= 0.6214 (⅝) mile
1 inch (in)	= 2.54 centimetres (cm)
1 foot (ft)	= 30.48 centimetres
1 yard (yd)	= 0.914 metre (m) = 3 feet
1 mile	= 1.609 kilometres (km) = 1760 yards
AREA	
1 hectare	= 2.471 acres
1 acre	= 0.405 hectare = 4840 square yards
1 square yard	= 0.836 square metre
VOLUME	
1 litre (l)	= 1000 millilitres (ml) = 1000 litres = 0.21998 gallon (Imp.) = 0.26417 gallon (US)
1 gallon (Imp.)	= 4.5459 litres
1 gallon (US)	= 3.785 litres
1 cubic yard	= 0.764 cubic metres
WEIGHT	
1 troy pound	= 12 troy ounces
1 troy ounce	= 31.1035 grams = 20 pennyweights = 480 grains
1 pennyweight	= 24 grains
1 grain	= 0.06479 grams
1 gram	= 15.43 grains
1 avoirdupois pound	= 16 avoirdupois ounces = 0.454 kilograms
1 avoirdupois ounce	= 28.35 grams
1 kilogram	= 32.15 troy ounce = 1,000 grams = 2.205 pounds
1 long ton	= 2240 pounds
1 short ton	= 2000 pounds
1 tonne	= 1.102 short tons = 2204.62 pounds
1 ounce/ton	= 34.2848 grams per ton

WEIGHT PER VOLUME CONVERSION		
1 ounce/cubic yard	= 40.68 grams/m^3	
1 ounce/ton	= 34.2848 grams/tonne	
GOLD PURITY		
pure gold	= 24 karats	= 1000 fine
91.6%	= 22 karats	= 916 fine
90%	= 21.6 karats	= 900 fine
75%	= 18 karats	= 750 fine
58.3%	= 14 karats	= 583 fine
41.6%	= 10 karats	= 416 fine
GRAIN SIZE		
particles	average diameter in mm	
boulders	greater than 256 mm	
cobbles	64 mm to 256 mm	
pebbles	4 mm to 64 mm	
gravel	greater than 2 mm	
sand	2 mm to 1/16 mm	
silt	1/16 mm to 1/256 mm	
clay	less than 1/256 mm	
TEMPERATURE		
°C = (°F - 32) x .555		
°F = (°C x 1.8) + 32		

MISCELLANEOUS

The following measures are not absolute values but are used by many miners to make working estimates:

1 standard gold pan	= 16" diameter top = 10" diameter bottom = 2.5" depth holds 0.007 cubic yards or 0.005 cubic metres weighs approximately 21 lbs (ordinary gravel)
1 cubic yard	= approximately 143 standard gold pans
weight of ordinary gravel in place	= 2500 to 3000 lbs/cubic yard
specific gravity of ordinary gravel in place	= 1.48 to 1.78 g/cm^3
specific gravity	
gold	= 15.6 to 19.3
garnet	= 3.56 to 4.32
magnetite	= 4.9 to 5.2
pyrite	= 4.0 to 5.2
quartz	= 2.6
platinum	= 19-21
silver	= 9-11
tin	= 6-7.3
1 ounce gold/ton ordinary gravel	= 1.25 to 1.50 ounces/cubic yard
1 gram gold/tonne ordinary gravel	= 1.48 to 1.78 grams/cubic metre
swell factor of ordinary gravels	= 20 to 30% increase in volume

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