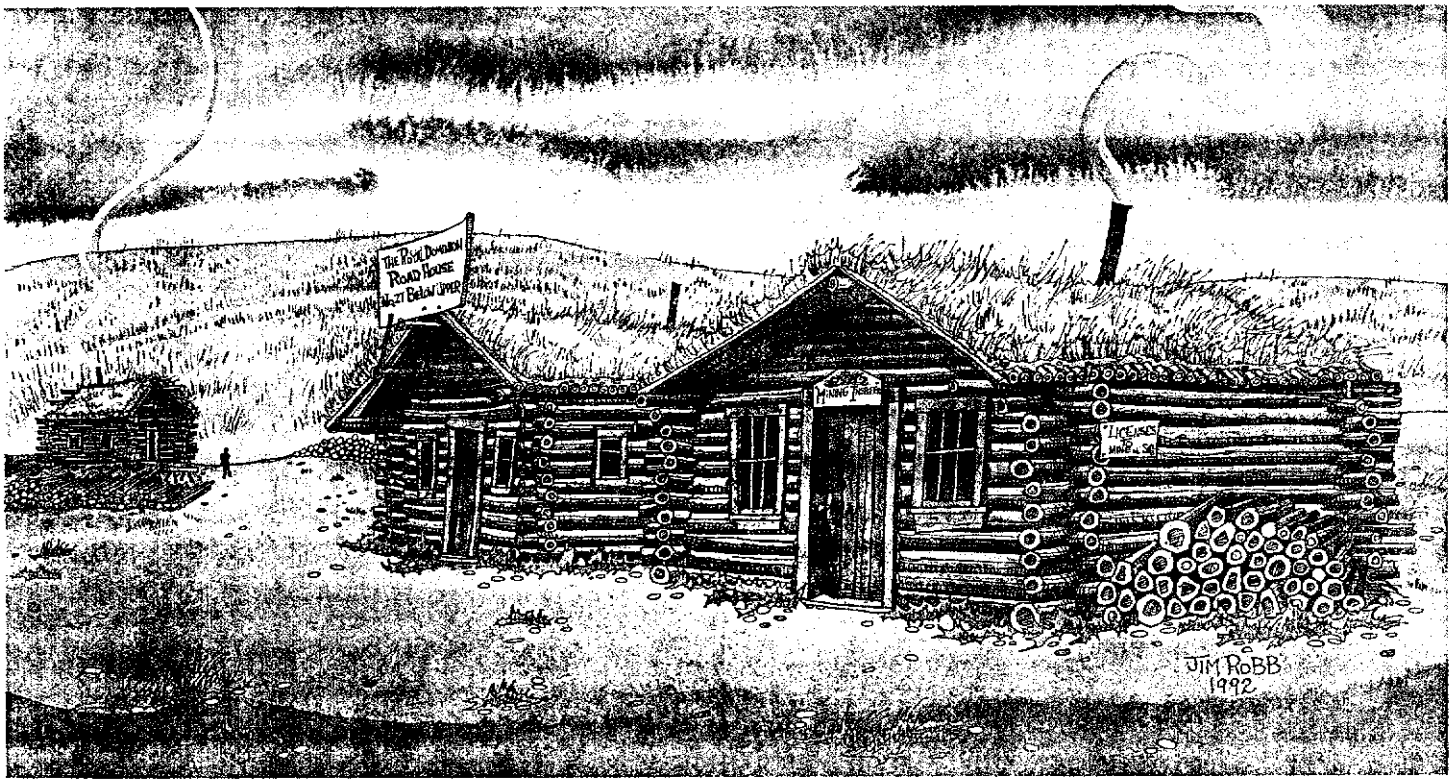
Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

YUKON PLACER MINING INDUSTRY 1991-1992



Canada

On the cover: Mining Inspector's Office 27 below Upper Dominion 1901.

When the news of Bonanza and Eldorado Gold reached the outside world, thousands of goldseekers rushed to find their fortune in the Klondike. Mining Inspectors helped to keep order during the staking rush that followed. The first Inspectors were brought in by the Department of the Interior in 1898.

Special thanks to Jim Robb for generously contributing his art for our cover. Jim's undisputed talent for capturing true "Yukon Moments" transports us back in time.

YUKON
PLACER MINING
INDUSTRY 1991-1992

This publication was compiled by R. F. Thomson and L. P. Van Kalsbeek, and edited by A. R. Waroway and D. A. Latoski.
Placer Mining Inspectors S. J. Howes, J. B. Leary, R. E. Leckie, A. L. Millar, A. E. Rothwell, R. F. Thomson and L. P. van Kalsbeek conducted mine site visits and gathered the data for the Placer Mine Inspection Reports.

Placer Mining Section
Mineral Resources Directorate
Northern Affairs Program
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The Yukon Placer Mining Industry Report 1991 - 1992, is now available in WordPerfect® 5.1 format.

Placer Mining Section, Mineral Development Division of Northern Affairs Program, Yukon Region, invites readers to write and inform us of any inaccuracies or new information with respect to Yukon Placer Mining Industry Reports. Please write to:

Placer Mining Section
Northern Affairs Program
200 Range Road
Whitehorse, Yukon
Y1A 3V1

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PREFACE

This report documents the state of the Placer Mining Industry in the Yukon Territory for the 1991 and 1992 mining seasons. This report differs from the "Yukon Placer Mining and Exploration 1985 to 1988" in that it does not contain summaries of Placer Exploration Programs filed with the Northern Affairs Program for assessment credit. The individual map sheets of the national topographic system that were printed in the previous volumes of this series, are not included in this volume. Each property detailed in this report is referenced to the 1:50,000 scale map of the national topographic system in which it is located.

The majority of this volume consists of detailed descriptions of placer operations visited by the staff of the Placer Mining Section of the Mineral Development Division, Northern Affairs Program, Yukon Region. Also included is information that may be useful to readers who are interested in searching for and developing placer properties in the Yukon Territory.

We invite comments from the readers of this report on the material presented herein and also suggestions for inclusion of any other material in future publications in this series that may be of use to the Placer Mining fraternity to whom this publication is directed.

We thank the many miners who donated time from their busy schedules to describe their mines and their mining methods to our staff. We recognize this input and sincerely appreciate it, as without it this publication would not be possible.

David A. Latoski
Head, Placer Mining Section
Chief, Claims Inspector
Northern Affairs Program

MINERAL RESOURCES DIRECTORATE, NORTHERN AFFAIRS PROGRAM

Mineral Development Division

Present staff includes A. R. Waroway (Regional Manager -Mineral Development), D. A. Latoski (Head, Placer Mining Section/Chief Claims Inspector), A. L. Millar (Placer Mining Inspector - Dawson) L. P. van Kalsbeek (Placer Mining Inspector - Whitehorse), S. J. Howes (Placer Mining Inspector - Whitehorse), R. F. Thomson (Placer Mining Inspector - Whitehorse), A . E. Rothwell (Placer Mining Inspector -Dawson), J. B. Leary (Placer Mining Inspector - Dawson), R. E. Leckie (Placer Mining Inspector - Mayo). V. R. Bailie (Office Manager), E. A. Sembsmoen (Office Clerk), B. D. Deklerk (Clerk) and V. Roberts (Dawson Clerk). Placer mining inspectors conduct claim inspections under the authority of the Yukon Quartz Mining Act, the Yukon Placer Mining Act, the Territorial Dredging Regulations and the Territorial Coal Regulations. They also complete field inspection reports for each mine visited, and assistance is provided to miners regarding road access or mining problems. The Placer Mining Inspection Unit is the agency responsible for inspection and enforcement of effluent discharge standards set forth in the Yukon Fisheries Protection Authorization as well as fish habitat and conservation and restoration measures.

Mineral Rights Division

Present structure consists of a regional office and four district mining records' offices (Watson Lake, Whitehorse, Mayo and Dawson), which administer over 60,000 individual dispositions made under federal legislation, namely the Yukon Quartz Mining Act (1924), the Yukon Placer Mining Act (1906), and the Territorial Coal Regulations and Territorial Dredging Regulations made under the (Federal) Territorial Lands Act.

Present staff consists of Roland Ronaghan (Regional Manager), R.H. Whittingham (Whitehorse Mining Recorder), M. Dejean (Dawson City Mining Recorder), P. McLeod (Watson Lake Mining Recorder), D. Wiebe (Mayo Mining Recorder), and ten full time support staff.

Exploration and Geological Services Division

Exploration and Geological Services Division staff presently includes S.R. Morison (Regional Manager/Chief Geologist), J.G. Abbott (Senior Geologist), T.J. Bremner (Geologist), D. Emond (Environmental Geologist), R. Deklerk and D. Ouellette (Staff Geologists), M. Burke (Geotechnician and Core Librarian), A. Wagner (Office Manager), and E. Phillips (Manager, Map Sales). R. Deklerk replaces W.P. LeBarge for an 18 month period while the latter completes an MSc degree at the University of Calgary. Services available to industry personnel include a geological library of texts and journals, Minfile, a lab equipped with petrographic microscopes, and a lab with rock cutting, staining, and core splitting facilities. Geology Division staff are available for consultation by arrangement at their office at 200 Range Road, Whitehorse, Yukon,(403) 667-3204.

ACKNOWLEDGEMENTS

This publication benefited from the efforts of a number of people and agencies. S. J. Howes, J. B. Leary, R. E. Leckie, A. L. Millar, A. E. Rothwell, R. F. Thomson, L. P. van Kalsbeek from the Placer Mining Section conducted the mine visits and gathered data for the placer mining inspection reports, under the direction of D.A. Latoski, Head, Placer Mining Section. V.R. Bailie and E.A. Sembsmoen assisted in compilation. The final manuscript was edited by A. R. Waroway and D. A. Latoski. Drafting Services (B. Lewis and N. Hulstein) prepared camera-ready maps and figures while final production and publishing arrangements were coordinated by Rod Raycroft, Communications Services. Photographs were taken by A. E. Rothwell, J. B. Leary, A. L. Millar, R. F. Thomson, R. E. Leckie, and L. P. van Kalsbeek. Historic photos are courtesy of Yukon Archives, Public Archives of Canada, C. Haines Collection. Finally, the contributions of the placer mining industry and the individual miners are gratefully acknowledged, as this publication would not be possible without their cooperation and assistance.

YUKON PLACER MINING 1991 - 1992

INTRODUCTION

This volume is a compilation of two sources of data, placer mining inspection reports and placer publications by government and industry sources. The Placer Mining Inspection Unit of the Northern Affairs Program, Indian and Northern Affairs Canada was the principal agency involved in the gathering and compilation of data for this publication. Mining inspection reports were compiled from site visits conducted by the staff of the Placer Mining Inspection Unit from 1991 to 1992. Information provided regarding claims, leases and royalties collected was provided by Mineral Rights, Division of the Mineral Development Branch of the Northern Affairs Program.

EXPLANATORY NOTES

Many of the placer mining operations which were active during the period of 1991 to 1992 may have been visited only once or twice; there are also operations which were not documented at all during this time. Some miners may find their particular operation has not been included this is due to incomplete or missing data. Submission of relevant information is invited for inclusion in subsequent industry activity reports. The narrative descriptions were written by the placer mining inspectors and were not edited by the miners.

The descriptive reports in this volume have been alphanumerically arranged by NTS (National Topographic System) 1:250 000 scale map divisions. The mining inspection reports include the creek name, the operator, the water licence number (when available), and the year of the inspection. Locations of each operation are given in latitude and longtitude, as well as by the 1:50,000 scale NTS map division. Each operation has been assigned the NTS map number on which it is located.

Since most placer miners do not commonly use the metric system British units of measure have been used. A conversion table is provided.

VUE D'ENSEMBLE DE L'INDUSTRIE D'EXPLOITATION DES PLACERS AU YUKON EN 1991 ET 1992

par
D.A. Latoski, Chef, Section de l'exploitation des placers, AINC

Introduction

En 1992, la production d'or à partir de placers a connu pour la troisième année consécutive une chute par rapport à celle de 1989 qui avait atteint 165 571 onces d'or brut. En 1992, des redevances ont été versées sur 101 061 onces d'or brut, ce qui représente une baisse de 10 % ou de 10 909 onces d'or brut par rapport aux 111 972 onces d'or brut de 1991. Il est difficile de déterminer les raisons précises de cette chute. Cependant, la diminution de la production d'or pourrait être, en partie, attribuable au fait que la saison d'exploitation a été plus courte en 1992, le printemps ayant été tardif et l'automne très précoce. De plus, les températures ont descendu au-dessous du point de congélation et d'abondantes chutes de neige ont recouvert le sol au cours de la première semaine de septembre. Il se peut également que le prix relativement faible de l'or et la diminution des réserves dans les zones minières habituelles aient contribué à cette baisse.

Jalonnement

Durant la longue histoire de l'exploitation des placers au Yukon, depuis la découverte d'or au Klondike, le jalonnement des claims a été une activité indicatrice de la prospérité de cette industrie. Comme en témoigne l'histoire économique moderne, l'importance de cette activité dépend du prix de l'or, les années 1991 et 1992 ne faisant pas exception. En 1992, le jalonnement des claims de placers a atteint son niveau le plus bas des douze dernières années (figure 1).

Même si le jalonnement des claims a été plus important (25 % de plus) en 1991 qu'en 1992, cette activité a connu un déclin continu au cours des dernières années. Ce déclin se répercute également sur le jalonnement des concessions de placers (illustré à la figure 2). Si le jalonnement des claims a atteint son niveau le plus bas en douze ans, le jalonnement des concessions, par contre, a augmenté légèrement en 1992.

Même si le jalonnement de nouveaux claims a diminué, le nombre de claims en règle en 1991 et en 1992 a augmenté et se rapproche du plus haut niveau jamais atteint au cours des douze dernières années (figure 3). Au 31 décembre 1991, le nombre de claims a atteint 17 801 et, en 1992, 17 115, ce qui se compare au chiffre historique de quelque 18 000 claims de placers en règle à l'apogée de la ruée vers l'or au Klondike en 1898. Le nombre de concessions a chuté légèrement passant de 251 en 1991 à 239 en 1992 (figure 4).

Cette diminution du nombre de concessions en règle en 1991 et 1992 a pu contribué quelque peu au maintien du nombre de claims de placer en règle en 1991 et 1992. Le nombre de placers a diminué considérablement en 1991 et en 1992, chutant respectivement de 19 % et de 21 % par rapport à 1989 et 1990 (figure 5).

En 1991 et 1992, la longueur totale des concessions et des claims a atteint 3516 km (2185 mi) et 3514 km (2184 mi) respectivement. Même si l'importance du jalonnement a fléchi, la prospérité globale de l'industrie liée à l'exploitation des placers au Yukon, indiquée par le nombre de claims de placers détenus en règle, semble assurée.

Production d'or alluvionnaire en 1991 et 1992

La production d'or alluvionnaire continue de jouer un rôle important dans l'économie du Yukon qui est basée sur les ressources. En 1991, l'industrie a produit 111 972 onces d'or brut (figure 6) ou, basé sur une teneur moyenne de 800 onces d'or fin, 89 577 onces d'or fin évaluées à plus de 36,9 millions de dollars canadiens.

Même si elle est de 10 % de moins élevée qu'en 1991, la production d'or de 1992 a atteint 101 061 onces d'or brut ou 80 848 onces d'or fin évaluées à 33,8 millions de dollars canadiens (figure 7). Ces chiffres représentent la contribution économique directe de l'industrie des placers du Yukon mais ne correspondent qu'à une fraction de la contribution économique totale. Les autres facteurs non inclus dans ces chiffres sont

les retombées de l'exploitation des placers comme l'achat de fournitures dans les entreprises locales et les salaires des employés qui travaillent pour les exploitations minières et les fournisseurs.

En 1991 et 1992, la valeur totale combinée de l'or produit a dépassé la barre des 70 millions de dollars. Les tableaux suivants montrent les vingt-cinq creeks qui ont été les plus productifs en 1991 et 1992.

Durant la saison de 1992, 185 mines ont été exploitées soit par découverte soit par lavage au sluice, comparativement à 219 en 1991, ce qui représente une diminution de 16 %. Les droits de prises d'eau accordés pour l'exploitation de placers par l'Office des eaux du Territoire du Yukon ont également été moins nombreux en 1992. A la fin de la saison de 1992, on comptait 394 droits de prise d'eau valides, comparativement à 423 l'année précédente, ce qui représente une diminution de 7 %.

Prix de l'or

Du début de 1991 à la fin de 1992, les prix de l'or ont chuté de 13 % (figure 8). En 1991, les prix de l'or ont varié de 384,00 $ US l'once ou 442,00 $ CAN (taux de change de 0,865), niveau supérieur atteint en janvier, à 349,00 US l'once ou 408,00 $ CAN (taux de change de 0,880), niveau inférieur atteint en septembre. En 1991, le prix moyen mensuel global de l'or a atteint 362,00 $ US l'once ou 415,00 $ CAN (taux de change de 0,872).

Les chiffres de 1992 ne diffèrent pas beaucoup de ceux de 1991. En 1992, les prix de l'or ont varié de 354,00 $ US l'once ou 409,00 $ CAN (taux de change de 0,866), niveau atteint en janvier et 335,00 $ US l'once ou 425 $ CAN (taux de change de 0,789), niveau atteint en novembre et décembre. Le prix moyen mensuel de 1992 a été de 344,00 $ US l'once ou 415,00 CAN (taux de change de 0,828).

Nous tenons à remercier L.P. van Kalsbeek, inspecteur des exploitations de placers (AINC), qui a compilé les données de ce tour d'horizon.

AN OVERVIEW OF THE YUKON PLACER MINING INDUSTRY 1991 AND 1992

By D. A. Latoski, Head, Placer Mining Section, I.N.A.C.

Introduction

The 1992 Placer Mining season was the third consecutive year which recorded a drop in gold production from the modern day record year of 165,571 crude ounces recovered in 1989.

Royalties were paid on 101,061 crude ounces of gold during 1992, which represents a decline of 10% or 10,909 crude ounces from the 111,970 crude ounces reported in 1991.

It is difficult to discern the precise reasons behind the drop in gold production. However, the decrease in gold production may be due in part to the much shorter mining season in 1992 which resulted from the late spring and the very early fall, and saw sub-zero temperatures and heavy snowfalls in the first week of September. It is also possible that the relatively low gold price and the declining reserves in the historical mining areas may have been contributing factors.

Staking Activity

Throughout the long history of placer mining in the Yukon, since the discovery of gold in the Klondike, claim staking activity has been indicative of the health of the industry. As modern history has shown, the level of activity is influenced by the price of gold, with 1991 and 1992 being no exception. Placer claim staking in 1992 was at its lowest level in the past twelve years (as illustrated in **Figure 1**).

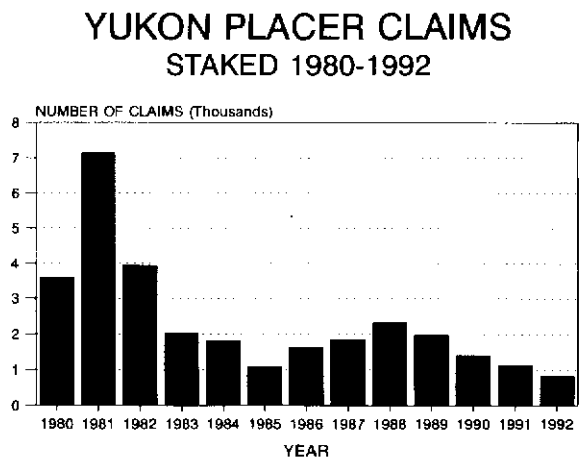


Figure 1

Though approximately 25% higher in 1991 than in 1992, claim staking activity is declining, just as the price of gold has been steadily declining in the last few years. This decline in claim staking activity is also reflected in the level of placer lease staking activity (as illustrated in **Figure 2**). Although claim staking reached a twelve year low, lease staking activity increased slightly in 1992.

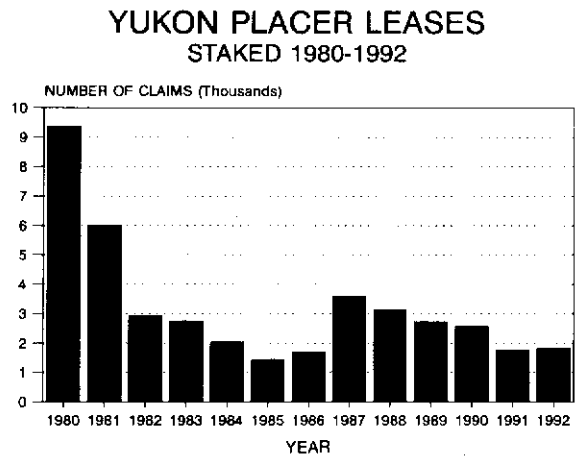


Figure 2

Though new claim staking activity is down, the number of claims held in good standing in 1991 and 1992 is up, and is close to the highest level of the past twelve years **(Figure 3)**. The 1991 figure of 17,801 claims held

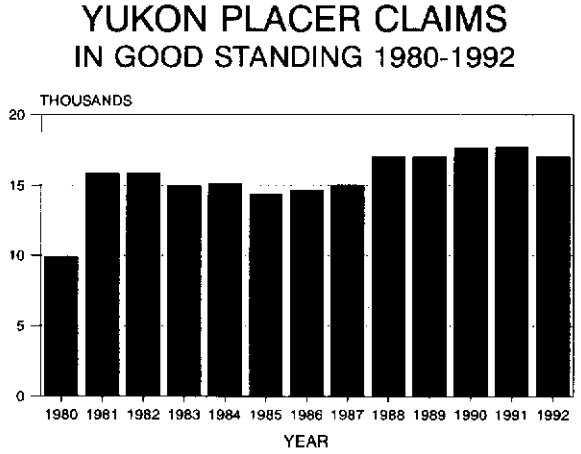


Figure 3

in good standing as of December 31st, 1991 and 17,115 in 1992 compares with the historic figure of some 18,000 placer claims held in good standing at the height of the Klondike Gold Rush of 1898.

The number of placer leases held in 1992 fell slightly to 239 from 1991's figure of 251 **(Figure 4)**.

YUKON PLACER LEASES
IN GOOD STANDING 1980-1992

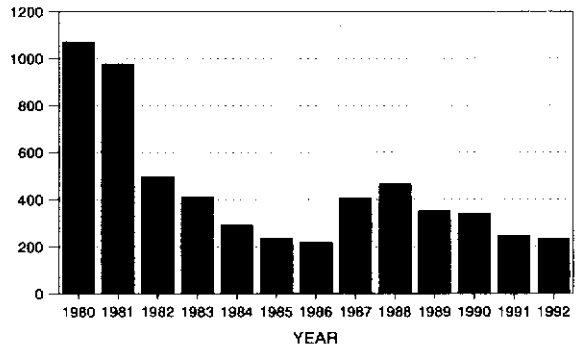


Figure 4

This decline in the number of placer leases in good standing in 1991 and 1992 may have contributed somewhat to the constant number of placer claims held in good standing in 1991 and 1992. Together, the accumulated amount of placer ground held decreased dramatically in 1991 and 1992, falling 19% and 21%, from the levels of 1989 and 1990 respectively **(Figure 5)**.

MILES OF YUKON PLACER HELD
IN GOOD STANDING 1980-1992

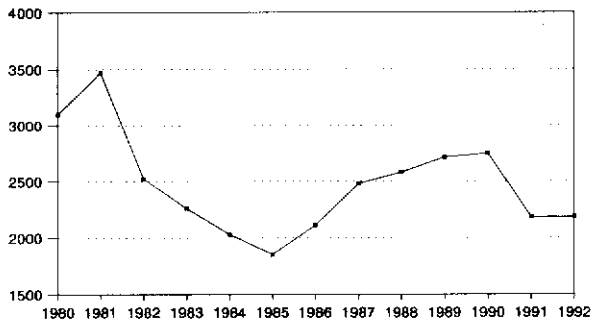


Figure 5

Measured in kilometers (miles), the combined total of leases and claims equated to 3,516 (2,185) and 3,514 (2,184) in 1991 and 1992 respectively. Although staking activity is down, the overall health of the Yukon's placer mining industry, as reflected by the number of placer claims held in good standing, appears to be sound.

Placer Gold Production in 1991 and 1992

Placer gold production continues to make a significant economic contribution to the Yukon's resource based economy. In 1991 the industry produced 111,972 crude ounces **(Figure 6)** or, based on an average grade of 800 fine, 89,577 fine ounces of gold valued at over 36.9 million dollars Canadian.

YUKON PLACER GOLD PRODUCTION
CRUDE OUNCES 1910-1992

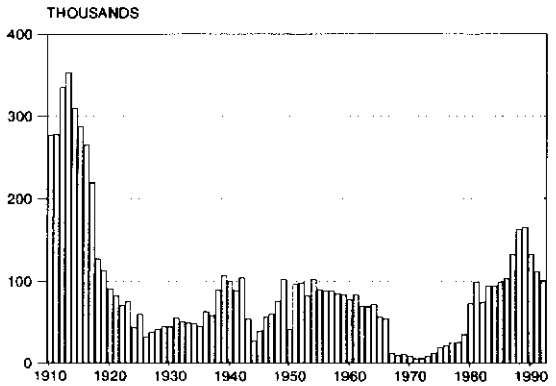


Figure 6

Though down 10% from 1991, gold produced in 1992 reached a total of 101,061 crude ounces, or 80,848 fine ounces valued at 33.8 million dollars Canadian **(Figure 7)**.

These dollar figures represent the direct economic contribution of the Yukon's Placer Industry, and indicate only a fraction of the total economic contribution.

Other factors not included in these figures are the "SPINOFFS" from Placer Mining, such as the purchases of supplies from local businesses and the wages of the workers of both the mining operations and the suppliers.

YUKON PLACER GOLD PRODUCTION
CRUDE OUNCES 1980-1992

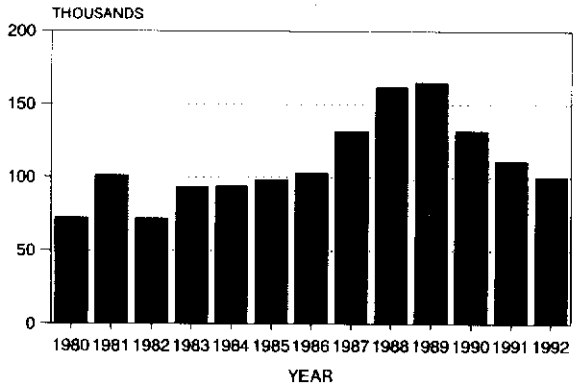


Figure 7

The total combined dollar value of the gold produced in 1991 and 1992 surpassed the 70 million dollar mark. The following tables show the twenty-five most productive creeks in 1991 and 1992.

MOST PRODUCTIVE CREEKS 1991

1. Dominion	19,387
2. Indian River	12,196
3. Hunker	12,084
4. Goldrun	7,891
5. Clear	6,930
6. Scroggie/Mariposa	5,718
7. Bonanza	5,400
8. Sixtymile	4,516
9. Quartz	3,627
10. Miller	2,718
11. Highet	2,506
12. Dublin	2,480
13. Glacier	2,395
14. Duncan	2,318
15. Henderson	1,867
16. Blackhills	1,853
17. Sulphur	1,469
18. Maisy May	1,175
19. Swamp	1,160
20. Klondike	1,145
21. Bear	954
22. Gold Bottom	858
23. Thunder	841
24. Rude	831
25. Thistle	797

MOST PRODUCTIVE CREEKS 1992

1. Dominion	18,652
2. Indian River	12,894
3. Hunker	11,089
4. Goldrun	9,655
5. Sixtymile	6,930
6. Highet (Mayo)	4,466
7. Henderson	3,858
8. Scroggie/Mariposa	3,658
9. Clear	3,227
10. Quartz	2,912
11. Bonanza	2,592
12. Klondike	2,573
13. Black Hills	2,113
14. Last Chance	2,044
15. Sulphur	2,031
16. Swamp	1,670
17. Duncan	1,370
18. Miller	1,323
19. Ballarat	1,214
20. Maisy May	789
21. Dublin Gulch	779
22. Thistle	767
23. Glacier	731
24. Bear	683
25. Gladstone	578

The 1992 season saw 185 operations either stripping or sluicing compared with 219 placer operations in 1991, a decrease of 16%. Water Use Licences issued for Placer Mining by the Yukon Territory Water Board were also down in 1992. There were 394 valid Placer Water Use Licences at the end of the 1992 season compared with 423 the previous year, a 7% decrease.

Gold Price

YUKON PLACER GOLD PRODUCTION
CRUDE OUNCES 1910-1992

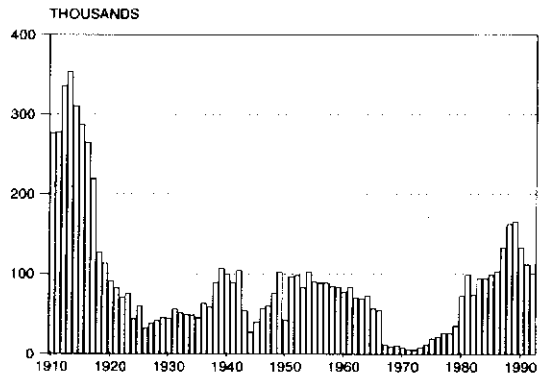


Figure 8

Gold prices through the start of 1991 to the end of 1992 dropped 13% **(Figure 8)**. In 1991 gold prices ranged from a high of $384.00 U.S. per ounce or $442.00 Canadian (Canadian-U.S. dollar exchange rate of 0.865) in January, to a low of $349.00 U.S. per ounce or $408.00 Canadian (Canadian-U.S. dollar exchange rate of 0.880) in September. The overall monthly average gold price for 1991 was $362.00 U.S. per ounce or $415.00 Canadian (Canadian-U.S. dollar exchange rate of 0.872).

The 1992 figures did not vary greatly from the 1991 figures. In 1992 gold prices range from a high of $354.00 U.S. per ounce or $409.00 Canadian (Canadian-U.S. dollar exchange rate of 0.866) in January to a low of $335.00 U.S. per ounce or $425.00 Canadian (Canadian-U.S. dollar exchanges rate of 0.789) in November and December. The 1992 monthly average was $344.00 U.S. per ounce or $415.00 Canadian (Canadian-U.S. dollar exchange rate of 0.828).

My thanks to L. P. van Kalsbeek, Placer Mining Inspector I.N.A.C., who compiled the data for this overview.

PLACER GOLD PRODUCED FROM YUKON CREEKS, 1985 - 1992 (compiled by L.P. van Kalsbeek)
Crude Ounces

STREAM or RIVER	Tributary to	85	86	87	88	89	90	91	92	85-92
Dawson Mining District										
Allgold	Klondike	69	0	151	635	1565	1495	719	0	4634
Ballarat	Yukon	1077	163	472	483	448	1025	308	1214	5190
Barker	Stewart	22	80	1182	0	3	38	158	0	1483
Barlow	Clear	0	103	0	0	13	118	27	40	301
Bear	Klondike	73	1384	647	435	244	594	954	683	5014
Bedrock	Sixtymile	232	403	101	0	1320	1149	0	0	3205
Big Gold	Sixtymile	952	0	0	0	32	0	0	0	984
Black Hills	Stewart	3829	4830	6857	3767	2843	2695	1853	2113	28787
Bonanza	Klondike	8567	10120	15284	9824	5368	2827	5400	2592	59982
Clear	Stewart	3680	3646	4834	4290	6725	9372	6930	3227	42704
Dominion	Indian	11151	8616	13360	16190	25627	19017	19387	18652	132000
Eldorado	Bonanza	3369	3356	2914	3790	2175	429	713	483	17229
Eureka	Indian	3416	2355	2982	3623	2104	901	709	200	16290
Fortymile	Yukon	195	153	159	324	179	273	83	259	1625
Glacier	Sixtymile	48	223	884	1336	3039	2226	2395	731	10882
Gold Bottom	Hunker	0	0	0	0	1179	987	858	16	3040
Gold Run	Dominion	1127	1129	7288	8520	5464	10172	7891	9655	51246
Henderson	Stewart	2762	857	854	1624	1385	1768	1867	3858	14975
Hobo	Klondike	54	0	0	0	0	0	0	0	54
Hunker	Klondike	12020	12910	8355	17423	17046	11311	12084	11089	102238
Indian	Yukon	2143	9835	15774	30482	20865	19086	12196	12894	123275
Kirkman	Yukon	61	91	128	81	46	310	498	87	1302
Klondike	Yukon	213	95	157	393	2207	2525	1145	2573	9308
Last Chance	Hunker	0	0	0	0	0	0	0	2044	2044
Little Gold	Sixtymile	693	0	0	364	57	0	0	2044	3158
Maisy May	Stewart	2386	2852	5542	4063	3991	543	1175	0	20552
Matson	Sixtymile	50	88	0	0	244	31	0	789	1202
Miller	Sixtymile	2916	2517	5069	6026	3921	2790	2718	193	26150
Moose	Fortymile	0	0	0	0	0	0	544	1323	1867
Poker	Fortymile	101	0	0	0	0	0	0	0	101
Quartz	Indian	3249	2441	1024	384	732	6366	3627	0	17823
Scroggie/Mariposa	Stewart	2172	3918	6895	8394	7036	6121	5718	2912	43166
Sestak	Yukon	0	0	0	40	539	399	70	3658	4706
Sheep	Firth	207	0	0	0	0	0	0	0	207
Sixtymile	Yukon	5239	8014	11676	10160	12710	6003	4516	0	58318
Sulphur	Dominion	9520	8372	3868	4662	3983	2481	1469	5560	39915
Tenmile	Sixtymile	3567	3363	3399	3477	0	0	0	2031	15837
Thistle	Yukon	0	0	162	0	2794	2840	797	119	6712
Upper Bonanza	Bonanza	0	0	0	0	923	256	0	767	1946
Various Dawson Creeks		0	3	5	0	7043	1310	355	407	9123
Total Dawson		85160	91917	120023	140790	143850	117458	97164	92213	888575
Mayo Mining District										
Anderson	Mayo Lake	0	13	0	0	0	0	0	44	57
Bear	Moose/Stewart	0	0	80	132	231	209	123	11	786
Carlson	Minto	0	0	0	0	0	0	0	0	0
Davidson	Mayo River	0	0	0	0	90	112	392	0	594
Dawn	Mayo Lake	0	0	0	0	0	0	0	0	0
Dublin Gulch	Haggart	0	0	0	0	1361	1454	2480	779	6074
Duncan	Mayo River	1323	798	238	727	1003	2148	2318	1370	9925
Empire	No Gold	450	119	174	223	0	0	0	11	977
Gem	Sprague	124	101	14	64	0	0	0	0	303
Haggart	McQuesten	3552	3345	1542	1661	1513	124	462	560	12759
Highet	Minto	2192	1735	2233	3042	3460	3498	2506	4466	23132
Johnson	McQuesten	0	0	411	470	668	782	648	0	2979
Ledge	Mayo Lake	6	48	99	153	194	219	154	372	1245
Lightning	Duncan	590	673	437	331	438	641	0	0	3110
McQuesten	Stewart	0	0	0	0	0	0	0	0	0
Minto	Mayo River	0	0	0	247	85	0	0	0	332
Morrison	Seattle	0	0	0	16	0	0	0	0	16
Russell	Macmillan	0	0	0	277	0	0	0	0	277
Seattle	McQuesten	0	0	0	0	0	0	0	0	0
Steep	Mayo Lake	0	76	0	0	0	0	0	0	76
Stewart	Yukon	0	0	0	0	0	0	0	0	0
Swede	Haggart	0	0	258	3230	61	0	0	0	3549
Thunder	Lightning	0	0	0	0	0	0	841	376	1217
Vancouver	McQuesten	0	0	0	371	184	0	0	0	555
Various Mayo Creeks		0	0	0	0	1551	0	1	0	1552
Total Mayo District		8237	6908	5486	10944	10839	9187	9925	7989	69515

STREAM or RIVER	Tributary to	85	86	87	88	89	90	91	92	85-92
Whitehorse Mining District										
Arch	Donjek	34	0	0	0	0	0	0	0	34
Back	Victoria	206	4	82	173	122	54	188	9	838
Burwash	Kluane	4	53	18	39	0	28	17	27	186
Canadian	Britannia	386	0	0	0	0	0	0	0	386
Casino	Dip	0	0	0	0	0	0	0	0	0
Cottoneva	South Big Salmon	0	0	0	0	56	0	407	0	463
Dollis	Tatshenshini	0	0	0	0	132	0	0	0	132
Fourth of July	Jarvis	174	462	948	1076	861	4	0	0	3525
Gladstone	Kluane Lake	0	0	0	0	0	0	168	578	746
Guder	Seymour	0	35	47	0	126	0	0	0	208
Happy	Big	0	0	0	0	0	0	0	0	0
Hayes tributaries	Selwyn	19	0	30	105	0	34	0	0	188
Kate	Ladue	0	0	0	42	0	522	662	276	1502
Kenyon	Scottie	2595	2120	4313	0	0	0	0	0	9028
Kimberly	Jarvis	0	0	32	5	11	53	81	0	182
Klaza tributaries	Nisling	70	251	166	107	69	210	489	63	1425
Lake	South Big Salmon	11	0	18	0	31	14	0	0	74
Little Violet	South Big Salmon	16	35	0	18	0	34	156	0	259
Livingstone	South Big Salmon	143	545	417	507	312	195	0	57	2176
Martin	South Big Salmon	0	34	13	0	0	0	0	0	47
Mechanic	Big	55	30	0	57	0	0	22	79	243
Mendocina	South Big Salmon	0	0	8	0	0	12	0	0	20
Moose	Lubbock/Atlin	0	0	0	0	0	0	0	0	0
Nansen	Nisling	17	29	162	737	45	0	664	35	1689
Porcupine	Donjek	0	0	0	0	0	0	0	0	0
Printers	Cultus	2	0	0	0	0	0	0	0	2
Quill	Kluane	0	0	6	0	0	0	0	0	6
Unnamed	South Big Salmon	0	0	0	0	0	0	14	0	14
Reed	Donjek	339	317	127	85	29	20	0	0	917
Revenue	Big	1229	540	105	623	28	273	0	0	2798
Rude	Dip	0	0	387	1039	798	1259	831	42	4356
Seymour	Big	101	207	320	347	0	43	0	54	1072
South Big Salmon	Big Salmon	0	0	0	0	0	0	0	0	0
Squirrel	Duke	166	8	0	0	0	21	0	0	195
Summit	South Big Salmon	0	0	16	0	0	0	0	0	16
Swamp	Scottie	0	0	0	5583	6153	3054	1160	1670	17620
Swede Johnson	Kluane	0	11	54	0	0	0	0	0	65
Tatshenshini R.	Alsek	0	0	0	0	0	0	19	14	33
Victoria	Nisling	0	79	0	215	436	0	0	0	730
Wheaton	Lake Bennett	0	0	0	0	0	0	0	0	0
Various Whitehorse Creeks		0	0	0	0	1673	160	2	0	1835
Total Whitehorse		5567	4760	7269	10758	10882	5990	4880	2904	53010

Watson Lake Mining District Stream or River	85	86	87	88	89	90	91	92	85-92
Liard River	0	10	13	0	0	0	0	0	23
Various Watson Lake Creeks	0	0	0	0	0	23	0	0	23
Total Watson Lake	0	10	13	0	0	23	0	0	46

Summary of Placer Gold Production	85	86	87	88	89	90	91	92	85-92
Dawson Mining District	85160	91917	120023	140790	143850	117458	97167	90168	888575
Mayo Mining District	8237	6908	5486	10944	10839	9187	9925	7989	69515
Whitehorse Mining District	5567	4760	7269	10758	10882	5990	4880	2904	53010
Watson Lake Mining District	0	10	13	0	0	23	0	0	46
Total	98964	103595	132791	162492	165571	132658	111972	101061	1011146

FINENESS OF YUKON PLACER GOLD

Creek	Fineness
Adams Gulch	615-746
Allgold Creek	858-860
American Gulch	864
Arch Creek	870
Anderson Creek (Fortymile Area)	720-728
Anderson Creek (Mayo Lake Area)	870
Back Creek	760-836
Ballarat Creek	852-860
Barker Creek	793-900
Barlow Creek	853
Bear Creek	644-746
Bear Creek (Mayo Area)	
Bedrock Creek	820
Bennett Creek	
Big Gold Creek	847-854
Black Hills Creek	730-855
Bonanza Creek Benches	
- American Hill	864
- Cheechako Hill	750-785
- King Solomon Hill	785-800
- Trail Hill	800-805
Bonanza Creek - Upper	809-827
- Middle	781
- Lower	739-798
Boulder Creek	800
Burwash Creek	860-876
Bullion Creek	871
Brimstone Gulch	830
Browns Creek	800
Bruin Creek	800
Canadian Creek	864-883
Canyon Creek	825
Caribou Creek	816-840
Childs Gulch	750
Claffey Pup	750
Clear Creek	820-860
(Left Fork Clear Creek)	730
(Right Fork Clear Creek)	720-740
Davidson Creek	840
Discovery Pup	700
Dominion Creek - Upper	805-832
- Middle	817-849
- Lower	790-840
Dublin Gulch	860-923
Duncan Creek	792-802
Eighty Pup	797
Eldorado Creek Benches	
- Gold Hill	768
Eldorado Creek	733-803
Empire Creek	910
Eureka Creek	677-745

Creek	Fineness
Eva Creek	790
15 Pup (Last Chance Creek)	700
Fifteen Pup (Mayo Area)	876
Fisher Gulch	900
Forth of July	810
Fortymile River	814-845
French Gulch	631-750
Friday Gulch	790-804
Gay Gulch	780-790
Gauvin Gulch	664
Gem Creek	895
Gill Gulch	870
Glacier Creek	830-860
Gladstone Creek	820
Gold Bottom Creek	780-800
Gold Run Creek	830-878
Goring Creek	738
Guder Creek	838
Haggart Creek	885-895
Hayes Creek	880
Henderson Creek	720-760
Henry Gulch	605-650
Hester Creek	850
Highet Creek	820-845
Homestake Gulch	660-750
Hunker Creek Benches	
- Australian Hill	850-860
- Dago Hill	798-859
- Paradise Hill	735-802
Hunker Creek - Lower	701-726
- Middle	725-820
- Upper	798-859
Independence Creek	780-794
Indian River	780-843
Irish Gulch	624-742
Jackson Gulch	829-842
Johnson Creek	760-820
Kate Creek	820
Kenyon Creek	750
Kimberly Creek	860
Kirkman Creek	860-896
Klaza River (Unnamed Tribs)	760-830
Klondike City	780-790
Klondike River Benches	
- Dawson Hill	790-825
- Groetschier Bench	790-825
- Jackson Gulch Hill	835
Lake Creek	895
Last Chance Creek	683-832
Ledge Creek	805-825
Lightning Creek	830
Livingstone Creek	880
Log Cabin Creek	850-895

FINENESS OF YUKON PLACER GOLD

Creek	Fineness
Lombard Pup	860
Lovett Gulch	808-836
Little Blanche Creek	650-710
Little Violet Creek	866
Maisy May Creek	780-782
Mariposa Creek	895-900
Martin Creek	870
Matson Creek	776-893
May Creek	892
McQuesten River	870
Mechanic Creek	880-910
Miller Creek	827-857
Mint Gulch	820-851
Minto Creek	827-835
Montana Creek	770
Monte Cristo Gulch	784-796
Moose Brook Creek	837
Moose Creek (Fortymile Area)	855
Moosehorn Range	820
Oro Grande Gulch	775
Quartz Creek	732-800
Ready Bullion Creek	710-717
Reed Creek	889-896
Revenue Creek	860-880
Rosebute Creek	800-810
Rude Creek	840-850
Rusk Creek	830
Russell Creek	850
Scroggie Creek	895-905
Sestak Creek	810-815
Seymour Creek	860
Skookum Gulch	605
65 Pup	960
Sixtymile River	810-840
Steep Creek	931-946
Stewart River	837-850
Sulphur Creek - Upper	820-832
Sulphur Creek - Middle	790-813
Sulphur Creek - Lower	823-832
Squaw (Dollis) Creek	834
Swamp Creek	800
Swede Creek	895
Tatshenshini River	866
Ten Mile Creek	830-845
Thistle Creek	848-895
Thunder Gulch	790-825
27 Gulch (Eldorado Creek)	750
27 Pup (Hunker Creek)	845
Victoria Creek	720-730
Victoria Gulch	807-820
Wade Creek	900-930

THE ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS (EARP)

The Northern Affairs Program of the Department of Indian Affairs and Northern Development is responsible for managing the minerals, oil and gas, water, forests and most of the land in the Yukon Territory. Environmental protection is a major element of this resource management responsibility.

This guide describes the federal environmental assessment review process and how the Northern Affairs Program carries out its responsibilities under EARP. It provides general information to resource users on their responsibilities under the EARP process and of the types of information that may be required at various stages of the EARP review process. The guide also provides information to promote public participation in the review of proposals for resource use.

This guide is not intended as an exhaustive manual of responsibilities and procedures under EARP. Project proponents are encouraged to contact DIAND as early as possible in the planning process. Early contact enables proponents to consider EARP information requirements as part of their overall project planning. Early examination of environmental and socio-economic considerations has proven to result in more efficient and cost-effective project planning.

WHAT IS EARP?

The Environmental Assessment and Review Process, or EARP, is the procedure used by the federal government to assess the environmental and related socio-economic impacts of development projects.

EARP derives its authority from the *EARP Guidelines Order*, an Order-in-Council passed by the federal government in 1984 under the *Government Organization Act*.

Although EARP has long been in effect, rulings of the Federal Court of Canada in 1989 and 1990 have dramatically expanded the scope of authority of the *EARP Guidelines Order*.

In the *Rafferty-Alameda Dam* case, the Federal Court ruled that the *EARP Guidelines Order* must not be considered a discretionary code of conduct. The ruling interpreted the EARP Order to be a law of general application, binding the Government of Canada to assess the environmental and related socio-economic impacts of all activities under its authority.

In the *Old Man Dam* case, the Federal Court ruled that responsible departments must ensure that their environmental assessment considers all potential impacts of a project proposal, not just the elements of the proposal for which they have regulatory authority. The requirement to assess the full range of effects, and to ensure that measures to mitigate these effects are identified and enforced, was referred to by the Federal Court as a "super-added" responsibility.

WHAT IS REQUIRED UNDER EARP IN THE YUKON?

EARP requires that the environmental implications of all proposals for which a federal department has decision-making authority must be considered before irrevocable decisions are made. Under EARP, environmental impacts must be assessed as early as possible in the project planning process.

In assessing the potential environmental effects of a project proposal, decision-making authorities are also required to consider the concerns of the public regarding the proposal.

When environmental impacts are identified, measures to mitigate these impacts must be established and enforced.

WHAT EFFECTS DOES EARP REVIEW?

EARP assessment examines effects upon the *physical, biological* and *socio-economic* environments.

Physical effects can include impacts upon the air, the land, the surface water and ground water.

Biological effects can include impacts upon terrestrial and aquatic plants and animals and habitats.

Socio-economic effects can include regional benefits and impacts upon human health, upon archaeological, heritage, recreational or aesthetic values or upon Native land use.

Levels of public concern and support for project proposals are also considered.

HOW IS INFORMATION OBTAINED?

The project proponent is responsible for supplying information which adequately describes the project proposal, its potential impacts and the nature of benefits associated with the proposal. These information requirements are specified by those responsible for conducting the environmental review and are described in more detail in the section of this guide dealing with Level I and Level II Screening.

WHAT IS THE RESULT OF PROJECT ASSESSMENT?

Project assessment results in recommendations regarding the significance and acceptability of environmental effects predicted to occur as a result of the proposed project.

If the potentially adverse environmental impacts that may be caused by the proposal are *insignificant or mitigable with known technology*, the proposal may proceed, or proceed with mitigation. In order for the project to proceed with mitigation, the department approving the project must also take steps to ensure the mitigation measures will be carried out.

If the potentially adverse environmental effects that may be caused by the proposal are *significant*, the EARP Guidelines Order calls for the proposal to be referred to the Minister of the Environment for public review by an EARP Panel.

If the potentially adverse environmental effects of the proposal are *unknown*, the proposal may be given further study, be rescreened and reassessed, or be referred to the Minister of the Environment for public review by an EARP Panel.

If the potentially adverse environmental effects of the proposal are *unacceptable*, the proposal may either be modified and rescreened, or reassessed or abandoned.

WHAT IS THE PROCEDURE FOR ASSESSMENT OF PROJECT PROPOSALS IN THE YUKON?

The EARP Guidelines Order requires the environmental screening of proposals ranging from land use permit and water license applications to requests for federal funding and major new mineral developments. However, not all proposals are screened in the same way.

The purpose of screening is to evaluate the potential environmental and directly related socio-economic impacts of a proposed activity. Screening attempts to determine the extent and nature of these impacts. Potential impacts are assessed and public concerns considered. Then, a determination is made on whether the project impacts are insignificant, significant but mitigable with known technology, significant (and requiring referral to an EARP Panel), unknown or unacceptable.

Because DIAND is responsible for managing Yukon waters, forests, minerals and most lands, the department has primary responsibility for EARP screening of project proposals affecting these resources.

Many applications for federal approval present little potential for significant physical, biological and socio-economic impact and prompt limited public concern. DIAND has developed processes to meet the screening requirements of EARP as part of the department's administration of resource management statutes. Environmental screening as part of the routine application process is referred to as *Level I Screening.*

In cases where there is the potential for significant environmental effect, or where significant public concern is expressed, more detailed assessment takes place. Hardrock mine developments, forest harvesting agreements, hydro projects or transmission lines are examples of projects which require more extensive review. This is referred to as *Level II Screening.*

Level II Screening often begins before an application is made for resource use. The need for compiling and preparing comprehensive information can require significant lead time before the information is submitted for review by government and the public.

Level III Screening is carried out by an EARP Panel appointed by the Minister of the Environment at the request of the Minister of DIAND. This level of review tends to be reserved for major project proposals with the potential to cause major environmental impacts and public concern. Past EARP Panel Reviews in the north include such projects as the Alaska Highway pipeline proposal, Beaufort Sea Oil and Gas Development, the Norman Wells Pipeline and the Shakwak Highway Project.

WHAT IS AN EARP PANEL?

An EARP Panel is an independent board of experts appointed by the Minister of the Environment to direct an exhaustive public and technical review of a project proposal. Its members are selected for their freedom from conflicting interests and for their special knowledge and experience relevant to the effects of the proposal under review.

WHAT IS THE PUBLIC'S ROLE?

Levels of public input to environmental assessment increase with the complexity of project proposals and of public concern. The extent of public input depends on the complexity of the project proposal and the level of public concern.

Minor applications for a lease or sale of land, or for a permit to temporarily occupy Crown land are referred to federal and territorial departments, Indian Bands and interest groups for comment.

In the case of major projects or significant public concern, more detailed environmental review includes increased opportunities for public comment. Review of proposals is advertised, project information is forwarded directly to interested parties for comment and, in some cases, public meetings will be held to discuss public concerns.

HOW WILL THE CANADIAN ENVIRONMENTAL ASSESSMENT ACT EFFECT THE ENVIRONMENTAL REVIEW PROCESS IN THE YUKON?

Once the new Act and regulations come into effect, DIAND will be responsible for reviewing its present environmental assessment procedures to ensure that the requirements of the new law are being met. Should the new law require changes to current procedures, information will be made available on the revised practices.

HOW WILL LAND CLAIMS AGREEMENTS EFFECT ENVIRONMENTAL REVIEWS?

A new environmental assessment process--known as the Development Assessment Process--will be designed for the Yukon, based on the requirements of Chapter 12 of the Umbrella Final Agreement. It will be designed to compliment the requirements of the new *Canadian Environmental Assessment Act* and the new process will be used by the federal and Yukon governments as well as First Nations.

CONVERSION FACTORS

1 cubic yard	= 0.764 cubic metres
1 long ton	= 2240 lbs
1 short ton	= 2000 lbs
1 tonne	= 1.102 short tons
1 tonne	= 2204.62 lbs
1 troy ounce	= 31.1035 grams
1 troy ounce	= 20 pennyweights
1 troy ounce	= 480 grains
1 pennyweight	= 24 grains
1 grain	= 0.06479 grams
1 ounce/cubic yard	= 40.68 grams/cubic metre
1 ounce/ton	= 34.2848 grams/tonne

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

Note: 1 inch = 25.4 millimetres (mm)

VOLUME

10 Milliliters (ML)	= 1 Centiliter (C)
10 Centiliters	= 1 Deciliter (DL) = 100 Milliliters
10 Deciliters	= 1 Liter (L) = 1,000 Milliliters
10 Liters	= 1 Dekaliter (DAL)
10 Dekaliters	= 1 Hectoliter (HL) = 100 Liters
10 Hectoliters	= 1 Kiloliter (KL) = 1,000 Liters
Liter x 0.21998	= Gallon (British)
Liter x 0.26417	= Gallon (U.S.)
Gallon x 4.5459 (British, Canadian)	= Liters
Gallon (U.S.) x 3.785	= Liters

TEMPERATURE

°C = (°F - 32) x 555

°F = (°C x 18) + 32

The following measures are not to be held as absolute values but are used by many miners in making 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, and 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
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
Swelling factor of ordinary gravels = 20 to 30% increase in volume

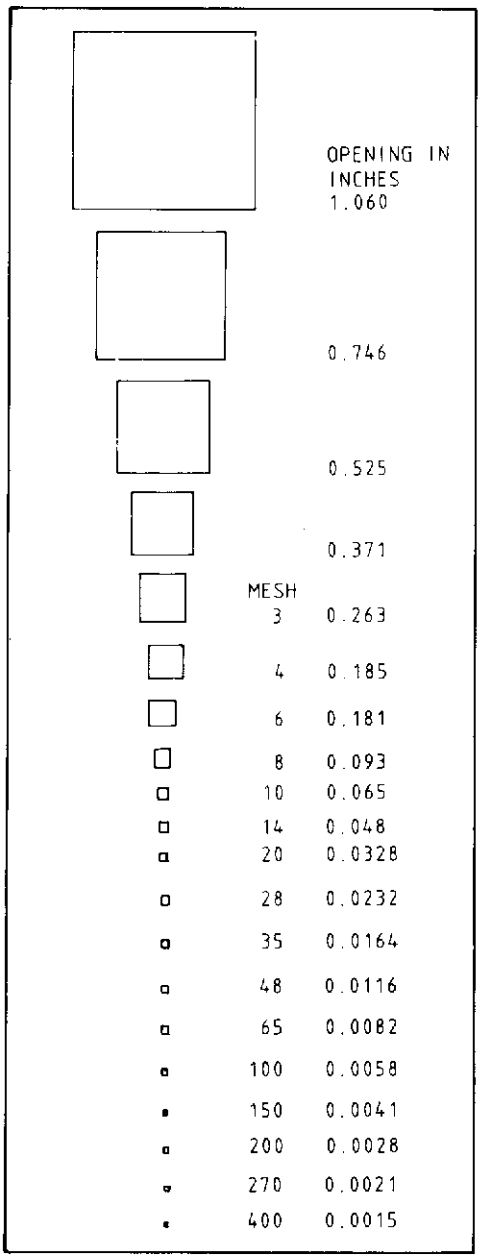
WEIGHTS

12 troy ounce	= 1 troy pound
32.15 troy ounce	= 1 kilogram = 1,000 grams
24 karats	= pure gold
22 karats	= 91.6 % fine gold
21.6 karats	= 90% fine gold
18 karats	= 75% fine gold
14 karats	= 58.3% fine gold
10 karats	= 41.6% fine gold

TYLER STANDARD SCREEN SCALE

Relationship of openings in basic $\sqrt{2}$:1 screen scale series.

(Openings not to scale).



BASELINE SURVEYS OF YUKON PLACER CREEKS

Stream	Tributary to	Date	Surveyor	Plan	Microplan
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
Allgold Creek	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
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	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	2454-6
Big Gold Creek	Sixtymile River	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	2485-86
Black Hills Creek	Stewart River	1908	Gibbon	18090	2453
Blueberry Creek	Thistle Creek	1902	McPherson	10390	2457-58
Bonanza Creek	Klondike River	1897	Ogilvie	8284	3865
Bonanza Creek	Klondike River	1901	McPherson	10285	2799
Bonanza Creek	Klondike River	1901	McPherson	10294	2800
Bonanza Creek	Klondike River	1933	Dickson		7567-78
Bonanza Creek	Klondike River	1971	McDonald	58479	
Bonanza Creek	Klondike River	1979	Brennan	67118	9841
Bonanza Creek	Klondike River	1981	Aucoin	68163	3687
Boucher Creek	Sixtymile River	1902	Cautley	9558	7707
Boulder Creek	Bonanza Creek	1898	Gibbon	9603	2818
Bourdeleau Gulch	Hunker Creek	1902	Cautly	9558	7707
Box Creek	Steele River	1902	McPherson	10179	
Bullion Creek	Slims River	1904	Dickson		7757
Burwash Creek	Kluane River	1906	Dickson	12759-61	1702-3,2819
Butler Gulch	Boucher Creek	1902	Cautly	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		7710-11
Cascade Creek	Mayo Lake	1904	McPherson	11491	2561
Center 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
Clear Creek	Stewart River	1913	Kitto	34673	
Clear Creek	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

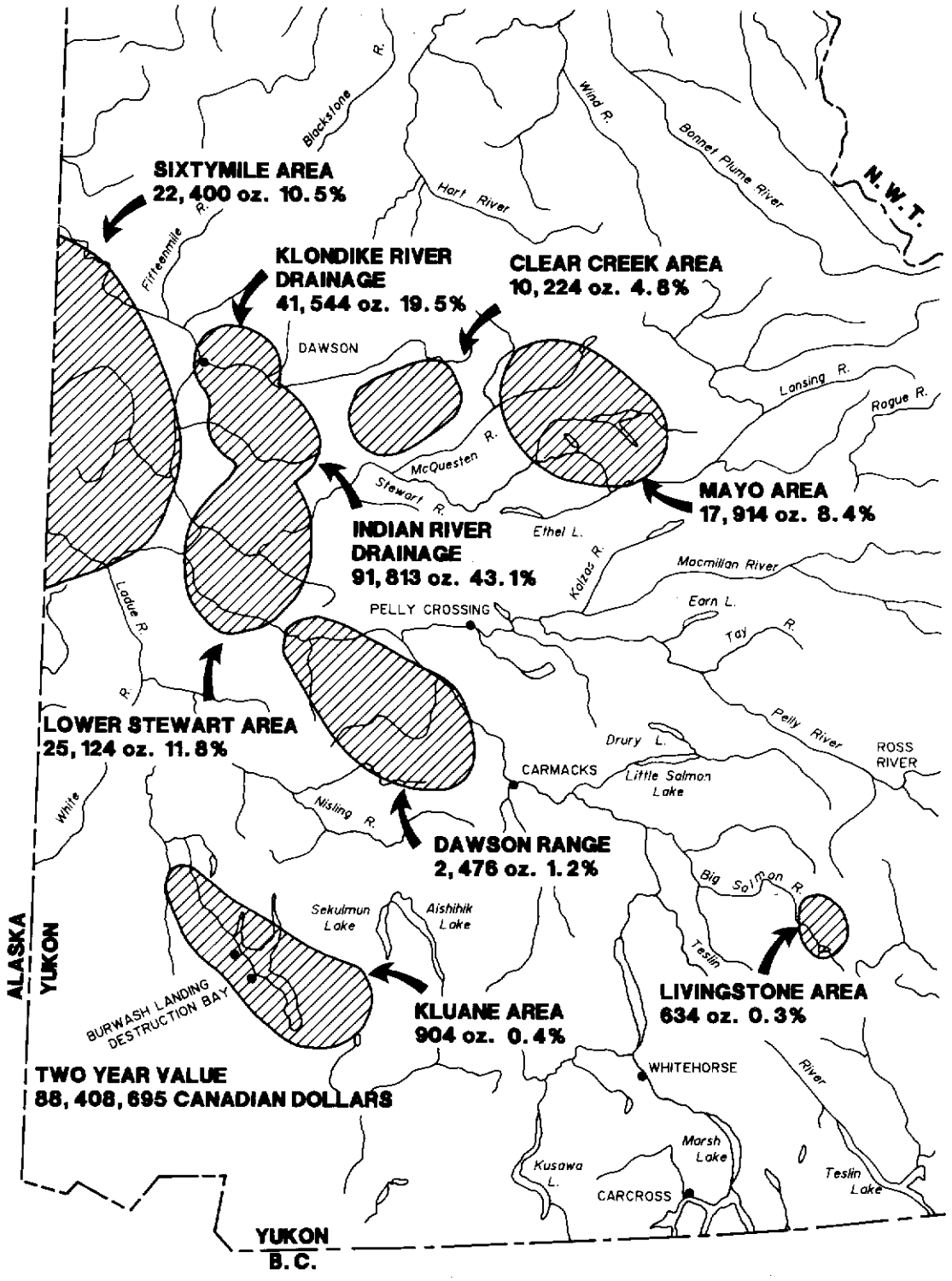
Stream	Tributary to	Date	Surveyor	Plan	Microplan
Cripple Creek	Yukon River	1986	Dupuis	70536	10711
Dago Gulch	Hunker Creek	1907	Green		2822
Dion Gulch	Yukon River	1908	McPherson		7748
Discovery Gulch	Black Hills Creek	1908	Gibbon	18090	2453
Dolly Creek	Nansen Creek	1912	Dickson	20053	1712-13
Dome Creek	Nisling River	1912	Dickson	20053	2001
Dominion Creek	Indian River	1900	Cote	9172	4643
Dominion Creek	Indian River	1902	Gibbon	10180	2770
Dominion Creek	Indian River	1918	Hawkins		2813
Dominion Creek	Indian River	1981	Welter	68166	3688
Dominion Creek	Indian River	1983	Aucoin	69030	10241
Dominion Creek	Indian River	1984	Aucoin	69639	10377
Dominion Creek	Indian River	1986	Mitchell	70929	10776
Dublin Gulch	Haggart Creek	1903	McPherson	10289	3054
Dublin Gulch	Haggart Creek	1980	Parnell		
Duncan Creek	Mayo River	1903	McPherson	10177	3418
Duncan Creek	Mayo River	1903	Rinfret	10178	3447
Duncan Creek	Mayo River	1903	Barwell	58577	
Dutton Pup	80 Pup	1985	Gray	70167	10543
Edmonton Creek	Mayo Lake	1904	McPherson	11490	3414
Eight Pup	Mayo Lake	1901	Gibbon	9608,9613	2802,7
Eighty Pup	Hunker Creek	1901	Gibbon	9609	2803
Eighty Pup	Hunker Creek	1985	Gray	70167	10543
Eldorado Creek	Bonanza Creek	1901	McPherson	9614-15	2808
Eldorado Creek	Bonanza Creek	1901	McPherson	9604	2873-74
Eldorado Creek	Bonanza Creek	1905	Gibbon	18091	3052,53
Eldorado Creek	Bonanza Creek	1933	Dickson	39900	
Eldorado Creek	Bonanza Creek	1982	Aucoin	68494	10108
Eliza Creek	Nansen Creek	1912	Dickson	20052	2001
Eureka Creek	Indian River	1902	McPherson		7709
Eureka Creek	Indian River	1902	McPherson	55028	7708
Eureka Creek	Indian River	1902	McPherson	10614	2482
Eureka Creek	Indian River	1900	Cote	9394	2827-8
Eureka Creek	Indian River	1987	Underhill	71059	11145
Examiner Gulch	Bonanza Creek	1908	McPherson		7748
Falconer Gulch	Yukon River	1908	McPherson		7748
Fifteen Pup	Last Chance Creek	1901	Gibbon	9613	2807
Fifty-one 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		7710-11
Flat Creek	Klondike River	1983	Thomson	68972	10243
Forty Pup	Duncan Creek	1903	McPherson	10177	3418
Fourth of July Cr.	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		4443
Glacier Creek	Sixtymile River	1907	Gibbon	17241	2454-56
Glacier Creek	Sixtymile River	1980	Parnell	68648	10127

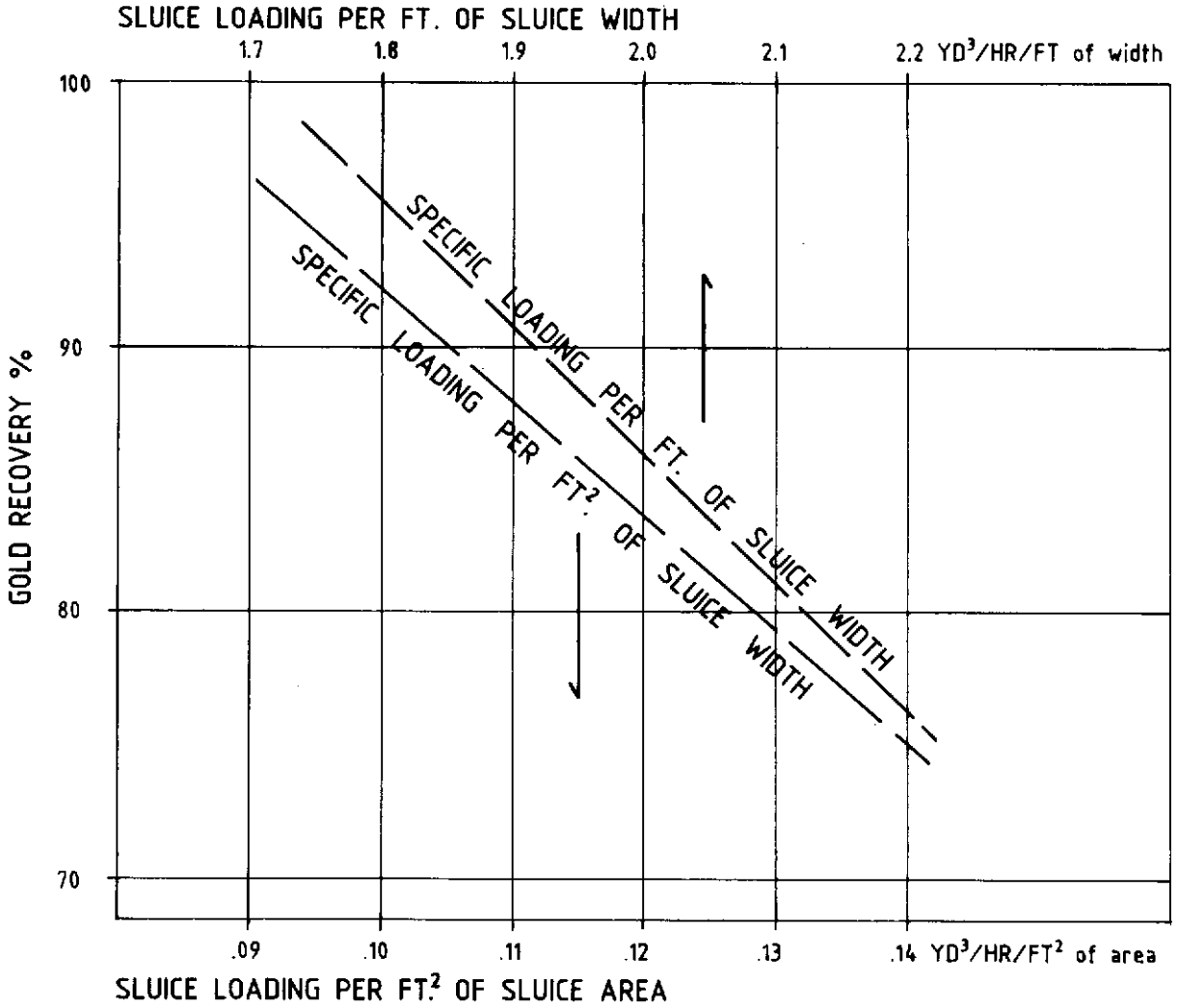
Stream	Tributary to	Date	Surveyor	Plan	Microplan
Glacier Creek	Big Gold Creek	1980	Keopke	69154	10279
Gold Bottom Creek	Hunker Creek	1901	Gibbon	9612	2805-6
Gold Run Creek	Dominion Creek	1902	McPherson	10181	2797-98
Gold Run Creek	Dominion Creek	1981	Welter	68166	3688
Goring Creek	Klondike River	1910	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
Haggart Creek	McQuesten River	1980	Parnell		
Hattie Gulch	Hunker Creek	1907	Gibbon	17319	2794
Hattie Gulch	Hunker Creek	1990	Aucoin	73313	
Henry Gulch	Hunker Creek	1901	Gibbon	9607	2802
Hester Gulch	Hunker Creek	1901	Gibbon	9611	2804
Hester Creek	Hunker Creek	1984	Aucoin	69640	10379
Henderson Creek	Yukon River	1901	Gibbon	9542	2485-86
Highet Creek	Minto Creek	1904	McPherson	11489	3055
Hodgen Creek	Montana Creek	1902	McPherson	10179	2483-84
Homestake Gulch	Bonanza Creek	1901	McPherson	9847	2811
Hunker Creek	Klondike River	1901	Gibbon	9606,7,11	2802-4
Hunker Creek	Klondike River	1902	Gibbon	10180	2770
Hunker Creek	Klondike River	1977	Koepke	65451	9623
Hunker Creek	Klondike River	1902	Gibbon	8636,9824	2831-32,2809
Hunker Creek	Klondike River	1967	Holt	53536	
Hunker Creek	Klondike River	1980	Aucoin	67557	944
Hunker Creek	Klondike River	1982	Aucoin	68595	10150
Huot Gulch	Boucher Creek	1902	Cautley	9558	7707
Indian River	Yukon River	1900	Cote	9172	4643
Indian River	Yukon River	1934	Dickson	39217-18	2474-75
Indian River	Yukon River	1936	Dickson	39321-22	692
Indian River	Yukon River	1938	Dickson		7987
Indian River	Yukon River	1981	Koepke		
Indian River	Yukon River	1981	Welter	68166	3688
Indian River	Yukon River	1982	Koepke	68495	10110
Indian River	Yukon River	1984	Aucoin	69641	10380
Indian River	Yukon River	1986	Iles	70538	10713
Iron Creek	Barker Creek	1906	Gibbon	34669-70	2477,3899-902
Iron Creek	Nisutlin River	1988	Lamerton	71815	11144
Isaacs Gulch	Flat Creek	1904	Gibbon		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	Aucion	74563	
Klondike River	Yukon River	1902	White-Fraser	54370	
Klondike River	Yukon River	1980	Aucoin	67133	9846
Klondike River	Yukon River	1989	Dupuis	72345	11429
Lake Creek	S.Big Salmon River	1902	McPherson	10359	1726

Stream	Tributary to	Date	Surveyor	Plan	Microplan
Last Chance Creek	Hunker Creek	1901	Gibbon	9605,8,10	2802,3,7
Last Chance Creek	Hunker Creek	1983	Keopke	69106	10244
Last Chance Creek	Hunker Creek	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	1903	McPherson	10177	3418(7727)
Lightning Creek	Duncan Creek	1903	Barwell	58577	
Lindow Creek	Bear Creek	1902	Gibbon	9825	2810
Lion Gulch	Caribou Creek	1904	Gibbon		7710-11
Little Blanche Cr.	Quartz Creek	1909	McPherson		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
Lovett Gulch	Bonanza Creek	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
McRae Gulch	Highet Creek	1906	Gibbon	34669-70	2477,3899-
Miller Creek	Sixtymile River	1909	McPherson		7436
Miller Creek	Sixtymile River	1981	Aucoin	67918	2463
Mint Gulch	Hunker Creek	1901	Gibbon	9606	2802
Minto Creek	Mayo River	1912,	Kitto	31763,65	3041-42
Montana Creek	Indian River	1902	McPherson	10179	2482-84
Moose Creek	Fortymile River	1907	Gibbon		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	Cote	9172	4643
Quartz Creek	Indian River	1980	Welter	68165	mylar
Quartz Creek	Indian River	1980	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
Sharpe Creek	Scroggie Creek	1912	Kitto	34676	2476
Shaw Creek	Nansen Creek	1912	Dickson	20052	2001
Sidney Creek	Nisutlin River	1988	Lamerton	71815	11144
Rusk Creek	Nisling River	1912	Dickson	2005	2001
Sixtymile River	Yukon River	1907	Gibbon	17241	2454-56
Sixtymile River	Yukon River	1914	Dickson	34663-65	2755-57

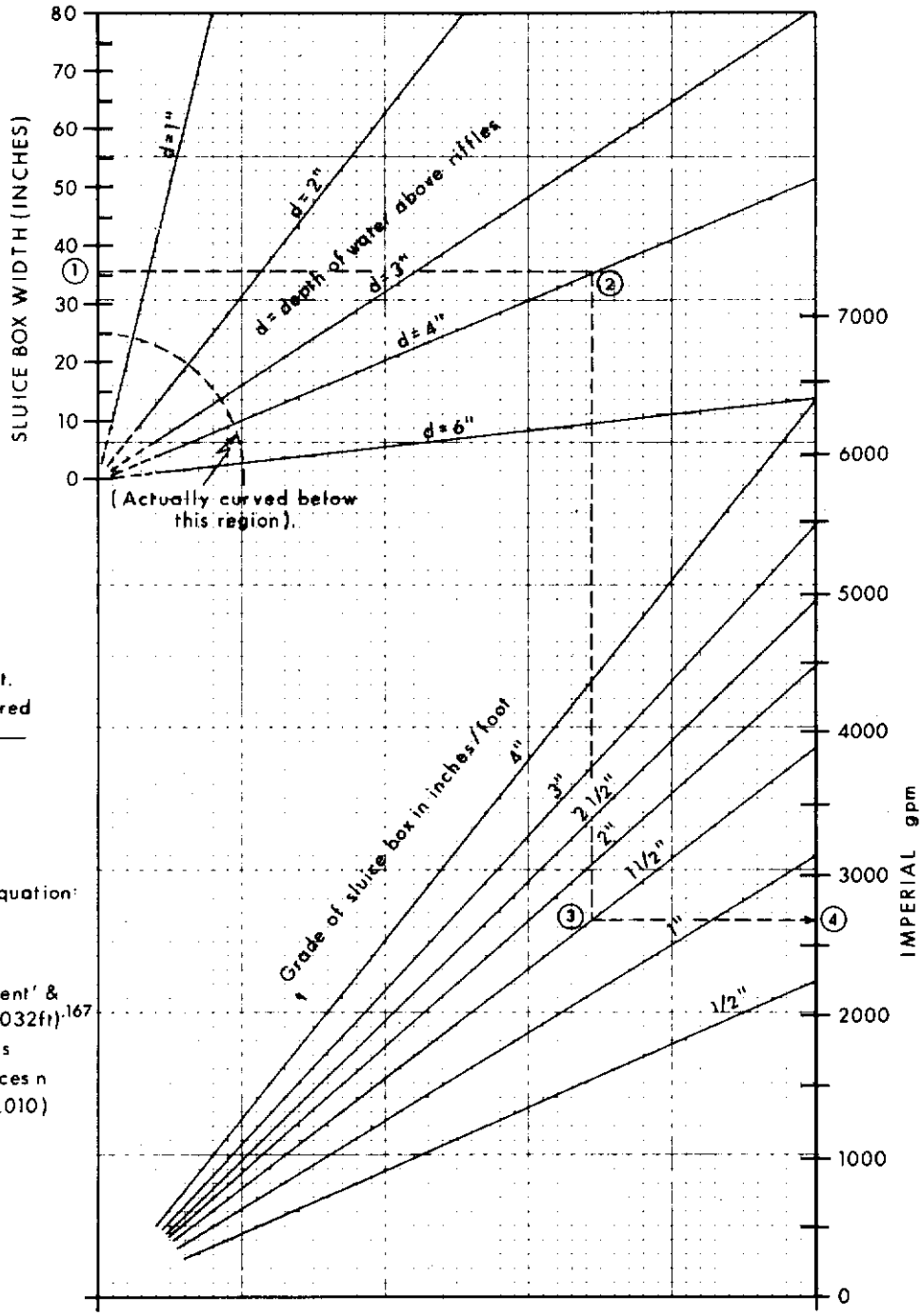
Stream	Tributary to	Date	Surveyor	Plan	Microplan
Sixtymile River	Yukon River	1914	Kitto	34674	2753,54
Sixtymile River	Yukon River	1981	Aucoin	67918	2463
Skookum Gulch	Bonanza Creek	1901	McPherson	9847	2811
Slate Creek	Nansen Creek	1912	Dickson	20049	2001
Sock Creek	Klondike River	1903	Gibbon	11494	2801
Spring Gulch	Bonanza Creek	1901	McPherson	9847	2811
Steele River	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
Sluphur Creek	Dominion Creek	1912	Kitto	8599-600	7561
Summit Creek	S.Big Salmon R.	1902	McPherson	10359	1726
Summit Creek	Nisling River	1912	Dickson	20053	1712-13
Tenmile Creek	Sixtymile River	1912	Kitto	134675	2477
Thirteen Gulch	Eldorado Creek	1916	Brownlee		2812
Thistle Creek	Yukon River	1902	McPherson	10390	2457-58
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
wenty-one Gulch	Hunker Creek	1907	Gibbon	17319	2794
Twenty-one Pup	Hunker Creek	1990	Aucoin	73313	
Vermont Creek	Steele River	1902	McPherson	10179	2483-84
Victoria Gulch	Bonanza Creek	1901	McPherson	12068	2796
Victoria Creek	Nisling River	1912	Dickson	20048	1715
Victoria Gulch	Upper Bonanza	1985	Thomson	70173	10578
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
Williams Creek	Duncan Creek	1903	Rinfret	10178	3447

TWO YEAR YUKON PLACER PRODUCTION
1991 to 1992 incl.
TOTAL 213,033 oz.





TYPICAL DETERIORATION IN SLUICE PERFORMANCE WITH INCREASED LOADING



eg.

1. box width 36"
2. water depth 4"
3. grade 1 1/2"/ft.
   Find water required
4. 2700 igpm ←

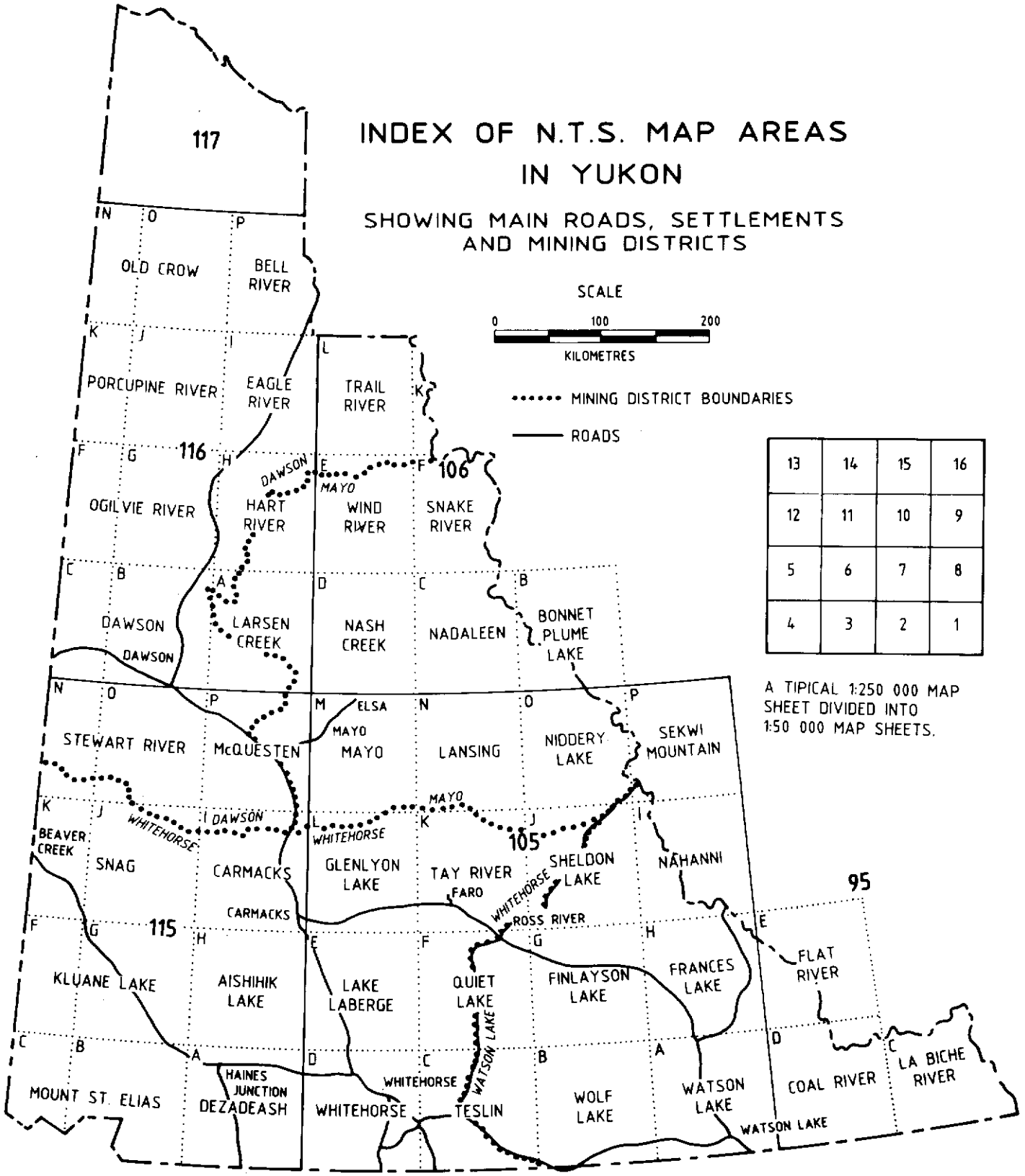
Based on Mannings Equation:

$$Q = \frac{1.5A}{n} (R)^{.67} (S)^{.5}$$

n = 'roughness coefficient' & given value of $(0.032ft)^{.167}$ to allow for riffles (For smooth surfaces n would be about 0.010)

DETERMINATION OF SLUICE BOX FLOW

Modified from Alaska Dept. of Environmental Conservation booklet by R & M Consultants, Fairbanks, Alaska Jan. 83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Homestake Gulch	Roberts, A. & M.	115-O-14	63°56'N 139°16'W	90
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Bonanza Creek	Fowler, G.	115-O-14	63°59'N 139°21'W	91
Bonanza Creek	Kohlman Explorations Ltd.	115-O-14	63°59'N 139°22'W	91
Bonanza Creek	Troberg, R.	115-O-14	63°58'N 139°21'W	92
Bonanza Creek	Daunt, I.	115-O-14	63°55'N 139°20'W	92
Bonanza Creek	Van Resources	115-O-14	63°56'N 139°20'W	93
Bonanza Creek	Van Resources	115-O-14	63°57'N 139°21'W	93
Bonanza Creek	Van Resources	115-O-14	63°58'N 139°21'W	94
Lombard Pup	Hamilton, Sean	115-O-15	63°51'N 138°52'W	94
Dominion Creek	Yanisiw, J.E.	115-O-15	63°51'N 138°49'W	94
Minnie Bell Creek	Wheelton, John	115-O-15	63°54'N 138°35'W	95
Green Gulch	Morgan, D.	115-O-15	63°49'N 138°56'W	96
Gold Bottom Creek	Fraser, J. & I.	115-O-15	63°58'N 138°58'W	96
Gold Bottom Creek	Mogul Gold	115-O-15	63°57'N 138°58'W	97
Hunker Creek	Stuart, J.	115-O-15	64°02'N 139°13'W	98
Hunker Creek	Shannon, H.	115-O-15	63°58'N 138°59'W	98
Dominion Creek	Favron Enterprises Ltd.	115-O-15	63°49'N 138°47'W	99
Dominion Creek	Ross Mining Services Ltd.	115-O-15	63°45'N 138°30'W	100
Dominion Creek	Sailer, Arthur	115-O-15	63°48'N 138°37'W	100
Friday Gulch	Cross, N.	115-O-15	63°47'N 138°54'W	101
Sulphur Creek	Sulphur Gold Placers	115-O-15	63°48'N 138°55'W	101
Sulphur Creek	Meadow Gold Placers	115-O-15	63°50'N 138°58'W	102
Upper Dominion Creek	Hamilton, Ian	115-O-15	63°52'N 138°51'W	102
Upper Dominion Creek	Quality Box Company Ltd.	115-O-15	63°52'N 138°55'W	103
24 Pup, Hunker Creek	Ahnert, J. & E.	115-O-15	63°54'N 138°54'W	103
Allgold Creek	Alton, John	115-O-15	63°56'N 138°37'W	104
Hunker Creek	Daval Mining	115-O-15	63°58'N 139°00'W	104
Hunker Creek	Consolidated Mines	115-O-15	63°57'N 138°56'W	105

MAP SHEET/CREEK	OPERATOR	NTS	LAT. LONG.	Page
Hunker Creek	Erickson, John	115-O-15	63°56'N 138°53'W	105
McQuesten 115-P				
Bear Creek	Konservative Placers	115-P-9	63°39'N 136°22'W	107
Clear Creek	Jarvis, Raymond	115-P-12	63°44'N 137°37'W	107
Barlow Creek	Lizotte, R.	115-P-13	63°48'N 137°38'W	107
Clear Creek	West Coast Paving	115-P-13	63°46'N 137°28'W	108
Left Fork Clear Creek	Blackstone Mining Ltd.	115-P-14	63°50'N 137°07'W	109
Clear Creek	Sisters Resources	115-P-14	63°47'N 137°27'W	109
Clear Creek	4757 Yukon Ltd.	115-P-14	63°46'N 137°16'W	110
65 Pup	Scott, J.	115-P-14	63°49'N 137°19'W	110
Highet Creek	Bleiler Placers Ltd.	115-P-16	63°43'N 136°06'W	111
Bennett Creek	Lone, Howard & Elizabeth	115-P-16	63°44'N 136°04'W	111
Highet Creek	Erl Enterprises	115-P-16	63°43'N 136°12'W	112
Highet Creek	Sasha Mining Ltd.	115-P-16	63°44'N 136°08'W	112
Johnson Creek	C & I Construction Ltd.	115-P-16	63°46'N 136°21'W	113
Johnson Creek	Barchen, R.	115-P-16	63°47'N 136°22'W	113
Dawson 116-B & C				
Australian Hill	Eldorado Mining	116-B-3	64°03'N 139°09'W	115
Hattie Gulch	Gould, P.	116-B-3	64°01'N 139°07'W	115
Hunker Creek	J & C Holdings Ltd.	116-B-3	64°02'N 139°08'W	116
Unnamed Tributary of Last Chance Creek	Wolreid Mining Ltd.	116-B-3	64°01'N 139°06'W	117
Bear Creek	Sunrise Placer	116-B-3	64°00'N 139°14'W	117
Klondike River	Hall, L.	116-B-3	64°02'N 139°25'W	118
Klondike River	Djukastein, T.	116-B-3	64°02'N 139°25'W	118
Klondike River	Olson, B.	116-B-3	64°03'N 139°22'W	119
Bonanza Creek	Brunet, A.	116-B-3	64°01'N 139°22'W	119
Bonanza Creek	Brunet, A.	116-B-3	64°01'N 139°22'W	120
Bonanza Creek	Nicholson, R.	116-B-3	64°01'N 139°22'W	120
Bonanza Creek	Algotsson, H.	116-B-3	64°01'N 139°22'W	121
Sixty Mile River	Aardvark Placer	116-C-2	64°02'N 140°45'W	122
Sixty Mile River	Coulee Resources Ltd.	116-C-2	64°01'N 140°42'W	122
Sixty Mile River	Eldorado Placers	116-C-2	64°01'N 140°43'W	122
Moose Creek	McMillan, R.	116-C-2	64°12'N 140°54'W	123
Moose Creek	Young, R.	116-C-2	64°11'N 140°54'W	124
Glacier Creek	Hanulik, B. & H.	116-C-2	64°02'N 140°49'W	124
Glacier Creek	Coulee Resources Ltd.	116-C-2	64°02'N 140°45'W	124
Little Gold Creek	Downs, G.	116-C-2	64°02'N 140°46'W	125
Glacier Creek	D & P Mining Expl. Ltd.	116-C-2	64°01'N 140°45'W	125
Big Gold Creek	Prohaszka, S.	116-C-2	64°02'N 140°45'W	126
Miller Creek	Sixty Mile Enterprises	116-C-2	64°02'N 140°55'W	126
Glacier Creek	D & H Placers	116-C-2	64°02'N 140°54'W	127
Bruin Creek	Gagnon, B.	116-C-2	64°15'N 140°40'W	127
Browns Creek	Neuser, C.	116-C-7	64°20'N 140°52'W	128
Forty Mile River	Forty Mile Placers	116-C-7	64°23'N 140°38'W	128
Forty Mile River	Forty Mile Placers	116-C-7	64°23'N 140°39'W	129

YUKON PLACER INDUSTRY ACTIVITIES

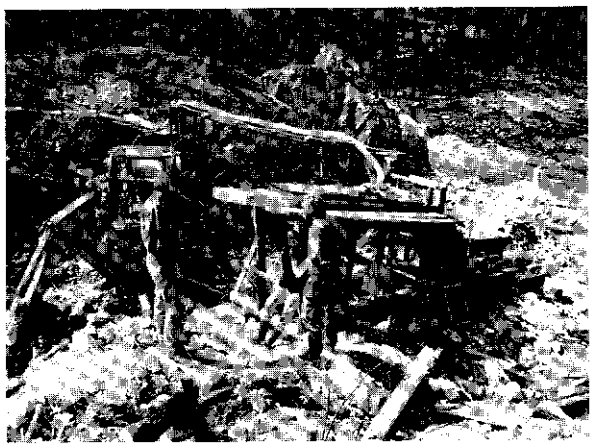
Summaries of mining inspection reports

MATT CREEK **105 B 14**
Yukon Yellow Metal **60°46'N 131°02'W**
Water Licence: PM90-095 **1991, 1992**

Operation/Location: Matt Creek is a tributary of Shootamook Creek. Mr. Holloway carried on a single shift 4 person operation in 1991, however he reduced his operation to a two person camp in 1992.

Equipment/Function: A 350 John Deere track loader was used to feed the sluice plant and remove tailings.

Wash Plant: A single run sluice box 32 inches wide by 10 feet long was used in 1991 and 1992. The sluice run had 6 feet of expanded metal and 4 feet of 1 inch Hungarian riffles over Nomad matting. In 1992 a manual derocker with a 3 foot wide by 7 foot long grizzly was added. Two inch minus material moved to a wash box 4 feet wide which screened to 1 inch minus. About 100 igpm of water was fed by gravity to the sluice box.



A view of Mel Holloway's test plant on Matt Creek.

Ground Description: Four feet of mixed gravel with clay seams and slide bedrock lay over bedrock.

Mining Cuts: Two small cuts were tested in 1991 and 1992. Approximately 25 cubic yards were processed.

Water Supply and Treatment: Water was held in an instream reservoir and gravity fed to the sluice. An instream settling pond approximately 20 feet by 20 feet was used for testing.

Gold: The gold was flat, smooth and dull in colour with some stain.

Comments: This testing program will be used to determine if values warrant continued mining in this remote area, first hand-mined in the 1930'S.

COTTONEVA CREEK **105 E 8**
North American Resources **61°24'N 134°23'W**
Water Licence: PM91-017 **1991**

Operation/Location: Mr. Trerice mined by himself on the upper portion of Cottoneva Creek, under North American Resources' licence.

Equipment/Function: One TD25c International dozer was used for stripping overburden and digging gravels. A JVC 7C excavator fed pay gravel into the wash plant and assisted in the removal of tailings.

Wash Plant: A shaker screen wash plant 3 feet by 5 feet classified material to ¾ inch minus. The sluice section consisted one run 1 foot wide by 8 feet long for coarse material, and one run 2 feet wide by 8 feet long for fines.

Ground Description: Rim gravels were mined to a depth of 3 feet, with under 1 foot of bedrock sluiced. All trees and vegetation were pushed to either side of the hill.

Mining Cuts: All gravels and 1 foot of bedrock were sluiced. One cut approximately 40 feet by 20 feet for a total of 120 cubic yards was mined in 1991.

Water Supply and Treatment: Water was acquired from an instream reservoir in upper Cottoneva Creek. The water was pumped to the sluice using a 4 inch by 4 inch trash pump. The waste water was settled downstream in the natural topography of the valley bottom.

Gold: The gold was coarse and rounded, with ⅔ being 12 mesh.

Comments: Mr.Trerice ran a limited sluicing program to determine if values were sufficient to warrant continued mining in this area.

LITTLE VIOLET CREEK **105 E 8**
Golden Violet Mining Ltd. **61°25'N 134°22'W**
Water Licence: PM87-122 **1991**

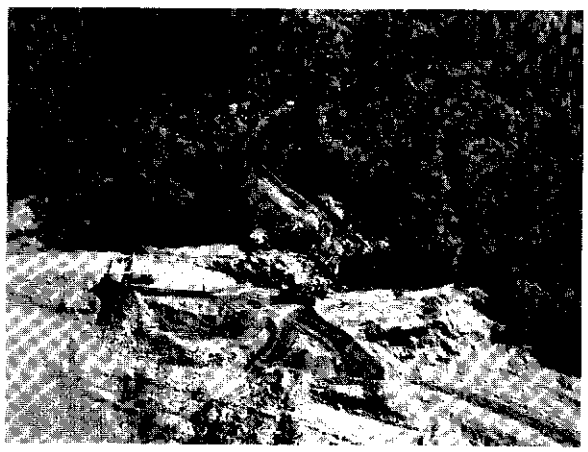
Operation/Location: Four miners working a single shift mined this property on the lower reaches of Little Violet Creek, about 4500 feet upstream from its entry point into the South Big Salmon River.

Equipment/Function: A D8 Cat dozer stripped overburden and pushed up pay gravels. A 950 Cat loader was used to feed the sluice box and remove tailings.

Wash Plant: A Torgusson wash plant 4 feet wide by 16 feet long channelled 2½ inch minus material to a single run sluice. The 2 foot wide by 60 foot long run used Hungarian riffles over Nomad matting. About 60 cubic yards per hour were processed using 1500 igpm of water.

Ground Description: The stratigraphic section consists of 20 feet of glacial till covering 60 feet of sand and gravel. This overburden was stripped off to expose about 40 feet of tertiary gravels, which were sluiced with 2 feet of decomposed bedrock.

Mining Cuts: One cut approximately 50 feet wide by 120 feet long was mined, for a total of 9300 cubic yards in 1991.



Aerial view of the mining operation on Little Violet Creek.

Water Supply and Treatment: Water was held in an instream reservoir and gravity fed. Waste water was settled in three ponds with the overflow seeping into the natural topography of the South Big Salmon Valley.

Gold: Some coarse gold was recovered along with 400 mesh gold. Fineness was 866.

MAY CREEK **105 E 8**
Doug Gonder Jr. **61°17'N 134°15'W**
Water Licence: PM91-078 **1992**

Operation/Location: May Creek is a right limit tributary of the South Big Salmon River. Mr. Gonder and two helpers worked 14 hour shifts while stripping and testing in 1992.

Equipment/Function: Overburden was stripped with a D9 bulldozer. A 235 Cat hoe with a 1¼ yard bucket was used to process gravels, and a 980 Cat loader was used to remove and stack tailings.

Wash Plant: This operation used a derocker, a 3 foot by 20 foot main sluice run, and a 2 foot by 20 foot side run. The main run consisted of punch plate with hydraulic riffles for half its length, and 2½ inch Hungarian riffles below. The side run was equipped with hydraulic riffles at the mouth and expanded metal the rest of the way, and processed ⅜ inch minus material.

Ground Description: Pay gravels were intercepted on the upper bench. The overburden extends to a depth of 50 to 70 feet, ending with a layer of boulders on top of the pay gravels. A layer of pay gravels from 8 to 10 feet deep overlies bedrock, which was a red coloured decomposed schist. There was some permafrost.

Mining Cuts: An exploration cut 100 feet long by 30 feet wide was excavated by mechanically and hydraulically stripping between 50 and 70 feet of overburden. About 5800 yards of pay gravel was processed.

Water Supply and Treatment: A gravity pipeline 8 inches in diameter and 200 feet long delivers 1500 igpm to the derocker from an instream reservoir. Discharge was carried along a ½ mile ditch to a settling area consisting of sinkholes.

Gold: Gold recovered from the exploration pit included both bright yellow smooth nuggets, and

rough nuggets. The largest nugget found was approximately half an ounce. The fineness was 892.

LAKE CREEK **105 E 8**
Wade Carrell **61°22'N 134°18'W**
Water Licence: PM91-121 **1992**

Operation/Location: Three miners worked ten hour shifts on this property at the headwaters of Lake Creek. Work in 1992 was confined to stripping, trenching, and testing.

Equipment/Function: Mr. Carrell and his helpers used D8 and D9 bulldozers, a 977 Cat loader, and a Kubota KH101 backhoe for stripping, trenching, and digging test pits in 1992.

Wash Plant: No gravel was processed in 1992.

Ground Description: The first 18 feet consists of glacial till, blue-grey clay, and boulders. Beneath this layer lies three feet of blue-grey clay and gravel, which overlies three feet of gravel and grey clay. Under this lies three feet of gravel and light brown silty sand, which covers three feet of gravel, reddish brown broken schist, and rusty quartz.

Mining Cuts: One trench 100 yards by 20 yards by 10 yards deep was excavated. This cut was aligned with the expected pay channel.

Water Supply and Treatment: Water used in testing was obtained from Lake Creek.

Gold: Information was not available.

EMPIRE CREEK **105 M 5**
Dan Sabo **63°27'N 135°36'W**
Water Licence: PM88-002 **1991, 1992**

Operation/Location: Mr. Sabo was the owner and sole operator of this remote mine on Empire Creek. In 1991 and 1992 mining continued upstream for 1000 feet on the Left Fork, and terminated approximately about ¾ of a mile from the confluence with the Right Fork.

Equipment/Function: A D65A Komatsu dozer was used to strip and to remove tailings. A H65C Hough loader with a 3 yard bucket fed the sluice box. A Hitachi UHO-81 excavator with a 1 yard bucket was used for stripping and moving pipe.

Wash Plant: A 12 foot long by 3 foot wide dump box and wet grizzly fed material through an 8 foot long V-trough into a single run sluice 11 feet long by 21 inches wide. Four feet of grader blade lined the throat of the dump box. The sluice box was lined with 3 inches of Hungarian riffles at 3 inch spacings over cocoa matting. The grade of the box was 2 inches per foot. The processing rate was about 20 cubic yards per hour.

Ground Description: Six feet of large boulders up to 5 feet in diameter were mixed with clay and coarse gravel. Bedrock was schist and shale in various stages of decomposition. Quartz veins occurred across the valley. The gravel and 3 feet of bedrock were sluiced.

Mining Cuts: A combined total of 9000 cubic yards were sluiced and 9000 cubic yards stripped in 1991 and 1992. The valley was only 35 feet wide with a very steep gradient at this point. In some places it was impossible to mine rim to rim because slide rock had deeply buried the original stream.

Water Supply and Treatment: Total creek flow was diverted through 250 feet of 36 inch diameter culvert around the cut and past the wash plant. Two 6 inch pipes delivered water from the culvert to the spray bar on the wash plant. Some recycling was undertaken in 1991, but was not necessary in 1992.

Gold: The gold was coarse with a fineness of 910. Native silver, jade, lodestone magnetite, barite, scheelite, stibnite, native bismuth, galena, hematite, and asbestos were found in the concentrate.

Comments: A rare type of meteorite was found on the property in 1986.

LEDGE CREEK **105 M 10**
Bert Liske **63°40'N 134°51'W**
Water Licence: PM88-106 **1991, 1992**

Operation/Location: This property was located on Ledge Creek about .75 miles above its junction with Mayo Lake. The gradient is very steep. Bert Liske, Ralph Barchen, and a helper were on site for most of the season.

Equipment/Function: The pay was broken out and pushed up with a D8 Cat dozer. A 275B loader with a 6½ yard bucket was used for feeding the wash plant and removing tailings.

View of Bert Liske's derocker with a single run sluice on Ledge Creek.

Wash Plant: The wash plant consisted of a 10 foot by 17 foot derocker, feeding 2 inch minus material to a single run sluice 16 feet long by 4 feet wide. The sluice was lined with 1½ inch flat bar riffles at 2 inch spacings over expanded metal, ⅜ inch punch plate, expanded metal, and astroturf. The grade on the box was set at 2¼ inches to the foot. The processing rate was 60 cubic yards per hour.

Ground Description: The unfrozen ground consisted of slide rock mixed with post-glacial

muck, silt, clay and gravel. The mixture of rounded and angular material suggested a glacial deposit possibly associated with a glacial retreat. Up to 55 feet of material overlay a bedrock of soft schist with some quartz stringers and a hard conglomerate.

Mining Cuts: All the material and 10 feet of bedrock were sluiced. Mr. and Mrs. Moritz sluiced 3600 cubic yards from a cut at the upper end of the property in 1991. In 1992 Mr.Ralph Barchen sluiced 55,000 cubic yards. Although this ground had been stripped, it was necessary to remove 7000 cubic yards of recently accumulated tailings.

Water Supply and Treatment: The settling pond did not discharge into Mayo Lake, and all the sluicing water was recycled with a 8 inch by 8 inch Gorman Rupp trash pump powered by a D311 Cat motor. Ledge Creek bypassed both the pond and the mine site.

Gold: About 75% of the gold was coarse (pea and rice size). The fineness ranged between 805 and 820. Copper nuggets, scheelite, golf ball sized pyrite, and hematite were found in the concentrate.

ANDERSON CREEK **105 M 11**
Manfred Wozniak **63°43'N 135°02'W**
Water Licence: PM91-006 **1991, 1992**

Operation/Location: Mr. Wozniak and his family ran this operation on Anderson Creek, a tributary to Mayo Lake. Mining in 1991 and 1992 took place toward the top end of an alluvial fan deposit. During the 1992 spring runoff, the creek cut down through a layer of clay upstream of mining activity. The clay layer extended upstream for 800 feet, and may have been deposited when the level of Mayo Lake was higher than it is today. A 12 hour shift was worked most of the 1991 and 1992 seasons.

Equipment/Function: A Cat D7 bulldozer was used to strip, push up pay, and rip bedrock. A Trojan loader with a 1 yard bucket fed the plant and stacked tailings.

Wash Plant: A 10 foot long by 4 foot wide dump box fitted with a dry grizzly with horizontal bars, classified material to 8 inch minus. Minus ¾ inch material passed through punch plate in the hopper to a single run sluice, 20 feet long by 3 feet wide. The sluice run was lined with Hungarian riffles and Nomad matting. The processing rate was 8 cubic yards per hour.

Ground Description: The fan deposits have been altered by glaciation and interlayers of fine material were found throughout the deposit. The ground was frozen and averaged 50 feet deep including 4 feet of glacial till and organic material, 20 feet of oxidized red gravel, a 4 foot layer of clay, and another 20 feet of red gravel. Both layers of red gravel and 2 feet of bedrock were sluiced. In 1992, Mr. Wozniak uncovered several faults containing mineralization. Mining was difficult in this area and the sticky clay material in the fault would not wash, despite water running over it for several days.

Mining Cuts: In 1991, one cut was mined for a total of 19,000 cubic yards sluiced and 1000 cubic yards stripped. Eight thousand cubic yards were sluiced and 400 cubic yards were stripped in 1992.

Water Supply and Treatment: A small diversion ditch supplied water to the wash plant at a rate of 500 igpm. Effluent was treated in a series of out of stream ponds.

Gold: The gold was coarse and occurred with a great deal of black sand. Fineness was 870. Red coloured gold was found in red oxidized gravel, bright shiny yellow gold in glacial till, and a dark brown/black gold with an oxidized coating occurred at bedrock.

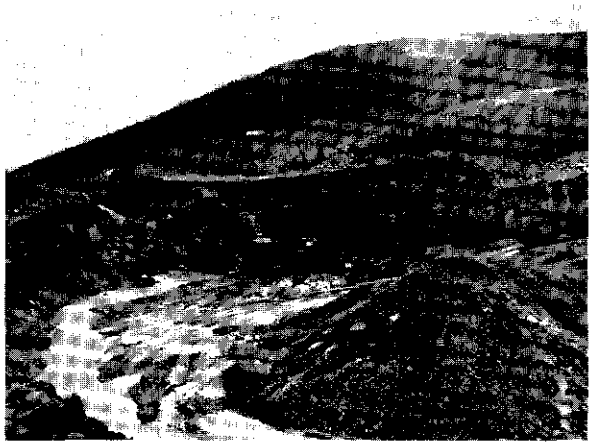
THUNDER GULCH **105 M 14**
Bardusan Placers Ltd. **63°53'N 135°15'W**
Water Licence: PM89-174 **1991, 1992**

Operation/Location: Thunder Gulch is a narrow, steep valley adjoining the Lightning Creek valley. Mr. Barchen, his son Claus, and one equipment operator worked the property in 1991 and 1992.

Equipment/Function: A D7 Cat dozer stripped overburden. A 988 Cat loader with a 7 yard bucket was used to dig up pay and to feed the derocker. A 980 Cat loader with a 5½ yard bucket removed tailings.

Wash Plant: The wash plant consisted of a derocker and a 17 foot long sluice run with undercurrent. Twelve feet of the upper run had punch plate with ⅜ inch diagonal slots that

passed material into the lower run. In the upper run, flat riffles were spaced 2½ inches apart over expanded metal and cocoa matting. Expanded metal and cocoa matting also lined the lower run. The grade on the sluice box was 1½ inches per foot, and the processing rate was 70 to 100 cubic yards per hour.



Looking upstream at Bardusan Placers' operation on Thunder Gulch.

Ground Description: Glacial moraine and slide material consisting of poorly sorted clay, sand, and angular stream gravel up to 3 feet in diameter lies over a bedrock of poorly fractured, massive greenstone (chlorotic schist) and Keno Hill quartzite. The ground was not frozen. All material and 2 feet of quartzite bedrock were sluiced. It was necessary to take up to 6 feet of the greenstone bedrock because the gold penetrated it to a greater depth.

Mining Cuts: Four cuts were mined at the mouth of Thunder Gulch in 1991. A total of 45,600 cubic yards were sluiced and 21,000 cubic yards were stripped. In 1992, one cut was taken from the mouth of Thunder Gulch, and three cuts were taken upstream. A total of 44,000 cubic yards were sluiced and 26,000 cubic yards were stripped.

Water Supply and Treatment: Water was supplied to the wash plant at a rate of 800 igpm with a 12 inch gravity feed pipeline. A Flygt sump pump powered by a 75 Kw Cat generator kept the cut dry for part of 1991. Effluent was treated in a series of out of stream ponds located in the Lightning Creek valley. Each pond was about 200 feet long by 100 feet wide.

Gold: The gold was rough and angular, with quartz attached. In 1992, 20% was larger than 4 mesh, 20% was 4 to 6 mesh, 10% was 6 to 10 mesh, and 50% was less than 10 mesh in size. In 1991, more of the gold was smaller. The fineness was 823. Large amounts of galena cubes were found in the concentrate.

LIGHTNING CREEK **105 M 14**
Bardusan Placers Ltd. **63°53'N 135°15'W**
Water Licence: PM90-060 **1991, 1992**

Operation/Location: The Lightning Creek valley upstream of Keno City is narrow with a moderate gradient. In 1991 Mr. Barchen and son Claus began preparation for mining in the valley approximately one mile downstream of Thunder Gulch.

Mining Cuts: Overburden was hydraulically and mechanically stripped from an area measuring 90 feet by 80 feet. An excavation 24 feet deep was made without reaching bedrock. In 1992 the creek was diverted to the right limit, and excavation continued on the bedrock drain. The drain was now 700 feet long by 14 feet wide by 28 feet deep on the upstream end.

DUNCAN CREEK **105 M 14**
Duncan Creek Golddusters **135°38'N 63°47'W**
Water Licence: PM91-107 **1991, 1992**

Operation/Location: This operation was located on Duncan Creek, approximately 3 miles upstream from its confluence with the Mayo River. Three to six miners in addition to Mr. Taylor and his family worked two 11 hour shifts in 1991 and 1992.

Equipment/Function: Two rock trucks transported pay gravel to the wash plant. The Volvo 5350 and Cat 769C were loaded by an Hitachi UH30 tracked excavator with a 5 yard bucket. A 988B Cat loader occasionally helped by rock trucks removed tailings to a pile separating Duncan Creek from the bedrock/effluent drain.

Wash Plant: A heavy duty hopper with pre-wash fed a wet grizzly which removed rocks larger than 4 inches by six inches. A tray 4 feet by 16 feet by ½ inch beneath the grizzly transported the material to a 6 foot by 14 foot vibrating double screen deck. A five run 40 foot long sluice box accepted ⅝ inch minus material. The five sluice runs totalling 17 feet wide were lined with

expanded metal over Nomad matting. The processing rate was about 185 loose cubic yards per hour.

Ground Description: The valley fill was composed of glacio-fluvial deposits. Approximately 2 to 20 feet of frozen black muck overlies 10 to 90 feet of inorganic overburden, consisting of silt and sorted sands and gravel with clasts up to three feet in diameter. The pay gravel beneath was poorly sorted, and contains silty to coarse sand with large boulders. The pay was usually overlain by clay bands up to four feet thick. Bedrock was schist and decomposed Keno Hill quartzite. The pay gravel and about two feet of bedrock were sluiced.

View of an Hitachi hoe feeding a shaker wash plant at Frank Taylor's operation on Duncan Creek.

Mining Cuts: About 80,000 bank cubic yards were sluiced in 1991, and 100,000 cubic yards in 1992. Mechanically stripped volumes were approximately 50,000 bank cubic yards in 1991 and 65,000 cubic yards in 1992. A Site Specific Authorization for hydraulic stripping was issued in 1991.

Water Supply and Treatment: A drain 1½ miles long transported effluent from the wash plant to a 300 foot long by 130 foot wide settling pond. Process water was pumped from Duncan Creek with a 10 inch by 10 inch Gorman-Rupp slurry pump powered by a Cat 3306 engine, at a rate of 2000 igpm.

Gold: The gold was pounded flat. Roughly 7% was larger than 10 mesh, 60% between 10 and 25 mesh, 28% between 25 and 70 mesh, and 5% was smaller than 70 mesh in size. Fineness ranges from 785 to 790. Garnets and hematite were found in the concentrate.

DUBLIN GULCH **106 D 4**
Dublin Gulch Mining Ltd. **64°02'N 135°49'W**
Water Licence: PM90-058 **1991, 1992**

Operation/Location: Dublin Gulch is a narrow valley of steep gradient running into Haggart Creek. Mr. Holoway, his son Fred, six miners, and one cook made up the crew, working two 8½ hour shifts.

Equipment/Function: Two D9H Cat dozers with U-blades and rippers stripped overburden and pushed pay. Two 988B Cat loaders with 7 yard buckets were used to feed the wash plants, and a 988B Cat loader with a 6 yard bucket removed tailings. A 172 Hitachi excavator with a 2 yard bucket dug drainage ditches, cleaned bedrock, and fed the derocker.

Wash Plant: Two wash plants were used in 1991 and 1992. A derocker fed a 24 foot long by 31 inch wide double run sluice. The main run processed 2 inch to ½ inch sized material and was lined with 8 feet of ½ inch punch plate and 15 feet of 2½ inch Hungarian riffles over expanded metal and astroturf. The undercurrent was lined with Hungarian riffles, expanded metal and astroturf. The second wash plant consisted of a wet hopper, a 40 foot long trommel 7 feet in diameter, and a 10 foot long triple run sluice. The trommel screened the material to 1 inch minus. Smaller material passed through punch plate into two side runs lined with expanded metal and Nomad matting.

Ground Description: The ground at the mouth of Platinum Pup consisted of 2 feet of organic material, 40 feet of glacial till, a 3 foot layer of hardpan with large boulders, and 20 feet of old channel gravels which were sluiced. On the left limit of Dublin Gulch sixty five feet of sand, silt, and fine gravel overlay 6 to 15 feet of old channel gravels. The old channel and 4 feet of bedrock were sluiced. The glacial deposit consisted of 20 feet of glacial overburden ranging in size from silt to boulders, and 8 feet of stream gravels and boulders. Bedrock was decomposed, bedded quartzite. The stream gravels and some bedrock were processed.

Mining Cuts: In 1991, one cut taken at the mouth of Platinum Pup resulted in 37,040 cubic yards of stripping and 30,000 cubic yards of sluicing. Four cuts totalling 71,240 cubic yards stripped and 61,500 cubic yards sluiced were taken out of Dublin Gulch. In 1992, two cuts were taken from Seattle Pup and Eagle Pup and one cut was taken from the original channel on the left limit of Dublin Gulch. A total of 120,000 cubic yards were stripped and 38,610 cubic yards sluiced in 1992.

Water Supply and Treatment: A 10 inch by 8 inch Cat 3204 pump was used to recycle water from a small pond to the derocker on Dublin Gulch. A Morris 12 inch by 12 inch pump powered by a Cummins 360 supplied water to the trommel. CanTung's old ponds and a series of large ponds in the Haggart Creek valley were used to treat the effluent.

Gold: Thirty percent of the gold was larger than 10 mesh, including some large nuggets. The fineness was 870. Concentrates contained wolframite, hematite, bismuth, jamsonite, and scheelite, in quantities of ½ pound per yard.

15 PUP (HAGGART CREEK) **106 D 4**
Victor Sharman **64°00'N 135°50'W**
Water Licence: PM90-105 **1991, 1992**

Operation/Location: This property was located on 15 Pup about ½ a mile upstream of its junction with Haggart Creek. Mr. Sharman, his wife, and son worked 12 hour shifts. The valley is relatively narrow with moderate gradient.

Equipment/Function: A D9H Cat dozer was used for ripping frozen ground, stripping, and pushing up pay. Tailings were removed with a 65Z Kamatsu loader with a 3 yard bucket. A C266 Bantam Coring excavator with a ⅞ yard bucket fed the box, and a 780 Case backhoe was used for ditching. Overburden was ripped and pushed up the side hill.

Wash Plant: The wash plant consisted of a spring mounted grizzly with 1½ inch pipe at 3 inch spacings over a 12 foot by 10 foot wet hopper. Half-inch punch plate in the throat of the hopper fed material to an undercurrent of expanded metal over Nomad matting. Half-inch to 3 inch material passed over a double run sluice. Each run measured 2 feet wide by 20 feet long and was lined with angle iron riffles and Nomad matting under expanded metal.

Ground Description: Deposits were frozen and consisted of 10 feet of black muck over 30 feet of post-glacial gravel. The gravel and 1 to 2 feet of shale bedrock with layers of clay bedding were sluiced.

Mining Cuts: Approximately 20,000 cubic yards were processed in 1991. 6000 cubic yards were sluiced and 9000 cubic yards stripped in 1992.

Water Supply and Treatment: Water from an instream reservoir was gravity fed to the wash plant through 125 feet of lay flat hose 10 inches in diameter. Effluent was treated in two ponds in 15 Pup and a series of out of stream ponds in the Haggart Creek valley.

Gold: Fifty percent of the gold was finer than 100 mesh, 25% between 100 mesh and 14 mesh, and 25% was between 14 mesh and 6 mesh. The fineness was 876 with 10% silver.

FISHER GULCH **106 D 4**
Jack Frank **64°02'N 135°49'W**
Water Licence: PM89-137 **1991, 1992**

Operation/Location: Fisher Gulch is a narrow valley joining Haggart Creek upstream of Dublin Gulch. The camp was located 1200 feet above the mouth of Fisher Creek. Mr. Frank and one miner worked the ground in 1991, beginning two claims above the discovery claim. A third miner joined the crew in 1992.

Equipment/Function: A Cat 255 excavator with a one yard bucket was used for testing, ditching, and feeding the wash plant. A D85A Kamatsu dozer with ripper was used to strip and push up pay. A Ford loader with a 2 yard bucket removed tailings. A Fiat Allis loader with a 4 yard bucket was added in 1992 to remove tailings and overburden.

Wash Plant: A 12 foot by 10 foot dry grizzly classified material to 3 inch minus. A 2 foot by 16 foot single run sluice contained 2½ inch angle riffles at 4 inch spacing over astroturf. The plant processed 50 cubic yards of material per hour.

Ground Description: The ground consisted of 12 to 15 feet of frozen glacial till with decomposed silt and clay pockets, and 12 to 15 feet of oxidized pay gravels. In places the depth to bedrock was 40 feet. The gravel and 1 foot to 4 feet of bedrock were sluiced.

Mining Cuts: One cut measuring 50 feet wide by 120 feet long by 30 feet deep was taken out in 1991. Seven thousand cubic yards were sluiced and 11,000 cubic yards were stripped. In 1992, 4200 cubic yards were sluiced and 7100 cubic yards were stripped.

Water Supply and Treatment: Water was supplied from an instream reservoir at a rate of 400 igpm, through a 500 foot long aluminum pipeline 10 inches in diameter. Effluent was treated in three instream ponds averaging 75 feet wide by 120 feet long. A ditch on the right limit of the valley diverted the creek around the ponds and mine cuts.

Gold: The gold was coarse with 30 mesh being the smallest recovered. The fineness was 900. Some black sand and azurite occurred in the concentrate. The gold was coated with iron oxide which prevented amalgamation. It was possible to remove the iron oxide with a rust remover.

GILL GULCH **106 D 4**
Ted Takas **64°01'N 135°50'W**
Water Licence: PM89-129 **1991, 1992**

Operation/Location: Gill Gulch is a small stream running into Haggart Creek ¾ of a mile downstream of Dublin Gulch. The property was worked by Mr. Takas, a helper, and family members.

Equipment/Function: Two D8H Cat dozers with angle blades and one ripper were used to strip overburden and push up pay. A Michigan 175 loader with a 3 yard bucket fed the trommel and removed tailings.

Wash Plant: The wash plant consisted of a 5 yard wet dump box feeding a grizzly over a V-hopper feeding a single run sluice. The 20 foot long by 22 foot wide run was lined with astroturf, punch plate, and 2 inch Hungarian riffles.

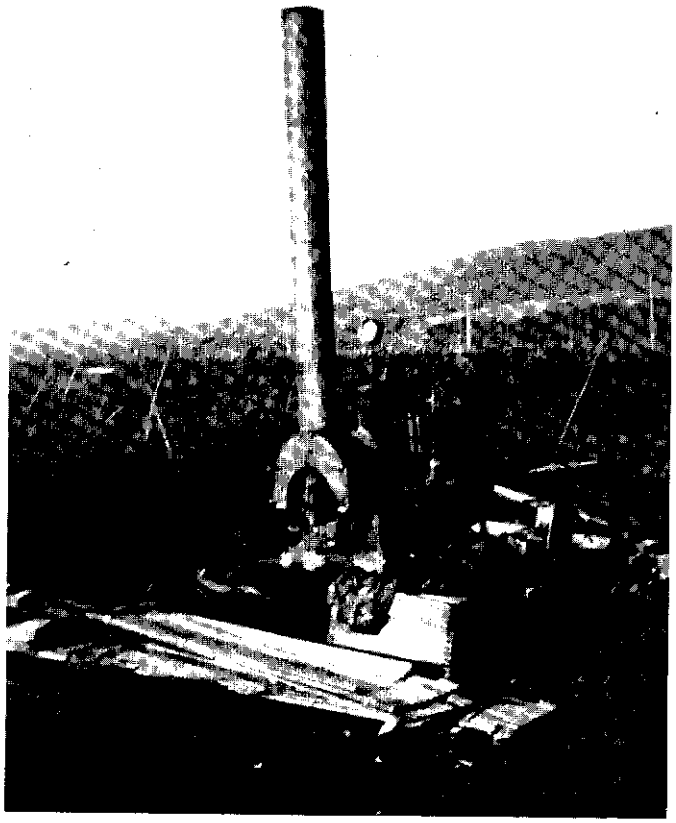
Ground Description: The ground was frozen in patches and consisted of 1 foot of organic material, 34 feet of stream gravel, and decomposed schist bedrock with quartz riffles. An average of 9 feet of old channel gravel and 1 foot of bedrock were sluiced.

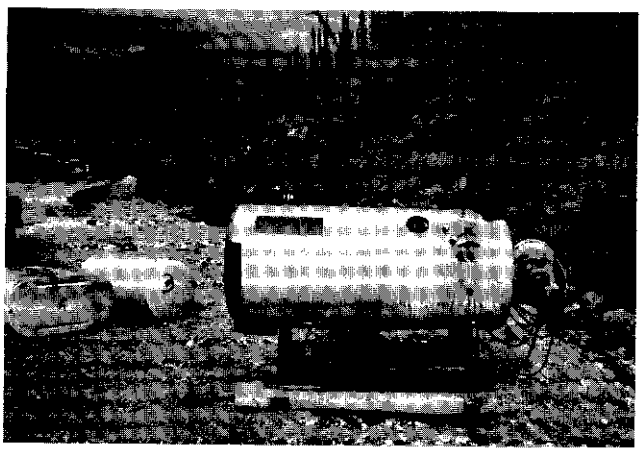
Mining Cuts: A bench on the right limit of Haggart Creek downstream from Gill Gulch was mined in 1991. The channel ran parallel to Haggart Creek

and was possibly an extension of the Dublin Gulch channel. 15,000 cubic yards were sluiced and 20,000 cubic yards were stripped. In 1992 10,000 cubic yards were sluiced and 5,000 cubic yards were stripped, as the bench deposit was mined out and prospecting done on Gill Gulch.

Water Supply and Treatment: A Duetz diesel powered Gorman Rupp pump supplied water from Haggart Creek to the wash plant at a rate of 500 igpm. Effluent was treated in a large out of stream pond which discharged into Haggart Creek. The outflow of the pond was upstream from the inflow, resulting in superior pond performance.

Gold: The gold was oxidized and fine with some small nuggets. Fineness was 870.





The steamer on the left, used to thaw ground on Granville in 1935, is not much different from the steamer on the right, which found service on Revenue Creek in 1992.

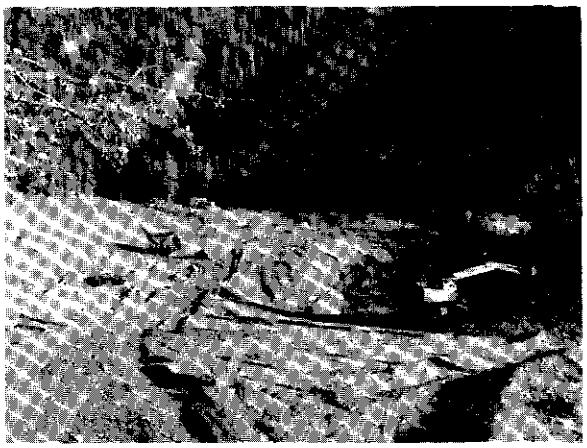
TATSHENSHINI RIVER **115 A 3**
Rod McPhail **60°04'N 137°13'W**
Water Licence: PM88-124 **1991**

Operation/Location: This operation was located on the right bank of the Tatshenshini River, about 2 kilometres south of the Takhanne River bridge. Mr. McPhail was the sole operator.

Equipment/Function: A D6 Cat dozer was used to strip and push up pay gravel. The plant was fed using a P&H 312 hoe with a ¾ yard bucket, and a 175A loader was used for tailings removal and cleanup.

Wash Plant: The wash plant consisted of a hopper feeding a 12 foot long trommel 30 inches in diameter. A sluice run 18 inches wide by 10 feet long processed ½ inch minus material.

Ground Description: The deposit was made up of 20 to 30 feet of mixed gravels to bedrock. Some drilling and blasting was necessary due to a layer of cemented conglomerate.



A view of Rod McPhail's placer operation looking upstream on the Tatshenshini River.

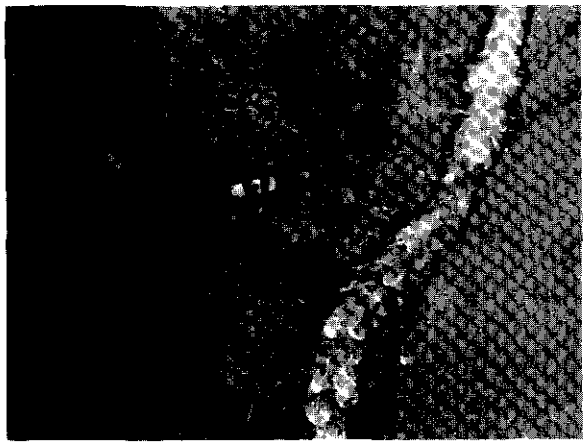
Mining Cuts: Approximately 5000 cubic yards of material was sluiced in 1991.

Water Supply and Treatment: Water was supplied to the wash plant from a recirculation/settling pond, and when necessary, make-up water was pumped from the Tatshenshini River. There was no discharge from this operation.

Gold: A variety of gold has been recovered from this site. Some has been pounded flat, some was quite rough, quartz was often attached, and some was crystalline in nature. The fineness was 866.

KIMBERLEY CREEK **115 B 16**
Clair & Pat Sawyer **60°52'N 138°04'W**
Water Licence: PM87-155 **1991, 1992**

Operation/Location: This property was located approximately 2 miles upstream from the confluence of Kimberley Creek and the Jarvis River. The Sawyers worked single shifts in 1991 and 1992.



An overhead view of Clair and Pat Sawyer's placer operation on Kimberley Creek.

Equipment/Function: A Drott Cruiz Air 40 rubber tired hoe fed the sluice with a ½ yard bucket. A D6 Cat bulldozer was used to stockpile pay, remove tailings, and build settling ponds.

Wash Plant: The sluice plant consists of a 6 foot by 6 foot dump box with spray bar. Five chain driven elliptical shafts screened the gravel to ½ inch minus. The material dropped down to a second wash deck before proceeding to a jig. About 20 cubic yards of loose material was processed every hour using 400 igpm of water.

Ground Description: A bench 6 feet above the present stream was mined. The section consisted of 6 to 10 feet of overburden, over a 2 foot layer of pay gravels, on top of a decomposed bedrock floor.

Mining Cuts: A total of nine cuts were mined in 1991 and 1992.

Water Supply and Treatment: Water was pumped from an instream reservoir using a 5 inch by 4 inch pump. The waste water was treated in three out of stream settling ponds, with the discharge returning to Kimberley Creek.

Gold: The gold was chunky, bright and smooth, with some red staining. Ten percent was larger than 4 mesh, 50% greater than 8 mesh, 30% was caught by 40 mesh, and 10% exceeds 60 mesh. Fineness averaged 860.

Comments: A 25 pound copper nugget was found in 1992.

ARCH CREEK **115 G 5**
Oliver Leckie **61°28'N 139°37'W**
Water Licence: PM90-034 **1991, 1992**

Operation/Location: Arch Creek is a right limit tributary of the Donjek River. The Leckies continued to mine the property, on a limited basis, in 1991. In 1992 the ground was leased by Mr. Balcar, who set up a new operation with three helpers. Mr. Balcar expects to resume mining in 1993 under his own water licence.

Equipment/Function: Mr. Leckie used a D6 Cat dozer for stockpiling pay gravel, and a 920 Cat loader to feed the sluice box. In 1992 Mr. Balcar used a Fiat-Allis HD-31 bulldozer for ripping and pushing material, and a 988 Cat loader to feed the wash plant and pack materials for the construction of ponds and protective berms.

Wash Plant: In 1991 material was dumped through a grizzly into a wash box, before it entered a 26 foot long twin run sluice box. The plant installed in 1992 utilized mechanical agitation at all phases of the process, to minimize water consumption. A vibratory grizzly classifies material to two products, ¾ inch minus and ¾ inch by 2½ inch. Each product travels by chute to separate oscillating sluice runs.

Ground Description: Roughly 4 feet of cobbles, 14 feet of gravel and sand, one foot of fine sand, and one foot of clay lie above bedrock. Boulders from one to 5 feet in diameter were common. None of the material in the stream bed was frozen.

Mining Cuts: Only a small cut was taken in 1991. Mr. Balcar spent most of the 1992 season preparing the site, assembling the wash plant, and reacting to severe flood events. About 600 cubic yards of material was sluiced at the end of the season.

Water Supply and Treatment: In 1991 water was pumped to the wash plant using a 6 inch by 6 inch pump powered with a 635 Perkins diesel engine. Waste water was treated in two out of stream ponds. In 1992 an 8 inch by 6 inch pump powered by a 160 horsepower engine was used. A pre-settling pond and two new out of stream ponds were constructed.

Gold: Mr. Leckie reported that 30% of the gold was fine grained, and 70% was coarse. Fineness was 870.

TATAMAGOUCHE CREEK **115 G 6**
Steve Johnson **61°30'N 139°17'W**
Water Licence: PM91-094 **1992**

Operation/Location: This 2 person operation was located on Tatamagouche Creek, a tributary of Burwash Creek.

Equipment/Function: A D8 Cat dozer was used primarily for stripping and pushing up pay gravels, and a P&H hoe with a 1¼ cubic yard bucket fed the sluice plant. A 977 Cat tracked loader was used for moving tailings.

Wash Plant: A 4 cubic yard dump box operated by remote control fed into a 1 inch minus punch plate shaker table. The plant had a processing rate of 50 loose yards per hour, utilizing 2000 igpm of water.

Ground Description: The cut mined averaged 1 foot of black muck over 2 feet of glacial till, overlaying 4 to 6 feet of river gravels, over bedrock. The sluiced section consisted of 3 feet of pay with 6 feet of bedrock.

Mining Cuts: A small testing program took place in 1992.

Water Supply and Treatment: Water was pumped from an instream reservoir in Burwash Creek. Waste water was directed into a large out of stream settling pond that discharged by way of seepage.

Gold: The gold was flat and round with a fineness of 860.

QUILL CREEK **115 G 6**
Willi Pfisterer **61°29'N 139°25'W**
Water Licence: PM90-049 **1991, 1992**

Operation/Location: This property was located at the lower reaches of Quill Creek, on the left limit. Mr. Pfisterer has mined in this location for the past 4 years.

Equipment/Function: One Case 850 crawler traxcavator with a 1½ yard bucket was used to strip overburden and push up pay gravels. One Case 580 backhoe/loader was used to feed the sluice with pay gravels.

Willi Pfisterer's one person placer mine on Quill Creek.

Wash Plant: The plant consisted of a 4 foot by 8 foot hopper with a 3 inch minus grizzly with spray bar. The washed gravels flowed into a single run sluice 21 inches wide by 14 feet long. About 20 cubic yards of loose pay gravels were processed using 400 igpm of water.

Ground Description: The stratigraphic section consisted of 1 to 3 feet of black muck overlaying 3 to 6 inches of frozen clay, with another 4 foot layer of clay on top of a 2 to 3 foot mixture of gold bearing sand and boulders, over another gold bearing layer of yellow gravels to bedrock. All overburden was pushed to the side hill on the left limit.

Mining Cuts: A total of 8200 cubic yards of pay gravels were sluiced from the left limit of Quill Creek.

Water Supply and Treatment: Water supply was from an instream reservoir in Quill Creek. Waste water was discharged into 4 out of stream settling ponds, approximately 80 feet square.

Gold: Gold recovered from Quill Creek was flat, round, and smooth. It ranged in size from ½ ounce nuggets to 40 mesh, with 40% of the gold smaller than 20 mesh.

Comments: On going restoration works continued with levelling of tailings piles.

GLADSTONE CREEK **115 G 7**
Alan Roy Dendys **61°18'N 138°32'W**
Water Licence: PM90-137 **1992**

Operation/Location: Mr. Dendys was working on the right limit of Gladstone Creek, upstream of Sota Computing Systems Ltd. In 1992 this was a one person operation, with Mr. Dendys working one shift.

Equipment/Function: A D8H Cat dozer was used for stripping off the organic layer, and levelling tailings. The floating trommel recovery plant was fed with a 235 Cat excavator.

Wash Plant: A 20 foot long trommel 5 feet in diameter was mounted on pontoons. There were two tables, each roughly 3 feet wide by 8 feet long, mounted on each side of the trommel. Process water was supplied by a 4 inch pump powered by a 60 to 70 horsepower diesel engine.

Al Dendys' floating trommel and sluice plant, located on Gladstone Creek in the Kluane area.

Ground Description: Approximately 12 feet of glacial gravel, boulders, gravel and sand, and silt lie between a thin layer of organic material and a wavy bedrock floor. The bedrock appears to be rising as the mining cut progresses upstream.

Mining Cuts: Mining has progressed in one continuous cut 150 to 200 feet wide by about 300 feet long.

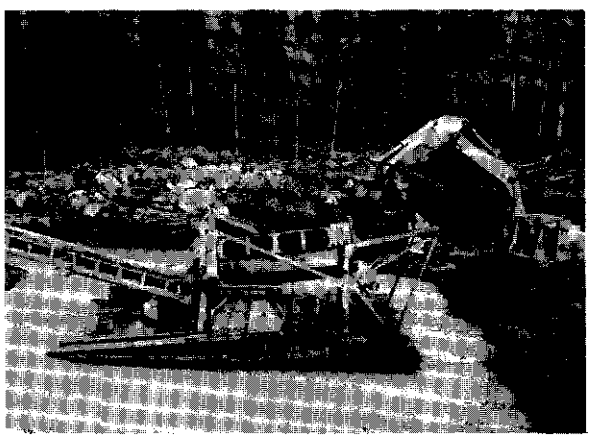
Water Supply and Treatment: Water was pumped from the pond the plant floats in, used for processing, and then discharged back into the pond. All flows into and out of the pond were by seepage. It is possible that make-up water will have to be pumped into the pond if the bedrock floor continues to slope upward.

Gold: The recovered gold had a fineness of 820.

GLADSTONE CREEK **115 G 7**
Sota Computing Systems Limited **61°18'N 138°32'W**
1991, 1992
Water Licence: PM91-022

Operation/Location: Gladstone Creek flows into the east side of Kluane Lake. The lower reaches of the creek flow through a low, broad valley, with braiding and side channels occurring near the mouth. Mr. Fischer and Mr. Stentiford began mining here in 1991, and continued with their families present in 1992. The two miners have been working turnabout, around the clock, on the right limit.

Equipment/Function: A D8H Cat dozer was used to push off the shallow layer of organic overburden, and to level the tailings behind the operation. The floating trommel recovery plant was fed with a Kobelco 907C excavator.



Sota Computing Systems Ltd.'s floating trommel plant works around the clock on Gladstone Creek.

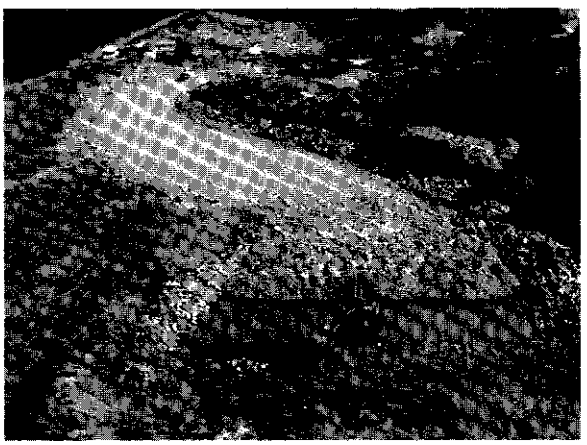
Wash Plant: The wash plant consists of a 12 foot long trommel 4 feet in diameter, floating on pontoons. There were two 3 foot wide by 6 foot long sluice runs on each side of the trommel. Process water was provided by a 3 inch Davies pump, powered by a 40 horsepower Isuzu diesel engine.

Ground Description: The ground was unfrozen, and consists of a homogenous mix of gravel, boulders, silt, sand, and some clay. Up to 12 feet of this material was found above a wavy bedrock floor. All the material between moss and bedrock was processed.

Mining Cuts: In this operation the excavator digs pay from the front bench of the pond, while tailings were stacked at the rear. In this manner mining progresses in one continuous cut. A cut roughly 150 to 200 feet wide by 800 feet was made in 1992.

Water Supply and Treatment: Process water was pumped from the pond, through the plant, and drains back into the pond. The pond fills and discharges by seepage.

Gold: Fineness of the gold was 820.



An aerial view of Sota Computing Systems Ltd.'s floating trommel plant, looking upstream on Gladstone Creek. Note progressive restoration work following the wash plant.

BACK CREEK **115 I 3**
Frank Cochrane **62°04'N 137°04'W**
Water Licence: PM89-090 **1991**

Operation/Location: This three person operation was located on the upper section of Back Creek, approximately 2½ miles upstream of its confluence with Victoria Creek.

Equipment/Function: One Fiat Allis HD21B dozer stripped overburden and stockpiled pay gravels. One Clark Michigan 125 front end loader fed the sluice and removed tailings.

Wash Plant: The wash plant consisted of a 5 foot trommel with a single run sluice 4 feet wide by 21 feet long, powered by a Ford 3 cylinder tractor. Approximately 25 cubic yards of loose material was processed per hour.

Ground Description: The deposit consists of 3 feet of frozen black muck over 3 feet of non-paying gravels, then 2 to 3 feet of pay gravel over 3 feet of boulders and clay with pay.

Mining Cuts: The lower 6 feet of pay and 1 foot of decomposed bedrock was sluiced. One cut approximately 45 feet by 180 feet was mined for a total of 1800 cubic yards.

Water Supply and Treatment: A 6 inch Gorman Rupp pump with a 4 cylinder Ford diesel provided 700 igpm to the wash plant from an instream recycling pond located directly across from the sluice plant.The discharge from this pond was settled in four downstream ponds.

Gold: The gold was primarily 50 mesh with some coarse nuggets. Fineness was about 810.

BACK CREEK **115 I 3**
J. Bush & E. Schweppe **62°04'N 137°04'W**
Water Licence: PM89-090 **1992**

Operation/Location: This property was located on the upper section of Back Creek. Mr. Bush and Mr. Schweppe took over from Mr. Cochrane in 1992.

Equipment/Function: A Fiat Allis HD21B stripped overburden and stockpiled pay gravels. One Clark Michigan 125 front end loader fed the sluice and removed tailings.

Wash Plant: The wash Plant consisted of a 5 foot trommel with a single run sluice 4 feet wide by 21 feet long, powered by a Ford 3 cylinder tractor. Approximately 25 cubic yards of loose material was processed per hour, using about 700 igpm of water supplied by a 6 inch Gorman Rupp pump with a 4 cylinder Ford diesel.

Ground Description: The deposit consists of 3 feet of frozen black muck over 3 feet of non-paying gravels, over 2-3 feet of pay gravel over 3 feet of boulders and clay with pay.

Mining Cuts: The lower 6 feet of pay and 1 foot of decomposed bedrock was sluiced. One cut approximately 45 feet by 180 feet was mined for a total of 1800 cubic yards.

Water Supply and Treatment: An instream recycling pond provided water to the sluice. The discharge from this pond was settled in four downstream ponds.

Gold: The gold was primarily 50 mesh with some coarse nuggets. Fineness was 810.

BACK CREEK **115 I 3**
J. & B. Coghlin **62°04'N 137°07'W**
Water Licence: PM89-112 **1991, 1992**

Operation/Location: This operation was located approximately 2 miles from the confluence with Victoria Creek. The Coghlin's have been mining here for the past 6 years.

Equipment/Function: One D7F Cat dozer was used for stripping overburden and opening up pay gravels. A Trojan 6000 front end loader fed the sluice plant and removed tailings.

Wash Plant: The Blue Loon was a 3 step hydraulically operated finger derocker that screened pay gravels to 1 inch minus. Undersize materials entered two sluice runs. About 50 cubic yards of loose gravels were processed using about 1200 igpm of water.

Ground Description: Eight feet of frozen black muck was removed to both limits of the creek

valley. Non-paying gravels to a depth of 3 feet were stripped to expose 1 to 3 feet of pay gravels and decomposed bedrock or clay.

Mining Cuts: A total of four cuts roughly 165 feet by 25 feet in size were mined in 1991 and 1992.

Jack and Beryl Coghlin's Blue Loon finger sluice, located on Back Creek.

Water Supply and Treatment: Water was pumped to the sluice from a instream recycling pond using a 6 inch Flygt pump. Waste water was settled in 4 ponds downstream of a pre-settling pond that was emptied twice a day.

Gold: Gold was rough in character with 25% to 50% larger than 16 mesh, depending on the depth of pay gravel sluiced. The gold was assayed at 820.

Comments: Beryl Coghlin stated that they had terrible weather all year, encountered zillions of bugs, and survived two major floods.

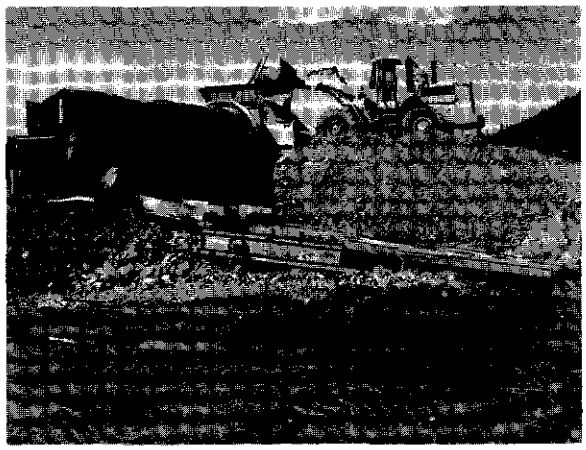
NANSEN CREEK **115 I 3**
BYG Natural Resources Inc. 62°04'N 137°13'W
Water Licence: PM90-052 **1991, 1992**

Operation/Location: This operation was located approximately 3 miles from the head waters of Nansen creek. A 7 person crew worked a double shift on the property in 1991, and a single shift of 4 ran the operation in 1992.

Equipment/Function: One Cat D9H dozer was used to strip overburden and push up pay gravels. Two Cat 980C loaders were used to feed the wash plant and remove tailings. A Cat 225 excavator was used for putting in bedrock drains and ditching.

Wash Plant: A 6½ foot diameter by 40 foot long trommel was used to classify the pay gravels. The classified material was sluiced in four 3 foot by 10 foot live bottom sluice runs. A 10 inch by 10 inch pump powered by a 3208 Cat diesel engine pumping 2000 igpm of water washed approximately 100 loose yards of material per hour.

Ground Description: The average depth to the bottom of the pay zone was 25 feet, with 5 feet of overburden stripped off and stockpiled on the sides of the valley. Twenty feet of homogenous pay gravels were sluiced.



A 980C loader is feeding a hopper at the head of a trommel at BYG Resources' operation on Nansen Creek.

Mining Cuts: One large cut 250 feet wide by 500 feet long was opened up in 1991, and 65,000 cubic yards were sluiced. Due to mechanical difficulties and an early freeze-up only 10,000 cubic yards were processed in 1992.

Water Supply and Treatment: Water was supplied to the operation by an out of stream reservoir in Nansen Creek. The waste water was impounded in two out of stream settling ponds 200 feet by 200 feet, with the discharge returning to Nansen Creek.

Gold: The gold was reported to be flat, round, smooth, and bright in form. One percent was +10 mesh, 50% -10 to +60 and 49% -60. Fineness was 805.

Comments: There was evidence of oldtimer workings in the form of old shafts.

NANSEN CREEK (EAST FORK) 115 I 3
Joe T. Lawrence 62°06'N 137°13'W
Water Licence: PM91-077 1992

Operation/Location: Mr. Lawrence was exploring on two claims on the East Fork, just before it joins the main stem of Nansen Creek. Two people worked 8 to 10 hours per day testing this ground in the late summer and fall.

Equipment/Function: A 680 Case backhoe was used to dig test pits. In 1993 a Fiat-Allis 21B bulldozer with ripper will be used to strip overburden, construct settling ponds, and perform restoration work.

Wash Plant: A 12 foot long trommel 42 inches in diameter will be used in this operation. It has two 8 foot side-run sluice boxes, lined with matting underneath a layer of expanded metal. Four 2 inch riffles were found at the end of each box.

Ground Description: Between 4 to 6 feet of gravel, sand, and some finer material overlies a floor of "boulder clay".

Mining Cuts: An undetermined amount of ground was prepared for mining in the 1993 season by stripping off a layer of black muck.

Water Supply and Treatment: Water will be pumped from an instream reservoir by a 4 inch by 4 inch diesel powered Monarch pump. Waste water will be treated in a series of out of stream ponds.

Gold: A few sharp and flat pieces of gold, some with quartz attached, were recovered by panning.

KLAZA RIVER (UNNAMED TRIB.) 115 I 3
Ted Tullis 62°09'N 137°12'W
Water Licence: PM91-052 1991, 1992

Operation/Location: This two person operation was located approximately ½ mile upstream from the Klaza river on a small left limit tributary which had an approximate valley width of 1000 feet.

Equipment/Function: One 82-40 Terex dozer was used for stripping and stock piling pay gravels. One 980 Cat front-end loader was used to feed the sluice plant. A 3300 TT Hi Hoe was used for testing and ditching. 1992 saw the addition of a D355 Komatsu dozer which took over the duties of stripping and stock piling pay gravels.

Wash Plant: A 6 foot by 25 foot trommel plant was used to screen sluiced material to ⅝ inch minus. The screened material was processed further by two "live bottom" sluice runs. One run was 3 feet wide by 8 feet long, and the other 4 feet wide by 8 feet long. Approximately 30 cubic yards of loose pay gravel was processed per hour.

Ground Description: Overburden was removed to either side of the valley in a series of ongoing cuts. The deposit consisted of 5 to 7 feet of silts and sandy clay over approximately 13 feet of pay gravels. Bedrock was a sandy red granite.

Mining Cuts: One cut 200 feet long by 100 wide was mined in 1991. Roughly 20,000 cubic yards were sluiced. In 1992 about 14,000 cubic yards of pay gravel was sluiced from a cut 200 feet by 80 feet.

Water Supply and Treatment: An out of stream water reservoir was located above the operation. About 600 igpm of water was supplied by a 6 inch by 6 inch Gould volume pump, powered by a Baldor 60 HZ 20 horsepower electric generator. Waste water was discharged into two out of stream settling ponds in 1991, and a third was added in 1992.

Gold: Gold recovered was rough and porous in character, with nuggets having quartz throughout. The fineness was reported as 760.

MECHANIC CREEK (UNNAMED TRIB.) 115 I 6
Ralph Lingard 62°21'N 137°18'W
Water Licence: PM90-117 1992

Operation/Location: Mr. Lingard has been testing ground on a right limit tributary of Mechanic Creek. The tributary joins Mechanic Creek where Mr. Wilson was mining.

Equipment/Function: Mr.Lingard has been engaged in old-time prospecting, relying on a pick and shovel, steamer with steam points, and a bucket with windlass. A backhoe was used to dig one 14 foot test hole.

Wash Plant: A gold pan was used for testing.

Ground Description: Not available.

Mining Cuts: Five holes were dug for testing purposes.

Water Supply and Treatment: A small Briggs & Stratton engine powered a two inch pump, delivering 200 IGPM. Waste water was treated in Mr. Wilson's settling ponds, on Mechanic Creek.

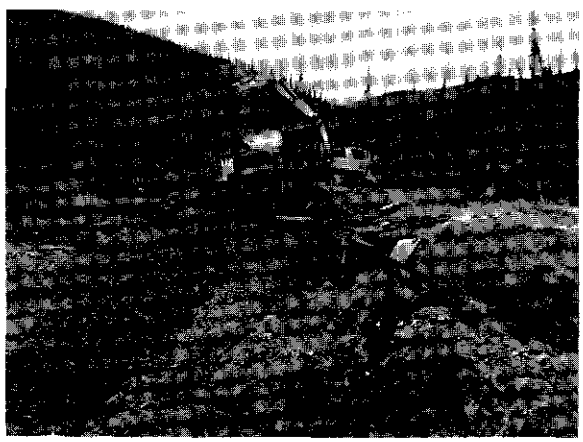
Gold: Mr. Lingard reports that gold was "scarce".

MECHANIC CREEK **115 I 6**
Ken Wilson **62°20'N 137°20'W**
Water Licence: PM90-124 **1991, 1992**

Operation/Location: This property was located at the upper reaches of Mechanic Creek, a tributary of Big Creek. Mr. Wilson and a crew of 2 to 4 people have mined here for 2 years.

Equipment/Function: A TD25 dozer was used for stripping overburden, stockpiling pay gravels, and removing tailings. A 5000 TT hoe fed the screen deck with a one yard bucket, and a Koehring 666E hoe with a 3 yard bucket was used for stripping.

Wash Plant: A 3 by 6 foot double deck shaker screen fed a 4 foot by 16 foot long sluice run. The run was lined with Nomad matting and covered with 2 inch expanded metal for the top 8 feet, and 1 inch angle iron riffles over the bottom 8 feet. In 1992 the shaker screen was upgraded to a 5 by 10 foot deck screening to minus ½ inch. Roughly 75 yards of loose material was processed every hour using 400 igpm of water supplied by a 6 inch by 6 inch Monarch pump.



Ken Wilson's shaker plant on Mechanic Creek.

Ground Description: The deposit was approximately 20 feet in depth. Two feet of black muck overlay 18 feet of mixed homogenous gravels, which covered decomposed bedrock. The bottom 3 feet of pay gravel was sluiced with 3 feet of bedrock. All overburden was pushed to the side of the valley.

Mining Cuts: Five cuts were mined in the two year period, amounting to about 16,500 cubic yards sluiced.

Water Supply and Treatment: A small instream reservoir was constructed in Mechanic Creek to supply water by pump to the wash plant. Waste water was treated in 2 out of stream ponds, with a small pre-settling pond used to capture the heavier settleable solids.

Gold: The fine gold was assayed about 880 to 910.

MECHANIC CREEK **115 I 6**
Maingold Ltd. **62°21'N 137°18'W**
Water Licence: PM90-004 **1991**

Operation/Location: This operation was located on the lower reach of Mechanic Creek.

Equipment/Function: A D7H Cat was used for stripping and feeding the processing plant. A D6 Cat and 930 Cat were used to remove, stack, and level tailings.

Wash Plant: The processing plant consisted of a derocker and single run sluice box.

Ground Description: The ground has been extensively stripped in past seasons, and overburden has been eroded by flood events, leaving exposed gravels.

Mining Cuts: Information not provided.

Water Supply and Treatment: A Gorman Rupp 10 inch pump supplied water to the processing plant from an out of stream reservoir. A small single settling facility located out of stream treated effluent before returning the flow to Mechanic Creek.

Gold: Information not provided.

Comments: Tailings and overburden have been stockpiled on the left hand limit of Mechanic

Creek downstream of the cut area. Limited activity has taken place in the past years, and limited future activity has been indicated by the operator.

REVENUE CREEK **115 I 6**
John Gow **62°20'N 137°17'W**
Water Licence: PM91-076 **1992**

Operation/Location: The Gow's were prospecting on Revenue Creek, about 4000 feet above its confluence with Big Creek. Using hand mining methods, they put approximately 200 feet of drifts into the creek's left hand bank.

The Gow family's underground placer operation on Revenue Creek.

Equipment/Function: A D7 Cat and 966 Cat loader were used to construct recirculation and settling ponds, provide a protective berm between the ponds and the creek, and pack away tailings. A Cleaver Brooks steamer was used to thaw ground in the various adits.

Wash Plant: Pay material was flushed out of the drifts and processed in a 1 foot by 8 foot straight run sluice box set at the portal entrance.

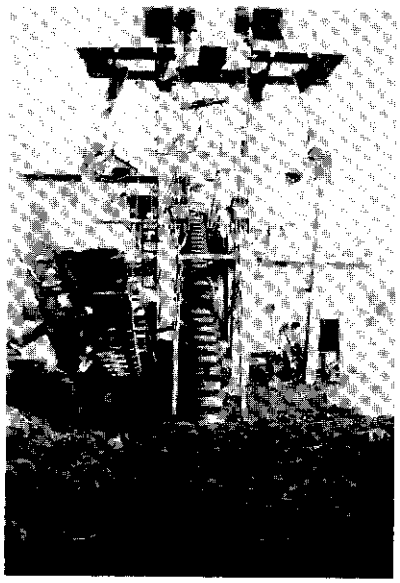
Ground Description: Bedrock varied from 30 to 40 feet from the surface, and was wavy in character. The overburden ranged from large boulders to fine sands, was seamed, and consistently frozen. Clay made up nearly five percent of the overburden, and was found in a layer on the bottom.

Mining Cuts: No cuts were made, but 200 feet of drifts averaging 5 to 6 feet wide by 5 to 6 feet high were put in.

Water Supply and Treatment: Make-up water was taken from Revenue Creek using a 2 inch electric powered Flight pump. Ninety five percent of the process water was recycled after treatment in two out of stream settling ponds.

Gold: Gold recovery varied from flour gold to nuggets, with colour ranging from dull to bright.

Comments: An assortment of bones of undetermined origin were found in the overburden, as well as evidence of relatively recent shafting and drifting.



Dredge No. 5 at Granville in June 1937.

RUDE CREEK **115 J 10**
André Fournier **62°40'N 138°42'N**
Water Licence: PM90-097 **1991, 1992**

Operation/Location: This property was located on Rude Creek approximately 3.5 miles upstream from the confluence of Dip Creek. Mr. Fournier and three helpers mined the right limit bench in 1991 using a single shift, while in 1992 two miners worked the main valley channel.

Equipment/Function: Two TD25C Dresser dozers and one HD31 Fiat Allis dozer were used to strip overburden and push up pay gravels. Two 966C front end loaders fed the sluice and removed tailings.

Wash Plant: The wash plant was a derocker which classified material to 1 inch minus, followed by 4 sluice runs with Hungarian riffles and Nomad matting. The runs were set at 1½ inches to the foot. Sixty to 90 cubic yards per hour was processed using 2000 ipgm.

Ground Description: There was a total stratigraphic section of 20 to 25 feet. Six to 8 feet of black muck and 5 to 6 feet of mixed gravels 6 to 24 inches in diameter overlay 10 to 12 feet of homogenous frozen gravels, which were sluiced. The bedrock was flat and sloped.

This photo shows André Fournier's derocker being fed by a Cat 980B loader on Rude Creek.

Mining Cuts: Approximately 103,333 cubic yards of material was taken from a cut 500 feet long by 400 feet wide in 1991. In 1992 about 37,992 cubic yards of gravel was excavated from an area 500 feet long by 245 feet wide.

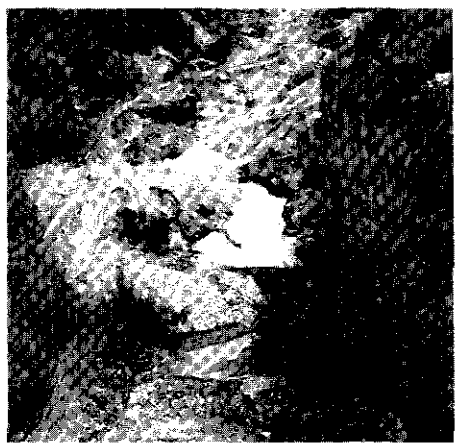
Water Supply and Treatment: An out of stream reservoir fed water to the sluice by way of a 6 inch Flygt pump. Effluent was treated in four large settling ponds and returned to Rude Creek.

Gold: The gold was flaky and bright in colour, with some small nuggets. The fineness was 840 to 860.

Comments: Old timer's workings were found every 600 to 800 feet.

BALLARAT CREEK **115 J 14**
Fell-Hawk Placers **62°57'N 138°58'W**
Water Licence: PM90-053 **1991, 1992**

Operation/Location: Joe and Wendy Fellers moved their operation from Kirkman Creek to Ballarat Creek in 1991. The Fellers ran the mine in 1991 and 1992 with help from their two boys. An employee was hired in 1992.



Fell-Hawk Placer's operation on Ballarat Creek, looking upstream at the recycle pond, the sluice plant, and the cuts.

Equipment/Function: A D8L Cat bulldozer was used to strip the ground and prepare the cuts. A D7 Cat bulldozer fed the sluice plant, tailings were hauled away with a 966 Cat loader. In 1992 a 235 Cat hoe was added for feeding the sluice plant, and for stripping pay near the steep limits of the creek.

Wash Plant: A derocker fed into a 5 foot by 20 foot single sluice run. Nomad matting, expanded metal, and 2 inch angle iron riffles were used in the sluice run. The riffles were spaced 3 inches apart in the neck and top of the sluice run, and 2 inches apart for the remainder of the run. A 3208 Cat pump supplied the 2000 igpm used to sluice approximately 100 cubic yards per hour.

Ground Description: Ballarat Creek is very narrow along this portion of the creek, so cuts were valley wide. An average cut has 2 feet of overburden and up to 10 feet of gravel on bedrock. Boulders were common and much of the bedrock when ripped comes out as large fractured rock. Several types of bedrock including decomposed bedrock was common. Dips and rises in the bedrock were noted. The lower 4 feet of gravel and up to 6 feet of bedrock was sluiced.

Mining Cuts: Part of 1991 was used to set up the operation on Ballarat Creek. Two cuts approximately 270 feet by 150 feet were mined in 1992.

Water Supply and Treatment: Water was recycled in instream reservoir/recycle ponds. The effluent passed through a pre-settling pond before entering the recycle pond. Effluent discharge from the recycle pond was settled in a downstream final settling pond.

Gold: The gold tended to be flat, smooth, and chunky. About 50% was +10 screen, with nuggets up to 1 ounce common. Fineness was 860.

SCROGGIE CREEK **115 J 15**
Resore Industries Corp. **63°00'N 138°35'W**
Water Licence: PM89-181 **1991, 1992**

Operation/Location: Mining occurred near the bottom of the property in 1991 and 1992. A crew of 13 miners and 2 camp staff worked in 1991. The operation scaled down to 10 miners and 2 camp people in 1992. A double shift was run each year.

Equipment/Function: Three 355 Komatsu bulldozers and one 155 Komatsu dozer were used to strip the ground and stockpile the pay. Two WA 600 Komatsu loaders and a 95 ZIII Kawasaki loader fed the wash plant and carried the tailings away.

Wash Plant: A 14 foot wide derocker was used to deal with the boulders which were common on Scroggie Creek. The classified gravels fell into a 4 foot by 16 foot underflow lined with unbacked Nomad matting, 1 inch angle iron riffles, and punch plate for the first 12 feet, and unbacked Nomad matting and 2 inch angle iron riffles for the last 4 feet. The slurry was then turned 90 degrees and spread over three 4 foot by 16 foot sluice runs. An 8 inch boil box was used at the top of this last section of sluice run to recover larger nuggets. The three runs were lined with unbacked Nomad matting and heavy expanded metal. A Peerless 12 inch by 12 inch pump powered by a 3306 Cat engine supplied the 3000 igpm needed to process approximately 175 cubic yards per hour.

Resore Industries' mining operation on Scroggie Creek.

Ground Description: An average cut had 8 feet of black muck and mud overlying 8 feet of gravel. Large rounded boulders between 2 and 3 feet in diameter were common in the gravel layer. Bedrock tended to vary between a soft Klondike schist and a blocky hard granite. The lower 2 feet of gravel and between 2 and 6 feet of the bedrock was sluiced.

Mining Cuts: Ten cuts varying in size from 20,000 to 60,000 cubic yards were sluiced in 1991. A total of 350,000 cubic yards were processed. A 3000 foot section along the left limit was mined in five cuts in 1992, along with a separate 900 foot area at the bottom of the property. Approximately 250,000 cubic yards were sluiced.

Water Supply and Treatment: Water was pumped from a suction pond built in the main creek channel. The effluent was settled in out of stream settling ponds built from previous cuts. Discharge was usually by seepage through the gravels and back into Scroggie Creek.

Gold: Large rounded nuggets, small flat flakes, and gold with a crystalline structure and quartz attached were all recovered. Depending on the cut the size of the gold varied, but the best pay streak was found to be 70% +10 screen. The fineness averaged 890.

Comments: 1992 was the last year for Resore Industries Corporation on Scroggie Creek. Permanent restoration was completed by the end of the 1992 season, and the camp and equipment was hauled out on the winter road in February 1993.

SWAMP CREEK (EAST FORK) 115 J 15
Glen Hartley 63°01'N 140° 56'W
Water Licence: PM90-062 1991, 1992

Operation/Location: Mr. Hartley and one employee mined on the right fork of Swamp Creek.

Equipment/Function: Two 82-40 Terex bulldozers were used to strip the cuts, feed the sluice plant, clear tailings and maintain the settling facilities.

Wash Plant: An 8 foot by 14 foot dump box fed a grizzly which passed 2 inch minus material to a 4 foot wide by 12 foot long sluice run. The upper 4 feet of the run was lined with unbacked Nomad matting, riffles, and ⅜ inch punch plate. The lower 8 feet used unbacked Nomad matting and expanded metal. In 1992 the grizzly was replaced with a Telsmith vibrating screen that classified the pay to ½ inch minus. A Gorman Rupp 6 inch pump supplied the 1200 igpm that was required to sluice approximately 35 cubic yards per hour.

Ground Description: The soil profile was made up of 4 to 8 feet of frozen black muck, a 4 foot layer of muck and gravel, and 2 to 4 feet of pay gravel on bedrock. Bedrock was consolidated and large boulders were very common. All the gravel and the surface of the bedrock were sluiced.

Mining Cuts: Little sluicing was done in 1991. Mr. Hartley did not mine full time. One cut measuring approximately 45 feet by 100 feet was sluiced in 1992.

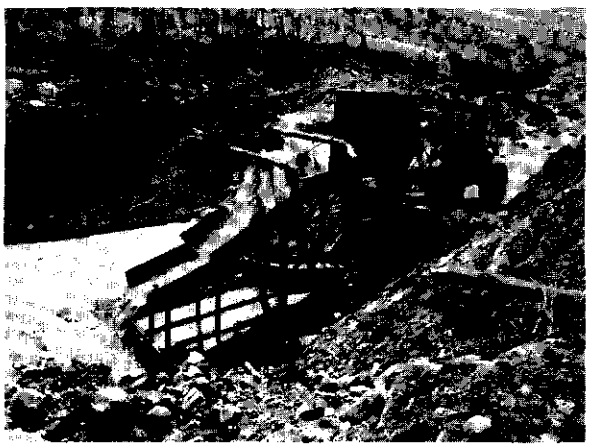
Water Supply and Treatment: Water was pumped from an instream reservoir upstream of the mine cut to the sluice plant. The effluent was treated in settling ponds before returning to the creek. Due to the lack of water a recycle system would be required to ensure sufficient water for extensive sluicing.

Gold: Most of the gold was fine with 60% -30 screen and the remainder -10 screen. No nuggets were recovered. The fineness was 840.

Two miners pose with a steam drill on Sulphur Creek, in 1935.

KATE CREEK (MOOSEHORN RANGE) 115 N 2
Moosehorn Exploration Ltd. 63°05'N 140°53'W
Water Licence: PM91-039 1991, 1992

Operation/Location: This mine was located on Kate Creek, a tributary of Lesaux Creek which flows into the Ladue River. Kate Creek is narrow and has a steep grade in the section that has been mined over the past years. Mining continued upstream in 1991 and 1992 from where it ended in 1990. Mr. Warrick, his wife Kate, and one employee ran the operation in 1991, and a second employee was hired in 1992.



Sluicing at Moosehorn Exploration's operation on Kate Creek.

Equipment/Function: In 1991 a D7F Cat bulldozer was used for stripping the cuts and stockpiling the pay gravels. A 966C Cat loader fed the washplant and stacked the tailings. A John Deere 350C and a International 125C was available where needed. In 1992 a D9H Cat bulldozer was acquired to do the stripping and stockpiling of pay which had proven too difficult for the D7F. A second 966C Cat loader was brought in so that one loader could feed the wash plant while the second loader made dams and roads with the oversize tailings.

Wash Plant: A new wash plant was constructed for the 1991 season. A 10 foot by 14 foot wet dump box lead over a grizzly which classified the material to 1 inch minus The material falling through the grizzly was sluiced in a single run 4 feet wide by 12 feet long. One inch angle iron riffles and matting were used in the run, which was set at 3 inches to a foot. The single run then branched into three 3½ foot by 12 foot sluice runs. These were lined with matting and expanded metal, and set at 1½ inches to a foot. A Monarch 6 inch by 6 inch pump and a Gorman Rupp 4 inch by 4 inch pump were used to supply the 1000 igpm needed to sluice about 30 cubic yards per hour in 1991. A Morris 10 inch by 12 inch pump was added in 1992, increasing the production to 40 cubic yards per hour.

Ground Description: The ground varied from the centre of the valley to each limit, but an average cut had 3 feet of frozen black muck overlying 3 to 6 feet of gravel with large boulders. Bedrock was usually decomposed. All of the gravels and up to 1 foot of bedrock was sluiced.

Mining Cuts: Five cuts averaging 40 feet wide by 300 feet long were sluiced in 1991. Four cuts with average dimensions of 90 feet wide by 300 feet long were processed in 1992.

Water Supply and Treatment: The water was contained in instream recycle ponds and pumped up to the wash plant. Several downstream settling ponds built from old cuts provided the final effluent treatment. During dry periods 80 to 90% of the water was recycled. A pre-settling pond just below the wash plant prolonged the life of the recycle pond.

Gold: The gold was mainly fine grained, with an occasional 4 screen nugget. The fineness was 820.

Comments: Extensive drilling and road building was done in 1992 on nearby Great Bear Creek. A move to this property is expected to occur sometime in 1993.

SWAMP CREEK & KENYON CREEK 115 N 2
Sikanni Oilfield Const. 63°02'N 140°56'W
Water Licence: PM91-034 1992

Operation/Location: Sikanni Oilfield Construction Ltd. took over this property after Canada Tungsten shut down in 1991. Most of the mining was done on Soya Creek, a left limit tributary of Swamp Creek. Near the end of the season the

equipment was moved to Kenyon Creek, and tailings were sluiced until freeze-up. A crew of seven miners and a cook ran the operation. A single shift was used most of the summer.

Equipment/Function: Two D8K Cat bulldozers with rippers were used to strip the cuts and push the pay gravels into a stockpile where a 235 Cat hoe could feed the wash plant. A D8H Cat bulldozer pushed tailings away. A 966 Cat loader and a D6C Cat bulldozer were available if needed.

Aerial view of Sikanni Oilfield Construction's operation on Soya Creek, a tributary of Swamp Creek.

Wash Plant: A 78 inch diameter by 40 foot long trommel classified the pay for eight 20 inch diameter by 9 foot long centrifugal concentrators. A 10 inch Gorman Rupp pump powered by a TD15 IHC engine supplied the roughly 1500 igpm needed to sluice 100 cubic yards per hour.

Ground Description: The ground on Soya Creek was frozen throughout the entire stratigraphic profile. The total depth to bedrock varied from 30 to 35 feet. Black muck overburden overlay a 13 foot layer of silt, and a layer of fine gravel with large boulders was found between the silt and the bedrock. The bedrock was blocky and consolidated. The pay did not go down to bedrock so very little bedrock was exposed. All the gravel and no bedrock was processed.

Mining Cuts: A single cut 330 feet long by 165 feet wide was sluiced on Soya Creek, along with approximately 20,000 cubic yards of tailings on Kenyon Creek.

Water Supply and Treatment: The mining operation was near the headwaters of these creeks, and very little water flows except in the spring. Large instream ponds were used, and as much as 80% of the water was recycled. Effluent was treated in two settling ponds near the wash plant and an instream pond at the bottom of the property before the Canada-U.S. border.

Gold: Most of the gold was fine and had a distinct shape, rather than being flat and smooth. The fineness was 800.

SWAMP CREEK **115 N 2**
Canada Tungsten **63°02'N 140°56'W**
Mining Corporation **1991**
Water Licence: PM89-080

Operation/Location: Mining was completed by Canada Tungsten on this property late in 1991. Mining had continued downstream on Swamp Creek. A crew of 6 miners and one camp employee ran the mine.

A panoramic view of extensive restoration work that took place on Swamp Creek in 1991.

Equipment/Function: A D9H Cat bulldozer, a D8K Cat bulldozer, a 980C Cat loader, two 966C Cat loaders, a 245 Cat excavator, a 235 Cat excavator, and two DJB 350 haul trucks were used to mine the property. The bulldozers stripped the overburden so the excavators could load the pay gravel into the trucks. The pay was transported to the sluice plant and stockpiled. The loaders fed the sluice plant, and removed tailings with the assistance of a bulldozer.

Wash Plant: The sluice plant consisted of a derocker, a screening plant, and three sluice runs. The derocker classified the pay to minus 2 inch, and the screen plant (a 4 foot by 10 foot double deck) further classified the pay to minus ⅝ inch for the sluice runs. Oversize material was carried off by a conveyor and stacked for the loaders. The sluice runs were each 4 feet wide by 20 feet long. Approximately 75 cubic yards per hour was sluiced. A Morris 10 by 12 inch pump powered by a 60 horsepower electric motor supplied the 2200 igpm required for sluicing.

Ground Description: The stratigraphic profile was very similar to cuts mined in 1989 and 1990. The top 16 feet was comprised of an organic layer, frozen black muck, and layers of clay, silt, and sand. The remaining 15 feet to bedrock was made up of layers of sand and pay gravel. The bedrock was highly decomposed. The top of the bedrock was scraped to ensure no gravel was missed, but the bedrock did not contain gold.

Mining Cuts: Several cuts were sluiced in 1991 for a total of 52,000 cubic yards.

Water Supply and Treatment: Very little water flows in Swamp Creek after spring melt, so a large instream reservoir was constructed, and used for recirculation. The reservoir became a major structure on the creek so all pay gravel had to be transported to the wash plant for sluicing. Effluent was treated in two reservoirs near the wash plant. A finishing pond was built downstream near the border to settle effluent generated by work in the mine cuts and permafrost melt.

Gold: The gold tended to be angular and rough, with 90% between 35 and 100 mesh. The fineness was 800.

COMMENTS: Canada Tungsten is to be congratulated on the extensive restoration work that took place on Swamp Creek in 1991.

MATSON CREEK **115 N 7**
Gene Fowler **63°29'N 140°35'W**
Water Licence: PM91-041 **1992**

Operation/Location: Mr. Fowler moved his operation from Australian Hill on Hunker Creek to Matson Creek in 1991. A Sixtymile River road was completed to gain access to the property. In 1992 testing was done at the mouth of an unnamed right limit tributary, near the area known as Val D'Or. A crew of four miners worked for Mr. Fowler in 1992.

Equipment/Function: Two D9 Cat dozers and a drill were used to test several locations on Matson Creek. The bulldozers also stripped, fed the box, and removed the tailings.

Wash Plant: A double deck screener was used. A 6 inch by 8 inch Deutz pump delivered the 1000 igpm needed to sluice up to 125 cubic yards per hour.

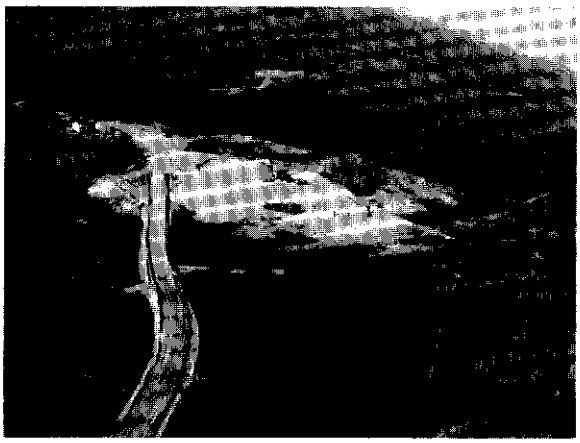
Ground Description: The ground was shallow with about 1 foot of vegetative material and 4 feet of gravel on bedrock. The lower 3 feet of gravel and 1 foot of bedrock was sluiced.

Mining Cuts: A small bench on the left limit of Matson Creek was tested by sluicing material from a 100 foot by 100 foot area.

Water Supply and Treatment: The water was pumped from an instream depression in Matson Creek. Effluent was treated in two settling ponds before discharging onto swamps on the left limit of the creek. No discharge back to the creek could be located.

Gold: Most of the gold recovered was -10 screen, with no nuggets. The gold was rounded and coarse, with a fineness of 880.

Comments: The test cut was done near the grave site of John Matson, which was left on an elevated piece of undisturbed ground. John Matson became famous for marrying Klondike Kate.

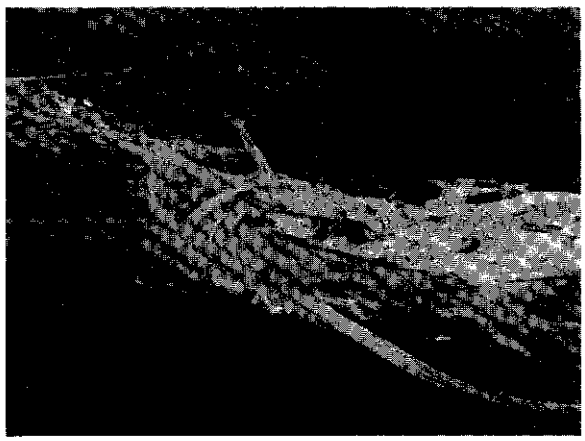


Gene Fowler's placer mine on Matson Creek.

MATSON CREEK **115 N 7**
M. W. Orbanski Ltd. **63°30'N 140°35'W**
Water Licence: PM91-040 **1992**

Operation/Location: Mr. Orbanski moved his operation from Australian Hill and spent most of the 1992 season hauling equipment into Matson Creek and setting up. Some sluicing was done near the mouth of Bow Pup.

Equipment/Function: Three D9H Cat bulldozers, a D7E Cat bulldozer, and three 631C Cat scrapers were brought in and will be available for mining next season.



An overhead view of Murray Orbanski's mining operation on Matson Creek.

Wash Plant: A 50 foot long trommel 8 feet in diameter classified the pay, which was sluiced in twelve runs lined with Nomad matting and expanded metal. A 12 inch by 14 inch Aura pump supplied the 3500 igpm used to sluice about 350 cubic yards per hour.

Ground Description: The cut near the mouth of Bow Pup had 14 feet of black muck over 10 feet of gravel. The lower 8 feet of gravel and 4 feet of bedrock was sluiced.

Mining Cuts: After a season spent moving and setting up only 40 hours of sluicing was done before an early freeze up occurred.

Water Supply and Treatment: Water was pumped from a 500 foot by 1000 foot instream reservoir. The effluent was treated in a series of out of stream settling ponds built along the right limit of Matson Creek.

Gold: The gold was primarily fine, although some nuggets were found. The fineness was 900.

SIXTYMILE RIVER **115 N 15**
L. Haner **63°59'N 140°45'W**
Water Licence: PM90-087 **1991, 1992**

Operation/Location: This operation was located on the Sixtymile River downstream from its confluence with Miller Creek. In 1991 this camp employed 4 miners, and in 1992 the operation was scaled down to 2 miners. In both years one additional person worked in camp. One 11 hour shift was worked per day.

Equipment/Function: A D9H Cat was used for stripping, and stockpiling pay gravel. A 980B loader and a 966C loader hauled tailings and fed the plant, and an Insley backhoe with a 2½ yard bucket dug drains. In 1992 the 966C loader was used to feed the derocker.

Wash Plant: In 1991 80 yards per hour were processed using a hopper/monitor fed triple run sluice with adjustable side runs. The centre run was 30 feet by 3 feet, and one side run was 16 feet by 18 inches. A 12 foot by 3 foot run on the other side of the box had a 12 foot by 3 foot run added to it, beginning halfway down the box. Two thousand igpm of water were acquired using a 10 inch by 12 inch Berkley pump powered by a cat 3208 engine. In 1992 100 yards per hour were processed through a 10 foot by 20 foot derocker with 2 inch openings between deck plates. A 10 inch by 12 inch Berkley pump powered by the 3208 cat engine supplied 1800 igpm of water.

Ground Description: In 1991 the ground was comprised of an average of 2 feet of muck, 1 foot of silt/clay, 3 feet of fine gravel, and 6 feet of coarse gravel. Three feet of gravel and up to 3 feet of bedrock were sluiced. The ground was deeper toward the limits of the valley with extra depth in muck. In 1992 the ground was comprised of 5 feet of black muck, 1 to 2 feet of fine sand and silt, and 5 feet of gravel turning to coarse cobbles at bedrock. Bedrock was andesite and decomposed andesite. Two feet of gravel and 1 to 4 feet of bedrock were sluiced.

Mining Cuts: Four cuts were processed during the 1991 season. They measured 200 feet by 200 feet by 12 feet deep; 150 feet by 375 feet by 15 feet deep; 200 feet by 200 feet by 15 feet deep;

and 20 feet wide at one end by 100 feet wide at the other by 250 feet long by 15 feet deep. Three cuts averaging 150 by 250 feet in size were processed in 1992.

Water Supply and Treatment: In 1991 an out of stream reservoir was used, supplied by a control gate from the Sixtymile River. Settling was out of stream, using up to six ponds strung in series along a mile of ground. In 1992 water was recycled for the first half of the season, and pumped from the Sixtymile River in the second half. Old cuts were used for settling and for ½ mile of drain.

Gold: The fineness was 840. Gold was flat and angular in shape, and predominantly from 10 to 40 mesh.

Comments: The river diversion constructed by the operator in 1991 remained stable despite very high water at the start of the 1992 mining season.

SIXTYMILE RIVER **115 N 15**
Brisbois Brothers Construction **64°00'N 140°47'W**
Water Licence: PM89-118 **1991**

Operation/Location: This operation was located on a left limit bench of the Sixtymile River, immediately downstream from its confluence with Miller Creek. Four miners and one camp employee worked 12 hours per day.

Equipment/Function: Two Cat D9G dozers with rippers were used for stripping, two Cat 992B loaders fed the sluice, and one Case 1150 bulldozer with winch was used in the yard.

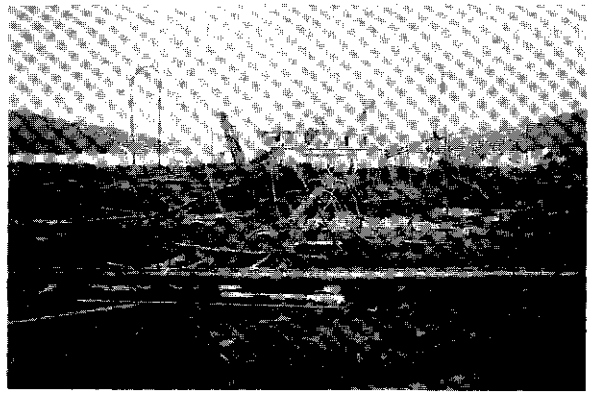
Wash Plant: Pay was processed at 150 loose yards per hour using an 8 foot by 20 foot plate feeder and a 4 foot wide sluice run with expanded metal and hydraulic riffles. The plant used 4500 igpm pumped with a Gould 12 inch by 14 inch pump powered by a 425 horsepower Cat D343 engine.

Ground Description: Total depth of the ground mined was 91 feet. This was composed of 25 feet of black muck, 60 feet of slide rock gravel, and 6 feet of cemented gravel on hard and flat decomposed bedrock. The cemented gravel and 1 foot of bedrock were sluiced.

Mining Cuts: One cut 100 feet by 200 feet was processed in 1991.

Water Supply and Treatment: Water acquisition and waste water treatment were accomplished in closed circuit out of stream settling ponds on the left limit bench.

Gold: The gold was small, flat, and smooth, with some quartz attached. Fineness was 840.



Steam pipes and points used to thaw ground on Granville (circa 1935).

MILLER CREEK **115 N 15**
Jayce Haynes **64°00'N 140°48'W**
Water Licence: PM91-108 **1991, 1992**

Operation/Location: Two miners worked a 10 hour shift each day at this operation.

Equipment/Function: A TD25B International bulldozer stripped overburden and pushed up pay. A 5 yard Eimco scoop stripped and moved tailings, a P&H ¾ yard excavator was used to feed the sluice plant and dig ditches, and a Wagner ST2A 2 yard loader was used for general duties around camp.

Wash Plant: An estimated 1500 igpm was supplied by a 5 inch by 6 inch Mission pump powered by a 50 horsepower Nissan diesel. About 60 yards per hour were processed using a 4 foot by 12 foot vibrating screen deck with ½ inch punch plate feeding a 2 foot by 8 foot sluice run with 2 inch riffles, which in turn fed an 8 foot by 16 foot run with expanded metal and Nomad carpet.

Ground Description: In 1991 18 to 30 feet of frozen ground was mined. This was comprised of

12 feet to 24 feet of black muck over 6 feet of sandy gravels. The gravel and 2 feet of decomposed bedrock were sluiced. In 1992 8 to 30 feet of muck lay over 6 to 8 feet of gravel. The gravel and 3 to 5 feet of decomposed schist bedrock was sluiced.

Mining Cuts: In 1991 2 cuts were mined. They measured 75 feet by 150 feet by 18 feet deep, and 60 feet by 200 feet by 30 feet deep. One cut 75 feet by 200 feet was mined in 1992.

Water Supply and Treatment: In 1991 all water was recycled using a 60 foot by 150 foot by 9 foot deep return pond. In 1992 a small instream pump pond was used, and a 75 foot by 150 foot by 12 foot deep pond was used for settling.

Gold: In 1991 gold recovered was: 4% +10 mesh (quartz attached nuggets), 16% -10 +20, 70% -20+60, and 10% -60. In 1992 2% was +10, 18% -10+20, 75% -20+60, and 5% -60. Fineness was 800.

Granville mining camp with tailings visible in the background (circa 1935).

SIXTYMILE RIVER **115 N 15**
K-1 Mining and Services **64°00'N 140°45'W**
M. McDougall & K. Haner
Water Licence: PM91-025 **1991, 1992**

Operation/Location: This operation located on the Sixtymile River between Miller and Glacier Creeks was worked by 3 miners in 1991, and 2 miners and 1 additional person in 1992.

Equipment/Function: Two D8H Cat bulldozers were used at this operation. One was used to feed the box, one was used to push up pay and remove tailings, and both were used for stripping.

Wash Plant: In 1991 75 to 90 cubic yards per hour of paydirt was processed in a triple run box with an 8 foot by 12 foot dump box (lined with ¾ inch punch plate), two 24 inch wide side runs with expanded metal and 1 inch riffles, and a 36 inch by 28 foot centre run. Water was supplied by a 6 by 8 Peerless pump powered by a GM diesel model 4-71.

In 1992 75 cubic yards per hour of pay was processed using a sluice box with one side run. The dump box was 4 feet by 12 feet with ¾ inch punch plate, the main run was 36 inches by 26 feet with 1 foot by 1 inch angle iron riffles, and the side run was 24 inches by 26 feet with expanded metal.

Ground Description: In 1991 15 to 18 feet of partially frozen ground was mined. This was comprised of up to 3 feet of mud over bank fines, 10 to 15 feet of river gravels, then 6 inches to 2 feet of orange stained gravels over fractured andesite bedrock. The lower 2 to 3 feet of gravel and up to 4 feet of fractured bedrock were sluiced.

In 1992 the ground was frozen and consisted of 2 to 4 feet of black muck or over bank fines, and 12 to 14 feet of mixed gravels and some cobbles over bedrock. Bedrock was decomposed and competent andesite with sulphides. The sluice section was the lower 2 to 3 feet of gravel and up to 6 feet of bedrock.

Mining Cuts: Two cuts measuring 280 by 175 feet and 275 by 160 feet were mined in 1991. In 1992 cuts of 170 feet by 250 feet and 160 feet by 250 feet were made.

Water Supply and Treatment: Water was obtained from an out of stream pump pond. Settling in 1991 was accomplished in two ponds, one 75 feet by 600 feet and the other 100 feet by 500 feet. Two ponds were also used in 1992.

Gold: In 1991 the gold was coarse and rounded with a dark stain. Fineness was 830. In 1992 the gold was angular to rounded with some flattened flakes, and stained black or rusty red. Most was -10 to +40 mesh with a fineness of 840.

BEDROCK CREEK **115 N 15i**
Steve Prohaszka **63°59'N 140°53'W**
Water Licence: PM89-165 **1992**

Operation/Location: This property was located on Bedrock Creek, a tributary of the Sixtymile River. It was mined by Graham Ventures under agreement with Mr. Prohaszka during the 1992 season. Two miners worked 10 hours per day at this site.

Equipment/Function: Two Cat bulldozers with rippers (a D9H and a D8H) were used for all aspects of the mining operation.

Wash Plant: A Ross box with side runs was used to process 250 loose yards per hour of pay dirt, using up to 2500 igpm of water. The box was equipped with ½ inch punch plate and expanded metal at the top, and 2 inch riffles on the bottom. The side runs had expanded metal, and Nomad matting was used throughout.

Ground Description: The depth varied from 5 feet to 14 feet. Six to 8 feet was overburden and 4 to 6 feet was pay gravel. Bedrock was sloped and slightly wavy. The sluice section was four feet of gravel and 1 to 2 feet of bedrock.

Mining Cuts: One cut was processed in 1992. It measured 200 feet by 400 feet, for approximately 17,700 cubic yards sluiced.

Water Supply and Treatment: A small instream wing dam was used for pumping. Settling was accomplished in two out of stream ponds.

Gold: The gold was flat, fine, and mostly bright, with a presence of mercury, mica and quartz. Fineness was 814.

Comments: Some old shafts were encountered in mining this ground.

BARKER CREEK **115 O 2**
Robin Burian **63°07'N 138°55'W**
Water Licence: PM91-059 **1991, 1992**

Operation/Location: Mr. Burian and his family mined on a left limit bench approximately 100 feet above Barker Creek, in the same general area as in the past couple of years.

Equipment/Function: A D7E Cat bulldozer was used for stripping, feeding the sluice box, clearing tailings, and maintaining the settling facilities. A D6 Cat bulldozer was also on site.

Wash Plant: A side dump box fed washed gravel into a single run sluice. The dump box measured 9 feet wide by 23 feet long. The sluice run was 32 inches wide by 20 feet long, and lined with astroturf, expanded metal, and 2 inch angle iron riffles. An International UD18 10 by 12 inch pump supplied water for sluicing.

Ground Description: The ground varied in depth from 6 feet at the rim of the bench to 15 feet deep at the back of the cut. An average profile saw 8 to 10 feet of frozen muck over 4 feet of gravels. The first 1 to 2 feet of bedrock was largely decomposed. The lower 2 feet of gravel and 2 feet of bedrock were sluiced.

Mining Cuts: In 1991 a single cut measuring 220 feet by 90 feet was sluiced. Cuts of 270 feet by 120 feet and 220 feet by 150 feet were processed in 1992.

Water Supply and Treatment: Water was pumped from an instream pool in Barker Creek onto the left limit bench. The effluent was channelled by ditch back into the valley bottom where three out of stream settling ponds were constructed. Discharge was into swamps adjacent to the creek.

Gold: The gold was fine in 1991, with more coarse gold in 1992. The smooth and flat gold had a fineness of 870.

Comments: Much of the ground worked in the last four years had been previously mined by shafting and drifting.

BARKER CREEK **115 O 2**
Henry Calmegane **63°11'N 138°53'W**
Water Licence: PM89-169 **1991, 1992**

Operation/Location: Mr. Calmegane mined a left limit bench of Barker Creek by himself in 1991, but employed a helper in 1992. The mine cuts were approximately 110 feet above Barker Creek near the mouth.

Equipment/Function: In 1991 a John Deere 450 bulldozer and a D6C Cat bulldozer were used for stripping and stockpiling the pay. A Dynahoe (¾ yard bucket) loader/hoe was used for testing the ground and feeding the sluice box. In 1992 a D8D (15A) Cat dozer was added to make the stripping faster.

Henry Calmegane shown with his sluice plant on Barker Creek.

Wash Plant: An elevated 3 foot by 12 foot dump box fed the pay over a grizzly made of 2 inch screen. The gravels were washed by a spray bar. A small section of the dump box was cut out and punch plate put in so washed slurry could enter the top of the sluice run beneath. Remaining slurry entered the sluice run after being classified by the screen. The 26 foot long and 2 foot wide sluice run was lined with Nomad matting, expanded metal, and 1½ inch angle iron riffles. A 4 inch trash pump supplied between 200 and 400 igpm of water, and about 30 cubic yards of gravel was sluiced per hour.

Ground Description: The depth of the ground varies considerably. An average cut had 6 feet of

black muck over up to 4 feet of gravel. Bedrock was usually decomposed schist. All of the gravel and up to 2 feet of bedrock were sluiced.

Mining Cuts: Henry Calmegane tested and sluiced irregular shaped cuts in 1991 and 1992. Very little sluicing was done in 1991.

Water Supply and Treatment: Make-up water was supplied by a 3 inch high pressure pump from Barker Creek to a reservoir on the bench. The reservoir was used for recycling and settling.

Gold: A wide range of gold size was reported with 50% +8 mesh. The fineness was 870.

SCROGGIE CREEK **115 O 2**
Zdenek Bidrman **63°07'N 138°37'W**
Water Licence: PM91-045 **1991, 1992**

Operation/Location: In 1991 Mr. Bidrman began mining on a left limit bench of Scroggie Creek where mining had occurred for several years. The entire operation was moved mid-season to claims on Scroggie Creek, immediately upstream of the confluence of Scroggie and Walhalla Creeks. In 1992 Mr. Bidrman and his son continued upstream on Scroggie Creek, bringing in more employees when required.

Zdenek Bidrman's large hoe feeding the wash plant on Scroggie Creek.

Equipment/Function: A D9G Cat bulldozer equipped with a U-blade and ripper was used for stripping, stockpiling pay, tailings removal, and construction of diversion channels and settling ponds. A Warner & Swasey H900A excavator fed the wash plant.

Wash Plant: A sluice plant with a dump box, grizzly, and single run sluice branching into five sluice runs was used. Punch plate was used over riffles at the top of the single run, and riffles only were used immediately above the five runs lined with expanded metal. Unbacked Nomad carpet was used on all the sluice runs. Pay gravel was sluiced at a rate of 50 yards per hour using approximately 1000 igpm.

Ground Description: Two to 4 feet of frozen black muck overlay 6 to 8 feet of frozen gravel. Bedrock was highly decomposed, so up to 6 feet were sluiced with the lower 2 feet of gravels.

Mining Cuts: Information on the amount of sluicing done in 1991 was not obtained. In 1992 four cuts measuring approximately 250 feet by 200 feet were sluiced.

Water Supply and Treatment: Water was pumped with an Allis Chalmers 10 by 10 inch pump from an out of stream reservoir connected to Scroggie Creek by a ditch. Effluent was settled in two out of stream ponds.

Gold: The gold was smooth and flattened. No quartz occurred. Fineness was 900.

BALLARAT CREEK **115 O 3**
Caley's Dream Inc. **63°10'N 139°10'W**
Water Licence: PM90-051 **1991, 1992**

Operation/Location: In 1991 and 1992 a crew of four miners and one camp employee ran the mine near the headwaters of Ballarat Creek.
Part of the 1992 season was used to move to Kirkman Creek, where the first cuts on a new block of ground were opened up.

Equipment/Function: A D8K Cat bulldozer with a U-blade and ripper was used for stripping, removing tailings, and building settling ponds and roads. A 235 Cat hoe was used to strip up against the limits, feed the sluice plant, build dams and roads, and clean out the settling ponds and drains.

Wash Plant: A 10 foot wide by 15 foot long dump box fed the washed pay into a 3 foot by 30 foot single sluice run. The dump box was lined with cocoa matting, expanded metal, and ¼ inch punch plate. Cocoa matting, expanded metal, and 2 inch angle iron riffles were used in the run. Indoor/outdoor carpeting was used in 1992. A

Cat 3306 10 by 12 inch pump supplied the 3000 igpm needed for sluicing. Between 150 and 180 cubic yards were sluiced an hour.

Ground Description: Ballarat Creek is narrow and steep-walled, so the depth of the ground ranges from 3 feet deep in the centre of the creek up to 15 feet on the limits. An average cut would be 6 feet deep, and frozen through out. The right limit appears to have been influenced by a siumping of the hillside which covered the original channel. The lower 2 to 3 feet of gravels were sluiced along with 6 inches of bedrock.

Mining Cuts: In 1991 four cuts averaging 150 feet long by 40 feet wide were sluiced. Most of the 1992 season was used to move over to Kirkman Creek and prepare new ground, so little sluicing was done on Ballarat Creek.

Water Supply and Treatment: Water was collected in an instream reservoir/pump pond upstream of the sluice plant. The effluent was treated in small downstream settling ponds. Most of the season water had to be recirculated, due to the small watershed above the mine site.

Gold: The gold was coarse and has been screened to approximately 20% +4 mesh, 25% -4+8 mesh, 25% -8+12 mesh, 20% -12+18 mesh with the rest -18 mesh. The gold tends to be very bright with some very white quartz attached. Fineness was 860.

KIRKMAN CREEK **115 O 3**
Fell-Hawk Placers **63°01'N 139°15'W**
Water Licence: PM89-168 **1991, 1992**

Operation/Location: Joe and Wendy Fellers mined Kirkman with one employee in 1991, but moved to Ballarat Creek later in the year. Merit Sager and Ken Karran mined under this licence in 1992.

Equipment/Function: In 1991 a D8L Cat bulldozer was used to strip the ground and stockpile the pay. A D7 Cat bulldozer and a 966 Cat loader fed the sluice plant and carried off tailings. A D7 Cat bulldozer was used to do all the stripping and sluicing in 1992.

Wash Plant: The sluice plant consisted of a derocker feeding into a 5 foot by 20 foot single sluice run. Nomad matting, expanded metal, and 2 inch angle iron riffles were used in the sluice run. The riffles were spaced 3 inches apart in the neck and top of the sluice run, and 2 inches apart for the remainder. A 3208 Cat pump supplied the 2000 igpm used to sluice approximately 100 cubic yards per hour.

Looking downstream at the mine cuts and settling facilities at Fell-Hawk Placer's operation on Kirkman Creek.

Ground Description: Kirkman Creek is very narrow. The cut mined in 1991 had approximately 3 feet of black muck overlying 10 to 14 feet of gravel. The gravels contained a high amount of clay and sand. The bedrock was usually decomposed. The 1992 cuts had thicker black muck and gravel layers, and were up to 25 feet deep. The Feller's sluiced the lower 4 feet of gravel and 2 feet of bedrock. Merit Sager and Ken Karran sluiced only the last 2 feet of gravel and 2 feet of bedrock.

Mining Cuts: The cuts span the full width of the creek ground. A single cut measuring 40 feet by 250 feet was sluiced in 1991. Two cuts with approximate dimensions of 40 feet wide by 100 feet long were sluiced in 1992.

Water Supply and Treatment: In 1991 2000 igpm was needed for sluicing so a recycle system was set up. Water was pumped from a U-shaped recycle pond to the sluice plant. Kirkman Creek was left in the left limit creek channel away from the mining cut. Any effluent leaving the recycle pond was settled in two downstream ponds. In 1992 the water was gravity fed and was not recycled. A series of three immediate ponds were used to settle the effluent with two more ponds two miles downstream.

Gold: The gold was mainly coarse with the size increasing as mining moved upstream. Some quartz showed up with the larger nuggets. Fineness was 870.

THISTLE CREEK **115 O 3**
Faith Mines **63°05'N 139°17'W**
Water Licence: PM89-035 **1991, 1992**

Operation/Location: Mike and Jay Hughes ran this operation with a crew of four in 1991 and three in 1992 (including the cook). Several locations on Thistle Creek over a couple of miles apart were tested in 1991. Most sluicing occurred along the left limit.

Equipment/Function: Three D8K Cat bulldozers and a D9H Cat bulldozer were used to strip, stockpile pay, build ramps, and feed the sluice box. A 980C Cat loader was used to ramp the tailings and assist in the clean-ups.

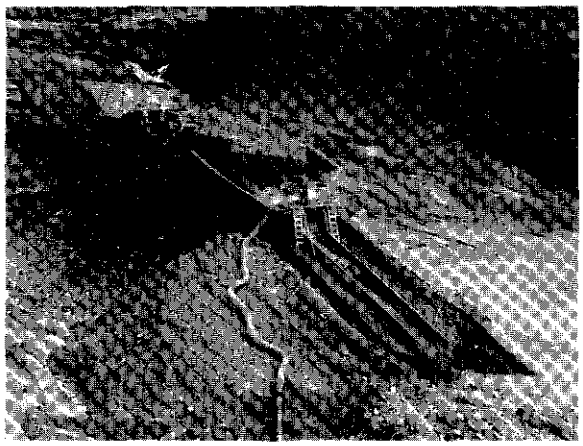
Wash Plant: A custom made conventional single run sluice box was used. The 20 foot by 23 foot dump box channelled into a 4 foot by 54 foot sluice run. A combination of Nomad matting, expanded metal, flat bar riffles, and punch plate was used in the dump box. The sluice run incorporated three 6 inch drops near the top. Punch plate was used in the drop sections of the sluice run, but the remainder used unbacked Nomad matting, expanded metal, and flat bar riffles. A Paco 10 by 12 inch pump powered by a 3208 Cat engine supplied the 4000 igpm needed to sluice 175 cubic yards per hour.

Ground Description: An average cut had 6 feet of black muck and vegetation with 8 to 10 feet of gravel sitting on bedrock. Bedrock was very wavy, and varied from fully decomposed to solid and blocky. Some cuts had layers of solid "gumbo" clay. The lower 4 feet of gravel and up to 1 foot of bedrock was sluiced.

Mining Cuts: In 1991 ten cuts averaging 250 feet by 250 feet were sluiced. Six cuts averaging 250 feet by 250 feet were sluiced in 1992. All of the cuts were on creek ground and no mining occurred on the benches.

Water Supply and Treatment: Most of the mine cuts were set up the same way each time. A U-shaped pond made from the previous cut was used as a recycle pond. Make-up water was brought in, but the bulk of Thistle Creek was diverted around the cut. Outflow from the recycle pond was settled in downstream ponds before discharging into Thistle Creek.

Gold: Most of the gold recovered was coarse with 30% +4 screen, 40% -4+6 screen, and 30% -6 screen. Numerous large nuggets have been found. Fineness was 890.



Faith Mines' large sluice box takes of a lot of pay gravel on Thistle Creek.

BREWER CREEK **115 O 3**
Barker Creek Placer **63°10'N 139°01'W**
Exploration Corporation **1991**
Water Licence: PM89-138

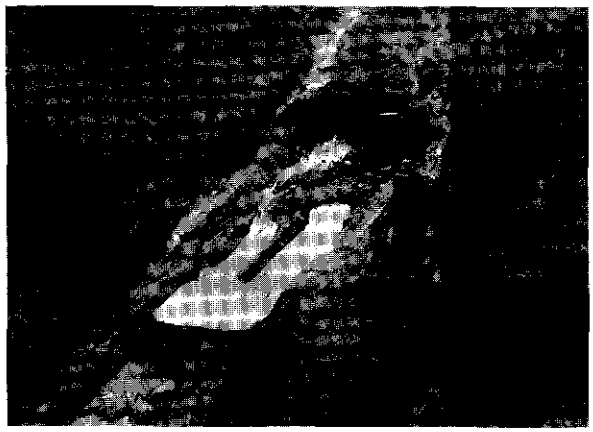
Operation/Location: This mine operated in 1991. Mining occurred immediately downstream from the main forks of Brewer Creek, on the left limit of the valley bottom. A crew of 3 miners and 2 camp employees ran the operation.

Equipment/Function: A D8H Cat bulldozer was used for ripping the permafrost, ramping up the overburden, digging and stockpiling the pay gravels, and removing tailings. A D6 Cat dozer was used to push material, and a John Deere hoe fed the sluice plant.

Wash Plant: A grizzly over a hopper fed a trommel. Undersize material was channelled from a wide sluice area into a single sluice run. Up to 120 cubic yards per hour could be sluiced.

Ground Description: The depth of the cut increased dramatically from the centre of this narrow valley towards the left limit. Eight to 20 feet of frozen vegetation and black muck lay over up to 8 feet of gravel. Distinct sand and clay

layers were encountered in the gravels. Bedrock was green schist and wavy over much of the cut. All of the gravels and 18 inches of bedrock were sluiced.



Aerial photo showing a mine cut, sluice plant, and recycle plant on Brewer Creek.

Mining Cuts: A single cut was sluiced for a total of 17,000 cubic yards.

Water Supply and Treatment: The total creek flow was used to fill a U-shaped reservoir. When the pond was full the creek was placed back into the original channel, and the water was used for an out of stream recycle system. A secondary pond was constructed but was not required.

Gold: Most of the gold was very fine, but some wire gold and flat, smooth nuggets were found. Fineness was 890.

HENDERSON CREEK **115 O 6**
Northway Mining & Exploration Inc. **63°22'N 139°20'W**
Water Licence: PM89-067 **1991, 1992**

Operation/Location: Morris and Chuck Scoby mined approximately one mile of claims on Henderson Creek, starting near the confluence of Henderson and North Henderson Creeks.

No other information was available.

NORTH HENDERSON CREEK **115 O 6**
David Laurenson **63°28'N 139°14'W**
Water Licence: PM89-179 **1991**

Operation/Location: Dave Laurenson and Sarah Braun mined on the north fork of Henderson Creek about 4½ miles upstream from the forks. The operation was located in the valley bottom centre.

Equipment/Function: One Cat D8 dozer was used to strip overburden and to dig pay gravel. A Terex 72-51 front-end loader was used to feed the wash plant and remove tailings.

Wash Plant: Roughly 50 loose yards per hour were processed using a screen plant with two 4 by 14 foot decks, followed by three 30 inch wide by 20 foot long sluice runs. The runs were lined with 2 inch Hungarian riffles, followed by expanded metal riffles on Nomad matting, then open Nomad matting. Five hundred igpm was supplied by a high pressure 4 by 5 inch pump, powered by a diesel engine.

Ground Description: North Henderson Creek in this area is a fairly wide valley with gentle side slopes and shallow grade. Total depth was about 20 feet to bedrock. There was 10 to 12 feet of frozen overburden over reddish gravels 8 to 10 feet deep. Bedrock was decomposed. The bottom 5 feet of gravel and up to 4 feet of bedrock were sluiced.

Mining Cuts: One cut 200 feet long by 300 feet wide was completed in 1991.

Water Supply and Treatment: Process water was pumped directly from the creek and was settled in two out of stream ponds.

Gold: Gold was mixed in colour, with some reddish and some brassy. Coarse gold was both angular and rounded. Fineness was 780.

MAISY MAY CREEK **115 O 7**
Jasper Equipment Ltd. **63°19'N 138°57'W**
Water Licence: PM89-136 **1991, 1992**

Operation/Location: This operation continued upstream on Maisy May Creek from where mining ended in 1990. Wayne Lerner and two employees ran the mine.

Equipment/Function: A D9L Cat bulldozer and a 355 Komatsu bulldozer were used to strip the cuts and stockpile the pay gravels. An EL300 Cat backhoe with a 2½ yard bucket fed the sluice plant, and a Hough 100C loader carried tailings off to build settling facilities and the diversion channel.

A large Cat hoe feeding Jasper Equipment's wash plant on Maisy May Creek.

Wash Plant: A 5 foot diameter by 40 foot long trommel was used to classify the pay to ¾ inch minus. The material was then sluiced in a run 9 feet wide by 16 feet long lined with Nomad matting and 1 inch angle iron riffles. A second box 12 feet wide by 16 feet long lined with Nomad matting and expanded metal was attached to the end of the first run. A 10 inch by 12 inch Paco pump powered by a 671 Detroit engine supplied the 2000 igpm needed to process 80 to 90 cubic yards per hour.

Ground Description: The average depth to bedrock was 10 feet, half being frozen muck and the remainder frozen gravels. The bedrock was flat and blocky. The lower 4 feet of gravel and 1 foot of bedrock was sluiced, and overburden was stockpiled along the left limit. The tailings will be used to construct settling facilities and the final diversion channel for Maisy May, along the right limit.

Mining Cuts: Four cuts averaging 300 feet long by 400 feet wide were sluiced in 1992.

Water Supply and Treatment: Maisy May Creek was diverted into a reservoir/recycle pond on the left limit near the sluice plant. The water was pumped through the plant and back to the recycle pond, re-using up to 50% due to low flows in Maisy May Creek. The settling facilities were constructed from tailings, making the walls porous and allowing seepage outflow back to Maisy May Creek.

Gold: The gold was flat and usually had a dull red stain. The fineness was 782.

BLACK HILLS CREEK **115 O 7**
Paydirt Holdings Ltd. **63°29'N 138°52'W**
Water Licence: PM87-079 **1991, 1992**

Operation/Location: In 1991 Paydirt Holdings mined upstream on Black Hills Creek from where they left off in 1990. The mouth of Childs Gulch was mined in 1992. The operation was scaled down from eight employees in 1991 (including mine manager Tim Nixdorf and camp staff) to four in 1992.

Equipment/Function: Three D9H Cat bulldozers were used to strip the cuts and stockpile pay. A 235 Cat hoe fed the sluice plant and a 980C Cat loader hauled the tailings away. A D8H Cat dozer, a D8K Cat dozer, and two 966 Cat loaders were also available.

Wash Plant: Two 10 foot derockers set side by side were used to classify the pay. The pay was washed in two 42 inch wide by 40 foot long sluice runs lined with Nomad matting and 1½ inch angle iron riffles. A 10 inch pump powered by a 3208 Cat engine supplied the 3000 igpm needed to sluice 140 cubic yards per hour in 1991. A 10 inch Cornell pump was used in 1992, increasing the water supply to 3500 igpm and boosting production to 180 cubic yards per hour.

Ground Description: The average depth to bedrock on Black Hills Creek was 15 feet. Frozen black muck and mud usually extended from the surface to bedrock, with no gravels. The bedrock was highly fractured but very solid. Occasionally decomposed bedrock was encountered. All gravel found and 4 to 5 feet of bedrock was sluiced. The depth to bedrock on Childs Gulch was up to 25 feet. Fifteen feet of frozen black muck overlay 6 to 10 feet of frozen gravel. The bedrock was solid and wavy. The lower 4 feet of gravel and 2 to 3 feet of bedrock was sluiced. Numerous shafts and drifts were found immediately above bedrock.

Mining Cuts: Three claims were mined in 1991, in four cuts with average dimensions of 200 feet by

400 feet. In 1992 three cuts measuring approximately 150 feet by 200 feet were sluiced.

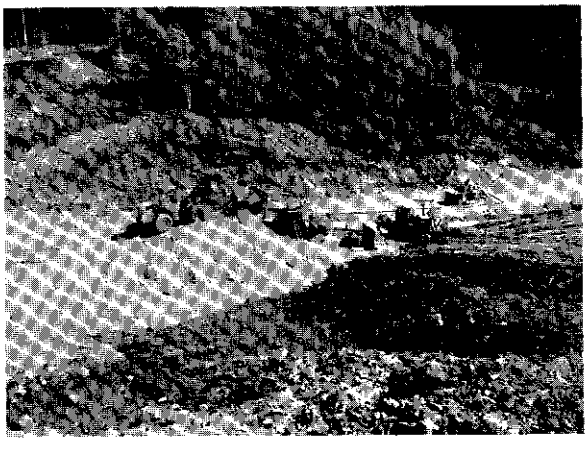
Water Supply and Treatment: Water was pumped from instream ponds on Black Hills Creek to the wash plants. The effluent was treated in a series of large instream settling ponds built from mined out cuts downstream of the sluicing operation.

Gold: Most of the gold from Black Hills Creek was fine and jagged. Flat and chunky gold and some wire gold was recovered at the mouth of Childs Gulch. The fineness was 700 on Black Hills Creek and 750 on Childs Gulch.

CHILDS GULCH **115 O 10**
Dorados Developments **63°30'N 138°51'W**
Elroy Wallin **1991, 1992**
Water Licence: PM91-053

Operation/Location: Childs Gulch is a left limit tributary of Black Hills Creek. Mining continued upstream from where it ended in 1990. Nine people ran the operation in 1991, and Roy Wallin and family operated the mine with a crew of eight in 1992 .

Equipment/Function: In 1991 two D355A Komatsu bulldozers were used to strip the cuts and handle tailings. A PC300 hoe fed the sluice plant. In 1992 an 8L Cat bulldozer was used to strip the cuts and remove tailings. The sluice plant was fed with a 966C Cat loader.



A Cat 966C loader feeds the wash plant at Dorados Developments' mine on Childs Gulch.

Wash Plant: A derocker fed into a model 300 Ross Box. A rubber mat in the dump box and another mat at the beginning of the main run spread the water flow across the run and helped wash the pay. A 12 inch by 10 inch Morris pump powered by a 3406 Cat engine supplied the 3500 igpm needed to sluice between 150 and 180 cubic yards per hour.

Ground Description: An average cut had 6 feet of overburden in the centre of valley, and 10 to 12 feet of overburden on each limit. The underlying gravels varied from 6 to 8 feet thick. Both decomposed (clay) and solid consolidated bedrock was found. The lower 4 feet of gravel and up to 1 foot of bedrock was sluiced.

Water Supply and Treatment: Water was pumped from an instream settling/recycle pond to the sluice plant. The mined out downstream cuts were used as additional settling ponds.

Gold: The gold size decreased from the mouth of Childs Gulch, but has remained constant for the last couple of years. Most of the gold was close to 20 mesh. Some very jagged nuggets have been recovered. The fineness averaged 734.

EUREKA CREEK **115 O 10**
Discovery Creek **63°35'N 138°52'W**
Gold Placers **1991, 1992**
Water Licence: PM91-027

Operation/Location: Richard Allen mined near the confluence of the left and right fork of Eureka Creek in 1991, and on the right fork in 1992. In 1992 Mr. Allen worked largely by himself.

Equipment/Function: Two D9 Cat bulldozers were used for stripping, feeding the sluice plant, and pushing tailings. A D8 Cat bulldozer was available if required.

Wash Plant: A model 500 Ross Box was used in 1991, and a new trommel wash plant was built for the 1992 season.

Mining Cuts: No production figures were obtained for 1991 and 1992. The first part of 1992 was spent building settling facilities and opening up new ground on the right fork of Eureka Creek.

Water Supply and Treatment: Water was pumped from instream reservoirs to the sluice plant. The effluent was treated in instream settling ponds built in downstream mined out cuts.

Gold: Most of the gold recovered in past years was fine grained and rounded. The fineness has averaged 690.

DOMINION CREEK (UNNAMED TRIB.) 115 O 10
Gyppo Mining Ltd. 63°41'N 138°35'W
Water Licence: PM91-128 1992

Operation/Location: Four miners worked 10 hours per day at this operation. The unnamed left limit tributary of Dominion Creek downstream from Rob Roy Creek is also called "Lee Pup".

Equipment/Function: A D8 Cat dozer, an excavator and a 966 Cat loader were used to mine this site.

Wash Plant: One hundred loose yards per hour were processed using 1750 igpm of water. The wash plant was a vibratory shaker screen deck feeding a riffle run with expanded metal and Nomad carpet.

Ground Description: The stratigraphic section of this property consisted of 10 to 15 feet of frozen black muck. Five to six feet of material were sluiced.

Mining Cuts: An area 100 yards by 80 yards was mined in 1992.

Water Supply and Treatment: Water was pumped from Dominion Creek. No recycling was used at this site. Settling was accomplished in out of stream ponds on the right limit of the valley.

Gold: Information was not available.

DOMINION CREEK 115 O 10
L.W. and G.A. Gatenby 63°39'N 138°40'W
Queenstake Resources 1991
Water Licence: PM89-175

Operation/Location: Queenstake Resources operated on Dominion Creek upstream of its confluence with Sulphur Creek, under the Gatenby's water use licence and a lease agreement. In 1991 two people worked one shift per day until operations ceased on July 1.

Equipment/Function: A Cat D9H bulldozer was used to push up pay and clear away tailings. An EL300 backhoe fed the trommel.

Wash Plant: Pay was processed at 120 loose yards per hour using a 60 inch trommel with four 30 inch sluice runs, and one sluice run 7 feet wide by 20 feet in length under the trommel. The trommel was powered by a Cat 3306. Water consumption was 2500 igpm, pumped by a 10 by 12 inch Morris pump powered by a Cat 3406.

Ground Description: The ground had a total depth of 32 feet, comprised of 8 feet of black muck over 12 feet of creek gravel, over 12 feet of white channel gravel on top of decomposed Klondike schist. Four feet of white channel gravel and 2 feet of bedrock was sluiced.

Mining Cuts: In 1991 20,000 cubic yards were mined in one cut.

Water Supply and Treatment: The operation utilized 100% recirculation of water. This was accomplished using two ponds for waste water treatment. One was 300 feet by 200 feet, and the other was 200 feet by 200 feet.

Gold: Gold was 98% -12 mesh, with a fineness of 860.

DOMINION CREEK 115 O 10
J. P. Taylor 63°49'N 138°39'W
Water Licence: PM89-184 1991, 1992

Operation/Location: This operation was located in the Dominion Creek Valley downstream from its confluence with Portland Creek. In 1991 work was carried out on the left limit by one person. Work continued here in 1992, and tailings in the centre of the valley were also worked, using three people.

Equipment/Function: A Cat D8 bulldozer was used to strip, push up pay, and remove tailings. A John Deere 450 loader with backhoe fed the plant, and a 720 Bobcat cleared tailings. In 1992 a Cat D7E dozer was added to strip, prepare the site, and push tailings. A John Deere 790D backhoe fed pay to the plant.

Wash Plant: Material from the left limit was processed using a 4 foot by 14 foot derocker with two 12 foot by 2 foot runs. Material from the centre of the valley was processed using a 6 foot trommel which screened to ⅝ inch. It had 18 feet total width of runs, 9 feet on each side of the trommel, each run 5 feet long. Three 3 inch Honda pumps were used to pump 750 igpm of

water to the derocker. The trommel processed 140 cubic yards per hour using 1200 igpm, pumped by a 6 inch by 6 inch Gorman Rupp pump powered by a 110 horsepower Hercules engine.

Ground Description: The stratigraphic section of the left limit cut was 12 feet of overburden consisting of black muck with some clay and gravel, over 6 to 8 feet of gravel. The sluice section was 5 feet of gravel and 1 foot of bedrock. The average depth of the tailings in the centre of the valley was 8 feet. Twelve to 18 inches of bedrock was processed with this material.

Mining Cuts: Approximately 40,000 square feet of material with an average depth of 20 feet was mined on the left limit in each of 1991 and 1992. In 1992 40,000 square feet and 120,000 square feet were mined from the centre of the valley.

Water Supply and Treatment: A closed recirculation system was used on the left limit. For mining at the valley centre water was pumped directly from Dominion Creek. Settling was done in out of stream ponds with seepage discharge only.

Gold: Gold was approximately 10 mesh in size, with a fineness from 820 to 835.

PORTLAND CREEK **115 O 10**
J. P. Taylor **63°49'N 138°39'W**
Water Licence: PM89-185 **1992**

Operation/Location: This operation was located on Portland Creek, immediately upstream from its confluence with Dominion Creek. Three miners and one camp person worked 16 hours per day.

Equipment/Function: Stripping, removal of tailings, and road construction was performed using a Cat D7E bulldozer. The trommel was fed by a Cat 235 backhoe.

Wash Plant: A 6 foot trommel screened to ⅝ inch and fed runs with a total width of 18 feet, 9 feet on each side, with each run having a length of 5 feet. Twelve hundred igpm of water were used to process 100 cubic yards per hour. Water was pumped using a 6 inch Gorman Rupp pump powered by a 110 horsepower Hercules engine.

Ground Description: All ground was frozen except for that stripped in 1991. The ground had been extensively hand mined. Fifteen feet of black lay over 10 feet of gravel. The sluice section was 2 to 6 feet of gravel and about 1 foot of bedrock.

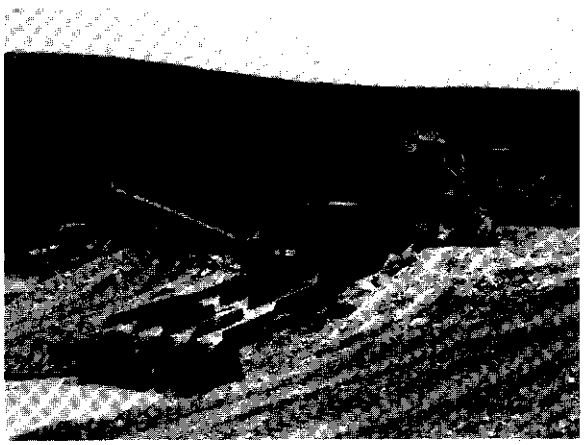
Mining Cuts: In 1992, 1½ cuts were mined at this site. One was 400 feet by 300 feet by 25 feet deep. The second, measuring 800 feet by 600 feet, could not be completed as the operators ran into frost.

Water Supply and Treatment: A closed recycle system was used for water supply. Initial water acquisition was from Portland Creek.

Gold: Gold was generally flat, and the size of wheat germ or raw sugar. Fineness ranged from 820 to 835.

GOLD RUN CREEK **115 O 10**
Teck Mining Group **63°42'N 138°36'W**
Water Licence: PM90-042 **1991, 1992**

Operation/Location: This operation was located on lower Gold Run Creek. In 1991, 15 miners and 6 other employees worked two 10 hour shifts. In 1992 the staff was increased by two miners.



A view of Teck Mining's operation on Gold Run Creek, a tributary of Dominion Creek.

Equipment/Function: Three Cat 637E scrapers were used to strip waste, haul tailings, and repair roads. A Cat 235 backhoe was used to dig bedrock drains, and two Cat D9N dozers were used to strip overburden, remove tailings, and repair roads. An 8 inch by 10 inch Cornell pump powered by a Cat 3306 engine was used for hydraulic stripping.

Wash Plant: An 8 inch by 10 inch Cornell pump powered by a Cat 3306 engine was used to supply 3500 igpm of water to the shaker plant. The processing rate was 130 cubic yards per hour.

Ground Description: The stratigraphic section was 35 feet, consisting of 1 foot of moss, 27 feet of black muck, and 7 feet of gravel, all of which was frozen. Seven feet of pay gravel and 2 to 3 feet of bedrock was sluiced.

Mining Cuts: In 1991 one large cut broken into 6 blocks was processed, totalling 285,000 cubic yards sluiced. In 1992 one large cut was broken into 12 blocks. The total cubic yardage sluiced was 235,000.

Water Supply and Treatment: Water was obtained using a 100% recycle system, with effluent going to 3 settling ponds, each 2500 by 200 feet.

Gold: In 1991 the mesh size of gold recovered was .46% +4, 1.15% +7, 2.53% +12, 6.38% +20, 10.85% +28, 19.31% +35, 45.31% +60, 11.45% +80, 2.51% +200, .03% +250, .031% +325, and .01% -325. In 1992 the mesh sizes were 2.6% +4, 8.1% +8, 25.3% +14, 43.2% +28, 18.3% +48, 2.3% +100 and .2% -100. The gold was coarser as work progressed upstream. Fineness was 830 in 1991 and 850 in 1992.

DOMINION CREEK **115 O 10e**
Airgold Limited **63°38'N 138°42'W**
Water Licence: PM90-055 **1991,1992**

Operation/Location: This operation mined immediately downstream on Dominion Creek from its confluence with Sulphur Creek. Fourteen miners worked 2 to 10 hour shifts each season. Camp duties were carried out in 1991 and 1992 by 1 and 2 people respectively.

Equipment/Function: Two Cat D9L bulldozers were used to strip and sluice, and a Komatsu 455 dozer was used to strip. Two Cat 966 loaders were used to sluice, and a Cat 235 backhoe was used to sluice and dig drains. In 1992 a Cat D9L bulldozer stripped and fed the plant, and the Komatsu 455 dozers were used for stripping. The Cat 966 loaders fed the sluice plant and hauled tailings, a Cat 631 scraper hauled pay, and a Cat 235 backhoe dug drains.

Wash Plant: Two modified triple run Pearson Rock Boxes, one with direct feed and one with a grizzly feeder, each processed 120 loose yards per hour. In 1991 4500 igpm was pumped using a Cornell 10 by 12 inch pump powered by a Cat 3306 engine. In 1992 3500 igpm was pumped by a Cornell 10 by 10 inch pump powered by a Cat 3306 engine.

Aerial view of Airgold Ltd.'s placer operation on Dominion Creek. Dredge No.6 is in the foreground.

Ground Description: In 1991, 20 feet of black organic material and 2 to 4 feet of sandy creek gravel were stripped, and 6 to 8 feet of material was sluiced. In 1992 18 to 40 feet of black muck and 10 to 14 feet of gravel were stripped, and 6 feet of material was sluiced. All ground was frozen in both years.

Mining Cuts: In 1991 2 cuts were mined, totalling about 522,000 cubic yards. One was 1000 feet by 400 feet, and the other was 700 feet by 100 feet. In 1992 3 cuts were mined for a total of 1,000,000 cubic yards. One cut was 2000 feet by 250 feet, one 750 feet by 300 feet, and one 200 feet by 200 feet.

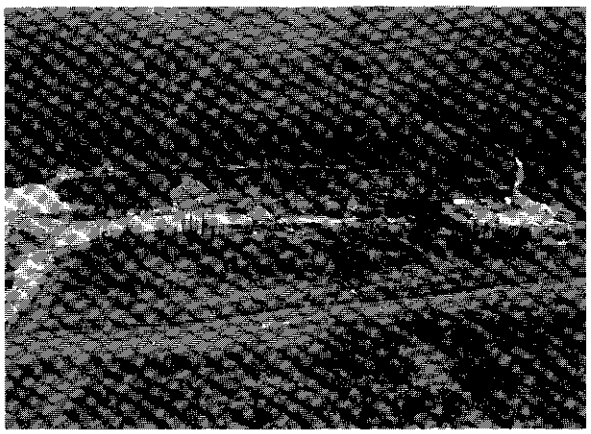
Water Supply and Treatment: Water was obtained from seepage water through old dredge tailings. Waste water was settled and recycled in large ponds.

Gold: Fineness was 835. The gold was flat and flaky in shape, with 5% +10, 65% -10 to +60, and 30% -60.

INDIAN RIVER **115 O 10e**
E. Setrakov & G. Schroeder 63°48'N 138°42'W
Water Licence: PM91-070 **1992**

Operation/Location: This operation was located immediately downstream from Scribner Gulch on a right limit bench of the Indian River. Two miners and two camp personnel worked one shift per day at this site.

Equipment/Function: A Komatsu 355 bulldozer, a Komatsu 85 dozer, a Clark bulldozer, a Terex front-end loader, and a 235 backhoe were used to mine this property.



E. Setrakov and G. Schroeder's operation on the right limit bench of the Indian River.

Wash Plant: Thirty five to 60 loose yards per hour were processed using a 4 foot diameter 24 foot long trommel, screening to ½ inch. The recovery area was 12 feet long by 8 feet wide with hydraulic riffles, angle iron riffles, and expanded metal.

Ground Description: The total depth of ground property was 20 feet. This consisted of 11 feet of overburden and 4 feet of waste gravel over 4 feet of pay gravel. The sluice section was the pay gravel and 1 foot of bedrock.

Mining Cuts: Two cuts were processed at this site. One was 500 feet by 200 feet and the other was 400 feet by 200 feet.

Water Supply and Treatment: Most of the water was obtained by recycling seepage water from the cut. Make-up water was obtained from the drainage ditch from the Airgold property upstream. Overflow was settled in an out of stream pond measuring 800 feet by 800 feet. Discharge from the settling pond travelled through moss and willows before entering the Indian River.

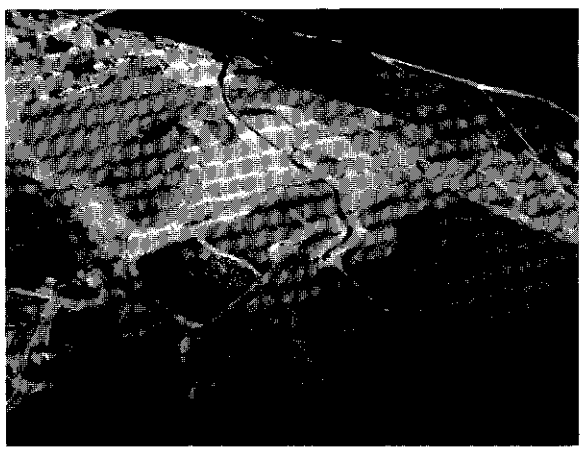
Gold: Gold was mostly rough, angular, and fine, with a fineness of 840 to 860.

Comments: This operation was set up in the fall of 1991. The camp and all equipment and materials were removed from the site when mining ceased in 1992.

DOMINION CREEK **115 O 10g**
Ross Mining Services Ltd. **63°41'N 138°35'W**
Water Licence: PM90-068 **1991, 1992**

Operation/Location: This property was located on Dominion and Gold Run Creeks. Eight miners, two camp personnel, and two maintenance employees worked at this operation.

Equipment/Function: In 1991 a Cat 245 excavator, a Komatsu PC400 excavator, three Cat 769B rock trucks, a Cat D10L bulldozer, a Cat D9H dozer, and a Cat 988 loader were used to mine this site. In 1992 a Cat D8L dozer was added and the 988 loader was dropped.



An overhead view of Ross Mining Services' operation on Dominion Creek.

Wash Plant: In 1991 a Ross 500 and a double deck screening plant were used to process pay dirt. The Ross 500 processed 225 loose yards per hour, and the screening plant processed from 180 to 200 loose yards per hour. In 1992 175 to 240 loose yards per hour were processed using a screen deck and oscillating sluice runs. Water was

pumped using a 24 by 20 pump powered by a Cat 398 engine, and a 10 by 12 pump powered by a GMC 671 engine.

Ground Description: In 1991 the average total depth was 60 feet. This consisted of 15 feet of muck, 35 feet to 40 feet of waste gravel (made up of both white channel and red gravels), and about 10 feet of pay gravel. In 1992, 10 to 20 feet of muck lay over 40 to 65 feet of gravel. The sluice section was 6 to 15 feet of gravel.

Mining Cuts: Information was not available.

Water Supply and Treatment: Water was supplied from Dominion Creek. A system consisting of four ponds measuring roughly 150 feet by 400 feet by 20 feet deep helped recycle 98% of the process water.

Gold: Gold was 50% -50 mesh with a fineness of 850 to 860.

Comments: Contouring of this site has been addressed on an ongoing basis.

SULPHUR CREEK **115 O 10**
Balner Enterprises Ltd. **63°45'N 138°49'W**
Water Licence: PM90-071 **1992**

Operation/Location: Three miners and one camp worker worked at this operation on the right limit of Sulphur Creek.

Equipment/Function: One Cat D8H bulldozer was used for stripping and some mining, and an Hitachi EX200 backhoe was used for mining and digging drainage ditches.

Wash Plant: The wash plant was a small mobile plant comprised of a trommel, with recovery performed using hydraulic riffles. Fifty five loose yards per hour were processed using 650 igpm supplied by a four inch pump.

Ground Description: The stratigraphic section was comprised of 15 feet of silt over 3 to 5 feet of grey creek gravel. Bedrock varied but was mostly orange coloured schist. All the gravel and 2 feet of bedrock was sluiced.

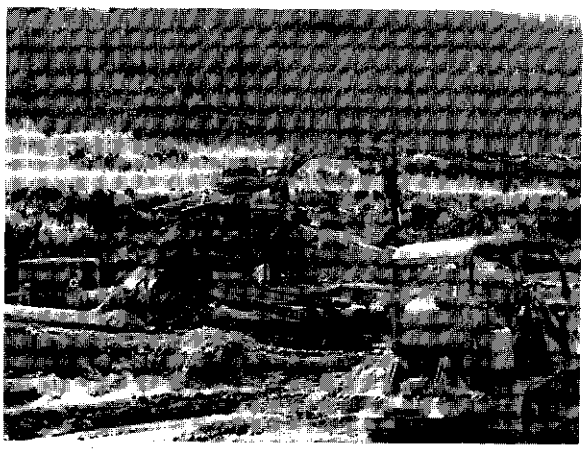
Mining Cuts: Three mining cuts were processed in 1992. The surface area of these cuts was 5336 square yards, 1452 square yards, and 6122 square yards. The average depth of the cuts was 6 feet, for a total of 25,820 cubic yards sluiced.

Water Supply and Treatment: Water was obtained from seepage from the right limit of Sulphur Creek. Water treatment was accomplished in previous cuts, and a series of ponds in the drain. Water returned to Sulphur Creek ½ mile downstream of the working area.

Gold: Gold consisted of flat, well travelled flakes, mainly 30 to 90 mesh in size. Fineness was 807.

SULPHUR CREEK **115 O 10**
L. Gibson & K. Kana **63°45'N 138°50'W**
Water Licence: PM90-016 **1991, 1992**

Operation/Location: This operation was located on Sulphur Creek upstream from its confluence with Brimstone Gulch. Four people worked 10 hours per day at this operation.



The wash plant at Lance Gibson and Kris Kana's placer mine on Sulphur Creek.

Equipment/Function: In 1991 a D9 bulldozer was used to strip overburden and push up pay, a 980C loader was used to carry pay to the plant and haul tailings away, a 160 Proclain fed the plant and dug drains, and a 270 Scraper stripped, stockpiled overburden, hauled pay and built roads. In 1992 two D9 bulldozers and two 980C loaders performed the same functions as in 1991, and a 6 by 6 Detroit diesel powered pump was used at the start of each working day to de-water the cut.

Wash Plant: Two hundred yards per hour were processed through a 5 by 14 double deck screen with two 4 by 20 foot sluice runs. Nomad carpet

and single expanded metal were used in the runs. In 1991 the top deck screened to 2 inches and the bottom to ½ inch, and in 1992 the top deck screened to 1 inch. Two thousand igpm of water was acquired using a 12 by 12 Gorman Rupp pump powered by an Allis Chalmers engine.

Ground Description: In 1991 the total depth of the ground was 38 feet. Six feet of frozen river bed silt and 2 feet of bedrock were sluiced. In 1992 the total depth of ground was 36 to 58 feet. Six to 8 feet of material was sluiced. All material was frozen and overlay a blocky bedrock.

Mining Cuts: In 1991, one cut 200 feet by 300 feet by 8 feet and a tailing pile of approximately 10,000 cubic yards were sluiced. In 1992 two cuts were made One was 50 feet by 750 feet by an average of 6 feet of pay, for approximately 3000 cubic yards. The other cut was irregularly shaped but averaged 100 feet by 350 feet for about 7,800 cubic yards.

Water Supply and Treatment: In 1991 water was acquired by a diversion of Sulphur Creek to a reservoir pond, and in 1992 water was obtained using partial recirculation of effluent in an out of stream reservoir pond. In both years effluent was treated in the Sulphur Creek Community Settling Facility.

Gold: Gold was in fine, powdery particles. Fineness was 810.

SULPHUR CREEK **115 O 10**
Henry Kruger **63°50'N 138°56'W**
Water Licence: PM90-077 **1991, 1992**

Operation/Location: This one person operation was located on the right limit of the Sulphur Creek Valley. Work continued upstream as in previous years.

Equipment/Function: In 1991 stripping was done using a D7E bulldozer, which also pushed up pay. A Hugh 120C loader was used for sluicing and moving tailings. A 955K loader was used for lifting and miscellaneous other jobs. A D9G dozer was acquired for 1992, and used for stripping and moving tailings. The D7E was then used for stripping on thawed ground, and loosening gravel for the 120C loader, which sluiced and moved tailings. A Koering 605 dragline was on site for ditching but was not needed.

Wash Plant: Fifty yards per hour were washed using 1600 igpm of water in a conventional triple run sluice box. The box had a 13 foot wide by 8 foot long dump box tapering down to the neck in the last 3 to 4 feet. The centre run was 2½ feet by 24 feet with ½ inch punch plate, 1½ inch space expanded metal, and cocoa matting. The side runs were 3 feet wide by 5 feet long, changing to 4 feet by 19 feet with expanded metal and cocoa matting. An 8 inch pump was powered by a 671 Detroit diesel engine.

Ground Description: The stratigraphic section averaged 35 feet of frozen material to bedrock. Fourteen to 20 feet of black muck (deeper at the right limit side of the cut) lay over 15 to 20 feet of gravel on top of fully decomposed (sandy) bedrock. The top 4 feet of gravel was rusty, and the bottom 4 feet was white channel. All of the gravel and 1 foot of the bedrock was sluiced.

Mining Cuts: In 1991 one cut with an area of 100 feet by 150 feet was mined, and in 1992 the cut area was 150 feet by 150 feet.

Water Supply and Treatment: Water was obtained from the mine pit. The bottom of the pit was approximately 3 to 4 feet below the water table, and recharge kept up with pumping approximately 3 to 4 hours each day. Effluent went to a pre-settling pond, then crossed Sulphur Creek by overhead pipeline to an out of stream settling pond built in old dredge tailings.

Gold: Gold was fine, flat and flaky. One percent was +10 mesh, and 99% was -10 mesh. Fineness was 820.

BRIMSTONE GULCH **115 O 10i**
Walter Groner **63°44'N 138°51'W**
Water Licence: PM89-144 **1991**

Operation/Location: This small operation was located at the mouth of Brimstone Gulch, a tributary of Sulphur Creek. One miner worked 8 hours per day for 14 days during the summer.

Equipment/Function: A D4 bulldozer and a 977 loader were used for all aspects of this mining operation.

Wash Plant: About 10 yards per hour were processed with a conventional single run sluice box. The dump box measured 4 feet wide by 12 feet long, and had a slick plate leading into a 2

foot by 30 foot sluice run. A monitor directed against the stockpile washed the pay into the sluice run. Cocoa matting with a double layer of expanded metal sat beneath punch plate of various sizes and types. Five hundred igpm were pumped using a 6 by 5 inch Peerless pump powered by a D4 Cat engine.

Ground Description: The total depth of ground was approximately 20 feet, comprised of 2 feet of frozen black muck over 10 feet of frozen silt and ice lenses, and up to 8 feet of gravel on top of bedrock. Bedrock varied from highly decomposed clays and sands to a fractured consolidated form. The gravel layer and two feet of bedrock were sluiced.

Mining Cuts: High water levels from rain in the first weekend of August washed out Mr. Groner's stockpiled pay, tailings, and some pipeline. Little sluicing occurred in 1991.

Water Supply and Treatment: Water for sluicing and monitoring of overburden was acquired from an instream pond on Brimstone Gulch. Effluent was settled and recycled in the pump pond, with additional settling in the Sulphur Creek Community Settling Pond.

Gold: Very little gold was recovered in 1991. The fineness was 830.

MONTANA CREEK **115 O 11**
Tom Morgan **63°37'N 138°59'W**
Water Licence: PM90-038 **1991, 1992**

Operation/Location: Four miners worked this property on the left limit of Montana Creek, immediately upstream from its confluence with Conglomerate Creek. In 1991 stripping only was performed. In 1992 Tom Morgan and Reid Haines mined until Terry Tosczak and a partner took over the sluicing operation at the end of July.

Equipment/Function: Tom Morgan and Reid Haines used a D7 Cat bulldozer for stripping and for testing, and a 955 loader was used for loading the box. Terry Tosczak used two D8 Cat bulldozers for stripping, pushing up pay, sluicing, and stockpiling tailings.

Wash Plant: A screening deck 3 feet by 10 feet with two 2 foot by 8 foot sluice runs was used by Mr. Morgan and Mr. Haines to process approximately 20 yards per hour. Water was pumped using a 6 inch submersible Flygt pump. Mr. Tosczak used a side push single run sluice box to process 40 to 50 loose yards of pay per hour. Water for this set up was pumped with a 10 inch by 8 inch pump.

Ground Description: At the left side of the cut 4 feet of mud lay over 10 feet of gravel. At the shallowest point 2 feet of mud lay over 6 feet of gravel. The ground was initially frozen but thawed due to stripping started in 1991. The sluice section was 4 feet of gravel and 1 foot of bedrock.

Mining Cuts: One cut 200 feet by 100 feet was processed.

Water Supply and Treatment: Make-up water was ditched from Conglomerate Creek to a three pond out of stream recirculation system. Any discharge from this system went by surface overflow through the moss.

Gold: Gold was mostly fine, flat pieces. Fineness was 790, with the remaining 210 mostly silver.

Comments: Sone old workings were found on the property.

A view of Chuck Haines standing next to a steam drill (circa 1935).

TEN MILE CREEK **115 O 12**
Oak Bay Manor **63°32'N 139°55'W**
Water Licence: PM90-109 **1992**

Operation/Location: This operation was located on Ten Mile Creek, a right limit tributary of the Sixty Mile River near the mouth. Cuts along the left limit and in the valley bottom were sluiced in

1992. This property was dormant for a couple of years before reopening in 1992. A crew of five miners and one cook ran the mine.

Equipment/Function: A D9G Cat bulldozer and a D8K Cat dozer were used to strip the cuts and stockpile pay. A 966C Cat loader fed the pay gravels into the sluice plant and stacked the tailings.

Wash Plant: A derocker classified the pay before it was sluiced in a single run 4 feet wide by 42 feet long. The first 8 feet of the run was lined with cocoa matting and 2 inch angle iron riffles. The remainder of the run was lined with cocoa matting and 1 inch angle iron riffles. The sluice run was set at 2⅝ inches per foot. A 10 inch by 12 inch pump powered by a 3208 Cat engine supplied the 3200 igpm required to sluice approximately 160 cubic yards per hour.

Ground Description: An average cut in the river bottom varied from 10 to 12 feet deep. A shallow black muck layer overlay layers of gravel between 6 and 8 feet deep. The entire stratigraphic profile was frozen. Bedrock was usually consolidated and wavy. All the gravel and up to 18 inches of bedrock was sluiced.

Mining Cuts: Several small cuts were sluiced in 1992 for a total of 18,000 cubic yards.

Water Supply and Treatment: Water was pumped from recycle ponds located near each of the cuts. At times 100% recycle was necessary due to low flows in Ten Mile Creek, or because the cut was on a bench. Effluent was settled in large out of stream settling ponds before discharging into Ten Mile Creek.

Gold: A large range of gold size was found on this property. The gold was usually rough, and had been flattened. Nuggets were not uncommon and quartz was usually attached. Most of the gold was +10 screen, with some -60 screen. The fineness was 830.

INDIAN RIVER **115 O 13**
Eric Mayes **63°47'N 139°27'W**
Water Licence: PM91-050 **1991, 1992**

Operation/Location: Eric and Jeannie Mayes ran a two person operation, located on the right limit of Indian River downstream from Bertha Creek.

Equipment/Function: Two Cat D9G dozers were used for stripping, digging gravel, and removing tailings. A Hough 100 front-end loader fed pay gravel into the wash plant.

Wash Plant: A 12 by 12 foot hopper fed two 4 foot diameter trommels 30 feet long, followed by a 5 foot by 25 foot sluice run with expanded metal riffles. A Berkley 8 inch by 6 inch pump powered by a GM371 diesel supplied around 1800 igpm, which was used to process about 100 loose yards per hour.

Ground Description: The Indian River valley at this point was wide and fairly flat, with about 6 feet of frozen overburden on the right side of the valley. The gravels were from 5 to 6 feet deep, and the bottom 4 feet and about 2 feet of decomposed bedrock were sluiced. Overburden and waste gravels were stockpiled at the base of the steep, right limit hillside.

Mining Cuts: Two cuts were completed in 1991 and 1992. One was about 150 feet wide by 300 feet long, and the other was approximately 150 feet wide by 450 feet long.

Water Supply and Treatment: Water was pumped directly from the Indian River using a screened intake, and was settled in out of stream settling ponds. Discharge to the Indian River was by seepage only.

Gold: Gold was smooth, flat and powdery with fineness around 800.

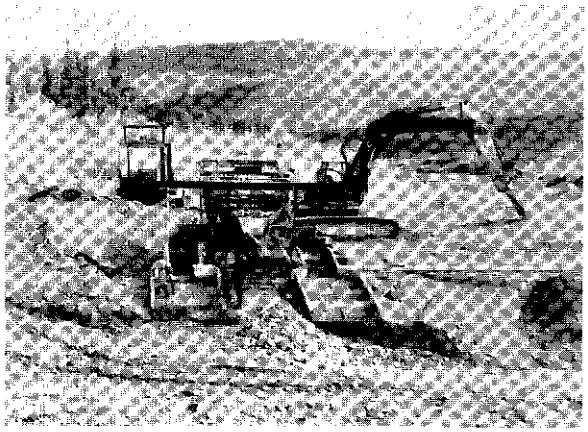
Comments: A stable, vegetated leave strip, approximately 10 meters wide, was maintained along both banks of the Indian River.

LITTLE BLANCHE CREEK **115 O 14**
Irvin Nafziger **63°51'N 139°08'W**
Water Licence: PM91-071 **1991, 1992**

Operation/Location: This two person operation was located below the forks of Little Blanche Creek, about four miles upstream from Quartz Creek. Irv Nafziger and one other miner worked a single shift.

Equipment/Function: Two Cat D8H dozers were used to strip and dig gravels and to remove tailings. One Cat 225 backhoe was used to feed the wash plant and to dig drains.

Wash Plant: A derocker fed two sluice runs three feet wide by 20 feet long, lined with angle iron riffles. Both sluice runs were increased to 6 feet wide by 15 feet long, with expanded metal riffles. About 75 loose yards per hour were sluiced using around 1000 igpm supplied by a 6 inch by 8 inch pump powered by a GM 371 diesel.



Clean-up time at Irvin Nafziger's operation on Little Blanche Creek.

Ground Description: The valley is fairly wide and flat in this area. Overburden was up to 15 feet deep on top of about 5 feet of gravel. All gravel plus about 2 feet of bedrock were sluiced.

Mining Cuts: Two large cuts were excavated in 1991 and 1992. One was about 300 feet by 250 feet, and the other was about 500 feet by 300 feet.

Water Supply and Treatment: Water was recycled from an out of stream pond in an old mining cut.

Gold: The gold was fine and assayed about 650.

HUNKER CREEK **115 O 14**
Hilltop Mining Partnership **63°59'N 139°02'W**
Water Licence: PM90-066 **1991**

Operation/Location: Charlie Friday and a crew of three miners and two camp employees ran this operation on Nugget Hill, a left limit bench of Hunker Creek immediately upstream from Hester Creek.

Equipment/Function: The equipment used included an HD31 Fiat Allis bulldozer, a TD25 International dozer, a 966C Cat loader, a UH20 Hitachi excavator, and two 631 Cat scrapers. Stripping was done with the HD31 dozer, the TD25 dozer, and the UH20 excavator. The pay gravels were transported from the cuts to the sluice plant by the scrapers, which were loaded by the excavator.The 966C loader fed the sluice plant.

Wash Plant: The sluice plant consisted of an elevated dump box feeding a 5½ foot by 44 foot long scrubber (trommel). The pay gravels were classified to ¾ inch minus, and sluiced in two suspended oscillating runs 4 feet wide by 20 feet long. The sluice runs were lined with Nomad matting and expanded metal. A Cornell 7 inch by 5 inch pump powered by a 3208 Cat engine supplied the 1500 igpm needed to sluice 135 cubic yards per hour.

Ground Description: An average cut was 44 feet. Up to 22 feet of overburden was stripped off before gravel was encountered. The top 6 feet of gravel was non-paying and was wasted along with the black muck. The lower 16 feet of gravel was sluiced. The bedrock varied from clay to shattered consolidated, and did not contain gold. The bedrock was scraped to ensure all of the pay gravel would be sluiced, but no bedrock was processed.

Mining Cuts: Several irregular size cuts were sluiced in 1991 with 130,000 cubic yards sluiced.

Water Supply and Treatment: Water was pumped from an instream pond on Hunker Creek to a reservoir on Nugget Hill, then delivered to the sluice plant with an electric submersible pump. The effluent was directed over the rim and settled in 3 to 4 settling ponds next to Hunker Creek. Outflow was by seepage only.

Gold: The gold was very fine. Quartz was common, and the fineness dropped from 840 to 830.

BONANZA CREEK **115 O 14**
King Solomon Mines **63°51'N 139°20'W**
Water Licence: PM90-024 **1991, 1992**

Operation/Location: A two person operation was sub-contracted by Lee Hakki on the right limit of Bonanza Creek, halfway between Queen Gulch and Mosquito Gulch, across the road from Claim 33.

Equipment/Function: One John Deere JD15 dozer and one Cat D7 dozer were used for pushing gravel and overburden. A Michigan 125 front-end loader with a 1¾ yard bucket fed the washplant and removed tailings. A 2¾ inch water monitor was used to strip frozen overburden.

Wash Plant: An 8 foot by 12 foot dump box and single sluice run 36 inches wide by 20 feet long with angle iron riffles, processed 50 loose yards per hour using about 800 igpm of water. A 6 by 6 inch high pressure Denver pump was powered by a Cat 1300 diesel.

Ground Description: Up to 60 feet of frozen overburden overlay a gravel layer 6 to 8 feet deep, on the right limit of the valley bottom. Slide bedrock was mixed with the gravel. All the gravel plus and slide bedrock was sluiced. Bedrock was mounded and stepped uphill going into the hillside. A bedrock reef was encountered running across the valley bottom.

Mining Cuts: An old cut about 150 feet long was extended another 20 feet into the hillside.

Water Supply and Treatment: Water was pumped from an instream reservoir, with a creek bypass channel around the mine site. Waste water was settled in three out of stream ponds, with seepage discharge only to Bonanza Creek.

Gold: Almost 95% fines, with coarse gold having yellow and greenish colours, and quartz attached to a few small nuggets. The largest nugget was ¼ ounce. Fineness averaged about 770.

HESTER CREEK **115 O 14**
Emile Levesque **63°58'N 139°03'W**
Water Licence: PM90-005 **1991, 1992**

Operation/Location: Hester Creek is a left limit tributary of Hunker Creek. Emile Levesque worked upstream from where mining ended in 1990. A single employee was hired in 1991, and Steve Chizen was taken on as a partner for part of 1992. Colette Levesque ran the main camp located at the mouth of Hester Creek.

Equipment/Function: In 1991 a D6C Cat bulldozer was used to strip the overburden, construct and maintain settling facilities, and move the sluice plant between cuts. A 950 Cat loader fed the sluice plant and a 966 loader carried off tailings. When time permitted the 966 loader was used to strip and prepare pay. A D9H Cat dozer was used to strip off overburden for a short period of time in 1992. The D6C bulldozer scraped the pay and pushed it up into a stockpile for the 966 loader, which feed the sluice plant and removed tailings. The 950 loader served as a standby machine.

This view downstream at Emile Levesques's mine on Hester Creek shows the depth of black muck found in the Dawson area.

Wash Plant: The sluice plant consisted of a 5 foot by 12 foot shaker plant leading into sluice runs. The screen used in the shaker in 1990 had worn out, and was replaced with ¾ inch punch plate in 1991. The classified pay was fed into a 2 foot by 18 foot sluice run. The single run did not work properly, so a second run, 2 foot wide by 18 foot long, was added mid-season. A nugget trap, various combinations of astroturf matting, Nomad matting, expanded metal, and 1½ inch riffles lined the sluice runs. The plant required approximately 1200 igpm to sluice 100 to 120 cubic yards per hour.

Mr. Levesque was unhappy with the sluice runs and decided to replace them for 1992. The same shaker was used with punch plate, yet by the end of the season the punch plate was worn out, so it will be replaced with screen. A single 4 foot by 18 foot sluice run was constructed, and lined with unbacked Nomad matting and 1 inch angle iron riffles. The 4 foot wide by 2 foot long sluice section under the shaker was lined with Nomad matting and expanded metal. About 1000 igpm was needed to sluice between 120 and 130 cubic yards per hour. An 8 inch by 6 inch high pressure pump powered by a 3208 Cat engine was used for sluicing and monitoring in 1991 and 1992.

Ground Description: The stratigraphic section has been covered with White Channel gravels from the hillsides, which increased the depth of the ground and caused the underlying ground to be thawed, which speeds up the stripping time. In 1991 an average profile saw 15 feet of White Channel over 30 feet of black muck, over 12 to 15 feet of gravel next to bedrock. The bedrock was black and decomposed for 3 feet before solid bedrock was encountered. All of the gravels were sluiced with 3 feet of the bedrock.

Because the cuts mined in 1992 were not covered with White Channel gravels, the overall depth decreased but the ground was frozen throughout. The top 50 feet was black muck with three distinct layers of vegetation. An average of 10 feet of gravel was next on vertical decomposed bedrock. All of the gravel was sluiced. Overburden was stripped with monitors in 1991 and 1992, and settled in large ponds on the left limit of Hunker Creek.

Mining Cuts: A large cut was continued in an upstream direction. An area 75 feet wide by 250 feet long was processed in 1991. A smaller cut measuring 125 feet by 150 feet was sluiced in 1992.

Water Supply and Treatment: In 1991 water for sluicing was pumped from large out of stream cuts at the mouth of Hester Creek. When not sluicing the clean water from Hester Creek was diverted into these reservoirs. While sluicing or monitoring the effluent bypassed the reservoirs, and was settled in large ponds located on the left limit of Hunker Creek. In 1992 a gravity ditch was built to convey make-up water from Hunker Creek into the reservoir. Hester Creek bypassed the reservoir all season, and effluent was treated in the settling facilities next to Hunker Creek.

Gold: The gold was almost entirely fine, flat and smooth. Coarse gold was usually rounded and rough. The fineness varied between 715 and 765 in 1991, but dropped to 670 in 1992, indicating a different source of the deposit.

HUNKER CREEK **115 O 14**
Tamarack Inc. **64°00'N 139°05'W**
Water Licence: PM89-103 **1991, 1992**

Operation/Location: This operation was located on Paradise Hill, a left limit bench 300 feet above Hunker Creek, between 70 Pup and 80 Pup. A crew of eleven (including property manager Frank Short, drillers and camp staff) ran the mine in 1991. Ten employees worked in 1992. A double shift was run both years.

Equipment/Function: Four 651 Cat scrapers were used to strip the overburden and carry the pay to the plant. Either a D9 Cat bulldozer or a D10 Cat dozer was used to push load the scrapers. A 5½ yard Hough loader fed the wash plant.

Wash Plant: The sluice plant consisted of a 70 yard hopper which dropped the pay gravels onto a variable speed conveyor. The conveyor fed a 7½ foot diameter by 40 foot long scrubber (trommel). The pay was washed by a manifold running the length of the scrubber. A 6 foot section at the lower end of the scrubber was lined with ¾ inch punch plate. The classified pay was collected and spread over six oscillating sluice runs 3 feet wide by 20 feet long. The sluice runs were lined with Nomad matting and expanded metal. A 100 foot conveyor disposed of the oversize tailings into 80 Pup in 1991. Another 120 feet of conveyor was added in 1992 to move the tailings to the rim of 80 Pup. A 10 inch by 8 inch Deming pump powered by an 850 horsepower D398 engine supplied the 1100 igpm required to sluice 280 cubic yards per hour.

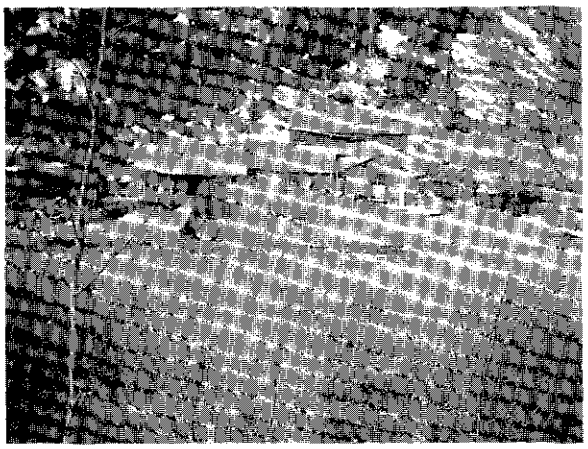
Ground Description: Paradise Hill is a White Channel deposit which averages 85 feet deep but can reach 110 feet. A 3 foot layer of muck overlies 20 feet of Klondike wash gravels. An average of 62 feet of White Channel gravel was found above bedrock. Intermittent seams of sand and silt as thick as 6 feet were found in the White Channel gravel. The pay zone in the White Channel varies widely. In some areas the lowest 15 feet of the gravel was sluiced, but in other areas up to 30 feet was sluiced. The gold did not extend into bedrock. The overburden was stripped and hauled to mined out cuts with the scrapers.

Mining Cuts: A 250 foot by 700 foot cut was stripped and processed in 1991. Another 400 foot by 600 foot cut was stripped in 1991, but was not sluiced until 1992. A 500 foot by 1400 foot by 50 foot deep cut was stripped in 1992 for processing in 1993.

Water Supply and Treatment: Water was pumped from a large instream reservoir up to Paradise Hill. Effluent was directed into 80 Pup where it flowed to a large out of stream settling pond the left limit of Hunker Creek. Final effluent treatment occurred

in old dredge tailings. The settling facilities were located upstream of the pump pond, so this would be considered a full recycle system.

Gold: The gold was primarily fine grained and flat, although some granular gold was recovered. Quartz was common, and some crystalline and dendritic gold has been found. The fineness was 830.



An exterior view of Marsh's Roadhouse on Blackhills Creek, which empties into the Stewart River (circa 1936).

QUARTZ CREEK **115 O 14a**
Ken Tatlow **63°49'N 139°04'W**
Water Licence: PM91-024 **1991, 1992**

Operation/Location: Ken Tatlow ran a four miner operation near the top end of Quartz Creek and on Mack Fork, an upstream, left limit tributary.

Equipment/Function: One Cat D9L dozer with U-blade and ripper was used for stripping and pushing pay gravel into the wash plant. Water monitors were used to strip frozen overburden.

Wash Plant: A dump box 14 feet wide by 20 feet long and washed by a water monitor fed a centre sluice run 12 inches wide by 20 feet long, and two side runs 4 feet wide and 20 feet long. Up to 180 loose yards per hour were processed using 6000 igpm of water, supplied by a 10 by 12 inch Morris pump, powered by a Cat 3408 diesel.

Ground Description: Frozen black muck overburden was very deep on upper Quartz Creek, and was up to 40 feet deep on Mack Fork. The bottom gravel layer was up to 5 feet deep. All gravel and 2 to 3 feet of bedrock were sluiced.

Mining Cuts: In 1991 about 50,000 loose yards were sluiced; in 1992 about 80,000 loose yards were sluiced.

Water Supply and Treatment: Water was recycled in old mining cuts on upper Quartz Creek. Waste water from the monitoring of overburden was settled in large settling ponds in old mining cuts in the Indian River valley.

Gold: Both fine and coarse gold was found. The fineness was 740 to 790.

LITTLE BLANCHE CREEK **115 O 14a**
Harvey Miller **63°51'N 139°08'W**
Water Licence: PM89-083 **1991, 1992**

Operation/Location: Harvey Miller continued his one person operation in 1991 and 1992 on Little Blanche Creek, approximately one mile upstream from its confluence with Quartz Creek.

Equipment/Function: One D8 Cat dozer with a U blade was used for stripping, digging gravels, feeding the wash plant, and removing tailings. One P&H dragline with a 1¼ yard bucket was used for digging drains and cleaning ponds.

Wash Plant: A 20 foot by 8 foot dump box lined with ¾ inch punch plate fed a single sluice run, 3 feet wide by 25 feet long, with 2 inch angle iron riffles on ½ cocoa matting and ½ Nomad matting. Around 25 to 30 loose yards per hour were sluiced using 1000 igpm, supplied by a 6 inch Gord pump powered by a GM 252 diesel.

Ground Description: Located near the middle of the wide, shallow valley below a right limit tributary, the depth of the ground varied from about 8 feet of gravel above the pup, to 20 feet of muck on top of gravel below the pup. The bottom 4 feet of gravel was sluiced.

Mining Cuts: One cut approximately 200 feet by 50 feet was stripped in 1991 and sluiced in 1992.

Water Supply and Treatment: An instream reservoir and an instream settling pond on Little Blanche Creek were followed by secondary settling on Quartz Creek.

Gold: About 40% was coarse, chunky gold (+20 mesh), and about 60% was fines (20 to 40 mesh). Fineness was around 700.

TORONTO CREEK **115 O 14a**
Dit Werner **63°46'N 139°06'W**
Water Licence: PM91-001 **1992**

Operation/Location: Toronto Creek is the most downstream, left limit tributary of Quartz Creek. This operation was located on the right limit of the Toronto Creek valley about one mile upstream from its confluence with Quartz Creek.

Equipment/Function: One Cat D9G dozer was used to strip overburden and to dig and push gravel. One Cat backhoe was used to feed the wash plant. A 3 inch portable drill was used for testing.

Wash Plant: A motorized grizzly classified material to 2 inch minus, and a shaking screen deck classified to ⅛ inch minus. The ⅛ inch minus material went to a centrifugal, spiral concentrator, and the 2 inch minus material passed over a single sluice run.

Ground Description: Overburden was 3 to 4 feet deep. Although only 4 feet of gravel was excavated from the active mining trench, drilling indicated that 10 to 12 feet of gravel lay on top of bedrock.

Mining Cuts: Approximately 1500 cubic yards were excavated from a trench about 20 feet wide by 200 feet long.

Water Supply and Treatment: Water was pumped from a small, instream reservoir in Toronto Creek and was settled in an out of stream pond beside the creek, with seepage discharge only.

Gold: Fineness was 890.

INDIAN RIVER **115 O 14b**
Estabrook Mining **63°45'N 139°08'W**
Water Licence: PM89-111 **1991, 1992**

Operation/Location: A large scale operation with 10 miners and 4 camp workers doing two shifts per day was located in the Indian River valley at the mouth of Quartz Creek, immediately below the old dredge. Two mining cuts with two wash plants were set up in the wide, flat valley, with a diversion channel around the entire operation.

Equipment/Function: One D9L and one D9H Cat dozer were used for stripping overburden and digging pay gravel. Three Cat front-end loaders, one 980C, one 966E and one 966F, were used to feed the wash plants and to remove tailings.

Wash Plant: One wash plant was a dump box with triple sluice runs processing about 150 cubic yards per hour with roughly 3000 igpm. The other wash plant was a rock box with oscillating, double sluice runs which handled nearly 100 cubic yards per hour, using about 2000 igpm.

Ground Description: The organic overburden layer was 3 to 4 feet deep. Gravels were fairly uniform, brown and grey, and 10 to 12 feet deep. Bedrock varied from soft and decomposed in some areas, to hard and flat in others. The bottom 3 feet of gravel and 1½ feet of bedrock were sluiced.

Mining Cuts: Four large cuts ranged in size from approximately 400 feet by 400 feet to about 400 feet by 1000 feet.

Water Supply and Treatment: Water supply was by groundwater seepage into mined out cuts, with waste water recycled 100%.

Gold: Gold was all fines and assayed at 790.

INDIAN RIVER **115 O 14b**
Kodiak Gold **63°45'N 139°11'W**
Water Licence: PM91-056 **1992**

Operation/Location: In 1992 Pat Hipskind managed a 6 person operation, working two 12 hour shifts. The property was located on the right limit of the Indian River valley about a mile downstream from Quartz Creek.

Equipment/Function: Two Cat D9L dozers with U blades and rippers were used to dig and push gravel and to remove tailings. One Koehring 1166 backhoe with a 7 yard bucket was used to feed the wash plant.

Wash Plant: An 18 foot by 45 foot long Ross box was lined with ½ inch punch plate and followed by double sluice runs 6 feet wide by 16 feet long, with expanded metal riffles over Nomad matting. Roughly 350 loose yards per hour were processed using 6000 igpm, supplied by a 14 inch Gorman Rupp pump powered by a Cat 3408 diesel.

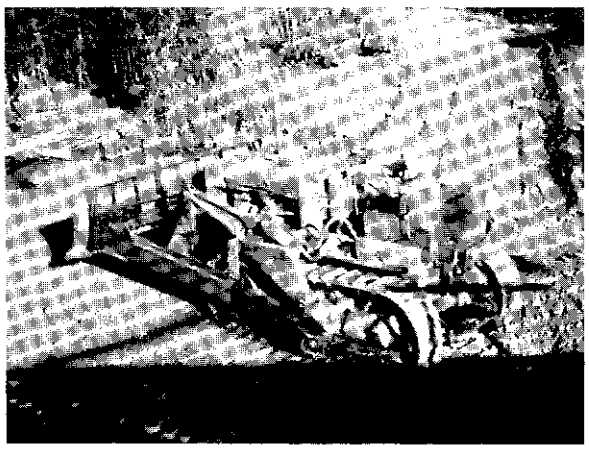
Ground Description: About 2 to 3 feet of frozen mud overlay gravel layers from 4 to 6 feet deep on top of uneven, loose bedrock. Pay gravels had very little clay and some white quartz. The upper

layers of reddish gravel (1 to 2 feet deep) contained no gold, and very little gold was found in the bedrock. Only the bottom 3 to 4 feet of gravels were sluiced.

Mining Cuts: Four large cuts were completed in 1992: 500 by 1000 feet with about 4 feet of pay gravel; 300 by 650 feet with about 3 feet of pay gravel; 500 by 600 feet with about 3 feet of pay; and 350 by 700 feet with about 4 feet of pay gravel.

Water Supply and Treatment: Water was settled and 70% recycled in large, out of stream ponds, built in old mined out areas. Around 30% make-up water was pumped directly from the Indian River.

Gold: Gold was very fine, with 70% minus 70 mesh. Fineness was 788.



The first bulldozer in the Dawson area. It was a diesel owned by Y.C.G.C. and operated by Sam Woods (circa 1937).

INDIAN RIVER **115 O 14b**
Stuart Schmidt **63°45'N 139°12'W**
Water Licence: PM91-105 **1991, 1992**

Operation/Location: Four miners worked two shifts a day at this operation on the right limit of the Indian River valley, about one mile downstream from Quartz Creek. The valley is wide and flat in this area.

Equipment/Function: One Cat D10N dozer was used to strip overburden, dig and push gravel, feed the wash plant, and remove tailings.

Wash Plant: A dump box 16 feet by 20 feet lined with punch plate and washed by a water monitor was followed by five parallel sluice runs with expanded metal riffles. Up to 250 loose yards per hour were processed using around 4000 igpm, supplied by a Morris 10 inch by 12 inch pump powered by a Cat 3408 diesel.

Ground Description: Approximately 700,000 cubic yards of frozen overburden, averaging 16 feet deep, was stripped off about 4 feet of gravel. The gravel plus nearly 3 feet of bedrock were sluiced.

Mining Cuts: Roughly 350,000 loose yards were sluiced in 1992, and around 300,000 cubic yards were processed in 1991.

Water Supply and Treatment: Water was recycled 100% in out of stream ponds built from old mining cuts, fed by groundwater seepage only.

Gold: The flattened fines assayed around 750.

INDIAN RIVER **115 O 14c**
Stuart Schmidt **63°47'N 139°23'W**
Water Licence: PM90-059 **1991, 1992**

Operation/Location: Four miners worked two shifts per day at this operation in the Indian River valley about one half mile downstream from Ophir Creek. The valley is narrow, averaging 250 to 300 feet wide, with steep sides, and meanders around wide turns in this area.

Equipment/Function: One Cat D10N dozer was used to strip overburden, dig and push gravel to the wash plant, and remove tailings.

Wash Plant: A 14 foot by 20 foot dump box lined with punch plate with ½ inch and ¾ inch holes was followed by five parallel sluice runs, three of which were 4 feet wide and two of which were 3 feet wide, with expanded metal riffles. Around 250 loose yards per hour were sluiced using 4000 igpm of water supplied by a Morris 10 inch by 12 inch pump, powered by a Cat 3408 diesel engine. Two pumps were used to de-water the mining pits: a 6 inch Gorman Rupp powered by a Lister diesel, and an 8 inch Gorman Rupp powered by a Cat 3708 diesel.

Ground Description: Frozen organic overburden was about 3 feet deep on top of 10 feet of gravel. The bottom 5 feet of gravel and up to 4 feet of bedrock were sluiced.

Mining Cuts: Five cuts of about 100,000 square feet each were excavated between the valley wall and the river channel. The river was then diverted through a new channel prepared in the mining cuts, and five more cuts were taken out.

Water Supply and Treatment: Water was pumped directly from the Indian River using screened pump intakes. Settling of waste water occurred in out of stream ponds in old mining cuts.

Gold: Fine gold (50% minus 16 mesh) with some coarse (5% plus 12 mesh) was recovered. The fineness was 800.

FRENCH GULCH **115 O 14e**
James Archibald **63°53'N 139°20'W**
Water Licence: PM89-133 **1991, 1992**

Operation/Location: James Archibald has been placer mining in Yukon for thirty years. He continued a one person operation in 1991 on the upper half of claim #2 on French Gulch, and on claim #3 in 1992. French Gulch is a left limit tributary of Eldorado Creek, about 1½ miles upstream from Grand Forks.

Equipment/Function: One Cat D8K dozer was used for stripping overburden and digging gravels. One Cat 980B front-end loader was used to feed the wash plant, to remove and stack tailings, and to clean out the settling ponds. A D6B and a D6C dozer were used for small jobs around the camp.

Wash Plant: A dump box 8 feet by 20 feet fed a single sluice run 3 feet wide by 32 feet long, lined with angle iron riffles. The riffles were 2½ inches by 2½ inches and set at 17 degrees. The slope of the sluicebox was 2¼ inches per foot. About 45 cubic yards per hour of loose material was sluiced, using 2500 igpm of water supplied by a 10 by 12 inch Byron-Jackson pump powered by a 671 Detroit diesel engine.

Ground Description: Overburden was removed from the two claims in the spring of 1991 by ground-sluicing under a Site Specific Authorization issued by the Department of Fisheries and Oceans for two weeks only. The overburden was mostly black muck with no seams of sand or gravel. The black muck contained a high percentage of roots and trees with seams of moss, and it also contained a large amount of prehistoric animal bones.

Water Supply and Treatment: An instream, pump reservoir on French Gulch contained about 2 hours of water. Out of stream settling ponds were increased from about 2 acres in 1991 to 3 acres in 1992. The settling ponds discharged into a drain entering Eldorado Creek just downstream from the mouth of French Gulch.

Gold: Very coarse gold with at least 55% larger than 12 mesh. The largest nugget found was 8½ ounces and shaped like a bear. The fineness of gold from claim 2 was 667, and from claim 3 it was 645, indicating that the lode deposit of this gulch was farther upstream.

Comments: One hundred fifty bones were recovered from the frozen overburden. Eighty percent were buffalo, 10% were Yukon wild ass, 5% mammoth and moose, and 5% were unknown.

INDIAN RIVER **115 O 14e**
6495 Yukon Ltd. **63°46'N 139°20'W**
Water Licence: PM89-188 **1991, 1992**

Operation/Location: Pete Risby and Ruth-Ann Gullen ran a four person operation in 1991 and 1992 in the Indian River valley bottom immediately upstream of Ophir Creek.

Equipment/Function: One D10N Cat dozer was used to strip overburden and dig pay gravel. One D9L Cat dozer was used to feed the wash plant and stack tailings.

Wash Plant: The plant consisted of a 24 foot by 15 foot dump box with a 4 foot by 16 foot centre run, and two 6 foot by 16 foot side runs. Up to 150 cubic yards per hour were sluiced using 5000 igpm, delivered by a 10 by 10 inch pump powered by a Cat 3408 diesel.

Ground Description: Gravels and overburden were thin in the valley centre and deepened toward the sides. Overburden reached 15 feet deep near the valley walls, but only 1 foot or less in the middle of the valley. Gravels were 2 to 4 feet deep and bedrock was decomposed. The bottom 2 feet of gravel and two feet of bedrock were processed.

Mining Cuts: Two large cuts approximately 400 feet by 200 feet each were excavated in 1991, and one cut measuring 500 feet by 800 feet was taken out in 1992.

Water Supply and Treatment: Water was pumped directly from the Indian River to the sluice box. and waste water was settled in large out of stream ponds.

Gold: Mostly flat and yellow fines, and some darker coloured, chunky and coarse gold was found. Fineness was 800.

VICTORIA GULCH **115 O 14e**
6077 Yukon Ltd. **63°54'N 139°13'W**
Water Licence: PM91-091 **1991, 1992**

Operation/Location: Vern Trainer and his sons ran a three miner operation, for one shift per day, at the end of each season in 1991 and 1992. This was the continuation of an operation in the valley bottom of Victoria Gulch, about seven claims up from its confluence with upper Bonanza Creek.

Equipment/Function: Two Cat D8H dozers with rippers were used for digging and pushing gravel. An American model 25 backhoe with a 1½ yard bucket fed the wash plant, and a Cat 980 front-end loader was used to remove and stack tailings.

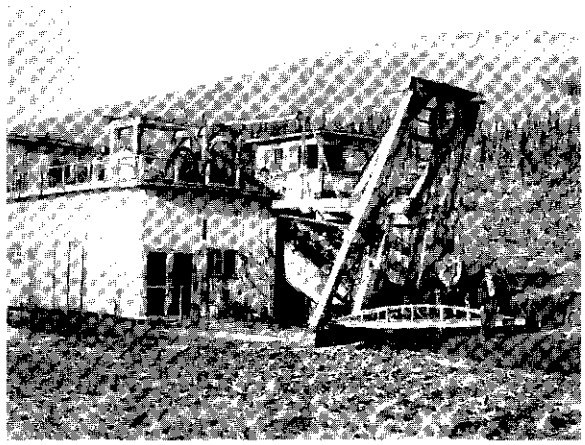
Wash Plant: A 10 foot by 15 foot derocker fed a single sluice run 4 feet wide by 30 feet long. The run was sloped at 2½ inches per foot, and had ⅜ inch punch plate over expanded metal for the first 15 feet, and 3 inch angle iron riffles for the last 15 feet. Up to 100 loose yards per hour were sluiced using 2000 igpm of water, supplied by a Morris 8 inch by 10 inch pump powered by a Perkins diesel.

Ground Description: Previously mined ground was reworked in 1991 and 1992 by ripping and digging deeper into the bedrock on the left limit of Victoria Gulch. Overburden and gravel had already been removed,so thawing of the ground had occurred.

Mining cuts: In 1991 an area about 500 feet long by 15 to 20 feet wide was cleaned, and in 1992 an area about 200 feet long by 20 feet wide was completed.

Water Supply and Treatment: A small instream pump pond on Bonanza Creek supplied make-up water to the main settling and recycle pond, located instream on Victoria Gulch.

Gold: Fairly coarse gold was recovered from the bedrock; there were no nuggets but flakes were thick. Fineness was 815.



View of a dredge on Glacier Creek. This dredge was originally owned by the Holbrook Dredging Company, then taken over by Sunshine Mining Co. in 1939-40 (circa 1940).

ELDORADO CREEK **115 O 14e**
Beron Placers Co. Ltd. **63°52'N 139°18'W**
Water Licence: PM91-075 **1991, 1992**

Operation/Location:This family operation was run by Ron and Bern Johnson. They were located in the Eldorado Creek valley between Oro Grande Gulch and Nugget Gulch for most of the 1991 season, before moving up to Oro Grande Gulch for late 1991 and all of 1992.

Equipment/Function: One D8K Cat dozer was used for stripping overburden, stockpiling pay gravels, and removing tailings. A 245 backhoe was used for stripping frozen overburden and for feeding the wash plant. One 950 front-end loader was used for tailings removal and other duties.

Wash Plant: The wash plant began with a shaking screen plant for primary classification. A 4 foot by 12 foot grizzly and a 12 foot square vibrating pan deck were followed by an 8 foot long stepped grizzly. Materials passed to a 5 foot by 12 foot Allis Chalmers ¼ inch screen deck. Oversize materials discharged onto a tailings conveyor 2 feet wide by 50 feet long. Undersize materials flowed into two parallel sluice runs 4 feet wide by 10 feet long, with expanded metal riffles over Nomad matting. Approximately 150 cubic yards per hour of loose materials were processed, using

about 1100 igpm of water, supplied by a 6 inch by 8 inch pump powered by a GM 471 diesel.

Ground Description: Overburden removed from the left side of the Eldorado Creek valley bottom increased in depth as the cut progressed into the base of the hillside, and was up to 30 feet deep with 6 inches of moss on top of frozen black muck with ice lenses, and broken slide rock. Pay gravels were only 4 feet deep and bedrock was very decomposed. There were many oldtimer shafts and drifts throughout. In Oro Grande Gulch, overburden was removed up to a depth of from 35 feet to 55 feet. The pay gravel layer was only 2 feet deep and bedrock was decomposed. All gravels plus 2 to 3 feet of bedrock were processed.

Mining Cuts: The area mined in Eldorado Creek was about 75 feet wide by 1700 feet long. The cut in Oro Grande Gulch was about 90 feet wide by 400 feet long.

Water Supply and Treatment: Water supply was from an instream reservoir in Eldorado Creek. Waste water was discharged to an out of stream settling pond, approximately 250 feet wide by 1100 feet long, on the right side of the Eldorado Creek valley. An instream settling pond built in Oro Grande Gulch also fed into this pond, which discharged by seepage only. An 8 inch by 10 inch pump powered by a GM 871 diesel was used for hydraulic monitoring of overburden from the left side of the valley bottom of Eldorado Creek.

Gold: Gold recovered from Eldorado Creek was very fine (30 mesh) and well rounded, and assayed at 750. Gold recovered from Oro Grande Gulch was more rough and angular, and assayed from 730 to 740.

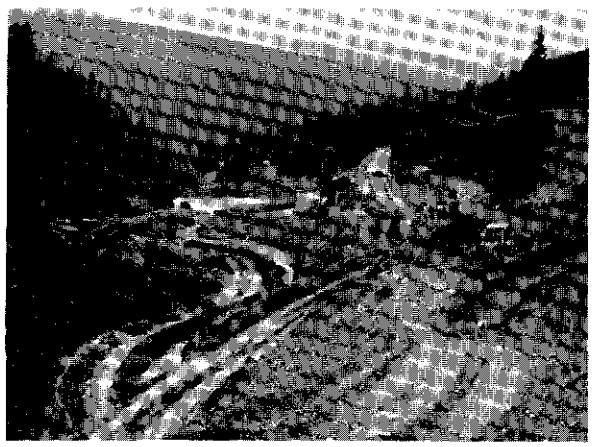
Comments: A Site Specific Authorization was issued to Beron Placers for ground-sluicing on Eldorado Creek without settling, for two weeks only in the spring of 1991.

GAY GULCH **115 O 14e**
Arden Danielson **63°55'N 139°15'W**
Water Licence: PM89-105 **1991, 1992**

Operation/Location: This two person family operation was run by Ron Danielson in Gay Gulch, about 3000 feet upstream from its confluence with Eldorado Creek.

Equipment/Function: One D9H Cat dozer was used for stripping overburden and digging pay gravel. One 980 Cat front-end loader was used to haul pay and feed the sluice, and a Hitachi UH07 backhoe was used for settling pond cleaning and dam maintenance.

Wash Plant: A hopper fed pay by conveyor to a trommel with 4 sluice runs and a tailings conveyor. The sluice runs were 3 feet wide by 8 feet long, with angle iron riffles for the first 3 feet, followed by expanded metal riffles. Approximately 50 cubic yards per hour were processed using about 800 igpm.



A view downstream at Arden Danielson's mining operation on Gay Gulch, a tributary of Eldorado Creek.

Ground Description: Frozen overburden was about 5 feet deep in the valley centre on upper Gay Gulch. Gravels were up to 10 feet deep near the middle of the valley, and tapered off on each side as bedrock sloped uphill. All gravels were sluiced along with 1 foot or less of bedrock.

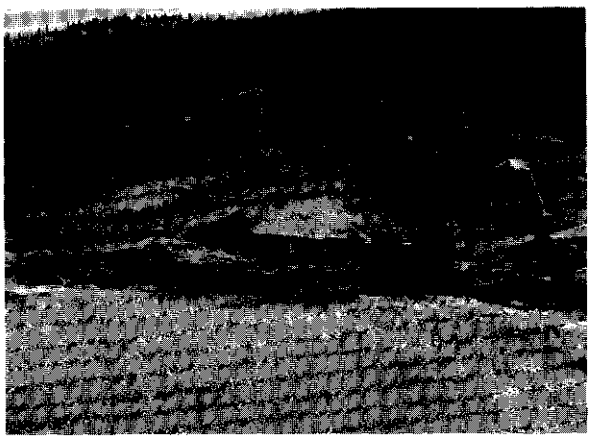
Mining Cuts: A series of mining cuts about 30 feet wide were excavated from the middle of the valley bottom, working upstream, for a total length of about 500 feet.

Water Supply and Treatment: A series of instream, cross-valley dams have been built in Gay Gulch using bedrock slabs and other heavy rip-rap material to armour the spillways. Water was recycled from the second pond below the sluice, and further settled in downstream ponds built in old mining cuts.

Gold: Mixed fines and granular coarse gold were found. Assay was 790.

ELDORADO CREEK **115 O 14e**
Sisters Resources **63°53'N 139°18'W**
Water Licence:PM90-093 **1992**

Operation/Location: The Eldorado Creek valley is narrow (200 to 250 feet wide) and steep sided. John Zogas ran a six person, two shift operation just upstream from French Gulch on ground taken over from Dave Johnson in 1992.



This photo shows a variety of equipment working at Sisters Resources' mining operation on Eldorado Creek.

Equipment/Function: A Cat D8L dozer was used to strip, dig, and push gravel. Two Cat 980C front-end loaders hauled pay gravel to the wash plant and removed tailings. One Cat 225 backhoe fed the derocker, and an Hitachi backhoe was used dig and clean drains.

Wash Plant: The super sluice derocker was 6 feet wide by 12 feet long with parallel bars, 1 inch to ¾ inches apart. A 6 foot by 20 foot sluice run was lined with 5 feet of large double expanded metal riffles, 10 feet of 1¼ inch angle iron riffles, then more expanded metal. Up to 100 loose yards per hour were processed using 1000 igpm of water, supplied by a 6 inch by 8 inch high pressure pump powered by a 6 cylinder Isuzu engine.

Ground Description: The Eldorado Creek valley has been previously mined in this area and overburden was removed. Gravel was stockpiled near the valley centre.

Mining Cuts: About 30,000 yards of gravel was sluiced in 1992.

Water Supply and Treatment: An instream reservoir on Eldorado Creek supplied water, and effluent was settled in an out of stream pond approximately 500 feet long by 75 feet wide.

BONANZA CREEK **115 O 14e**
Mask Mining **63°55'N 139°16'W**
Water Licence: PM89-125 **1991, 1992**

Operation/Location: Partners John Alton, Marty Knutson, and Tom Mickey ran a 5 person operation, using one 12 hour shift per day. The camp was located on upper Bonanza Creek at the mouth of O'Neil Gulch, a left limit tributary. Mining occurred on the lower claims in O'Neil Gulch, and in the Bonanza Creek valley just downstream.

Equipment/Function: One D9G and one D9H Cat dozer were used for stripping and digging gravels, along with a 631B scraper. Two Cat 980B front-end loaders fed the wash plant and removed tailings. A Cat 225 backhoe and an Insley H1000 backhoe were used to dig drains.

Wash Plant: The plant consisted of a 10 by 20 foot derocker, followed by two 4 foot wide oscillating sluice runs with expanded metal riffles over Nomad matting. An 8 inch by 10 inch Fairbanks Morse pump supplied the 2000 igpm used to process 70 to 100 loose yards per hour.

Aerial view of mining on the left limit of Mask Mining's operation on Bonanza Creek.

Ground Description: On the bottom claim in O'Neil Gulch the frozen overburden was up to 6 feet deep over 8 feet of gravel. In the Bonanza Creek valley on the left limit, frozen overburden increased to 14 feet as the cut progressed about 20 feet into the hillside. Gravel was about 6 feet deep. The bottom 4 feet of gravel and about 2 feet of decomposed bedrock from each location were sluiced.

Mining Cuts: One cut 50 feet wide by 600 feet long was taken from the centre of O'Neil Gulch just upstream from its confluence with Bonanza Creek. In 1992 an area 70 feet wide by 750 feet long was mined on the left limit of Bonanza Creek.

Water Supply and Treatment: Water was pumped from an instream reservoir on Bonanza Creek, upstream from O'Neil Gulch. The effluent was treated in two out of stream settling ponds located below the Gulch in the Bonanza Creek valley.

Gold: Gold from O'Neil Gulch was 95% fines (between 10 and 60 mesh), with only 1% larger than 10 mesh and 4% less than 60 mesh. Fineness was about 800. Gold from the Bonanza Creek valley was 90% 10 to 60 mesh, with only 1% larger than 10 mesh and 9% less than 60 mesh. Large amounts of black sand were recovered with the Bonanza Creek gold, and mercury contamination was present. The fineness was around 810.

BONANZA CREEK **115 O 14f**
Vern Trainer **63°54'N 139°07'W**
Water Licence: PM90-020 **1991, 1992**

Operation/Location: In 1991 Vern Trainer and his sons started a three miner operation on upper Bonanza Creek above Carmacks Fork. They continued in 1992, operating two shifts per day.

Equipment/Function: Two Cat D8H dozers with rippers were used for stripping overburden and digging gravel (one was equipped with a U-blade). An American model 25 backhoe with a 1½ yard bucket fed pay gravel into the wash plant, and a Cat 980 front-end loader removed tailings.

Wash Plant: A 10 foot by 15 foot derocker fed a single sluice run 4 feet wide by 30 feet long. The run was sloped at 2½ inches per foot, and lined with ⅝ inch punch plate over expanded metal for the first 15 feet, followed by 3 inch angle iron riffles for the last 15 feet. Up to 100 loose yards per hour were sluiced, using 2000 igpm of water supplied by a Morris 8 inch by 10 inch pump powered by a Perkins diesel.

Ground Description: Frozen black muck up to 30 feet deep lay over 1 to 2 feet of gravel. Overburden was stockpiled on the hillsides. All gravel and 2 to 3 feet of decomposed bedrock were processed.

Mining Cuts: One cut in 1991 was about 150 feet wide by 400 feet long. The cut in 1992 was roughly 200 feet wide by 1000 feet long.

Water Supply and Treatment: Water was supplied from an instream pump reservoir and treated in out of stream settling ponds.

Gold: The gold was flat, smooth, and bright in colour, with some quartz attached. Fineness was 760.

Comments: Oldtimer shafts were discovered every one hundred feet or so, and some old bones and ivory were found in the overburden.

BONANZA CREEK **115 O 14f**
Don Coomes **63°53'N 138°08'W**
Water Licence: PM86-141 **1991, 1992**

Operation/Location: This two person family operation was located at the confluence of Ready Bullion Gulch and upper Bonanza Creek.

Equipment/Function: An Allis Chalmers HD21 dozer (D8 equivalent) was used to strip overburden and dig pay gravel, and a Cat 966 front-end loader fed pay into the sluice. A Gradall G1000 backhoe with a 3½ yard bucket was used to dig pay gravel, strip overburden from steep side cuts, and clean out settling ponds. A D6 Cat dozer was used to push tailings.

Wash Plant: An 8 by 24 foot dump box lined with punch plate fed a single sluice run 4 feet wide by 33 feet long. The run was lined with 12 feet of punch plate followed by angle iron riffles. From 1000 to 2000 igpm of water was used to process 40 to 60 cubic yards per hour.

Ground Description: A frozen overburden layer up to 6 feet deep was removed from the middle of Ready Bullion Gulch immediately above the

confluence, and from the valley bottom and left limit of Bonanza Creek immediately below the confluence. Gravels varied from a few feet to 6 feet deep. Slide bedrock was mixed in with the side pay, and bedrock in the valley bottom was ridged and wavy. All gravels and 3 to 4 feet of bedrock were sluiced.

Mining Cuts: In both years a series of small cuts were taken from an area 300 feet long by 75 feet wide in Ready Bullion Gulch, and 150 feet long by 50 feet wide in Bonanza Creek.

Water Supply and Treatment: An instream reservoir on upper Bonanza Creek and Ready Bullion Gulch gravity fed water to the sluice box. Waste water was treated in two out of stream settling ponds before discharging into Bonanza Creek.

Gold: Gold was coarse with angular nuggets and assayed from 820 to 850.

BONANZA CREEK **115 O 14f**
Ted Paine **63°54'N 139°08'W**
Water Licence: PM89-158 **1991, 1992**

Operation/Location: Ted Paine ran a one person operation on upper Bonanza Creek immediately upstream from Carmack Fork and just above the Parks Canada Historical Reserve.

Equipment/Function: A John Deere 350 tracked loader was used for all mining functions, including digging pay gravel and feeding the wash plant.

Wash Plant: A small vibrating screen deck 2 feet by 4 feet in size, fed a single sluice run 21 inches wide by 12 feet long, lined with expanded metal riffles over Nomad mat. Five yards per hour were sluiced using about 200 igpm of water supplied by a 3 inch pump, powered by gasoline engine.

Ground Description: About 2 feet of organic overburden overlies an estimated 12 feet of gravel. Bedrock has not been reached.

Mining Cuts: An area approximately 50 feet by 50 feet was cleared and was being excavated in 1991 and 1992.

Water Supply and Treatment: An out of stream settling/recycle pond was constructed adjacent to Bonanza Creek, with seepage discharge only.

INDEPENDENCE CREEK **115 O 14g**
Anton Kosuta **63°59'N 139°01'W**
Water Licence: PM90-057 **1991, 1992**

Operation/Location: Tony Kosuta mined at the mouth of Independence Creek, a left limit tributary of Hunker Creek. A pay zone had been difficult to find, so most of 1991 and 1992 was spent testing the property. Mr.Kosuta mined by himself except when heavier equipment was rented to open up the ground.

A single run sluice does the job at Tony Kosuta's operation on Independence Creek.

Equipment/Function: A D9 Cat bulldozer was rented to strip overburden in 1992. A 930 Cat loader was used to excavate and carry the pay from the cut to the sluice box. A D5 Cat dozer cleared tailings. A 941 loader was on site but seldom used.

Wash Plant: An end dump box measuring 8 feet by 10 feet and tapering to 2 feet fed into a 2 foot by 36 foot long sluice run. The first section of the run was lined with matting, riffles, and stepped down sections of punch plate. Most of the remainder of the run was lined with matting and riffles only. The last 10 feet used matting, riffles, and punch plate. An 8 inch by 6 inch pump powered by a D4 Cat engine pumped the 1200 igpm needed to sluice 25 cubic yards per hour.

Ground Description: A cut on the left limit was opened up in 1992. A 1 foot layer of organics overlay 14 feet of frozen black muck and mud. The gravel layer beneath averaged four feet. Tailings from the oldtimers were found in many areas of the cut. All of the gravel was sluiced with 1 foot of bedrock.

Mining Cuts: One large test pit was worked in 1991 and 1992. Very little sluicing was done in 1991 due to the depth of the ground and the size of equipment available. A D9 dozer was rented in 1992, allowing for more sluicing. A single cut 40 feet by 35 feet was processed.

Water Supply and Treatment: Water was pumped from the test pit, where seepage inflow and melt provided enough water. The effluent was channelled into an area of old dredge tailings and discharged into Hunker Creek by seepage.

Gold: Although most of the gold was very fine and flat, a ½ ounce nugget was found. Quartz was common on the larger pieces. Fineness was 817.

LAST CHANCE CREEK **115 O 14g**
Lokey Mining Services Ltd. **63°58'N 139°08'W**
Water Licence: PM89-120 **1991, 1992**

Operation/Location: This operation was located on Tresure Hill, a left limit bench of Last Chance Creek, approximately 250 feet above the creek. In 1991 the property was hand mined for a few weeks during the summer. In 1992 it was mined by Frank and Karen Hawker.

Equipment/Function: An Hitachi UH07 backhoe with a 1 yard bucket was used to feed the trommel, and a 966C loader with a 4 yard bucket was used to move pay up to the processing area, and haul tailings. A Cat D10N bulldozer was hired for stripping.

Frank and Karen Hawker's operation on the left limit bench of Last Chance Creek, downstream of the confluence with 15 Pup.

Wash Plant: Sixty loose yards per hour were processed using 400 igpm of water in a 4 foot diameter trommel. There was ½ inch screen mesh in the trommel, and the 8 foot by 8 foot tables had hydraulic riffles. The pump was a 4 by 3 Monarch powered by an Isuzu engine.

Ground Description: The average depth of this ground was 40 feet, was made up of partially frozen mud and gravel overburden. Bedrock was broken black graphite schist with large fault zones. Four feet of white channel gravel and 1 to 3 feet of bedrock were sluiced.

Mining Cuts: Approximately 45,000 bank yards of overburden were removed. Ten thousand loose yards of old tailings and bedrock and 15,500 loose yards of white channel gravel were sluiced.

Water Supply and Treatment: This operation used a closed recycling system for water acquisition and settling. Any make up water necessary to replace water lost to evaporation and seepage was pumped up from Last Chance Creek.

Gold: Gold of various descriptions was found. Coarse, possibly dendritic gold was found in some areas, and fine flaky gold was found in others. Gold from low areas of bedrock had a black stain on it. Mercury was found on the gold from old tailings.

Comments: At completion of mining this season, overburden and tailings piles were contoured as the site was prepared for abandonment.

DISCOVERY PUP **115 O 14g**
(LAST CHANCE CREEK) **63°59'N 139°05'W**
Peter I. Erickson **1991, 1992**
Water Licence: PM89-110

Operation/Location: Two miners worked 8 to 10 hours per day at this site near the confluence of Discovery Pup and Last Chance Creek.

Equipment/Function: In 1991, Cat D6C and D7 bulldozers were used to mine the site. Cat D8 and D6 bulldozers and a 977 track loader with 2 yard bucket were used in 1992.

Wash Plant: In 1991 1200 igpm of water was pumped through an 8 inch by 6 inch GM pump with a 451 motor. Fifty loose yards per hour was processed in a 45 foot single run side feed sluice box with a 7 foot by 20 foot dump box. In 1992,

1000 igpm of water was pumped using an 8 inch by 8 inch Worthington pump powered by a 53 GM engine, processing 45 loose yards of pay material.

Ground Description: Thirty five feet of frozen black muck had to be removed to uncover 3 to 4 feet of broken bedrock, which was sluiced.

Pete Erickson standing behind large bison horns recovered from his mining operation on Discovery Pup, a tributary of Last Chance Creek.

Mining Cuts: In 1991 a cut approximately 4000 square feet was mined, and ground was prepared for 1992. In 1992 one cut 200 feet by 100 feet was mined and approximately 220 cubic yards was sluiced.

Water Supply and Treatment: Water was pumped from a small instream pond in Last Chance Creek. There was partial recirculation of water through this pond. Settling took place in an out of stream settling pond on the left limit of Last Chance Creek.

Gold: Gold recovered in 1991 was 75% fine and 25% coarse, with one small nugget found. In 1992 about 10% of the gold was coarse. Most of the gold was in small grains, none was flat, and the largest nugget was ¼ ounce. Fineness was 700.

Comments: Old bones and mammoth tusks were found near bedrock. Six old shafts, 3 of which were timbered, were uncovered.

LAST CHANCE CREEK **115 O 14g**
Murray Crockett **63°58'N 139°08'W**
Water Licence: PM91-057 **1991, 1992**

Operation/Location: Four miners worked 10 hours per day at this operation. Work was carried out instream in the valley bottom of Last Chance Creek.

Equipment/Function: A Cat D9 bulldozer and a 2 yard EL300 excavator were used at this site.

Wash Plant: In 1991, 110 yards per minute were processed through a 3 run sluice box with ½ inch punch plate in the dump box. Two inch riffles lined the centre run, and the 4 by 20 foot side runs were lined with expanded metal. Three thousand igpm were pumped using a Warpe 10 inch by 12 inch pump powered by a 671. In 1992, 200 yards per minute were processed through a 5 foot by 16 foot screen deck. Both 1½ inch riffles and expanded metal were used in a 4 foot by 8 foot sluice section, leading from the plant hopper to a 5 foot by 8 foot distribution section, above two 4 foot by 12 foot sluice runs. A Worthington 8 inch by 10 inch pump powered by a 671 supplied 2000 igpm of water.

Ground Description: In 1991 15 feet of muck and sandy material were stripped off to expose gravel. Six feet of gravel and up to 2 feet of "gumbo" bedrock was sluiced. In 1992, 25 to 28 feet of material was stripped and stacked on the valley sides. It was comprised of hydraulic tailings, 12 to 14 feet of muck, and 9 to 10 feet of gravel. Six to 7 feet of gravel located on very wavy bedrock was sluiced. Most of the gold was found in gravel pockets in the bedrock. Bedrock varied from "gumbo", to fine, to shale and larger blocks in each cut.

Mining Cuts: In 1991 one cut of 632 feet by 175 feet was put in, and approximately 32,770 cubic yards were sluiced. Three cuts were processed in 1992. The first was 30 feet by 50 feet and 133 feet by 100 feet, the second 300 feet by 200 feet, and the third 200 feet by 250 feet. Total cubic yardage sluiced was 27,732.

Water Supply and Treatment: In 1991 water was recirculated from a cut below the level of the diversion channel. In 1992 the first cut was mined using a recycle system that employed a settling area in the previous year's location. Water used in the last cut was recycled in the season's first cut, with final settling in a pond below.

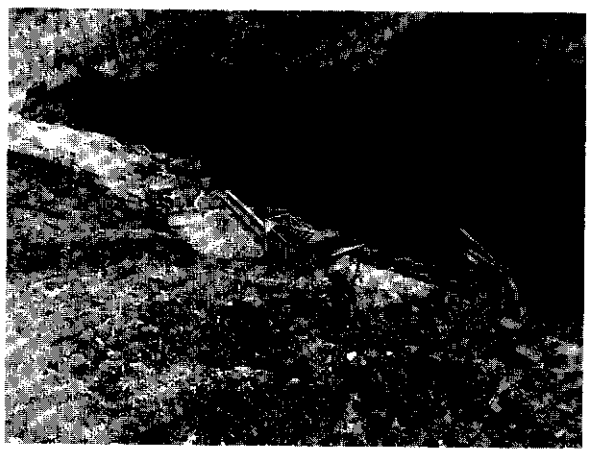
Gold: In 1991 the gold was 680 to 840 fine. None was coarse. In 1992 68% to 69% was bright, 90% was fine, and 10% was above 14 mesh. Fineness was 680 to 690.

Comments: Some old works were found. Clay at this site was very hard to settle.

15 PUP (LAST CHANCE CREEK) 115 O 14g
Newcan Placers Ltd. 63°58'N 139°13'W
Water Licence: PM89-109 1991, 1992

Operation/Location: Bruce Cowan and one miner worked 12 hours per day at this operation instream on 15 Pup, a tributary of Last Chance Creek.

Equipment/Function: In 1991 a Komatsu D155 was used to strip and push pay dirt and tailings. An Hitachi 1½ yard UH143 backhoe fed the trommel. A D10N Cat dozer was purchased the following winter, and put to work stripping overburden in 1992. The D155 continued to push pay dirt and tailings, and the backhoe fed the trommel.



Looking downstream of Newcan Placers' operation on 15 Pup. Old shafts and drifts can be seen in the right limit bank.

Wash Plant: A 5 foot diameter trommel with a 12 foot wide by 8 foot long sluice run underneath, and a 35 foot conveyor behind, was used to process 100 yards of pay per hour. The system used 800 igpm of water, which was supplied by a 4 inch by 5 inch Ajax pump powered by an Isuzu engine.

Ground Description: 35 feet of frozen black muck covered 5 feet of pay gravel with a muck lens through it.

Mining Cuts: Two cuts were processed in 1991. One was 225 feet by 60 feet, and the other was 200 feet by 90 feet. The area worked in 1992 was 50 feet wide by 700 feet long.

Water Supply and Treatment: Water for sluicing was pumped from Last Chance Creek. Settling was accomplished in an out of stream pond on the left limit of the creek, immediately downstream from the confluence of 15 Pup and Last Chance. During mining the total creek flow of 15 Pup was diverted to the settling pond.

Gold: Gold was angular with 20% +10 mesh. The fineness was 675.

Comments: In 1991 the licensee constructed a diversion channel to bypass the instream settling pond on Last Chance Creek, in order to avoid problems incumbent with the use of instream settling in high water events. Many bones, some ivory, and an abundance of old workings were found on this site.

LINDOW CREEK 115 O 14h
Bert Oud 63°57'N 139°13'W
Water Licence: PM91-035 1992

Operation/Location: This property was located on Lindow Creek, about three claims above its confluence with the right limit of Bear Creek. The valley is very narrow and steep. Bert Oud and son ran a two person operation for a few weeks in the spring of 1992.

Equipment/Function: A D8H Cat dozer was used for stripping overburden and digging gravel, and a 355 Komatsu backhoe/excavator fed the wash plant.

Wash Plant: A 4 foot by 12 foot screen deck fed ½ inch minus material to double sluice runs with hydraulic riffles. About 60 loose yards per hour were processed using roughly 1200 igpm of water. A Deutz 5 inch by 6 inch pump and a Monarch 6 inch by 8 inch pump were powered by diesel.

Ground Description: Approximately 20 feet of frozen overburden overlay about 5 feet of gravel

on soft, greenish bedrock. All gravel and 3 feet of bedrock were sluiced.

Mining Cuts: A small area of ground was opened to bedrock.

Water Supply and Treatment: A small instream recycle system was used in Lindow Creek.

LINDOW CREEK **115 O 14h**
Louie Peckham **63°58'N 139°12'W**
Water Licence: PM91-042 **1992**

Operation/Location: This operation was located on the upper reaches of Lindow Creek, a tributary of Bear Creek. Two miners worked this site during the summer of 1992.

Equipment/Function: Two bulldozers were used for all aspects of the mining operation.

Wash Plant: A small screening plant was used to process an estimated 40 yards per hour of pay material.

Ground Description: Information was not available.

Mining Cuts: Eight pits were excavated on this property, yielding 14,730 cubic yards of material.

Water Supply and Treatment: Water was supplied and treated using a two pond instream settling/recirculation system. The recycle rate was 100%.

Gold: Information was not available.

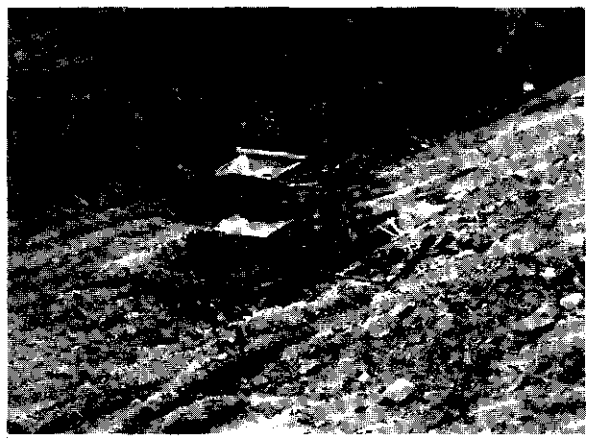
BEAR CREEK **115 O 14h**
Dominion Gold **63°59'N 139°11'W**
Water Licence: PM90-125 **1991**

Operation/Location: One miner worked 16 hours per day at this operation on the headwaters of Bear Creek.

Equipment/Function: A Cat D8H bulldozer was used for site preparation, stripping, and stockpiling of pay gravel. A Cat 225 excavator was used for stripping, and loading pay dirt into the sluice plant. A Caterpillar 955 track loader removed tailings.

Wash Plant: A 6 inch Gorman Rupp pump powered by a G.M. Diesel pumped 1500 igpm to wash 35 loose yards per hour. The sluice plant consisted of a Hyboy mounted 10 foot by 10 foot hopper attached to a 5 foot by 14 foot screen deck that classified to 1 inch minus. The recovery area consisted of a slick plate 6 feet by 14 feet for sand segregation which flowed into a section narrowing from 6 feet to 4 feet, lined with 1 inch angle iron riffles. From here the 1 inch minus flowed through a 20 foot by 4 foot wide sluice run lined with 1 inch riffles, 1 inch expanded metal, and Nomad matting.

Ground Description: The stratigraphic section of the site consisted of vegetative matter made up of willows and moss covering approximately 4 feet of frozen muck and organics, covering 5 feet of frozen sand, gravel and cobbles. Bedrock consisted of both decomposed rock, "gumbo" yellow clay, and fractured hard rock. Approximately 3 feet of gravel and 1 foot of bedrock were sluiced.



Dominion Gold's Hyboy mounted shaker plant on Upper Bear Creek.

Mining Cuts: Three cuts of approximately 200 feet by 50 feet by 12 feet were mined in 1991.

Water Supply and Treatment: Water was acquired using an instream recycling system. Effluent was settled in two pre-settling ponds before entering the recycle pond. Pond size was 150 feet by 50 feet by 10 feet.

Gold: Gold was angular, rough and chunky, and dull in colour. There were traces of quartz in the gold and some mercury was present. Fineness was 680.

Comments: The valley bottom was less than 15 feet wide from bank to bank. The mining operation opened up a 50 foot wide valley. Oldtimers had drifted underneath the original creek channel and high-graded the main pay. The drift continued up the creek, past the end of the area worked. There were drifts taking off at right angles from the main drift, heading toward each limit of the creek. Due to the oldtimers high-grading the main pay channels, it was no longer feasible to operate given the gold prices. The camp, all equipment, and supplies were removed. Tailings were levelled and spread over the tailings ponds to prevent sediments from re-entering the stream. A channel was constructed to replace the original creek channel.

BONANZA CREEK & GAUVIN GULCH — **115 O 14h**
Hunker Gold Co. Ltd. — **63°55'N 139°17'W**
Water Licence: PM91-081 — **1991**

Operation/Location: Frank Hawker and family sub-contracted property from Joseph Hua, on the right limit bench of Bonanza Creek and Gauvin Gulch, on Bunker Hill. These New Zealander miners worked 24 hours a day, from May to August.

Equipment/Function: One D9 Cat dozer was use to strip overburden and to push gravel. A Cat 966 front-end loader feed pay gravels into the wash plant, and removed tailings. An Hitachi UH07 backhoe with a 1 yard bucket was used to dig drains and ditches, build dams and berms, and excavate gravels in the mining cut.

Wash Plant: A four foot diameter trommel with ½ inch screen was followed by an 8 by 8 foot hydraulic riffle table. A 3 by 4 inch Monarch pump, powered by an Isuzu engine, delivered the 400 igpm used to sluice around 60 cubic yards of loose material per hour.

Ground Description: The right limit bench on Bunker Hill is about 200 vertical feet above the Bonanza Creek valley. Overburden was 6 to 8 feet of dirt over a layer of mixed gravels averaging 80 feet deep, on top of flat, grey bedrock. The bottom 15 feet of gravel and 1 foot of bedrock were sluiced.

Mining Cuts: Approximately 15,000 bank yards of overburden were removed in 1991. A stockpile of pay from previous workings and around 4500 loose yards of gravel from two cuts was sluiced.

Water Supply and Treatment: Water was recycled on the bench in a series of small ponds, with no discharge. Make-up water was pumped from Bonanza Creek.

Gold: Almost 90% was very fine (minus 60 mesh), bright yellow and flat, with some quartz attached. Fineness was 780.

BONANZA CREEK — **115 O 14h**
Larry Beyer — **65°55'N 139°16'W**
Water Licence: PM89-085 — **1991**

Operation/Location: A three person operation was located on Bonanza Creek, just below Homestake Gulch.

Equipment/Function: One 455 Komatsu dozer (D10 equivalent) and one D9 Cat dozer were used for stripping, and digging pay gravel. A 235 Hitachi backhoe fed the wash plant, while one 980 front-end loader and one 988 front-end loader removed and stacked tailings.

Wash Plant: The wash plant was a derocker which classified to 1 inch, followed by a single sluice run 36 inches wide by 16 feet long, with angle iron riffles. About 100 cubic yards of loose gravel were sluiced per hour. A 6 by 6 inch pump, powered by diesel, delivered about 1400 igpm of water.

Ground Description: A series of narrow, parallel cuts followed the contours of the base of the hillside. Material removed included White Channel tailings from old workings on the hillside, an overburden layer from a few feet up to 10 feet deep, and a layer of gravel about 4 feet deep. The bedrock was decomposed. All the gravel, the White Channel tailings, and 4 to 6 feet of bedrock were sluiced.

Mining Cuts: Roughly 15,000 cubic yards were excavated from an area 40 feet wide by 500 feet long on the right limit of the valley bottom.

Water Supply and Treatment: Water was pumped from an instream reservoir on Bonanza Creek below Homestake Gulch. Waste water was discharged to out of stream settling ponds in old dredge tailings, with seepage discharge only to Bonanza Creek.

Gold: Gold recovered from the White Channel tailings was mostly fine with quartz attached.

Gold found in the fresh gravel layer was fine, and gold contained in the bedrock was very coarse. The average assay was around 790.

HOMESTAKE GULCH **115 O 14h**
Alfred Roberts **63°56'N 139°16'W**
Water Licence: PM89-073 **1991, 1992**

Operation/Location: Alf and Marlene Roberts have run a two person family operation on Homestake Gulch, a right limit tributary of upper Bonanza Creek, since the early 1980's. The operation was located near the upper end of Homestake Gulch where the valley is steep and narrow.

Equipment/Function: An International 125C dozer was used to strip overburden, dig and push gravel, and remove tailings. A Bucyrus 20B dragline fed the wash plant and cleaned the settling/recycle ponds. In 1992 a Cat D8H dozer was used for stripping and digging.

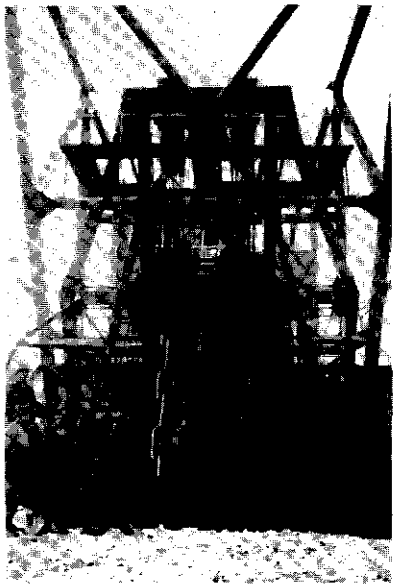
Wash Plant: A hopper fed a Parker wet screen shaker deck, 3 feet wide by 6 feet long, which classified material to ¾ inch minus. This material passed through a single sluice run, 18 inches wide by 20 feet long. The run consisted of 6 feet of expanded metal riffles over Nomad mat, 4 feet of slick plate, and 10 feet of 1 and 2 inch angle iron riffles. Ten to 12 loose yards per hour were processed, using about 750 igpm of water supplied by a 4 inch by 4 inch Monarch pump, powered by a 16 horsepower Briggs & Stratton gasoline engine.

Ground Description: Frozen black muck 16 to 20 feet deep overlay 2 to 4 feet of pay gravel. All gravel and up to 2 feet of bedrock were sluiced. Waste overburden was stripped mechanically and hydraulically; some mammoth tusks and bones were recovered.

Mining Cuts: In 1991 the cut was about 15 feet wide by 200 feet long, and in 1992 the same cut was enlarged to about 30 feet wide by 200 feet long. Around 2500 cubic yards were processed each season.

Water Supply and Treatment: Two instream settling/recycle ponds were located below the mining cut, and a third settling pond was located at the bottom claim about half way down the gulch.

Gold: Angular and chunky with fineness of 663.



A front view of Dredge No. 3, owned by Y.C.G.C. (circa 1937).

BONANZA CREEK **115 O 14i**
Vincent Amendola **63°59'N 139°21'W**
Water Licence: PM89-106 **1991, 1992**

Operation/Location: This two person operation was located on a left limit bench of Bonanza Creek between 49 Gulch and Sourdough Gulch, roughly 350 vertical feet above creek level.

Equipment/Function: A D8 Cat dozer was used for stripping, digging pay gravel, and removing tailings. A John Deere loader/backhoe fed the sluice.

Wash Plant: The wash plant was a 12 foot by 20 foot dump box and single sluice run. The run was 3 feet wide by 20 feet long, with 5 feet of punch plate over expanded metal at the top end, followed by Hungarian riffles. About 60 cubic yards per hour were processed using 1500 igpm of water.

Ground Description: Pay gravels on the bench were about 9 feet deep, and were covered with about 1 foot of overburden. White Channel gravel in 2 to 3 foot layers were mixed with darker gravels. Bedrock was greenish and decomposed. All gravels and less than 1 foot of bedrock were sluiced.

Mining cuts: An old stockpile from previous workings and two cuts measuring 100 feet by 400 feet were mined, for a total of 35,000 cubic yards in 1992.

Water Supply and Treatment: Water was pumped onto the bench from an instream reservoir in Bonanza Creek, using a 6 inch by 8 inch pump and 700 feet of 10 inch steel pipe. Waste water was settled in an out of stream pond, with discharge to the creek by seepage only.

Gold: The gold was all well-rounded fines, and assayed about 850.

BONANZA CREEK **115 O 14i**
Gene Fowler **63°59'N 139°21'W**
Water Licence: PM90-089 **1992**

Operation/Location: This property was located on the left limit of Bonanza Creek, at 49 Gulch. A two person operation was subcontracted by Max Lanzinger in 1992.

Equipment/Function: A D9 Cat dozer was used to push pay gravel and stack tailings, and a John Deere 644 loader fed pay into the wash plant.

Wash Plant: An 8 by 10 foot hopper fed gravels to a 6 by 8 feet shaking screen deck (⅜ and ¾ inch), followed by a single sluice run 36 inches wide by 10 feet long with 1 inch angle iron riffles.

Ground Description: On the hillside frozen overburden varied from 1 to 5 feet deep. The bedrock was decomposed but frozen. Local gravels up to 2 feet deep, previously mined tailings, and up to 4 feet of bedrock was stripped from the hillside and pushed downhill.

Mining Cuts: An area on the hillside about 60 feet high by 400 feet long was mined in 1992.

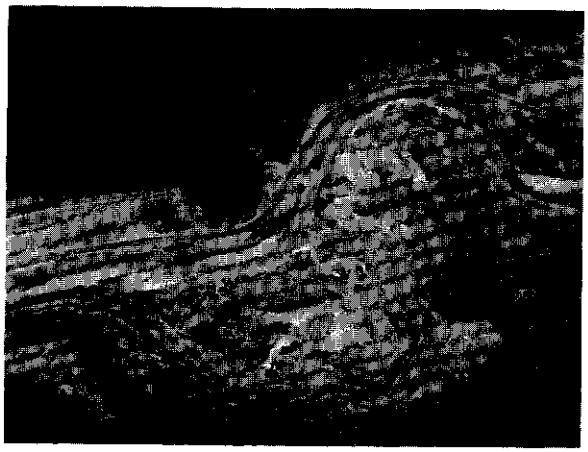
Water Supply and Treatment: Water was pumped from an out of stream reservoir in an old mining cut, and was settled in another out of stream pond with seepage discharge only to Bonanza Creek.

Gold: The gold was 95% fines, with 5% rough and angular coarse gold, and a few flattened flakes. Fineness was 805.

BONANZA CREEK **115 O 14i**
Kohlman Explorations Ltd. **63° 59'N 139°22'W**
Water Licence: PM89-160 **1991, 1992**

Operation/Location: This property was located on a left limit bench of Bonanza Creek, between 49 Gulch and Sourdough Gulch. Leo Twordik subcontracted a two person operation in 1991 and 1992.

Equipment/Function: A Cat D9 dozer was used to strip overburden and dig gravel, and a Cat 225 backhoe/excavator was used to dig the drain and feed pay gravel into the wash plant. A Cat 950 front-end loader was used to remove tailings and for general duties.



Kohlman Exploration Ltd.'s right bench operation on Bonanza Creek.

Wash Plant: A 10 foot by 20 foot derocker and single sluice run 4 feet wide by 24 feet long, was used to process 40 to 50 loose yards per hour. A 6 by 8 inch Deutz pump, powered by diesel, delivered about 2500 igpm of water.

Ground Description: The ground in the valley bottom was up to 40 feet deep, with 20 to 30 feet of frozen black muck on top of gravels 10 to 20 feet deep, over decomposed bedrock. In 1992 a cut was mined on a low level bench, 60 to 80 vertical feet above creek level. Overburden on this cut was only 2 feet deep near the edge of the bench, but increased to about 20 feet as the cut progressed into the hillside. The gravel layer averaged 8 to 10 feet deep, and bedrock was fractured. All gravels were processed with up to 4 feet of bedrock.

Mining Cuts: Around 30,000 cubic yards were processed in 1991 from the old cut in the valley bottom. The new cut in 1992 was about 150 feet long by 30 feet wide.

Water Supply and Treatment: Water was pumped directly from Bonanza Creek, and was settled in

out of stream ponds in old mining cuts. Discharge from the settling ponds was by seepage only to the drain, which discharged to Bonanza Creek about 3000 feet downstream.

Gold: Mainly fine, with some quartz attached to the coarse gold. Fineness varied from 780 to 800.

BONANZA CREEK **115 O 14i**
Ralph Troberg **63°58'N 139°21'W**
Water Licence:PM89-141 **1991, 1992**

Operation/Location: Ralph Troberg managed a two miner operation on the left limit bench of Bonanza Creek, immediately downstream of Boulder Creek. A tourist gold panning and placer mining exhibit was maintained in the valley bottom.

Equipment/Function: A Cat D8H dozer was used to strip and dig gravel, to push gravel toward the wash plant, and to remove tailings. A John Deere 844 front-end loader with a 6 yard bucket fed the wash plant.

Wash Plant: The plant consisted of a 12 foot by 18 foot dump box, and a single sluice run 32 inches wide by 22 feet long, with 10 feet of expanded metal riffles over Nomad mat followed by 2 inch angle iron riffles over cocoa mat. Sixty to 100 loose yards per hour were processed, using around 1500 igpm of water supplied by a 6 inch by 8 inch Monarch pump, powered by a Ford diesel.

Ground Description: The left limit bench below Boulder Creek was about 160 vertical feet above Bonanza Creek, and the cut has progressed about 300 feet back from the rim. The overburden near the rim was about 10 feet deep, but thinned down farther back. The gravel layer was about 40 feet deep near the rim, but increased to about 90 feet of White Channel near the back of the cut. The bottom 15 feet of gravel and about 2 feet of bedrock were processed.

Mining Cuts: One cut about 50 feet by 300 feet was made in 1991. Some time was spent cleaning bedrock from oldtimer operations. Little sluicing was done in 1992.

Water Supply and Treatment: An instream pump reservoir on Boulder Gulch was used for water supply. Out of stream settling ponds in the Bonanza Creek valley discharged by seepage only.

Gold: Gold was mostly flattened fines, with a few small nuggets. Fineness was 796.

BONANZA CREEK **115 O 14i**
Ivan Daunt **63°55'N 139°20'W**
Water Licence: PM90-099 **1991, 1992**

Operation/Location: This was a two person family operation run by Ivan and Kieran Daunt. Claims were being mined in Skookum Gulch, from the mouth upstream.

Equipment/Function: An Allis Chalmers HD16 dozer (D7 equivalent) was used to strip overburden and dig pay gravel. A Cat 966B front-end loader fed the sluice, and a JCB track loader removed tailings.

Wash Plant: A 5 by 12 foot screen deck and single sluice run 3 feet wide by 20 feet long with angle iron riffles, was used to process 15 cubic yards per hour. About 1200 igpm was supplied by a 6 by 6 inch pump powered by a Perkins diesel.

Ground Description: Frozen overburden was about 25 feet deep in the middle of the gulch, and about 15 feet deep on the sides, and got deeper as the operation moved upstream. Broken slide bedrock and gravel was mixed with ice lenses and black muck. Pay gravels were 3 to 6 feet deep, and averaged 20 feet wide in the bottom of the narrow, steep-sided gulch. All gravels and about 3 feet of green, decomposed schist bedrock were sluiced.

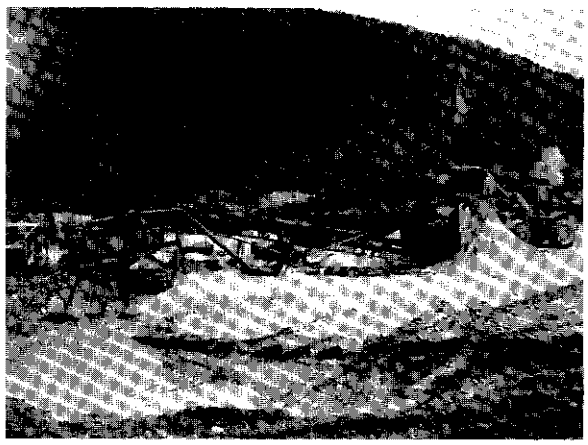
Mining Cuts: Nearly 6000 cubic yards of materials were excavated from an area roughly 350 feet long by 25 feet wide.

Water Supply and Treatment: Water was pumped from an instream reservoir on Bonanza Creek. Waste water was settled in out of stream ponds in Skookum Gulch, with seepage discharge only.

Gold: The gold was mostly coarse (60% over 6 mesh), with very few fines (nothing below 40 mesh). Angular nuggets had quartz attached. The fineness was 650 to 750.

BONANZA CREEK **115 O 14i**
Van Resources **63°56'N 139°20'W**
Water Licence: PM91-111 **1992**

Operation/Location: Sarah Braun and Dave Laurenson ran a two person operation, one shift per day, on the left limit of Bonanza Creek immediately upstream from its confluence with Adams Creek. They started the 1992 season on the low level bench on Chechako Hill, then moved upstream on Bonanza Creek to the base of the hillside around the first corner.



A large conveyor feeding a shaker plant at Dave Laurenson and Sarah Braun's operation on Bonanza Creek at Adams Gulch.

Equipment/Function: A Cat D8 dozer was used to strip, dig and push gravel, and remove tailings. A Terex 72/51 front-end loader fed the wash plant.

Wash Plant: Pay gravels were dumped through a grizzly into a hopper, then on to a conveyor belt which fed the screening plant. This was a 4 foot by 14 foot double screen deck, followed by triple sluice runs 30 inches wide by 20 feet long, with expanded metal riffles and 2 inch angle iron riffles. Up to 50 loose yards per hour were processed, using 500 igpm of water supplied by a 4 inch by 5 inch high pressure pump powered by diesel.

Ground Description: A White Channel deposit on the bench had been exposed by previous mining. Ten to 12 feet of overburden and about 12 feet of gravel remained at the back of the cut. The bottom 5 feet of gravel and about 2 feet of bedrock were sluiced, along with tailings from a previous cat mining operation at the base of the hillside.

Mining Cuts: Four hundred loose yards were sluiced on the bench, and about 4000 yards of tailings were processed.

Water Supply and Treatment: Water was pumped directly to the bench from a small instream reservoir on Adams Gulch. Waste water was settled in an out of stream pond built in mined tailings.

Gold: A few small nuggets and fines down to 200 mesh were recovered. Fineness was 770.

BONANZA CREEK **115 O 14i**
Van Resources **63°57'N 139°21'W**
Water Licence: PM91-112 **1992**

Operation/Location: This property was located on a left limit bench of Bonanza Creek, on Monte Cristo Hill at Fox Gulch. Steve Van Bibber ran a four person operation using 2 shifts per day, in June and July of 1992.

Equipment/Function: A Cat D8L dozer was used strip overburden and to dig and push gravel. A Cat 980 front-end loader was used to feed the wash plant and remove tailings.

Wash Plant: The plant consisted of a 5½ foot diameter trommel with 4 oscillating sluice runs 4 feet wide by 8 feet long, lined with expanded metal riffles over Nomad mat. Approximately 100 loose yards per hour were processed, using 1200 igpm of water supplied by a Cornell 8 inch by 8 inch pump powered by a Cummings 250 diesel.

Ground Description: The White Channel deposit on the left limit bench was up to 80 feet deep. Up to 60 feet of overburden was encountered in Fox Gulch, compared to 8 to 10 feet in Monte Cristo Gulch. The bottom 6 feet of gravel and about 2 feet of bedrock were sluiced.

Mining Cuts: One cut about 100 feet wide by 200 feet long was made near the mouth of Fox Gulch, and one cut about 200 feet by 200 feet was taken from Monte Cristo Gulch.

Water Supply and Treatment: Water was pumped from an instream reservoir in Bonanza Creek. Settling occurred in out of stream ponds in old mining cuts on the bench, with seepage discharge only.

Gold: Fine gold was cubic, and coarse gold was rough and angular. Fineness was around 750.

BONANZA CREEK **115 O 14i**
Van Resources **63°58'N 139°21'W**
Water Licence: PM91-113 **1992**

Operation/Location: This property was located on the left limit bench of Bonanza Creek at King Solomon Hill, just upstream from Boulder Gulch. Dave Brickner sub-contracted a two person operation for a few weeks during July and August of 1992.

Equipment/Function: A Terex 8250 dozer was used to dig and push gravel, and a Huff 120 front-end loader was used to feed the wash plant and remove tailings.

Wash Plant: A trommel, 7 feet in diameter by 40 feet long, classified material to 1½ inch minus and ½ inch minus. The trommel was followed by a 16 foot wide oscillating table with expanded metal riffles, and a 4 foot by 20 foot sluice run with angle iron riffles. Up to 250 loose yards per hour were processed, using 1200 igpm of water supplied by a Pako 10 inch by 12 inch pump powered by a Cummings diesel.

Ground Description: Previously mined ground on the bench had about 75 feet of gravel at the edge farthest back from the rim. About 15 feet of reddish gravel lay over approximately 60 feet of White Channel gravel. All gravels were sluiced with 3 to 4 feet of bedrock.

Mining Cuts: About 2500 cubic yards were excavated.

Water Supply and Treatment: Make-up water was obtained from Monte Cristo Gulch, and waste water was recycled in settling ponds built in old mining cuts on the bench. Discharge to Boulder Creek was by seepage only.

Gold: Only fine gold was recovered, with fineness around 670.

LOMBARD PUP **115 O 15**
Sean Hamilton **63°51'N 138°52'W**
Water Licence: PM89-055 **1991**

Operation/Location: This operation was located on Lombard Pup immediately upstream from its confluence with Dominion Creek. The ground was worked by one miner working 12 hours per day.

Equipment/Function: Equipment used on this ground was a D7 Cat bulldozer with a straight blade, and a D8 Cat bulldozer with a U-blade.

Wash Plant: Approximately 60 yards per hour were processed through a triple run sluice box. The dump box was 8 feet by 16 feet, the centre run was 4 feet wide (although the operator had boarded it off to create a 2 foot wide run), and the side runs were each 2 feet wide. Water was pumped using a 10 inch by 10 inch pump powered by a 371 GMC engine.

Ground Description: The ground was composed of frozen seams of mud and gravel and slide bedrock, with no clear definition between layers because of an old slide. Four feet of mixed gravel and bedrock were sluiced.

Mining Cuts: One cut was mined in 1991. The dimensions were 80 feet wide by 200 feet long, with a total depth of 18 feet.

Water Supply and Treatment: Water was acquired from an instream recirculation pond. Overflow from the pond left through a rock lined spillway at the right limit of the dam.

Gold: Gold was chunky and bright in colour. Thirty percent was +10, 60% -10 to +60, and 10% -60. Fineness was 850.

Comments: The mining area was in a narrow valley with a moderate slope.

DOMINION CREEK **115 O 15**
J. E. Yanisiw **63°51'N 138°49'W**
Water Licence: PM90-018 **1991, 1992**

Operation/Location: In 1991 this operation worked in the Dominion Creek valley downstream from Mummy Pup. In 1992 work was done on a right limit bench opposite 21 Below Pup. Two miners and 1 camp employee worked 12 hours per day.

Equipment/Function: In 1991 a Cat 225 excavator, one 22-B Bucyrus Erie dragline with a 1¼ yard bucket, one 22-B Bucyrus Erie Crane (operating a 3500 igpm Toyo sand pump), a Cat D9H with a U-blade and ripper, and a Cat 966F loader with 5 yard bucket were used to mine this

property. In 1992 the two Bucyrus and the Cat 225 excavator were used, along with a Cat 980 loader and a 10 inch by 12 inch Morris pump powered by a 3406 Cat engine.

Wash Plant: In 1991, a Super Sluice 6 Hydraulic Rock Puller with two 36 inch by 10 foot sluice runs using expanded metal and porous matting was used to process 150 loose yards per hour. Water was supplied to the plant using a 12 inch by 6 inch Morris pump powered by a 3406 Cat engine. In 1992, a Super Sluice 6 with two 36 inch by 18 foot runs using 6 pound expanded metal over rough top mat was used. The runs adjusted to 1½ inches per foot. The system classified material to 1 inch minus. Water was supplied to the plant using an 8 inch by 6 inch Allis Chalmers powered by a 471 Detroit diesel. Water use was 1500 igpm.

Ground Description: In 1991 dredge tailings were mined, and only the section consisting of stacker tailings was sluiced. The material processed was approximately 10 feet deep. Overburden has been stripped on the right limit bench deposit over several years. In 1992 stripping was continued down slope on a right limit bench deposit. Hydraulic stripping was used to expose the bedrock face, and to flush the fine silt to a bedrock sump. A 10 inch Toyo submersible slurry pump deposited the fines in the settling ponds. The deposit consisted of thawed cobbled and sandy gravel 5 to 8 feet deep over soft yellow schist bedrock. Gravel was uncovered for 75 to 100 feet towards the valley centre, when the bedrock rim was encountered. The rim wall plunged nearly vertically for 40 feet. Overburden in this section from the rim out to the dredge workings was frozen, and consisted of layers of black muck, slide rock, silt, ice lenses, and some large angular quartz boulders. Five to 8 feet of cobbled, sandy gravels were also encountered at the bottom of the overburden section, overlaying the same yellow schist bedrock found in the upper gravel deposit. The wall down the vertical section of the bedrock rim did not contain gravel, so it was assumed that a fault occurs on this side of the valley. Five to 89 feet of gravel and 2 feet of bedrock were sluiced.

Mining Cuts: In 1991 a cut 100 feet by 300 feet long by 10 feet deep was taken for approximately 10,000 cubic yards sluiced. In 1992 one cut 200 feet by 300 feet by 50 feet deep was stripped. Some of the exposed gravels were sluiced to test the values.

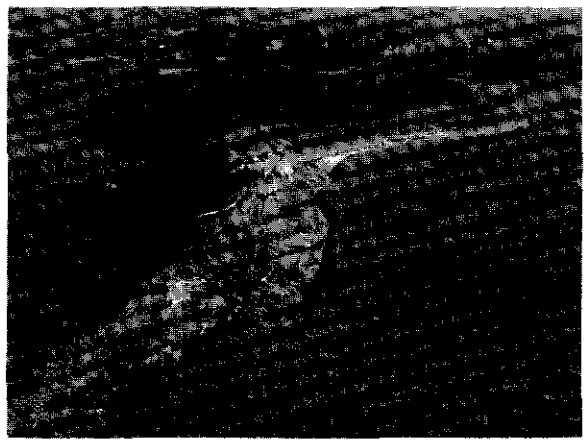
Water Supply and Treatment: Water was pumped from an instream pond on Dominion Creek, and settled ½ mile downstream in 2 large out of stream ponds before returning to the creek.

Gold: Gold recovered in 1991 was 40% +10, 40% -10 to +60, and 20% -60 mesh. Mercury was found on some of the gold. Fineness was 850. In 1992 the gold was bright and very fine grained (between -20 and +150 mesh). Fineness was 854.

MINNIE BELL CREEK **115 O 15**
John M. Wheelton **63°54'N 138°35'W**
Water Licence: PM90-070 **1991, 1992**

Operation/Location: John Wheelton continued preparing ground near the mouth of Minnie Bell Creek, a left limit tributary of Flat Creek. Most of the work was done by Mr.Wheelton, and no employees were hired.

Equipment/Function: A D8 Cat bulldozer and a 46A dozer were used to strip the ground. A wash plant constructed from a dump box and a single sluice run has been brought to the property but no sluicing has been done.



Swamps next to Flat Creek provide effluent treatment at John Wheelton's operation on Minnie Bell Creek.

Ground Description: A large cut has been excavated over the last several years but no sluicing has been done. Between 15 and 20 feet of frozen black muck overlay 10 feet of thawed gravels. The gravels were layered with silt and muck. Klondike schist appeared in the few small areas that were stripped to bedrock.

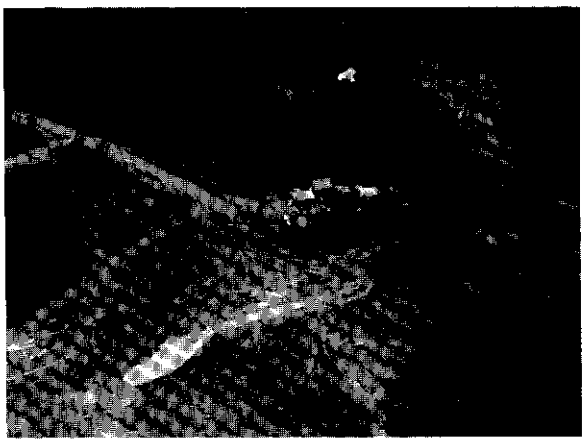
Water Supply and Treatment: Minnie Bell Creek was diverted into a drain to a series of out of stream swamps along the left limit of Flat Creek. The swamps provided effluent treatment for the instream workings on Minnie Bell Creek, and kept the bedrock drain on the property from filling in. Outflow was by seepage through the swamps and into Flat Creek from several points.

Gold: No gold was recovered except in a small drilling program.

GREEN GULCH **115 O 15**
Darrell Morgan **63°49'N 138°56'W**
Water Licence: PM89-086 **1991, 1992**

Operation/Location: Two miners worked 12 hours a day at this operation on Green Gulch, which is a tributary of Sulphur Creek. The valley is flat with steeply sloped sides.

Equipment/Function: A D8K Cat bulldozer was used for stripping, and feeding the sluice box, and a Terex 72-20 loader removed tailings. In 1991 a ½ yard dragline was used to mechanically clean the settling pond.



Darrell Morgan's operation is on Green Gulch, a tributary of Sulphur Creek.

Wash Plant: Up to 3000 igpm of water were used to process 100 loose yards of pay dirt per hour in a triple run sluice box. The dump box was 12 feet by 20 feet, the main run was 3 feet by 24 feet, and the side runs were each 2 feet by 10 feet. Two inch riffles, 1 inch punch plate, and cocoa matting were used for recovery. The slope of the sluice box was 3 inches to 1 foot. The water was pumped using a 10 inch by 10 inch Gorman Rupp pump powered by a GM engine.

Ground Description: In 1991, 36 feet of frozen black muck was stripped off to expose 4 feet of silt and gravel on bedrock. Four feet of gravel and 2 feet of bedrock were sluiced. In 1992, 40 feet of black muck was stripped off exposing 5 feet of frozen gravel on bedrock. The gravel and 2 feet of bedrock were sluiced.

Mining Cuts: In 1991 one cut 100 feet by 300 feet was mined. A cut 200 feet by 300 feet was mined in 1992.

Water Supply and Treatment: Water was acquired from an instream recirculation pond 250 feet by 200 feet by 8 feet deep. Two ponds were used for settling. The first pond settled heavy material before the effluent reached the recirculation pond, and was mechanically cleaned daily using a ½ yard dragline.

Gold: The gold was 90% -60 mesh and 10% +10 mesh. Fineness was 800.

Comments: Old shafts and drifts and some bones were found at gravel level in the cuts.

GOLD BOTTOM CREEK **115 O 15**
Jack & Ian Fraser **63°58'N 138°57'W**
Water Licence: PM90-048 **1991, 1992**

Operation/Location: Jack and Ian Fraser ran this operation with their family on Temperance Hill. Temperance Hill is an upper bench along the left limit at the confluence of Gold Bottom Creek and Hunker Creek. The operation was moved from the creek ground on Hunker Creek in 1991.

Equipment/Function: A D8 Cat bulldozer was used to strip the ground, stockpile the pay gravels, feed the sluice plant, and clean the pre-settling pond. A 950 loader was used to feed the shaker plant in 1992 and remove and stack the coarse tailings.

Wash Plant: In 1991 a 22 foot long by 7 foot wide dump box fed a conventional single sluice run 24 feet long by 4 feet wide. This sluice plant had been tested on the creek ground and had worked well, but the leaner pay on Temperance Hill required a greater feed rate. A new plant was built for the 1992 season. A 5 foot by 14 foot double screen deck classified the pay to 2 inch

minus on the upper screen, and 1 inch minus with the lower screen. The pay was then washed in an 8 foot wide by 22 foot long single sluice run. The first 4 feet of the run used expanded metal and 1¼ inch riffles along with matting. The next 8 feet were lined with matting and expanded metal only. Two feet of slick plate was used with the last 6 feet, which was lined with matting and 1¼ inch riffles. The processing rate increased from 28 to 48 cubic yards per hour with the screen deck in 1992, and the amount of water needed for sluicing decreased from 1500 igpm to 1000 igpm.

Ground Description: The average depth of the cuts on Temperance Hill was 32 feet. A thin vegetative layer covers 2 feet of silt and clay. Up to 30 feet of gravel was found next, with the size of gravel increasing with depth. The lower 6 feet of gravel was very heavy, with large amounts of packed sand and clayish fines. Bedrock was highly decomposed. The lower 5 to 6 feet of gravel and 1 foot of bedrock was sluiced.

Mining Cuts: One large cut 200 feet by 300 feet was sluiced in 1991 in two parts. Two cuts were mined in 1992. A 385 foot long by 75 foot wide cut was sluiced, and a 350 foot long by 60 foot wide cut was stripped. Only ½ of the second cut was sluiced before the early winter arrived.

Water Supply and Treatment: Water was pumped from an instream pump pond on Hunker Creek up to Temperance Hill with a 6 inch by 6 inch high pressure pump. The water was lifted 300 feet and contained in a series of four settling/recycle ponds, with an average size of 160 feet long by 70 feet wide. No discharge occurred and make-up water was required 30% of the sluicing time.

Gold: Very little coarse gold was recovered in 1991. The gold was screened in 1992 and 15% was +10 screen, 15% -10+16, and 60% was -16+90. The fineness was 810.

GOLD BOTTOM CREEK **115 O 15**
Mogul Gold **63°57'N 138°58'W**
Water Licence: PM90-032 **1991, 1992**

Operation/Location: This operation continued to mine upstream on Gold Bottom Creek, a left limit tributary of Hunker Creek. In 1991 the mine was run by Dave and Dirk Millar along with their father Len Millar. Bert Oud was taken on as a partner in 1992, and a single employee was hired to assist Dave and Dirk Millar while sluicing.

Equipment/Function: In 1991 a D8H Cat bulldozer was used to strip the ground, push up the pay gravels for sluicing, and clear the tailings away. The sluice plant was fed with a 666 Koering hoe. In 1992 Bert Oud brought in a 355 Komatsu dozer and a UH 07 Hitachi hoe. The bulldozer helped in the stripping and the hoe allowed for a faster feed rate to the sluice plant. A 966 Cat loader hauled the pay gravels to the wash plant and handled the tailings.

Dirk Millar feeding the sluice plant with father Len Millar ramping tailings on Gold Bottom Creek.

Wash Plant: In 1991 an elliptical screen deck with a single screen 3 feet wide by 8 feet long was used to classify the pay to 1 inch minus. The pay was then sluiced in a run 4 feet wide by 16 feet long. Nomad matting and large expanded metal was used in half of the run, and the other half used 1 inch riffles. The plant processed approximately 60 cubic yards per hour using about 1000 igpm. In 1992 the double deck screen plant owned by Bert Oud was added to the wash plant used in 1991. The pay was classified to 1 inch minus on the top screen, and to ½ inch minus on the lower screen. The pay was then sluiced in a section of pulsating riffles 8 feet wide by 8 feet long. Production increased to 100 cubic yards per hour while using the same 1000 igpm.

Ground Description: The depth of each cut varied from the centre of the creek towards the left limit hillside. A layer of mud 5 to 15 feet thick overlay a layer of gravel that varied from 2 to 8 feet deep. Bedrock was flat and decomposed with occasional deep pockets of gravel. Cuts near the left limit draws were usually frozen to bedrock, but other areas were thawed. Three to 5 feet of

the lower gravels were sluiced with 1 to 2 feet of bedrock.

Mining Cuts: In 1991 three cuts were sluiced for a total of 80,000 bedrock square feet. In 1992 cuts 400 feet by 150 feet, 500 feet by 100 feet, and 40 feet by 200 feet were sluiced, for a total of 118,000 bedrock square feet.

Water Supply and Treatment: Water in Gold Bottom Creek was diverted from the creek into a small reservoir/pump pond. After the water was used for sluicing the effluent flowed downstream and was treated in a series of out of stream settling ponds built along the left limit from mined out cuts. Discharge into Gold Bottom Creek occurred just before Hunker Creek.

Gold: The gold was mainly round, smooth and chunky. Some mercury showed up as a result of the oldtimer's mining activity. Nuggets were rare this far up Gold Bottom Creek. The fineness was 790.

HUNKER CREEK **115 O 15**
Jim Stuart **63°58'N 139°00'W**
Water Licence: PM89-101 **1991, 1992**

Operation/Location: Work was continued on a first tier, right limit bench of Hunker Creek, approximately 1 mile downstream of Gold Bottom Creek. Jim Stuart along with his son and one other employee ran the operation in 1991 and 1992.

Equipment/Function: A D9G Cat bulldozer and a D8H Cat dozer were used to strip the ground. A 966C Cat loader was used for carrying tailing away, and for the first part of 1991 was also used to feed the wash plant. Later in 1991 a C-14A Hein-Werner excavator was used to feed the wash plant.

Wash Plant: A 52 inch diameter by 30 foot long scrubber (trommel) classified the pay to ¾ inch minus. The pay was then sluiced in two 60 inch wide by 8 foot long sluice runs. The first 2 feet of the run used hydraulic riffles, and the remaining 6 feet was lined with Nomad matting and expanded metal. A 6 inch by 8 inch Monarch pump powered by a 671 Jimmy pumped the water from Hunker Creek onto the bench and into reservoirs. An 8 inch by 10 inch Canada pump powered by a 150 horsepower Volvo engine delivered the 1500 igpm needed to sluice 75 to 100 cubic yards per hour. Only 40 cubic yards per hour were processed when the loader fed the plant in 1991.

Ground Description: An average cut had a shallow vegetative layer on top of 10 to 12 feet of muck/clay. A layer of brown gravel 10 to 12 feet thick was next, with 7 feet of White Channel gravel beneath. The bedrock was mostly decomposed, although solid blocky bedrock was encountered in one area. The last 2 feet of brown gravel, all the White Channel gravel, and up to 1 foot of bedrock was sluiced.

Mining Cuts: A single cut about 500 feet long by 200 feet wide was sluiced in 1991. A cut 100 feet wide by 200 feet long and a second cut 200 feet wide by 200 feet long were sluiced in 1992.

Water Supply and Treatment: Make-up water was pumped from an instream suction pond in Hunker Creek. A full recycle system was employed. A series of three settling/recycle ponds were built on the bench. No discharge back to Hunker Creek occurred.

Gold: The gold was almost entirely fine and flat. Any coarse gold usually had quartz attached. The fineness was 820, and 95% was -12 screen.

HUNKER CREEK **115 O 15**
Harold W. Shannon **63°58'N 138°59'W**
Water Licence: PM91-029 **1991, 1992**

Operation/Location: Harold Shannon and two partners continued mining on a small scale along the left limit of Hunker Creek, immediately downstream of Not Much Gold Creek.

Equipment/Function: A D8H Cat bulldozer was used to strip the cuts and stockpile the pay next to the sluice plant. A 2½ yard Northwest dragline fed the sluice plant, and a 950 Cat loader hauled tailings away.

Wash Plant: A 10 foot by 12 foot derocker fed a single sluice run 4 feet wide by 28 feet long. The run was lined with various combinations of Nomad matting, expanded metal, riffles, and ¾ inch punch plate. An 8 inch by 6 inch Cornell pump or a 6 inch by 6 inch Mitsibushi pump supplied the 2300 igpm needed to sluice 50 to 60 cubic yards per hour.

Ground Description: The stratigraphic section has been completely altered by dredging. Eight to 10

feet of coarse tailings from the dredge stacker overlay 4 to 6 feet of fines, and 2 feet of mud and silt. One to 2 feet of gravel was found on the bedrock which was consolidated, and slopes down toward the centre of the valley. The left limit side pay has been covered by slide rock and layers of frozen black muck. All the material was sluiced, but the best pay was found in gravels just above bedrock.

Mining Cuts: A continuous excavation of the dredge tailings in an upstream direction occurred in 1991 and 1992. Approximately 5,000 cubic yards were sluiced during 1991, and 3,500 cubic yards in 1992.

Water Supply and Treatment: Water was diverted into an out of stream reservoir, where up to 90% was recycled. Make-up water was required because the dams were constructed from washed gravels, and seepage occurred.

Gold: The gold varied between flat and chunky, and mercury often showed up on the finer flakes. The gold was screened to about 30% +10 screen, 60% -10+60 screen, and 10% -60 screen. Nuggets up to ½ ounce have been found. The fineness was 815.

DOMINION CREEK **115 O 15**
Favron Enterprises Ltd. **63°49'N 138°47'W**
Water Licence: PM91-069 **1991, 1992**

Operation/Location: Four miners and one camp worker operated for an average of 10 hours per day in 1991. In 1992, 5 miners and 2 camp workers operated for one 12 hour shift per day.

Equipment/Function: Two 8250 and two 8230 Terex bulldozers were used for stripping and sluicing. A 2½ yard Bucyrus Erie 350H excavator was used for digging drains, stacking waste gravel, and stripping at the sides of cuts. A TS24B scraper was used for stripping and hauling pay to the box. An American 35A excavator was used when the BE350H was down. A 10 inch by 12 inch Bingham pump powered by a GM 671 engine was used for monitoring.

Wash Plant: One hundred twenty loose yards per hour were processed using a system consisting of a hopper with a conveyor belt feeding a derocker with spray bars and six sluice runs. A 10 inch by 12 inch Peerless pump powered by a GM 471 engine provided approximately 2000 igpm to the plant.

Ground Description: In 1991 two cuts were mined. The first had 26 feet of mostly frozen muck over 4 feet of gravel. The gravel and 1 foot of bedrock were sluiced. The second cut was located upstream of Troublesome Pup, and was worked to a depth of 20 feet. Bedrock was not encountered. The ground consisted of a mixture of oldtimer's tailings and gravel.

In 1992 four cuts were mined. A cut at the mouth of Troublesome Pup had 12 feet of clay over 3 feet of gravel and about 6 inches of bedrock. Three feet were sluiced. A cut located immediately upstream from the mouth of 8 Below Pup had 5 feet of clay, 4 feet of gravel, and around 6 inches of bedrock. Four feet were sluiced. A cut downstream of Coarse Gold Pup had 5 to 6 feet of muck, 24 feet of clay, and an average of 10 feet of gravel. All the gravel was sluiced. The last cut continued upstream from where work ended at Troublesome Pup in 1991. Eight feet were sluiced in this cut in 1992.

Mining Cuts: One cut in 1991 was 800 feet by 175 feet by 30 feet, and the other was 475 feet by 60 feet by 20 feet. In 1992 the cuts were 500 feet by 100 feet, 300 feet by 75 feet, 900 feet by 150 feet, and 200 feet by 100 feet respectively.

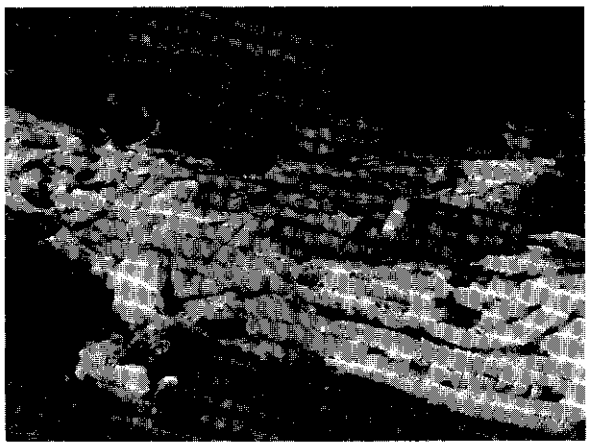
Water Supply and Treatment: Instream water acquisition was used for some cuts, and out of stream water acquisition ponds were used for others. Settling was accomplished in all cases using one main pond 2400 feet long and 125 feet wide. In 1992 pre-settling occurred in the willows before process water used in the third cut travelled to the main pond, and an out of stream pre-settle pond was used before effluent from the fourth cut flowed to the main pond.

Gold: Fineness was 820. Larger pieces of gold were rough and round, with quartz attached. The rest was flat.

Comments: Three weeks of the sluicing season in 1992 were lost due to unusual weather at the beginning and end of the season.

DOMINION CREEK **115 O 15**
Ross Mining Services Ltd. **63°45'N 138°30'W**
Water Licence: PM90-067 **1991, 1992**

Operation/Location: Aurion Placers mined on this property located in the Dominion Creek valley one mile downstream from its confluence with Jensen Creek. In 1991, 2 miners and 2 camp personnel worked 12 hours per day. Three miners and 2 camp personnel worked 12 hours per day in 1992.



Dredge No. 10 is shown in this photo of ground mined by Aurion Placers Ltd. on Dominion Creek.

Equipment/Function: A Cat D10 bulldozer with a 36 yard U-blade and a single shank ripper was used for stripping, pushing pay gravel to the sluice box, and pushing tailings. A Cat EL300 excavator with 1¾ yard bucket fed the sluice box and dug the drains and ditches. A JD450 track loader with a 2½ yard bucket was used to pull fuel tanks and help with clean-ups.

Wash Plant: One hundred ten loose yards per hour were processed using up to 3000 igpm of water in a triple run Pearson Rock Box. It had an 18 foot dump box with a 10 foot extension, and three 20 foot sluice runs. The centre run was 3 feet wide with 10 feet of 2 inch riffles, and 10 feet of 1 inch punch plate. The side runs had expanded metal over no-back Nomad matting. The box was set with a slope of 3 inches per foot.

Ground Description: In 1991, 18 to 28 feet of black muck and organics lay over gravel. The sluice section was 4 feet of gravel and 2 feet of bedrock. In 1992, 10 to 24 feet of black muck and organics lay over the gravel. Gravel started approximately four feet above the water course. Quartz dykes were found every 100 to 200 feet. Bedrock was flat with some elevated sections.

Mining Cuts: Two cuts were processed in 1992. They were 750 feet by 250 feet, and 750 feet by 350 feet. Stripping totalled approximately 300,000 cubic yards, and sluicing about 85,000 cubic yards. In 1992 three cuts were mined out. The dimensions were 650 feet by 400 feet, 400 feet by 250 feet, and 450 feet by 300 feet. The operators were into pay on a fourth cut 400 feet by 300 feet, and a fifth cut 400 feet by 250 feet. Stripping totalled 340,330 cubic yards, and sluicing about 91,760 cubic yards.

Water Supply and Treatment: The water source for this operation was Dominion creek. An out of stream reservoir and settling ponds were used for an 80% recycle system. Process water passed through settling ponds made up of mined out sections, then travelled ½ mile down an old dredge drain and through dredge tailings before discharging into Dominion Creek.

Gold: Gold was flat, fine and bright, with no stains. The few nuggets found had quartz attached. Fineness was 820.

Comments: In 1992 three old shafts were found. Rehabilitation work was performed on this site as work progressed throughout the season.

DOMINION CREEK **115 O 15**
Arthur Sailer **63°48'N 138°37'W**
Water Licence: PM90-063 **1991, 1992**

Operation/Location: Four miners and two camp personnel worked 12 hours per day at this operation on the left limit of Dominion Creek, approximately 12 miles upstream from the Indian River.

Equipment/Function: Two Cat D8 bulldozers and one Cat D9 dozer, two 5 yard Cat 980B loaders, one Cat 225 one yard excavator, and one Cat EL300 1½ yard excavator were used to mine this property.

Wash Plant: One hundred loose yards per hour were processed, using 3000 igpm of water pumped by a 10 inch by 12 inch Byron Jackson pump powered by a Cat engine. Pay was processed using a 10 foot by 20 foot derocker, and a sluice with four 10 foot by 30 inches runs

lined with expanded metal, and one 12 foot by 48 inch run with 1¼ inch angle iron riffles.

Ground Description: The total depth of this ground was 20 to 40 feet. This consisted of 20 to 30 feet of muck over 12 to 15 feet of gravel. Four to 8 feet of gravel and 2 to 6 feet of bedrock were sluiced. All sizes of gravel and all types of bedrock were encountered.

Mining Cuts: In 1991 three cuts were processed, each approximately 3000 square yards. About 80,0000 cubic yards were sluiced. In 1992 three cuts were processed, each from 3000 to 4000 square yards. The approximate yardage sluiced was 80,000.

Water Supply and Treatment: Water was supplied from an instream reservoir. Settling was accomplished in out of stream settling ponds.

Gold: The gold was fine, flat and flaky, with the few nuggets found containing quartz. One percent was +10, 50% -10 +60, and 49%- 60 mesh. Fineness was 810 to 820.

FRIDAY GULCH **115 O 15c**
Neil Cross **63°47'N 138°54'W**
Water Licence: PM89-071 **1992**

Operation/Location: This operation was located at the mouth of Friday Gulch, a left limit tributary of Sulphur Creek. Three miners worked two 12 hour shifts in the 1992 season.

Equipment/Function: A Cat 980C loader fed the derocker and removed tailings. A Cat D9H bulldozer was used to strip and push up pay dirt, and a Cat 966C loader was used for sluicing and removing tailings.

Wash Plant: Pay was processed using a derocker 10 feet wide by 16 feet long with a 4 foot by 24 foot sluice run. One inch riffles with ⅝ inch punch plate on top were used in the top half of the run, and 2 inch riffles with Nomad carpet underneath were used in the bottom half. One hundred yards per hour were sluiced, using 2000 igpm pumped through an 8 inch by 10 inch Morris slurry pump powered by a Cat 3208 engine.

Ground Description: The ground mined was 16 to 18 feet deep, and consisted of ½ foot of moss, 12 feet of black muck with gravel seams, and 4 feet of washed Klondike schist gravel with lots of quartz. The sluice section was the gravel and 2 feet of bedrock.

Mining Cuts: One cut 500 feet by 400 feet in the mouth of Friday Gulch, and one cut 200 feet by 100 feet on the left limit bench of Sulphur Creek were taken in 1992. Approximately 40,000 cubic yards were sluiced.

Water Supply and Treatment: Water was obtained from an instream reservoir on Friday Gulch. Settling was accomplished in 2 ponds with dimensions of 200 feet by 200 feet, and one pre-settling pond 150 feet by 80 feet.

Gold: Gold was fine, angular, and very porous. Fineness was 810.

Comments: Mining in 1992 was performed by Wolreid WGR Mining Ltd. The water licence has since been assigned to them.

SULPHUR CREEK **115 O 15c**
Sulphur Gold Placers **63°48'N 138°55'W**
Water Licence: PM91-068 **1991, 1992**

Operation/Location: This operation was located in the Sulphur Creek valley approximately 2000 feet upstream from its confluence with Friday Gulch. Four miners worked 12 hours a day at this site.

Equipment/Function: A Cat D8K bulldozer was used for stripping and sluicing, and a Cat D7(17A) dozer was used for stripping. A Hy Hoe excavator was purchased in 1991 for drainage and feeding the box. A hydraulic monitor was also used for stripping.

Wash Plant: In 1991 and most of 1992, a triple run sluice box was used to process 60 to 100 yards per hour. This system used up to 550 igpm, pumped by a 10 inch by 8 inch pump powered by a 3208 Cat engine. For the last two weeks of 1992 a 5 foot by 26 foot trommel was used to process approximately 40 yards per hour.

Ground Description: The stratigraphic section was 15 to 30 feet of muck over 6 feet of gravel on bedrock. The sluice section was the gravel and 2 feet of bedrock.

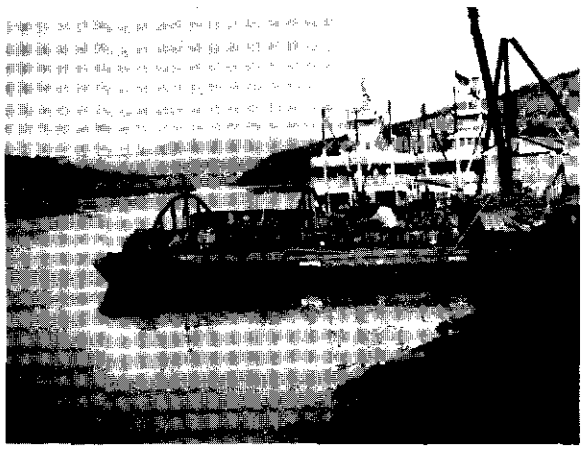
Mining Cuts: Two cuts 100 feet by 300 feet in area were mined in 1991. Total cubic yards sluiced in 1991 were approximately 17,700. Two cuts 100 feet by 250 feet were mined in 1992.

the total cubic yards sluiced were approximately 14,800.

Water Supply and Treatment: Water was supplied to this operation from an instream pond on the left limit of the valley. Waste water was treated in two settling ponds, with final polishing in the Sulphur Creek Community Settling Pond.

Gold: Gold fineness was 800.

Comments: Early cold weather in 1992 was the deciding factor on when this operation shut down for the season, leaving 1¼ cuts un-sluiced.



The sternwheelers *Casca* and *Yukon* at the dock in Dawson (circa 1935).

SULPHUR CREEK **115 O 15c**
Meadow Gold Placers Ltd. **63°50'N 138°58'W**
Water Licence: PM91-007 **1991, 1992**

Operation/Location: Two miners worked an average of 14 hours per day at this operation on Sulphur Creek at its confluence with Green Gulch.

Equipment/Function: A 355A Komatsu dozer was used for stripping, sluicing, and removing tailings. A D8K Cat dozer was used for mining.

Wash Plant: One hundred fifty loose yards per hour were processed using up to 5000 igpm of water. The plant was a converted Ross box, with a 20 by 20 foot dump box and 3 adjustable 3 foot by 20 foot sluice runs. Hydraulic riffles, expanded metal, normal riffles, and cocoa matting were used in this plant. Water was pumped using a 10 inch Cat pump with a 3306 engine.

Ground Description: Forty feet of frozen black muck was stripped off to expose the 10 feet of sand and gravel which was sluiced.

Mining Cuts: A 400 foot by 300 foot cut was mined at the mouth of Green Gulch in 1991. In 1992, an area 400 feet long by 50 feet at the bottom to 200 feet by 15 feet at the top was stripped across from the camp, at the confluence of Green Gulch and Sulphur Creek.

Water Supply and Treatment: A recycle pond on Sulphur Creek was used, with dimensions of 1500 feet long by 200 feet wide at the top end, 300 feet wide at the bottom end, by 4 to 5 feet deep. Final settling was accomplished in the Sulphur Creek Community Settling Facility, downstream on Sulphur Creek.

Gold: Gold was fine and granular, and -12 mesh. Fineness was 800.

Comments: "Gets tougher every year!" Niels Sprokkreeff.

UPPER DOMINION CREEK **115 O 15d**
Ian Hamilton **63°52'N 138°51'W**
Water Licence: PM89-097 **1991, 1992**

Operation/Location: Two miners and 1 camp worker put in 12 hours per day during the mining season on this property.

Equipment/Function: Mining was performed using a D8H Cat bulldozer with ripper and U-blade, and a Koehring 466 excavator with 1½ and 3 yard buckets.

Wash Plant: Sixty yards per hour were processed using a trommel with a 4 foot by 16 foot barrel, an 8 foot by 10 foot hopper, and a 5 foot by 12 foot recovery area. Eight feet of the recovery area had diamond mesh, and 4 feet had hydraulic riffles. The plant used approximately 500 igpm of water pumped by a 6 inch Caprari pump powered by a Deutz engine.

Ground Description: The stratigraphic section for this property consisted of 25 feet of frozen black muck and 2 to 5 feet of slide bedrock above the watercourse. Four feet of gravel and 2 to 3 feet of bedrock were sluiced.

Mining Cuts: In each year one cut was put in with dimensions of 50 to 60 feet wide, by 400 feet

long, by 30 feet deep, for a total cubic yardage of 24,000. Cubic yardage sluiced was 4800.

Water Supply and Treatment: Instream water acquisition and settling ponds were used at this site. Recycle of water was used when necessary.

Gold: Fineness was 780 to 800, and 95% of gold recovered at this property was -10 mesh. Very few nuggets were found.

Comments: Many old shafts and drifts were found on the right limit. A couple of quartz veins have been noted.

UPPER DOMINION CREEK **115 O 15d**
Quality Box Co. Ltd. **63°52'N 138°55'W**
Water Licence: PM89-063 **1991**

Operation/Location: This family run operation was located at the upstream reaches of Dominion Creek. Three miners and 1 camp cook worked 10 hours per day.

Equipment/Function: A Komatsu 355 bulldozer was used for stripping, a Cat D8 bulldozer was used to remove and stack tailings, and an Hitachi backhoe was used to feed the sluice and perform odd jobs.

Wash Plant: Sixty to 100 cubic yards of material were processed using a 4 foot by 12 foot double deck screening plant that screened to ½ inch minus and fed sluice runs with pulsating riffles. The 1200 igpm of water used by this system were provided by an 8 inch by 6 inch Monarch pump powered by a Cummins diesel, and a 6 inch by 5 inch Deutz pump.

Ground Description: Approximately 20 feet of frozen black muck lay over 5 feet of gravel on decomposed bedrock with beige and green coloration. The 5 feet of gravels were sluiced.

Mining Cuts: The area mined in 1991 was 100 feet by 900 feet. The total volume sluiced was approximately 16,700 cubic yards.

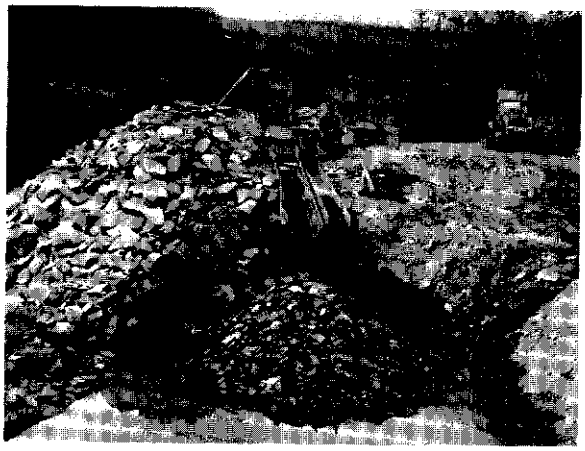
Water Supply and Treatment: Water was supplied and treated in this system using a series of instream ponds. The water was recirculated.

Gold: Gold was small and round, mixed with very flat grains and some coarse grains. The fineness was 800.

24 PUP (HUNKER CREEK) **115 O 15d**
Gerald and Elizabeth Ahnert **63°53'N 138°56'W**
Water Licence: PM89-068 **1991, 1992**

Operation/Location: This operation was run by Gerald and Elizabeth Ahnert on 24 Pup, a left limit tributary of the Right Fork of Hunker Creek. This small scale operation has mined in the same area for several years.

Equipment/Function: A John Deere 400 loader/backhoe was used for stripping the overburden, stockpiling the pay, and feeding the sluice box.



Gerald Ahnert doing a clean-up on 24 Pup, a tributary of Hunker Creek.

Wash Plant: A ½ cubic yard dump box fed a single run sluice. Expanded metal, 1 inch angle iron riffles, and Nomad matting was used in the sluice run. A 3 by 3 inch Honda pump supplied the 125 igpm needed to sluice approximately 3 cubic yards per hour.

Ground Description: In 1991 the stratigraphic section averaged 16 feet deep, with 14 feet of frozen black muck and 2 feet of pay gravels. All the gravel and up to 1 foot of bedrock was sluiced. Bedrock varied between highly decomposed schist and hard slabby bedrock. In 1992 a layer of peat-like material as thick as 7 feet covered 7 feet of frozen black muck. Approximately 18 inches of pay gravel was found beneath the overburden. All gravels and 1 to 2 feet of bedrock were sluiced.

Mining Cuts: In 1991 a cut approximately 350 feet by 9 feet was sluiced, for about 500 cubic yards for the season. In 1992 a cut approximately

75 feet by 30 feet was sluiced, for a total of around 300 cubic yards for the season.

Water Supply and Treatment: 24 Pup supplies only 5 to 10 igpm at mid-summer, so a system of recycle ponds was to hold the water. Water was pumped from the holding ponds/settling ponds to a water box. When the box was full a gate was opened and a steady flow of water passed through the sluice plant and returned to the recycle ponds.

Gold: Several distinct types of gold have been recovered, including dendritic and crystalline gold. Much of the gold was coarse with the larger nuggets containing quartz. The fineness varies between 830 and 850.

ALLGOLD CREEK **115 O 15g**
John Alton **63°56'N 138°37'W**
Water Licence: PM90-008 **1991**

Operation/Location: This operation mined near the mouth of Allgold Creek. Four miners worked 12 hours per day in the 1991 season.

Equipment/Function: A Cat D9G bulldozer was used for stripping and stockpiling pay, and a Cat 980B loader was used for sluicing.

Wash Plant: Pay was processed using a derocker which fed into twin 4 foot oscillating runs with expanded metal and Nomad matting.

Ground Description: The total depth of the ground mined was 20 feet, consisting of 10 feet of frozen black muck and 10 feet of gravel. Four feet of the gravel was sluiced with two feet of bedrock.

Mining Cuts: The 1991 cut dimensions were 1400 feet by 70 feet by 20 feet, for a total of approximately 72,000 cubic yards.

Water Supply and Treatment: A small instream dam was used to create a water acquisition pond. Waste water was treated in a large out of stream settling pond on the left limit of the valley.

Gold: Fineness was from 850 to 870. The gold was generally coarse and flat in shape. Seventy percent was +10, 15% -10 to +60, and 15% -60 mesh.

Comments: A stream rehabilitation and armouring program was completed in 1991 over 1½ miles of the property.

HUNKER CREEK **115 O 15i**
Daval Mining **63°58'N 139°00'W**
Water Licence: PM90-064 **1991, 1992**

Operation/Location: Dave and Allen Gould mined along the right limit of Hunker Creek, just upstream from 54 Pup. Dick Gillespie was employed to strip the overburden in 1991.

Equipment/Function: In 1991 stripping was done with a leased D8 Cat bulldozer and a 220 Cat hoe. A 950B Cat loader was used to carry the pay to the sluice plant and stack tailings. A D3 Cat dozer was available for small jobs. The stripping was largely done with a D9 Cat dozer and a Komatsu hoe in 1992.

Wash Plant: A dump box leading over a grizzly classified the pay to 1½ inch minus. The pay was washed in a 2 foot wide by 14 foot long sluice run lined with Nomad matting and 1½ inch angle iron riffles. The next section of sluice was 4 feet by 14 feet and was lined with Nomad matting and expanded metal. The plant handled 30 to 40 cubic yards per hour. A Gorman Rupp 6 inch pump supplied the 1200 igpm needed to sluice.

Ground Description: This portion of the Hunker valley was not dredged due to the depth. The top 20 feet was frozen black muck with a 6 foot layer of light non-paying gravel beneath. Another 4 feet of black muck and mud was found before the creek gravel was encountered. The creek gravels averaged 8 feet deep. Bedrock was chunky, consolidated, and fairly even. All the lower creek gravels were sluiced with up to 6 feet of bedrock in 1991. In 1992 the lower 3 feet of gravel and up to 6 feet of bedrock were sluiced. The area had been mined by the Oldtimers, by shafting and drifting.

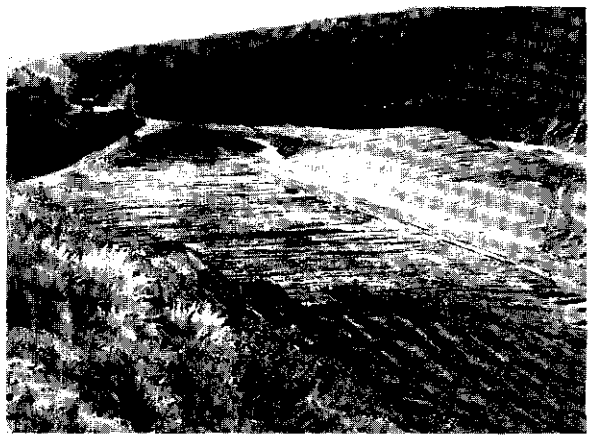
Mining Cuts: In 1991 a cut 220 feet by 120 feet was sluiced. A larger cut measuring 280 feet by 125 feet was sluiced in 1992.

Water Supply and Treatment: A complete recirculation system out of dredge tailing ponds was used in 1991 and 1992. No outflow occurred.

Gold: The gold was very fine, flat and smooth. Fineness was 820.

HUNKER CREEK **115 O 15i**
Consolidated Mines **63°57'N 138°56'W**
Water Licence: PM89-075 **1991**

Operation/Location: Lorne Ross and his crew sluiced one large cut on Hunker Creek just upstream from the confluence with Goldbottom Creek.



An example of good restoration and contouring by Consolidated Mines on Hunker Creek.

Equipment/Function: A 637 scraper was used to strip the property over the last three years. A D8K Cat bulldozer and two D8L Cat dozers were used to dig and stockpile the pay gravels in a ramp near the sluice plant, feed the sluice plant, and push tailings away.

Wash Plant: A triple run Ross Box was used.

Ground Description: The cut was on Hunker Creek ground that had not been dredged. The depth increased from the centre of the valley towards the limits.

Mining Cuts: One large cut was sluiced in 1991. Overburden was stacked upstream of the mine cut with the scraper. Mining was completed at this site in 1991 and the restoration work was finished before the end of season.

Water Supply and Treatment: A system of one pre-settling pond, two secondary settling ponds, and one final settling pond was used. The lower secondary settling pond was also used as a pump pond with water returning to the sluice plant. Due to the low flow in Hunker Creek through much of the season a recycle system was necessary to supply the 6000 igpm needed.

HUNKER CREEK **115 O 15i**
John Erickson **63°56'N 138°53'W**
Water Licence: PM91-090 **1991, 1992**

Operation/Location: John Erickson and his wife Sharon mined the Hunker Creek claims just downstream of Mint Gulch.

Equipment/Function: In 1991 a D8H Cat bulldozer and a 235 Cat hoe were used to strip the overburden, dig drains, and build water use structures. A 988 Cat loader fed the sluice plant and carried tailings. In 1992 a 966 Cat loader was added for handling tailings, and the 235 Cat hoe was not used.

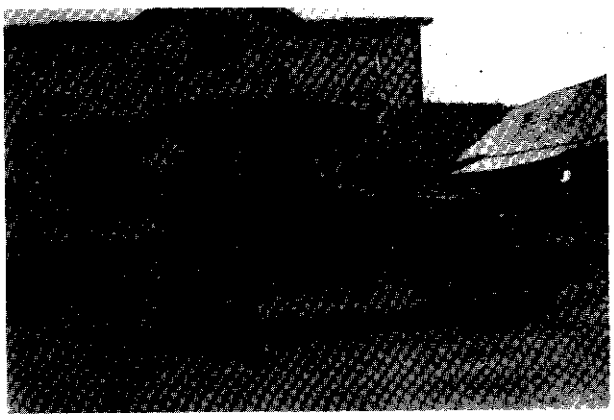
Wash Plant: A dump box feeding into a conventional single run sluice box was used. The 3 foot wide by 24 foot long sluice run was lined with Nomad matting and 1½ inch angle iron riffles. In 1991 a 10 by 12 inch Dayton Dowd pump supplied the 2000 igpm needed to sluice 70 cubic yards per hour. In 1992 an 8 by 8 inch high pressure pump supplied the 1800 igpm needed to sluice 50 cubic yards per hour.

Ground Description: Several different locations were mined so the total depth was dependent on the cut. An average cut had a narrow vegetative layer with 10 to 15 feet of black muck beneath. A layer of creek gravels 4 to 6 feet thick was found above bedrock. The lower 3 feet of gravel was sluiced with 1 foot of bedrock in 1991. In 1992 all the gravel was sluiced with up to 3 feet of bedrock.

Mining Cuts: In 1991 two cuts with an average size of 300 feet long by 20 feet wide were sluiced along with about 6000 cubic yards of dredge tailings. One cut measuring 1000 feet long by 25 feet wide was sluiced in 1992.

Water Supply and Treatment: Hunker Creek did not provide enough water without setting up a partial recirculation system. A pre-settling pond was used to lengthen the life of the settling ponds. Two large settling ponds were used with outflow back to Hunker Creek. Water was pumped from the settling ponds to the sluice plant, and up to 65% of the water was recycled.

Gold: Several types of gold were recovered, ranging from 30 mesh in size up to 2 ounce nuggets. Some of the gold was porous and rough, while some was smooth and flat. Fineness was 820.



Scenes from the Discovery Day Parade in Dawson City, August 17, 1935.

BEAR CREEK **115 P 9**
Konservative Placers **63°39'N 136°22'W**
Water Licence: PM88-021 **1991, 1992**

Operation/Location: Peter Tyerman and his family ran this operation located on the upper reach of Bear Creek. Three crew worked an 8 hour shift. The valley is narrow with a moderate gradient.

Equipment/Function: A D65S Kamatzu loader and a D60A Kamatzu dozer were used for stripping and to remove tailings. A JSW excavator with a 1¼ yard bucket was used for stripping and feeding the wash plant.

Wash Plant: The wash plant consisted of a 20 foot by 8 foot dump box, a wet grizzly made of railway iron on 3 inch centres, and a single run sluice 34 inches wide and 20 feet long. The box was lined with angle iron riffles, 8 feet of ½ inch punch plate, and burlap sacking. Approximately 250 yards were processed per day.

Ground Description: The depth to bedrock averaged about 30 feet. Overburden was not frozen and consisted of 1 foot to 2 feet of organic material, overlaying 6 to 7 feet of gravel and large boulders. Clay and gravel were mixed through the section. Bedrock was decomposed schist with quartzite.

Mining Cuts: Twenty feet of old channel gravel and 3 feet of bedrock were sluiced. A combined total of 36,000 cubic yards were sluiced and 20,000 cubic yards stripped in 1991 and 1992.

Water Supply and Treatment: A pipeline constructed of 45 gallon drums conveyed water a short distance from the creek to the sluice box at a rate of 1000 igpm. Water levels in the creek were high in 1991 and 1992. The effluent was treated in a series of small instream ponds and two out of stream ponds.

Gold: The gold was flat and flaky. Seventy five percent was greater than 10 mesh in size. Some platinum, hematite, magnetite, iron pyrite and garnets were found in the concentrate.

CLEAR CREEK **115 P 12**
Raymond Jarvis **63°44'N 137°37'W**
Water Licence: PM91-097 **1991, 1992**

Operation/Location: This property was located on Clear Creek three claims upstream from its junction with Barlow Creek. A crew of two began testing on the property in 1992.

Equipment/Function: A D6 Cat dozer was used to build a diversion, push tailings and strip overburden. A Drott excavator with a ⅝ yard bucket fed the wash plant.

Wash Plant: The wash plant consisted of a 6 by 8 foot screen deck feeding a 12 foot long by 18 inch wide sluice run lined with ½ inch punch plate, which fed a 7 foot long cyclone 18 inches in diameter. The capacity of the wash plant was 40 cubic yards per hour. A 9 horsepower Briggs and Stratton gasoline engine turned the cyclone at 160 rpm using a 4-speed transmission.

Ground Description: The material consisted of 10 feet of washed gravel on top of quartz and mica schist bedrock.

Mining Cuts: A 200 cubic yards bulk sample was taken from an old flood channel.

Water Supply and Treatment: Water was recirculated from a pit at a rate of 300 igpm using a small gasoline powered pump.

Gold: Most of the gold was smaller than 80 mesh, with a fineness of 842.

BARLOW CREEK **115 P 13**
Ray Lizotte **63°48'N 137°38'W**
Water Licence: PM89-123 **1991, 1992**

Operation/Location: Barlow Creek runs in a narrow, steep valley. The property was located about 5 miles upstream from the junction of Barlow and Clear Creek. Ray Lizotte and his brother ran the operation with the help of George Gervais. One 12 hour shift was worked.

Equipment/Function: Two D8 Cat dozers were used to strip and to build settling ponds. A 988 Cat loader stacked tailings along the channel to armour the banks. A 215 Cat excavator with a ¾

yard bucket was used for ditching and feeding the trommel. A 2500 Timber Jack loader served as a spare.

Wash Plant: The wash plant consisted of a 10 yard hopper feeding a 38 foot long trommel 7 feet in diameter, with angle iron baffles. Material smaller than ½ inch passed into a 4 foot wide by 8 foot long trough lined with expanded metal and 4 feet of hydraulic riffles. The processing rate was 60 cubic yards per hour.

Ground Description: The ground was frozen and was stripped a year in advance. Most of the overburden was Klondike schist slide rock covering 8 feet of old channel gravels. The overburden varied from 4 to 12 feet in depth.

Mining Cuts: In 1992, approximately 37,000 cubic yards were sluiced and 30,000 cubic yards stripped in preparation for 1993.

Water Supply and Treatment: Water was pumped out of a bypass channel through 400 feet of aluminum irrigation pipe 6 inches in diameter. A 10 inch by 12 inch pump powered by a 3208 Cat motor supplied the water at a rate of 700 igpm. The total creek flow was treated in a 175 foot wide by 500 foot long by 8 foot deep pond below the camp. Small pre-settling ponds below the wash plant were cleaned out regularly.

Gold: Half the gold was larger than 10 mesh, including 10% larger than 4 mesh, with nuggets up to 1½ ounces. The concentrate contained silver, black sand, magnetic tin, hematite, and sulphides.

CLEAR CREEK **115 P 13**
West Coast Paving **63°46'N 137°28'W**
Water Licence: PM89-099 **1991, 1992**

Operation/Location: This property began 6 claims below Squaw Creek and extended upstream along Clear Creek for 25 claims. Lum Zogas and his family ran the operation and employed 10 miners and 2 helpers. Ten hour shifts were worked with double shifting for 3 months of the year. Mining in 1991 started across from Squaw Creek and continued upstream for six claims.

Equipment/Function: A D9L Cat dozer with U-blade and ripper and a D9G Cat dozer were used for stripping overburden and pushing up pay. A 235C Cat excavator was used to feed the wash plant, dig drains, strip, and berm-up settling ponds. A EL300 Cat loader with a 2½ yard bucket helped feed the wash plant.

Wash Plant: A four deck Super Sluice finger derocker with a 7½ yard capacity fed one inch minus material into two 6 foot wide by 22 foot long orbiting sluice boxes. The boxes were lined with 4 feet of pipe riffles followed by 15 feet of expanded metal on top of Nomad matting. The processing rate was 150 to 200 cubic yards per hour.

West Coast Paving's placer mining operation on Clear Creek.

Ground Description: The valley ranges from 400 feet to 1000 feet in width. The ground was frozen and averaged 15 feet to 20 feet total depth. Ten to 14 feet of black muck, 5 feet of coarse river gravel with boulders up to 3 feet in diameter, and 4 to 5 feet of fractured decomposed granite overlay quartz and schist bedrock occurring in reefs and troughs. The gravel and bedrock were sluiced.

Mining Cuts: Between 10,000 and 24,000 cubic yards of material was sluiced from six cuts. In 1991, a total of 130,000 cubic yards were sluiced and 160,000 cubic yards were stripped. A total of 103,000 cubic yards were sluiced and 300,000 cubic yards stripped in 1992, as mining continued upstream to Eldorado Creek.

Water Supply and Treatment: Water was supplied to the wash plant at a rate of 1200 igpm by a 6 inch by 6 inch Cornell pump driven by a 3208 Cat diesel. Water was pumped directly out of Clear Creek. Effluent was treated in a series of ponds built in old cuts as mining progressed upstream.

Gold: Gold was flat, thin and fine with very few coarse pieces. The fineness was 840. Black sand, hematite and pyrite occurred in the concentrate.

Comments: 1992 was the last year of mining for West Coast Paving at this location. Twenty five claims were mined and 2½ miles of stream channel restored in 3½ years of operation.

LEFT FORK CLEAR CREEK **115 P 14**
Blackstone Mining Ltd. **63°50'N 137°07'W**
Water Licence: PM89-084 **1991, 1992**

Operation/Location: This property was situated on the Left Fork of Clear Creek, upstream from Lewis Gulch. Nelson and Madeleine Harper ran the show with three family members. A single 10 hour shift was worked.

Equipment/Function: Three D8 Cat dozers and one D7 Cat dozer were used for stripping, stockpiling pay, and building protection berms and roads. A 90E Hough loader with a 5 yard bucket was used to feed the trommel. A 90E Hough loader with a 4 yard bucket was used to remove tailings.

Wash Plant: The wash plant consisted of a 5 foot diameter trommel with two sluice runs. The trommel was fed by a 5 yard hopper and lined with four 6 inch high inner rings and six sections of 6 inch by 6 inch by 5 foot long angle iron, which helped wash the material. The trommel screened ½ inch minus material into a 4 foot wide by 20 foot long sluice lined with coarse expanded metal. The second run took 2 inch minus material, was 20 feet wide by 10 feet long, and was lined with 2 feet of 2 inch angle riffles and 8 feet of 1 inch angle riffles. Nomad matting was used under the riffles and expanded metal. The sluice box was set at a grade of 1½ inches to the foot. The process rate was 50 cubic yards per hour.

Ground Description: Overburden consisted of 2 feet of old tailings and organic material. Some of the area had been worked previously by a dredge. Bedrock was mainly decomposed schist. Ten feet of post-glacial washed gravels and 1 foot of bedrock were sluiced.

Mining Cuts: One cut was mined in 1991 measuring 500 feet long by 80 feet wide by 12 feet deep. 34,000 cubic yards were sluiced and 15,500 cubic yards stripped in preparation for 1992. 25,000 cubic yards were sluiced and 15,000 cubic yards were stripped in 1992.

Water Supply and Treatment: Seven hundred feet of 10 inch aluminum pipe supplied water to the pump from a holding pond in the creek. A 6 inch Allis Chambers pump powered by a 60 horsepower Perkins diesel supplied water to the plant at a rate of 700 igpm. The effluent was treated in a series of old dredge ponds.

Gold: The gold was 90% fine and 10% coarse with some nuggets. The fineness was between 790 and 820.

CLEAR CREEK **115 P 14**
Sisters Resources Ltd. **63°47'N 137°27'W**
Water Licence: PM91-092 **1991, 1992**

Operation/Location: This property on Clear Creek began 6 claims below Squaw Creek and extended about 1½ miles downstream. John Zogas and a partner ran the operation with the help of 5 miners and 2 helpers working double 12 hour shifts.

Equipment/Function: A D8L Cat dozer with a 4-barrel ripper was used for stripping, and pushing up pay. A 980C Cat loader with a 5¼ yard bucket removed tailings and fed the excavator. A 225 Cat excavator with a 2 yard clean-up bucket fed the derocker, and a 235C Cat excavator with a 3½ yard bucket was used to strip and dig bedrock.

Wash Plant: A 14 foot by 13 foot wet hopper fed material to a two deck, Super Sluice 6, finger derocker. The derocker was upgraded to a three deck Maximiser in 1992. The processing rate was increased from 100 cubic yards per hour to 125 cubic yards per hour. One inch minus material was fed into a single run sluice 6 feet wide by 20 feet long. The top 10 feet was lined with angle iron riffles and the bottom 10 feet was lined with expanded metal over Nomad matting.

Ground Description: The ground consisted of 7 to 8 feet of overburden, 5 to 6 feet of post-glacial and old channel gravels, and granite with quartz reef bedrock. The ground was frozen and had to be ripped. The old channel was discontinuous and disappeared under the hillside at various locations. The gravel and 5 feet of bedrock were sluiced.

Mining Cuts: In 1991, 105,000 cubic yards were sluiced and 75,000 cubic yards were stripped. Mining occurred in two cuts measuring 300 feet by 400 feet by 14 feet deep, and 2000 feet by

75 feet by 13 feet deep. In 1992, 60,000 cubic yards were sluiced.

Water Supply and Treatment: An Aurora 6 inch by 8 inch high pressure pump powered by an Isuzu engine supplied water to the wash plant. The water was pumped out of Clear Creek at a rate of 1000 igpm. Effluent was treated in a 50 foot by 100 foot pre-settling pond, and a 100 foot wide by 500 foot long by 10 foot deep secondary pond.

Gold: Gold was flat and thin, with very few coarse pieces. The fineness was 840. The concentrate contained black sand, hematite, and pyrite.

CLEAR CREEK **115 P 14**
4757 Yukon Ltd. **63°46'N 137°16'W**
Water Licence: PM91-089 **1991, 1992**

Operation/Location: This property was located on Clear Creek about 1½ miles downstream from its confluence with Left Fork Clear Creek. John Klassen and his son Dean ran the operation with 7 crew in 1991 and 5 crew in 1992. Twelve hour shifts were worked with double shifting for part of the season.

Equipment/Function: Two D9 Cat dozers with U-blades and 4-barrel rippers were used to strip overburden and stockpile paydirt. Two 966D loaders with 4 yard buckets fed the wash plant and removed tailings. A 235 Cat excavator was used for ditching, and feeding the derocker.

Wash Plant: The wash plant consisted of a 10 foot by 24 foot derocker with spray bar, and a 4 run sluice 35 feet long. The sluice runs took 1¼ inch minus material and were set at a grade of 2 inches per foot. They were lined with a combination of Hungarian riffles, punch plate, expanded metal, and perforated belting. The derocker was run by an electric motor powered by a 125 Kw 3304 Cat generator. Approximately 80 yards per hour were processed.

Ground Description: The bench ground consisted of 6 to 12 feet of frozen black muck overburden, and 6 to 7 feet of stream gravel on top of bedrock. Half of the bedrock was hard granite, and half decomposed shale. All the gravel and some bedrock was processed.

Mining Cuts: Mining took place in the main channel, on a left limit bench, and on 65 Pup. In 1991, 106,000 cubic yards were sluiced and 400,000 cubic yards were stripped. Eighty two thousand cubic yards were sluiced and 200,000 cubic yards were stripped in 1992.

Water Supply and Treatment: The Cat generator ran two 6 inch Flygt submersible pumps which supplied water to the sluice box at a rate of 2000 igpm. Water was pumped directly out of a diversion ditch. The effluent was treated in 3 ponds measuring 225 feet by 300 feet.

Gold: The gold was flat and fine, with a few nuggets. The fineness was 820 with 10% silver. Gold smaller than 125 mesh was recovered. The operator noted that the concentrate contained garnets.

65 PUP **115 P 14**
John Scott **63°49'N 137°19'W**
Water Licence: PM89-127 **1991, 1992**

Operation/Location: This operation was located on 65 Pup, a tributary to the Left Fork of Clear Creek. The valley is very narrow with a steep gradient. John Scott ran the operation along with his wife and son. Mining occurred at the downstream end of the property.

Equipment/Function: A 977 Cat track loader with a 3 yard bucket fed the trommel. A 50 Hough loader with 2 yard bucket removed tailings. Both machines were used to strip overburden. A John Deer 10-10 tracked excavator with a ⅛ yard bucket was used for testing.

Wash Plant: A 10 foot long by 3 foot wide wet hopper fed material to a 20 foot long trommel 4 feet in diameter. Minus 1 inch material passed over two 2 foot wide by 10 foot long sluice runs lined with expanded metal, no-back matting, expanded metal, and backed matting. The processing rate was 25 cubic yards per hour.

Ground Description: The material consisted of 1 foot of black muck, 8 feet of post-glacial gravel, and bedrock in various stages of decomposition. The gold appeared to be concentrated in the decomposed bedrock. All the gravel and 6 inches to 1 foot of bedrock was sluiced.

Mining Cuts: A total of 8000 cubic yards were sluiced in 1991 and 1992. 50,000 cubic yards

were sluiced in 1991 in preparation for 1992 and 50,000 cubic yards were stripped in 1992 in preparation for 1993. The average cut was 10 feet deep and had been stripped and thawed previous to mining.

Water Supply and Treatment: A 6 inch Gorman Rupp pump recycled water to the wash plant from an instream reservoir below the trommel at a rate of 400 igpm. Effluent was treated in a 75 foot wide by 75 foot long by 20 foot deep instream pond at the bottom property boundary.

Gold: The angular gold was half coarse and half fine. Small amounts of magnetite occurred in the concentrate. The fineness of the gold was 960, and it was stained red and black.

HIGHET CREEK **115 P 16**
Bleiler Placers Ltd. **63°43'N 136°06'W**
Water Licence: PM89-015 **1991, 1992**

Operation/Location: Highet Creek is located in a narrow valley of moderate gradient. Mining in 1991 and 1992 took place approximately 2000 feet downstream of Dredge Creek. The crew consisted of 5 miners and one helper. Two 10 hour shifts were worked when sluicing.

Equipment/Function: A D9L Cat dozer and 637 Cat scraper with a 35 yard dump capacity were used for stripping. When sluicing, the dozer stockpiled the pay, which was fed to the box by a UH20 Hitachi tracked excavator with a 4 yard bucket. Tailings were removed and stacked in the old cuts by a 988B Cat loader with a 7 yard bucket.

Wash Plant: The wash plant was a modified Ross 200 with a hopper and wet grizzly. The bars in the grizzly were specially cast with a taper to prevent rocks from getting stuck. The sluice box was 40 feet long and 9 feet wide with three top runs and one bottom run. A section of hydraulic riffles were incorporated into the top centre run. The processing rate was 250 yards per hour.

Ground Description: The overburden was partially frozen and ranged from 40 feet deep on the left limit to 60 feet on the right limit. It consisted of interlayers of organic blue and grey mud, fluvial glacial gravels including quartzite boulders up to 3 feet in diameter, and weathered bedrock slide material. The bedrock was shattered quartzite and quartzite schist. The lower 10 feet of gravel and boulders plus 2 feet to 3 feet of bedrock were sluiced.

Mining Cuts: Most of the 1991 season was spent stripping in preparation for sluicing in 1992. Approximately 433,333 cubic yards were stripped and 20,000 cubic yards sluiced in 1991. In 1992 106,000 cubic yards were sluiced from one cut measuring 730 feet long by 280 feet wide by 14 feet deep.

Water Supply and Treatment: Water was supplied directly out of the creek to the wash plant at a rate of 3000 igpm by a Morris 8 inch by 10 inch trash pump powered by a Cat 3208 engine. Total creek flow was treated in a 350 foot wide by 400 foot long by 20 foot deep two cell settling pond located 1½ miles downstream in a wide portion of the Highet Creek valley.

Gold: The gold was coarse with nuggets common. Fineness was 825.

BENNETT CREEK **115 P 16**
Howard & Elizabeth Lone **63°44'N 136°04'W**
Water Licence: PM92-020 **1991, 1992**

Operation/Location: This property was located on a right limit bench of Bennett Creek. Howard and Elizabeth Lone set up the operation in 1991 and began testing in 1992.

Equipment/Function: A D7 Cat dozer was used to strip overburden. A 55 Michigan loader moved the pay and tailings.

Wash Plant: A 7½ foot wide by 16 foot long dump box fed material into a wet grizzly. A 2 foot wide by 20 foot long single run sluice was lined with 1 inch angle iron and 20 feet of cocoa matting.

Ground Description: The ground consisted of 3 to 4 feet of sand, and 8 feet of hard packed gravel on top of hard packed sand. The ground was not frozen, and bedrock was not reached.

Mining Cuts: All the gravel was sluiced.

Water Supply and Treatment: A 6 inch by 4 inch pump powered by a Gardner Denver motor pumped water from Bennett Creek at a rate of 150 igpm. Effluent was treated in an out of stream pond located between the bench and the

Highet Creek road. The only discharge from the pond was by seepage.

Gold: A pan was used to clean up gold from the sluice box. A small amount of fine gold and hematite was recovered.

HIGHET CREEK **115 P 16**
Erl Enterprises **63°43'N 136°12'W**
Water Licence: PM89-078 **1991, 1992**

Operation/Location: This property was located along the upper reaches of Highet Creek, upstream from the mouth of Rudolph Gulch. The valley bottom is narrow and the gradient steep. The high elevation (3300 feet) results in a shorter than average mining season. Frank Erl worked an 11 hour shift and had two helpers for part of the 1991 season.

Equipment/Function: A 950 Cat loader with a 2 yard bucket fed the box and removed tailings. A D8K Cat dozer with angle blade was used for stripping, pushing up pay, and levelling tailings.

Wash Plant: The wash plant consisted of a wet grizzly 4 feet long by 5 feet wide and a single run sluice 20 feet long by 2 feet wide. The spacing of the pipes was 2½ inches at the top and 3 inches at the bottom. The box was lined with angle iron riffles 1¼ inches apart, expanded metal, and cocoa matting. The processing rate was 30 cubic yards per hour.

Ground Description: The bench deposit was frozen and consisted of 5 feet of gravel mixed with quartzite and granite boulders, overlain by 2 feet of gravel and yellow clay layers, and 2 feet of black muck. Bedrock stepped up the valley and consisted of fractured greenstone with quartz stringers.

Mining Cuts: Several cuts were made on the right limit bench deposits, and one cut was made in the creek channel on the left limit. The unfrozen creek deposit was mined when the water was low and could be bypassed around the cut. Five to 6 feet of gravel and 1 foot of bedrock were sluiced. A total of 2370 cubic yards were sluiced and 3273 cubic yards stripped in 1991. In 1992, 4348 cubic yards were sluiced and 2400 cubic yards stripped.

Water Supply and Treatment: Water was gravity fed to the sluice plant from a small reservoir in Highet Creek at a rate of 600 igpm, using a 200 foot long aluminum and PVC pipeline 6 inches in diameter. Effluent was treated in a series of instream ponds.

Gold: The fineness was 810. Twenty five percent of the gold was larger than 3 mesh, 25% between 3 and 8 mesh, and 50% smaller than 8 mesh. Some scheelite was found in the concentrate.

HIGHET CREEK **115 P 9 & 115 P 16**
Sasha Mining Ltd. **63°44'N 136°08'W**
Water Licence: PM92-002 **1991, 1992**

Operation/Location: Merl Powers and family mined this property on Highet Creek with 4 helpers, working two 12 hour shifts. Two claims located 2000 feet downstream of McRae Gulch were mined.

Looking for a bit of the yellow stuff at Sasha Mining's operation on Highet Creek.

Equipment/Function: A D9 Cat dozer was used for stripping and pushing up pay. Two 275B Michigan loaders fed the wash plant and removed tailings. A UH30 Hitachi excavator was used for stripping, and hauling pay and tailings. A 769C Cat rock truck hauled overburden and pay.

Wash Plant: The wash plant consisted of a 14 foot wide by 4 foot long by 4 foot deep wet hopper feeding a 26 foot long trommel 9 feet in diameter. Two inch minus material passed through the trommel into the top sluice run, which measured 8 feet wide by 9 feet long, and was lined with hydraulic riffles over astroturf. The bottom run measured 8 feet wide by 24 feet long

and was lined with expanded metal over astroturf. The processing rate was 180 cubic yards per hour. A 50 horsepower electric motor driven by a 50 Kw Deutz generator drove the trommel.

Ground Description: The depth to bedrock varied between 25 and 40 feet. The bedrock was shattered quartzite and quartzite schist. All the stream gravel including large boulders and 3 feet of bedrock was sluiced.

Mining Cuts: A total of 25,000 cubic yards were stripped and 300,000 cubic yards were sluiced during 1991 and 1992. With the exception of about 17,000 cubic yards mined from the left limit hillside, most of the material processed was old tailings.

Water Supply and Treatment: Water was supplied to the wash plant at a rate of 1800 igpm by a 8 inch by 10 inch Cornell pump, powered by a 671 Detroit diesel. Effluent was treated in a 50 feet wide by 300 feet long pre-settling pond and a large two cell pond located downstream of Bleiler Placers Ltd.

Gold: Fifteen percent of the gold was between 3 and 20 mesh in size, 80% was between 20 and 200 mesh, and the rest was nugget size. Fineness was 820.

JOHNSON CREEK **115 P 16**
C & I Construction Ltd. **63°46'N 136°21'W**
Water Licence: PM88-016 **1991, 1992**

Operation/Location: This operation was located on Johnson Creek about one mile downstream of Sabbath Creek. Conrad and Ina-Mae Klippert ran the mine with the help of their sons, Dan and Kim. Approximately 1200 feet on the right limit of the valley was mined in 1991. Johnson Creek ran close to the left limit hillside and was not diverted.

Equipment/Function: A D8K Cat dozer was used to strip ground and push up pay gravels. A 275B Michigan loader with a 7 yard bucket fed the plant. A 175B Michigan loader with a 5 yard bucket removed tailings.

Wash Plant: A 10 by 20 foot derocker fed material into a single run sluice 3 feet wide by 24 feet long. The top 8 feet of the sluice run was lined with ½ inch punch plate. The ½ inch minus material ran into a 20 foot long by 3 foot wide side run lined with expanded metal and Nomad matting. The main sluice run was lined with 8 feet of angle iron riffles, followed by 8 feet of punch plate over a mixture of straight and angle riffles.

Ground Description: The material consisted of stream gravel with boulders up to 2 feet in diameter and bedrock in various states of decomposition (*ie.* blue, grey, and yellow mud). The gravel and some bedrock were sluiced.

Mining Cuts: The cuts averaged 75 feet wide by 22 feet deep with 12 feet of overburden. In 1991 33,000 cubic yards were sluiced and 40,000 cubic yards were stripped. In 1992, ground on Sabbath Creek was tested with poor results.

Water Supply and Treatment: Water was diverted from Johnson Creek into a ditch by an earth berm. The ditch supplied water to a pipeline which delivered 2000 igpm to the spray bars on the derocker. Effluent was treated in a 500 foot wide by 300 foot long settling pond.

Gold: Gold was flat and well travelled with red coloration. Some black sand and scheelite were found in the concentrate.

JOHNSON CREEK **115 P 16**
Ralph Barchen **63°47'N 136°22'W**
Water Licence: PM89-116 **1991**

Operation/Location: This property was located on Johnson Creek, one mile downstream from the junction of Sabbath Creek. It was mined in 1991 by Ralph Barchen and a helper working an 11 hour shift.

Equipment/Function: Information was not available.

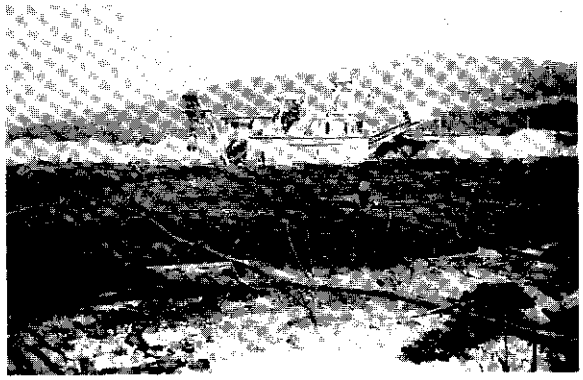
Wash Plant: A 10 foot by 17 foot derocker fed a 16 foot long by 3 foot wide single run sluice. The sluice was lined with 2 inch flat bar riffles at 2 inch spacing over 7 layers of expanded metal and astroturf. The grade on the box was set at 2¼ inches to the foot. The processing rate was 60 cubic yards per hour.

Ground Description: The deposit was frozen and consisted of 14 feet of pay gravel overlain by 11 feet of black muck. Bedrock was decomposed schist which required ripping, and turned to muck when worked. The pay gravel and 2 feet of bedrock were sluiced.

Mining Cuts: Four cuts measuring 100 feet wide by 200 feet long by 25 feet deep were mined on the right limit of Johnson Creek. A total of 50,000 cubic yards were sluiced and 24,000 cubic yards stripped in 1991.

Water Supply and Treatment: Water was delivered to the derocker from Johnson Creek through a short section of pipe 12 inches in diameter, at a rate of 700 igpm. Effluent was treated in a long drain and one out of stream pond.

Gold: The gold was uniformly fine, with a fineness of 780.



View of steam pipes and points used in thawing the ground in preparation for the dredge in the background (circa 1935).

Checking the steam points near the mining camp at Granville. These steam points were utilized to thaw the ground prior to dredging (circa 1935).

AUSTRALIAN HILL **116 B 3**
Eldorado Mining **64°03'N 139°09'W**
Water Licence: PM90-107 **1991**

Operation/Location: Dave Johnson mined the rim of Australian Hill on the Hunker Creek side in the same general area as in 1990. By the end of 1991 a decision was made to shut down due to the very fine gold which was difficult to recover.

Equipment/Function: Two D8K Cat bulldozers stripped the cuts, fed the sluice plant, and cleared tailings.

Wash Plant, Water Supply and Treatment: A Pearson rock box was used. A 14 foot by 18 foot dump box fed into three sluice runs. The centre run was 3 feet wide by 24 feet long and was lined with Nomad matting, expanded metal, and ¾ inch punch plate. The two 4 foot wide by 24 foot long side runs were lined with Nomad matting and expanded metal. Water was pumped from an instream reservoir on Hunker Creek 285 feet onto Australian Hill to the sluice plant. The hillside drain built in 1990 was used to channel the effluent to the Klondike side of Australian Hill, and into the three large out of stream settling ponds built by Murray Orbanski. Discharge from the ponds was to Hunker Creek.

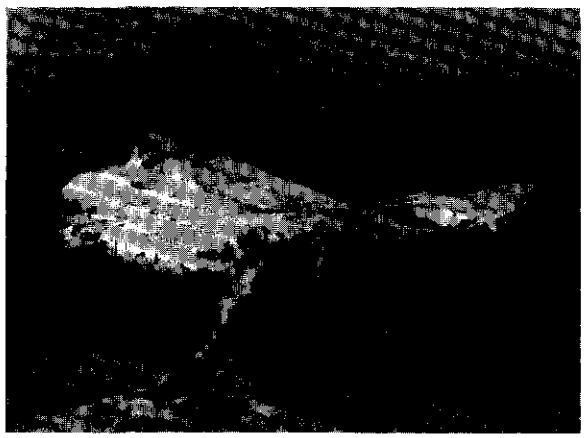
Ground Description: Dave Johnson worked into the hillside, and along the rim. The cuts were shallow by the rim, but deeper next to the hill. White Channel gravels made up the entire profile. All the gravels were sluiced.

Gold: The gold was very fine grained and difficult to recover. The gold screened in 1990 was 20% minus 10 +30 screen, 60% -30 +60 screen, and 20% minus 60 screen. The fineness was 860.

HATTIE GULCH **116 B 3a**
Gould, Peter **64°01'N 139°07'W**
Water Licence: PM91-067 **1991, 1992**

Operation/Location: Mining was done by Peter Gould and his father John in 1991 and 1992. Hattie Gulch is a right limit tributary to Hunker Creek near the mouth. Cuts on the right and left limit of Hattie Gulch were sluiced.

Equipment/Function: A D9G Cat bulldozer was used to strip the White Channel gravel overburden in each cut. A D7F Cat dozer pushed the pay gravel into a stockpile so a 930 Cat loader could feed the sluice plant. The loader also carried off tailings.



This White Channel bench property on Hattie Gulch was mined by Peter Gould.

Wash Plant: A 4 foot diameter by 30 foot long scrubber (trommel) classified the pay to 1 inch minus. The pay was then sluiced in two 4 foot by 20 foot oscillating sluice runs. The runs were lined with Nomad matting, expanded metal, and riffles. Up to 60 cubic yards of gravel were sluiced per hour using 1200 to 1500 igpm of water. A Cornell 8 by 6 inch pump delivered the water to reservoirs on Hattie Gulch. A 6 by 6 inch Gardner Denver pump supplied water for sluicing.

Ground Description: This gulch flows off Australian Hill, which is largely made of White Channel gravel. Klondike washed gravels were found in the first 1 to 3 feet. The rest of the ground was made up of White Channel gravel. The total depth increased rapidly as the cuts progressed into each limit. The bedrock was largely flat and decomposed. In 1991 the lower 3 feet of gravel and first 2 feet of bedrock were sluiced. In 1992 the cuts were deeper and only the lower 12 feet of gravel was sluiced. The bedrock was cleaned to ensure all gravels were sluiced but no bedrock was mined.

Mining Cuts: Three cuts along the right limit of Hattie Gulch were sluiced in 1991 for a total of

approximately 10,000 cubic yards. A cut on each limit was sluiced in 1992. One cut measured 450 feet by 150 feet, and the other measured 150 feet by 30 feet. A total of approximately 35,000 cubic yards were sluiced in 1992.

Water Supply and Treatment: Water was pumped from an instream pump pond on Hunker Creek into large reservoirs on Hattie Gulch. The water was used in a full recycle system with no discharge. Make-up water was usually required for 6 hours each week.

Gold: Two different types of gold were recovered. A flat coarse type of gold was found in the quartz deposits in bedrock, while the gold sluiced from the gravels was fine and angular. Fineness varied from 710 to 730.

Comments: Oldtimers mined this property by digging drifts into the hill every 100 to 150 feet. Some of the drifts extended from 50 feet to as much as 200 feet. Drifts, opened during stripping, had not yet collapsed or filled in.

HUNKER CREEK **116 B 3a**
J & C Holdings Ltd. **64°02'N 139°08'W**
Water Licence: PM90-113 **1991, 1992**

Operation/Location: This property was located along the left limit of Hunker Creek approximately 2000 feet downstream of Henry Gulch. Mining continued into the hillside where activity over the last ten years has been concentrated. Colin Mayes employed a crew of five in 1991, and four in 1992.

Equipment/Function: A D9H Cat bulldozer was used to strip the frozen black muck, stockpile the pay, feed the sluice plant, and clear tailings away. A UH 20 Hitatchi hoe was used to dig bedrock drains around the cut.

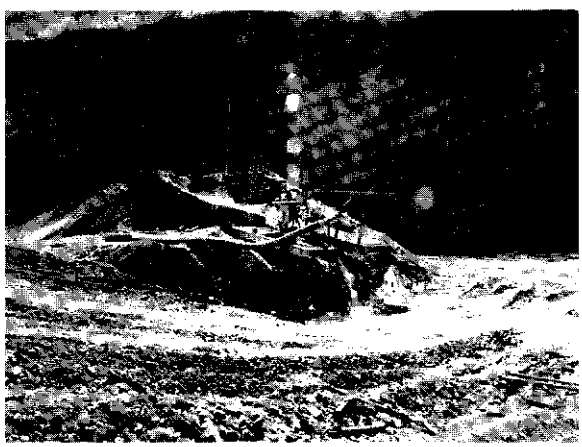
Wash Plant: A Pearson sluice plant was used in 1991 and 1992. The pay gravels were washed in a 12 foot by 20 foot dump box lined with ⅝ inch punch plate. The slurry was sluiced in two 4 foot by 20 foot side runs and one 3 foot by 20 foot centre run. The side runs were lined with Nomad matting and 1 inch riffles for the first 8 feet, and expanded metal and Nomad matting for the lower 12 feet. The centre run used Nomad matting, expanded metal, 1 inch riffles, and ⅝ inch punch plate. The plant processed 120 to 150 cubic yards per hour, using approximately 4600 igpm. A 10 inch by 12 inch Peerless pump supplied water to the sluice plant.

Ground Description: The cuts became deeper as mining progressed into the hillside. The 1992 cut had 1 foot of vegetation over a 80 feet of frozen black muck. The depth of the underlying gravel increased from 6 to 12 feet in 1992. Bedrock varied between fully decomposed and blocky. From 4 to 6 feet of gravel was sluiced with 3 to 4 feet of bedrock.

Mining Cuts: A single cut measuring 80 feet wide by 300 feet long was mined in 1991. A larger single cut measuring 80 feet wide by 800 feet long was mined in 1992.

Water Supply and Treatment: Water was pumped from an instream reservoir on Hunker Creek. The effluent was settled in three long settling ponds before discharging into Hunker Creek at the downstream end of the property. Seepage outflow through old dredge tailings was tried successfully for a while in 1991, but the tailings became plugged and that method no longer worked.

Gold: Most of the gold was fine with 5% +10 screen, 20% -10+60 screen, 50% -60+80 screen, and 25% -80 screen. Much of the gold was angular with quartz attached. Fineness was 740.



A triple run sluice box with monitor at J&C Holding's mine on Hunker Creek.

UNNAMED TRIBUTARY OF LAST CHANCE CREEK **116 B 3a**
Wolreid Mining Ltd. **64°01'N 139°06'W**
Water Licence: PM86-158RL **1992**

Operation/Location: Gary Crawford and Bob Cattermole moved their operation from Sulphur Creek in mid-season of 1992 to an unnamed tributary near the mouth of Last Chance Creek on the left limit. A crew of three and a cook were employed.

Equipment/Function: A D9H Cat bulldozer was used to strip the vegetation and push pay gravels into a stockpile. A 980C Cat loader fed the sluice plant and hauled the tailings away.

Wash Plant: The sluice plant consisted of a derocker 10 feet wide by 16 feet long feeding a sluice run 4 feet wide by 24 feet long. The first 12 feet were lined with Nomad carpeting, 1 inch riffles, and ⅝ inch punch plate. The lower 12 feet used Nomad matting and 2 inch riffles. A Morris 8 inch by 10 inch slurry pump powered with a 3208 Cat engine supplied the 2500 igpm required to sluice approximately 100 cubic yards per hour.

Ground Description: This area was mined by the oldtimers and the stratigraphic profile has been significantly altered. The gravel was mixed with dirt and clay from the hydraulic workings on Dago Hill. A shallow vegetative layer covered the mixed pay underneath. No overburden was found between the vegetation and pay gravel. All the gravel mix and up to 6 feet of the bedrock was sluiced.

Mining Cuts: A single cut 500 feet by 300 feet was sluiced in 1992.

Water Supply and Treatment: Water was pumped from a reservoir built beside Last Chance Creek. An open drain from the creek to the reservoir allowed the water to be replaced when sluicing. Effluent from the sluice plant was treated in a large out of stream settling pond located on the left limit of the Hunker Creek valley, downstream from Last Chance Creek.

Gold: Almost all of the gold was fine and flat, with some round coarser gold. The fineness was 710.

BEAR CREEK **116 B 3b**
Sunrise Placers **64°00'N 139°14'W**
Water Licence: PM90-076 **1991, 1992**

Operation/Location: This operation was located near the mouth of Bear Creek in the valley bottom. Three miners worked at this site in 1991, and 4 miners worked in 1992.

Equipment/Function: Equipment used at this site in 1991 included 2 Terex 8250 bulldozers, one Hough 120 loader with an 8 yard bucket, and one Hough 90 loader with a 5 yard bucket. In 1992 work proceeded with a Terex 8250 dozer, a Fiat 31 dozer, a LeBear 982 3 yard backhoe, a Hough 120 loader, and a Hough 90 loader.

Wash Plant: In 1991 a 10 foot by 20 foot modified derocker classified material to one inch, and fed a sluice run 3½ feet by 20 feet with Nomad carpet and a combination of expanded metal, punch plate and 2 inch riffles. This plant processed 150 loose yards per hour, using 2000 igpm of water pumped by a 10 inch by 20 inch pump powered by a 125 horsepower Lister engine. In 1992 a 6 foot by 35 foot trommel with 16 foot wide by 8 foot long oscillating sluice runs was used. The four, 4 foot wide runs were lined with expanded metal and matting. The trommel used 1000 igpm of water pumped by an 8 inch by 6 inch Berkley pump powered by a Detroit diesel engine.

Ground Description: In 1991 there was 80 feet of overburden, comprised mostly of mixed slide rock, a large underground glacier, and frozen muck and gravel at confusing levels. Bedrock stepped down in a downstream direction. Six feet of gravel and two feet of bedrock were sluiced. In 1992, 30 feet of mixed waste muck and gravel were found over 8 feet of bottom gravel. The bottom gravel and 6 feet of bedrock were sluiced.

Mining Cuts: In 1991 cuts measuring 400 feet by 100 feet by 35 feet, and 400 feet by 150 feet by 80 feet were mined. In 1992 one cut 400 feet long by 120 feet to 80 feet wide was sluiced.

Water Supply and Treatment: In 1991 water was supplied from out of stream reservoirs. Final settling of waste water was accomplished in old dredge tailing ponds. In 1992 water was supplied by an instream reservoir with settling in the same dredge ponds.

Gold: Gold recovered in 1991 was both rough and smooth, and quite chunky. Fineness was from 690 to 720, and it screened to 15% +10 mesh, 60% -10 to +60 mesh, and 25% -60 mesh. In 1992 the gold was coarse with no fines, and assayed at 700.

Comments: Work in 1991 was in a dredged area of the creek. When required these tailings were used for stabilization of the creek channel. In 1992 shafts and drifts were found from rim to rim throughout a cut made on the bottom claim of the property.

KLONDIKE RIVER **116 B 3c**
Lee Hall **64°02'N 139°25'W**
Water Licence: PM89-180 **1991**

Operation/Location: Lee and Richard Hall ran a seven person operation in 1991, then leased the ground to Torfinn Djukastein for the 1992 season. The mining cuts were located on the right limit bench, above the Klondike River Valley, within the bottom loop of the new Dome Road. The sluicing operation was located in the valley bottom, in old dredge ponds, about 1000 feet from the Klondike River just outside of city limits. Cat operators worked two shifts excavating the cut, and the wash plant was run for one single shift each day.

Equipment/Function: Four D9 Cat dozers were used to strip overburden and dig gravels in the bench cuts. Two 980 Cat front-end loaders were used to load pay gravels into dump trucks for transport to the wash plant. One 850 loader/backhoe was used to dig pay gravels. Two 966 Cat front-end loaders fed the wash plant and removed and stacked tailings. Tailings were loaded into dump trucks owned and operated by local contractors, and hauled away for use at construction sites.

Wash Plant: A 10 by 20 foot derocker was followed by double oscillating sluice runs, 4 feet wide by 20 feet long, with angle iron and expanded metal riffles. Up to 100 cubic yards of loose material were sluiced per hour, using about 1000 gallons per minute supplied by a diesel powered Deutch 6 by 8 inch pump.

Ground Description: Overburden increased from about 6 feet near the edge of the bench to nearly 15 feet at the back side of the cut, 500 feet from the edge of the bench. The gravel layer also increased, from about 20 feet to 30 feet deep. The bottom 3 feet of gravel and 2 to 3 feet of decomposed bedrock were sluiced.

Mining Cuts: Four parallel cuts about 100 feet wide by 1500 feet long were taken out, starting from the edge of the bench and working uphill.

Water Supply and Treatment: Water was recycled within dredge ponds beside the Klondike Highway. There was no seepage discharge detected in any of the adjacent dredge ponds between the operation and the Klondike River.

Gold: Mixed fines and coarse gold and nuggets with quartz attached were found. Fineness was 820.

KLONDIKE RIVER **116 B 3c**
Torfinn Djukastein **64°02'N 139°25'W**
Unlicensed **1992**

Operation/Location: A ten person operation was sub-contracted by Torfinn Djukastein in 1992. It was located on the right limit bench of the Klondike River just upstream of the Dawson City boundary, with the sluicing operation on dredge tailing piles in the valley bottom, next to the Klondike Highway.

Aerial view of the Klondike River looking downstream. Torfinn Djukastein's operation is on the right limit bench.

Equipment/Function: A D9H dozer, a D7 Cat dozer, and a Komatsu D375A dozer were used for stripping overburden and pushing pay gravel. A Poclain face-shovel with a 5½ yard bucket was used to excavate waste gravel, and to load a 60 ton Euclyd rock truck, which stockpiled gravels on

the bench. A 980B Cat front-end loader was used to load pay gravel into three leased 15 ton dump trucks, which carried gravels to the sluice plant in the valley. Two 966 Cat front-end loaders were used to feed pay gravels into the sluice and to remove tailings.

Wash Plant: A derocker fed a single sluice 5 feet wide by 24 feet long, lined with punch plate over expanded metal and Nomad matting for the first 12 feet, and 2 inch angle iron riffles for the last 12 feet. A Paco 8 by 10 inch pump powered by a GM 471 diesel delivered about 1500 gallons per minute, which was used to process 90 to 100 cubic yards per hour.

Ground Description: A new cut in 1992 between the Dome road and Thomas Gulch, along the edge of the right limit bench, had 5 feet of moss and dirt over a gravel layer 35 to 50 feet deep. Overburden and waste gravels were stockpiled on the bench. The bottom 1 or 2 feet of gravel and 3 to 4 feet of grey-green, decomposed bedrock were sluiced.

Mining Cuts: Approximately 500,000 cubic yards of materials were excavated from the bench. The area varied from roughly 250 feet wide to nearly 400 feet wide by 850 feet long. About 60,000 cubic yards were sluiced.

Water Supply and Treatment: Water was pumped from a dredge pond about 1000 feet away from the Klondike River. Sluice water was discharged to another dredge pond, next to the pump pond, on the uphill side. Seepage was visible between these two ponds. No discharge was detected in other dredge ponds or in the Klondike River.

Gold: Mostly fines, with a few rough nuggets with quartz attached. Fineness was 810.

KLONDIKE RIVER **116 B 3c**
Bill Olson **64°03'N 139°22'W**
Water Licence: PM89-093 **1991, 1992**

Operation/Location: William Olson Jr. managed a two person operation in 1992, on the right limit bench of the Klondike River below Thomas Gulch.

Equipment/Function: A D7 Cat dozer with ripper was used for cleaning bedrock. A 980B Cat front-end loader with a 5 yard bucket was used for stripping overburden and waste gravel, and for digging pay gravel. A 950 Cat front-end loader with a 3 yard bucket fed pay gravel into the wash plant and removed tailings.

Wash Plant: A 6 foot by 14 foot dump box was followed by a single sluice run, 2 feet wide by 16 feet long. The dump box was lined with 1½ inch punch plate over expanded metal riffles on cocoa mat, and the sluice run was lined with 2 inch angle iron riffles. Roughly 45 loose yards per hour were processed, using 1500 gallons per minute of water recycled from the settling ponds by a 6 inch by 6 inch Gorman Rupp trash pump, powered by a 353 GM diesel.

Ground Description: At the north side of the cut farthest away from the edge of the bench, a layer of vegetated soil 4 to 6 feet deep overlay about 15 feet of layered clay with seams of frozen sand and ice, which overlay gravels roughly 15 to 20 feet deep. The bottom 6 feet of gravel and about 3 feet of decomposed bedrock were sluiced.

Mining Cuts: One cut in 1991 was approximately 200 feet by 300 feet, and one cut in 1992 was about 100 feet by 150 feet.

Water Supply and Treatment: Water was ditched from Thomas Gulch to a small reservoir on the right limit bench. It was fed by gravity to the sluice box and was recycled by pump from the settling ponds on the bench.

Gold: Most of the gold was fine (90% minus 10 mesh), very bright in colour, flattened, with quartz attached. Fineness was 780.

BONANZA CREEK **116 B 3c**
Aime Brunet **64°01'N 139°22'W**
Water Licence: PM91-101 **1991**

Operation/Location: This property was located on the right limit bench of Bonanza Creek below Trail Hill. A two person operation was sub-contracted by Tim Coles for a few weeks in 1991.

Equipment/Function: One D9 Cat dozer was used to dig pay gravels from the hillside on a middle level bench plateau. A dump truck was used to transport the pay to the sluice box at the edge of the bench. A backhoe fed the wash plant, and tailings were discharged downhill into dredge tailings ponds.

Wash Plant: The wash plant was a dump box with shaking screen deck, followed by double sluice

runs with angle iron riffles. About 125 cubic yards of loose materials were processed per hour, using roughly 2000 gallons per minute supplied by a 10 by 10 inch pump powered by Cat diesel.

Ground Description: A layer of frozen black muck 30 to 40 feet deep was excavated from the middle level bench plateau, along with a gravel layer below it 10 to 15 feet deep. All gravels and about 4 feet of decomposed bedrock were trucked to the wash plant. Waste was stripped mechanically and stockpiled at the base of the hillside.

Mining Cuts: One cut about 20 feet wide by 100 feet long was removed.

Water Supply and Treatment: Water was pumped directly from Bonanza Creek. The sluice box was set at the edge of the hillside above old dredge tailing ponds. Waste water was settled in these dredge ponds, and discharge was by seepage only back to Bonanza Creek.

Gold: A mix of fine and coarse gold was recovered with some nuggets. Assay results were around 790.

BONANZA CREEK **116 B 3c**
Aime Brunet **64°01'N 139°22'W**
Water Licence: PM88-102 **1991, 1992**

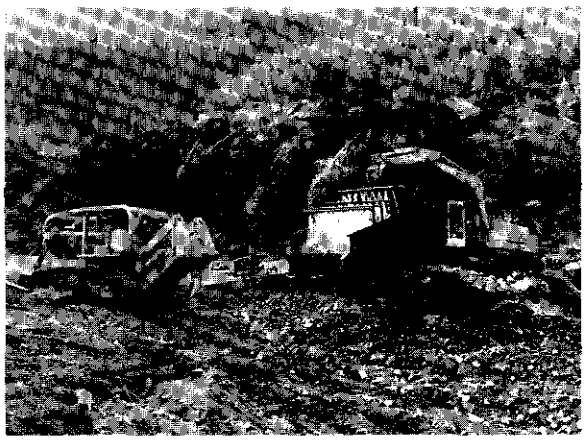
Operation/Location: A four person operation was sub-contracted to Tony Pete in 1991 and 1992, on the left limit of Bonanza Creek upstream of California Gulch.

Equipment/Function: One D9 Cat dozer and one D8 Cat dozer were used to strip overburden and dig pay gravel. A D5 Cat dozer was used to push tailings, and a John Deere 650B backhoe was used to dig drains and to feed the wash plant.

Wash Plant: A derocker was followed by a single sluice run 42 inches wide by 20 feet long, with angle iron riffles over expanded metal riffles over Nomad mating. Sixty to 75 yards per hour were processed, using up to 1500 gallons per minute supplied by a 6 by 6 inch pump powered by a GMC diesel.

Ground Description: Frozen overburden increased from about 5 to 30 or 40 feet deep as the cut progressed into the base of the steep hillside on the left limit of the Bonanza Creek valley. Layers of gravel and slide bedrock were mixed with the overburden. The bottom layer of gravel was 10 to 15 feet deep, and the bedrock was sloped. All the gravel and about 2 feet of bedrock were sluiced.

Mining Cuts: Several parallel cuts were made into the base of the hillside, gradually working uphill. Around 15,000 cubic yards were excavated from an area 100 feet wide by 300 feet long.



Aime Brunet's derocker and single run sluice, located on Bonanza Creek.

Water Supply and Treatment: Water was pumped directly from Bonanza Creek to the sluice. In 1991 waste water was pumped by a 6 by 6 inch slurry pump to dredge tailings ponds on the other side of the creek. Discharge to Bonanza Creek was by seepage only. In 1992 an out of stream settling pond was constructed behind an armoured protective berm, next to Bonanza Creek.

Gold: Mostly fines with a few small nuggets. Assay was 790.

BONANZA CREEK **116 B 3c**
Robert Nicholson **64°01'N 139°22'W**
Water Licence: PM91-028 **1991, 1992**

Operation/Location: This one person operation run by Robbie Nicholson was located on Bonanza Creek at the mouth of Lovette Gulch, a right limit tributary, near the base of Lovette Hill.

Equipment/Function: One D9 Cat dozer with ripper was used to strip overburden and dig pay gravels. A Cat 920 front-end loader fed the wash plant and removed tailings.

Wash Plant: A dry grizzly screen fed a single sluice run 3 feet wide by 20 feet long containing 1 inch angle iron riffles. This was followed by a second sluice run 4 feet wide by 15 feet long, with expanded metal riffles over Nomad matting. About 50 loose yards per hour were processed, using 1000 gallons per minute supplied by a Paramount 6 inch by 5 inch pump, powered by a Cat 3304 diesel.

Ground Description: Forty to 50 feet of frozen black muck was stripped from about 8 feet of orange-reddish gravel. All gravel and about 5 feet of decomposed bedrock were sluiced. Waste was used to backfill an old mining cut.

Mining Cuts: In 1991 one cut about 30 feet wide by 300 feet long was taken, and in 1992 cut about 200 feet by 150 feet was removed.

Water Supply and Treatment: Water was recycled 100% from a large old mining pit, separated from Bonanza Creek by the public road. Tailings gravel and overburden were also discharged into this old cut. Groundwater seepage into the pit was the only water supply.

Gold: The gold was very fine (minus 10 to plus 60 mesh), dull and flat, with very few nuggets. Fineness was 795.

BONANZA CREEK & SOURDOUGH GULCH — **116 B 3c**
Hans Algotsson — **64°01'N 139°22'W**
Water Licence: PM 90-078 — **1991, 1992**

Operation/Location: In 1991 a two person operation was sub-contracted by George Hamilton on the right limit valley bottom of Bonanza Creek at the base of Trail Hill, in an old White Channel tailings cone. In 1992 George Hamilton subcontracted a one person operation on the left limit bench of Bonanza Creek, and a left limit bench of Sourdough Gulch.

Equipment/Function: In 1991 a D7 Cat dozer and a D6 Cat dozer were used to load pay gravel, feed the wash plant, and remove tailings. In 1992 one D7 Cat dozer only dug pay, fed the plant, and removed tailings.

Wash Plant: An 8 foot by 12 foot dump box with punch plate fed triple sluice runs. The centre run was 24 inches wide by 16 feet long, and the two side runs were 27 inches wide by 16 feet long. Angle iron riffles were used, and the runs were stepped down 6 inches after each four feet section. the processing rate was about 60 cubic yards per hour, using around 1500 igpm.

Ground Description: In 1991 up to 10 or 12 feet of unfrozen White Channel tailings gravel was found above a layer of local gravel 1 to 2 feet deep, on top of broken, sloped bedrock. All gravels were sluiced with 1 foot of bedrock. In 1992 there was about 8 feet of tailings gravel partially mixed with a layer of local gravel up to 6 or 8 feet deep. All gravels and 1 to 2 feet of bedrock were sluiced.

Mining Cuts: In 1991 about 8000 cubic yards of materials were excavated from an area roughly 75 feet wide by 225 feet long. In 1992 about 6000 cubic yards of gravel was mined from area 150 feet by 125 feet.

Water Supply and Treatment: In 1991 water was supplied from Bonanza Creek, with out of stream settling in dredge tailing ponds and seepage discharge only to Bonanza Creek. In 1992 water was supplied by gravity from an old ditch line from Sourdough Gulch. Out of stream settling occurred in dredge tailing ponds in the Bonanza Creek valley, with seepage discharge only to Bonanza Creek.

Gold: In 1991 all the gold was fine powder, assayed from 790 to 820. In 1992 most of the gold was fine powder with a few small chunks, assayed at 790.

SIXTYMILE RIVER **116 C 2**
Aardvark Placer **64°02'N 140°45'W**
Water Licence: PM89-148 **1991, 1992**

Operation/Location: This operation run by Chuck and Lynn McDougall was located on a left limit bench of the Sixtymile River, midway between Miller and Glacier Creeks. Three miners worked one 10 hour shift per day at this site.

Equipment/Function: One D8H dozer was used for stripping and pushing up pay to the sluice. Hydraulic stripping methods were also employed at this location. Two Berkley 6 inch by 8 high pressure pumps were used at the site.

Wash Plant: In 1991 the wash plant was a dump box with a single sluice run. For 1992 two side undercurrents 6 feet by 6 feet in size with expanded metal over Nomad carpet were added. With this system 85 loose yards per hour were washed using 2000 igpm of water.

Ground Description: The stratigraphic section was 1 foot of moss over 20 feet of frozen black muck over approximately 6 feet of gravel. Two feet of pay gravel and one foot of bedrock were sluiced.

Mining Cuts: In 1991 an area 250 feet wide by 350 feet long was stripped. Of this 8100 cubic yards were sluiced in 1991, and the remaining 1620 cubic yards were sluiced in 1992. The remainder of 1992 was spent stripping a new cut which has not been sluiced.

Water Supply and Treatment: Water was pumped up to the sluice site from a small pond next to the Sixtymile Ditch. Out of stream settling of sluicing and monitoring effluent was accomplished in a series of 8 ponds on the left limit of the Sixtymile valley.

Gold: The fineness of the gold was 830. The gold was flat and smooth, with a lot of fine gold and some nuggets.

SIXTYMILE RIVER **116 C 2**
Coulee Resources Ltd. **64°01'N 140°42'W**
Water Licence: PM89-092 **1992**

Operation/Location: During the latter half of the mining season Coulee Resources Ltd. started stripping and processing ground on the left limit bench of the Sixtymile River, upstream of the confluence with Glacier Creek. Staff from the Glacier Creek site worked at this property. The water use licence was held by Eldorado Placers Ltd.

Equipment/Function: Two Cat bulldozers (one D8L and one D9H), and a PC400 excavator were used to work this property.

Wash Plant: Processing equipment from the Glacier Creek site was moved to this location.

Ground Description: The stratigraphic section was 10 feet of black muck over 20 feet of gravel, all over decomposed bedrock. The sluice section was 2 feet of gravel and 2 feet of bedrock.

Mining Cuts: An area 1500 feet by 200 feet was stripped at this location.

Water Supply and Treatment: Water was acquired from the Sixtymile River, with settling in a 500 foot by 1000 foot settling pond built from an old Eldorado Placers cut.

Gold: Gold was approximately 10% nuggets with a fineness of 820.

Comments: This ground had been previously cat mined.

SIXTYMILE RIVER **116 C 2**
Eldorado Placers Ltd. **64°02'N 140°41'W**
Water Licence: PM89-092 **1991, 1992**

Operation/Location: In 1991 eight miners and 2 camp personnel worked 16 hours per day on the Sixtymile River near its confluence with Big Gold Creek. Work was completed at this site in 1991. Testing was performed on the left limit of the Sixtymile River downstream of its confluence with Five Mile Creek, and in 1992 seven miners and 4 camp personnel worked 16 hours per day at the site.

Equipment/Function: In 1991 2 D9L Cat dozers, 2 D9H Cat dozers, and a D8H Cat dozers were used to mine the property. In 1992 one less D9H was used.

Wash Plant: Pay dirt was processed through a 300 bank yard per hour cat fed box, designed and built by Eldorado Placers. Material was screened to 1 inch minus. Gold recovery was achieved using 8 feet of 1 inch by 1 inch riffles, 12 feet of expanded metal, and Nomad matting.

Eldorado Placers' operation on the Sixtymile River, downstream of Five Mile Creek.

Ground Description: The stratigraphic section for the cuts mined in 1991 was 4 feet of mud over 12 feet of gravel, all frozen. Good definition was found between the mud and gravel layers. The sluice section was 3 feet of gravel and 3 feet of bedrock. In 1992 6 to 20 feet of muck was found over 6 to 12 feet of gravel, with good definition between the layers. The sluice section was 3 feet of gravel and 3 feet of bedrock.

Mining Cuts: In 1991 14 cuts were processed and approximately 223,168 cubic yards were sluiced. In 1992 6 cuts were processed and about 106,000 cubic yards of material was sluiced.

Water Supply and Treatment: In 1991 water was obtained from Big Gold and Glacier Creeks, and the Sixtymile River, depending on which cut was mined. Settling was achieved in out of stream settling ponds. In 1992 water was obtained from Five Mile Creek. Settling was achieved in out of stream settling ponds on the left limit of the Sixtymile River. After initial cuts were completed a recirculation system was utilized, with overflow entering the settling pond system.

Gold: In the Big Gold Creek area gold had a fineness of 740 to 810. Approximately 90% was -6 to +200 Tyler mesh. In the Five Mile Creek area gold was similar to that found in the Big Gold Creek area, except larger pieces had quartz attached. Fineness was 840.

Comments: Site restoration was completed in the fall of 1991 at the Big Gold Creek site.

MOOSE CREEK **116 C 2**
Ron McMillan **64°12'N 140°54'W**
Water Licence: PM89-066 **1991, 1992**

Operation/Location: This three person operation run by Ron McMillan was located on Moose Creek, a tributary of the Forty Mile River about 4 miles upstream from the Alaska border.

Equipment/Function: One D6 Cat dozer was used to strip and dig gravel and to remove tailings. An Hitachi backhoe with 1½ yard bucket was used to dig drains and to feed the wash plant.

Wash Plant: An 8 foot wide by 24 foot long dump box lined with punch plate was followed by a single sluice run, 3 feet wide by 40 feet long with 2 inch angle iron riffles. Around 60 loose yards per hour were processed using gravity feed water ditched from an instream reservoir.

Ground Description: The valley was only 100 feet wide in the area being mined. Overburden was about 6 feet deep over 5 to 6 feet of pay gravels. All gravels plus and 2 feet of decomposed bedrock were sluiced.

Mining Cuts: Two cuts approximately 125 feet by 150 feet, and 100 feet by 90 feet were completed in 1991 and 1992.

Water Supply and Treatment: Water was ditched about 400 feet by gravity from an instream reservoir. Two out of stream settling ponds were approximately 300 feet by 60 feet, and 600 feet by 40 feet in dimension. In 1992, a 4 inch pump was used to recycle water from the settling pond to the sluice box.

Gold: Mostly fines with a few rough, small nuggets with quartz attached. Fineness was estimated to be 850.

MOOSE CREEK **116 C 2**
Robert Young **64°11'N 140°54'W**
Water Licence: PM90-026 **1991, 1992**

Operation/Location: Carol and Bob Young continued their two person operation on Moose Creek, a right limit tributary to the Forty Mile River. Mining took place in the narrow valley, from 100 to 200 feet wide.

Equipment/Function: A Cat D9 dozer was used to dig and push gravel. A Cat 235 backhoe was used to feed pay gravel into the wash plant and to dig drains, and a Cat 988 front-end loader was used to remove and stack tailings.

Wash Plant: A dump box 7 feet wide by 20 feet long was followed by a sluice run 45 inches wide by 32 feet long with angle iron riffles. An 8 inch by 10 inch pump powered by a Cat diesel supplied the 5000 igpm of water needed to process 80 to 100 loose yards per hour.

Ground Description: Overburden was only 3 or 4 feet deep, and the depth of gravel varied from 4 to 10 feet near the middle of the valley bottom. All gravel and up to 4 feet of bedrock were sluiced.

Mining Cuts: Four cuts totalling about 100 feet wide by 900 feet long were taken.

Water Supply and Treatment: Water was pumped from an instream reservoir and was settled in three out of stream ponds.

Gold: The gold was coarse and flat with a few small nuggets, some with quartz attached. Fineness was 840.

GLACIER CREEK **116 C 2**
Barbara and Henry Hanulik **64°02'N 140°49'W**
Water Licence: PM90-086 **1991, 1992**

Operation/Location: This small family operation was located on the left limit of Glacier Creek. Two miners and one camp worker were active at this site, working 8 hours per day.

Equipment/Function: Mining was performed using a 955 track loader with a two yard bucket.

Wash Plant: Twenty to 30 loose yards per hour were processed through a sluice box with a truck dump box with punch plate, expanded metal and matting. It fed a 30 foot by 2 foot sluice run with 2 inch riffles on Nomad matting and expanded metal. An estimated 1400 igpm of water was used, pumped with a 6 by 6 pump powered by a 4 cylinder Ford diesel engine.

Ground Description: One to 2 feet of old tailings lay over moss and 15 feet of mud and gravel. This was partly thawed above creek level. Old workings were found on this site.

Mining Cuts: In 1991 one 80 foot by 150 foot cut was processed, and in 1992 one cut 50 to 60 feet wide by 200 feet long was processed.

Water Supply and Treatment: Seepage from an upstream dam and water from Glacier Creek were recycled at this site in 1991. In 1992 no recycling was done. Settling was achieved in two 50 foot by 100 foot out of stream settling ponds.

Gold: Gold was generally in fine particles, black in colour. The Fineness was 820 to 830.

GLACIER CREEK **116 C 2**
Coulee Resources Ltd. **64°02'N 140°45'W**
Water Licence: PM89-132 **1991, 1992**

Operation/Location: This operation was located on Glacier Creek approximately 2 miles upstream from its confluence with the Big Gold Creek Valley. The licence was assigned to Coulee Resources from Fell Hawk Mining. Mining was continued both upstream from Fell Hawk's work, and on the left limit bench of Glacier Creek. Five miners and one camp worker covered two 12 hour shifts per day.

Equipment/Function: Two Cat bulldozers (a D8L and a D9H), a Cat 980C loader, and a PC400 excavator were used to mine the site.

Wash Plant: Two wash plants were used. A triple run sluice processed 75 yards per hour, and a derocker processed 120 yards per hour. A 10 inch by 10 inch GMC pump was used to provide 1500 igpm of water.

Ground Description: The depth varied from cut to cut. Typically the stratigraphic section consisted of 16 feet of gravel and 40 feet of talus material over decomposed shale bedrock. The sluice section was 2 feet of gravel and 1 foot of bedrock.

Mining Cuts: Five cuts were mined with surface dimensions of 100 feet by 150 feet, 100 feet by 450 feet, 75 feet by 200 feet, 200 feet by 100 feet, and 130 feet by 800 feet

Water Supply and Treatment: Water was acquired and treated in an instream recycle/settling pond in Glacier Creek.

Gold: The majority of the gold was 28 mesh in size, although 15% was coarser than 12 mesh. Fineness was 820.

Comments: Extensive underground drifting had taken place on this property, evidence of the mining this creek has seen since before the turn of the century.

LITTLE GOLD CREEK **116 C 2b**
Gordon Downs **64°02'N 140°46'W**
Water Licence: PM89-047 **1991**

Operation/Location: This operation was located on Little Gold Creek a few claims upstream of its confluence with Big Gold Creek. Two miners and one camp person worked at this site.

Equipment/Function: A Cat D7 bulldozer was used for pushing up pay dirt and stripping. A Grade-all backhoe was used to feed the sluice, and a Case 580 backhoe was used for ditching.

Wash Plant: Thirty yards per hour were processed through a Super Sluice II with a 2 foot by 8 foot sluice run. Water consumption was 300 igpm, pumped using a 4 inch by 4 inch Monarch trash pump powered by a Briggs and Stratton 14 horsepower engine.

Ground Description: The total depth was 12 feet, all of which was frozen. The 12 feet was comprised of 1 foot of moss, 4 feet of muck, and 6 to 8 feet of gravel. The sluice section at this site was the gravel and 2 feet of bedrock.

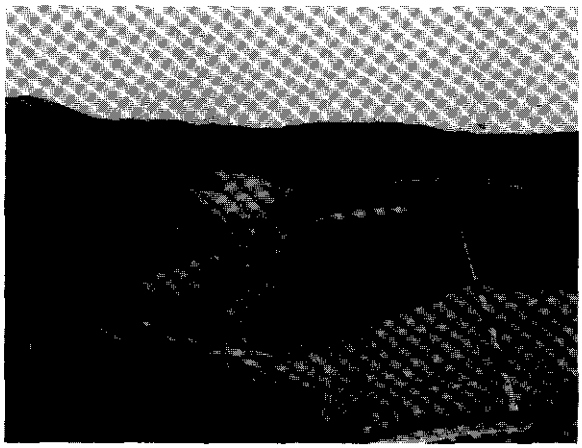
Mining Cuts: One cut was mined on the right limit of Little Gold Creek in the 1991 mining season. It was 10 feet wide by 200 feet long. Total cubic yardage sluiced was 595.

Water Supply and Treatment: Water was acquired from an instream reservoir in Little Gold Creek. All settling ponds were out of stream on the left limit. Pond dimensions were 200 feet by 50 feet, 100 feet by 2 feet, and 50 feet by 25 feet.

Gold: Gold recovered was mostly fine with some nuggets. The gold was flat and smooth with some black stain. Some gold had quartz in it. Fineness was 860.

GLACIER CREEK **116 C 2b**
D & P Mining Expl. Ltd. **64°01'N 140°45'W**
Water Licence: PM89-053 **1991**

Operation/Location: Three miners worked 10 hours per day 7 days a week during the mining season. This operation was located on the left limit of Glacier Creek, immediately upstream from its confluence with the Big Gold Creek Valley. Work was also performed approximately 1 mile upstream on the right limit of Glacier Creek, where oldtimer's cat tailings were sluiced.



In 1992, D & P Mining Exploration Ltd. moved their operation to Gold Run Creek (shown above).

Equipment/Function: A Cat D9G bulldozer was used to push up the cut, and a Cat D8H dozer fed the plant. A Cat D8H dozer and Cat 966C loader were used to remove and pile tailings.

Wash Plant: The wash plant was a modified Hector box. A 15 foot by 20 foot dump box with ½ inch and ¾ inch punch plate over expanded metal and Nomad matting dispersed the pay to a triple run sluice. The centre run was 3 feet by 20 feet with alternating 5 foot sections of expanded metal over Nomad matting, followed by 3 inch angle iron riffles. Approximately 3000 gallons per minute of water was provided by a 10 by 12 inch Worthington pump powered by a Cat 3208 diesel engine. From 75 to 100 cubic yards per hour were sluiced.

Ground Description: At the start of the 1991 mining season sluicing was completed on ground prepared during the 1990 mining season. On completion of this work the oldtimer's cat tailings were processed.

Mining Cuts: The cut processed at the start of the season was 300 feet by 300 feet, and the dimensions of the tailings processed were 100 feet by 350 feet.

Water Supply and Treatment: For the first cut water was pumped from Big Gold Creek, with settling achieved in two ponds on Greg Hakonson's ground in the Sixtymile Valley. For the second cut a 100% recycle system was used out of stream from Glacier Creek.

Gold: Gold was angular with quartz, although some pieces were solid and smooth. Fineness was 840, and 10% screened to +10, 65% -10 to +60, and 25% -60.

Comments: During the winter of 1991-1992 this licence was assigned to Kluane Enterprises Ltd. No work took place under this licence in the 1992 season.

BIG GOLD CREEK **116 C 2b**
Steve Prohaszka **64°02'N 140°45'W**
Water Licence: PM89-164 **1991, 1992**

Operation/Location: This operation was located in the Big Gold Creek valley between Big Gold and Glacier Creeks, approximately 1550 feet upstream from the Sixtymile River. In 1991 three miners worked 7 to 8 hours per day, and in 1992 two miners worked 10 hours per day on this property.

Equipment/Function: Mr. Prohaszka used two Cat front-end loaders, models 988 and 980, for feeding the sluice plant. Two Cat dozers, models D9H and D9G, were used for stripping. A Drott 50 backhoe with a ¾ yard bucket was used to dig drainage ditches.

Wash Plant: In 1991 the wash plant was a 6 foot diameter trommel 24 feet long, with double sluice runs 30 inches wide by 24 feet long, alternating 2 foot sections of angle iron riffles and 2 foot sections of expanded metal riffles. In 1992 the wash plant was a derocker with two sluice runs, each 4 feet wide by 24 feet long. The trommel processed 130 to 140 loose yards per hour, while the derocker processed 120. Both plants used 1600 igpm of water. Water was supplied to the trommel using an electric powered 6 inch submersible pump. Water was supplied to the derocker using a 10 inch by 8 inch Cornell pump powered by a 6 cylinder GM diesel.

Ground Description: The ground had a total depth of 22 to 23 feet. One foot of moss lay over an average of 14 feet of frozen black muck, which in turn lay over 8 feet of gravel. The sluice section was 2 to 3 feet of pay gravel and 3 to 4 feet of bedrock.

Mining Cuts: In 1991 the area mined was 300 feet by 500 to 600 feet. In 1992 the area mined was 200 feet by 200 feet.

Water Supply and Treatment: Water for this operation was pumped from Big Gold Creek. Settling was accomplished in one large settling pond in old dredge tailing, with discharge to Glacier Creek.

Gold: Gold was fine and flat with very little coarse gold. Fineness was 870.

MILLER CREEK **116 C 2c**
Sixty Mile Enterprises Ltd. **64°02'N 140°55'W**
Water Licence: PM89-186 **1991, 1992**

Operation/Location: Miller Creek is a tributary of the Sixtymile River. Five miners and 1 camp cook worked a 12 hour shift, with one person stripping overburden at night.

Equipment/Function: One Cat D8L bulldozer was used for stripping and pushing up pay gravel. A Cat 980C loader was used to feed the trommel, and a Cat 966 loader was used to feed the sluice box in 1991 and the shaker plant in 1992.

Wash Plant: In 1991 a trommel was used on the downstream end of the property, and a single run side dump sluice box was used at the upstream end of the property. The trommel was 4 feet by 20 feet, with material going to a 3 to 4 foot by 8 foot run of pulsating riffles with a small nugget trap. The sluice box had a 6 foot by 12 foot dump box with a 2 foot by 45 foot sluice run. Water was supplied at a rate of 1500 igpm to each plant with 10 inch by 8 inch Morris high pressure pumps. One was powered by a 3304 Cat diesel engine, and the other was powered by a 3306. The sluice box processed 50 yards per hour and the trommel processed 70 yards per hour. In

1992 the trommel was used at the downstream site, and a shaker plant worked the upstream site. The shaker plant had a hopper over a 4 foot by 8 foot screen deck, feeding a 2 foot by 10 foot sluice run, followed by a 9 foot wide by 16 foot long run with expanded metal. The shaker plant processed 45 loose yards per hour using 1200 igpm of water.

Ground Description: At the upstream site 1 foot of moss covered 5 feet of gravel on bedrock. The ground was half frozen and half thawed. The gravel and up to 4 feet of bedrock were sluiced. In 1991 the downstream site had a total depth of 60 feet of frozen material. It consisted of 1 foot of moss over 25 feet of muck over 35 feet of gravel. The sluice section was 15 feet of gravel and 4 feet of bedrock. In 1992 the total depth at the downstream site was 15 feet of frozen material. One foot of moss lay over 5 feet of black muck covering 10 feet of gravel. The gravel and 2 feet of bedrock were sluiced.

Mining Cuts: In 1991 a cut 300 feet by 100 feet was made on the downstream site, and a cut 50 feet by 300 feet was taken at the upstream site. In 1992 a cut of 50 feet by 700 feet was put in at the upstream site, and a cut 40 feet by 1400 feet was excavated at the downstream site.

Water Supply and Treatment: At the upstream site water acquisition and treatment was accomplished using 100% recycling in two instream ponds, one 300 feet by 100 feet and one 300 feet by 400 feet. Water for the downstream site was pumped from instream, and settling was accomplished using an out of stream settling pond 500 feet by 200 feet.

Gold: Gold was rough with some red and black stain. The fineness was from 827 to 855.

GLACIER CREEK **116 C 2c**
D & H Placers **64°02'N 140°54'W**
Water Licence: PM89-126 **1991, 1992**

Operation/Location: This operation was located in the valley bottom of Glacier Creek, 7 miles upstream from the mouth. Two miners worked 10 hours per day at this site.

Equipment/Function: A Cat D7E bulldozer with angle blade and winch, and a one yard Insley 875H excavator were used to mine this site.

Wash Plant: The wash plant was a 30 inch by 8 foot vibrating screen deck with 1½ inch holes. The run was 18 inches by 12 feet with 1½ inch angle iron riffles. The slope of the run was 1⅝ inches per foot. Matting was Nomad carpet with backing. Pay dirt was processed at 25 yards per hour, using 400 igpm pumped with a 4 inch by 6 inch Allis Chalmers pump.

Ground Description: The stratigraphic section on this property consisted of 2 feet of moss overlaying 15 feet of muddy gravel. The sluice section was 4 feet of gravel and 2 feet of bedrock.

Mining Cuts: About 5100 cubic yards of material was processed.

Water Supply and Treatment: A small instream reservoir supplied water for this operation. Waste water treatment was achieved in two out of stream settling ponds.

Gold: Gold recovered was rough and chunky. Ten percent was +10, 80% -10 to -60, and 10% -60. Fineness was 830.

Comments: Restoration work for final abandonment was completed at this site in mid to late August of 1992.

BRUIN CREEK **116 C 2**
Bernard Gagnon **64°15'N 140°40'W**
Water Licence: PM91-066 **1992**

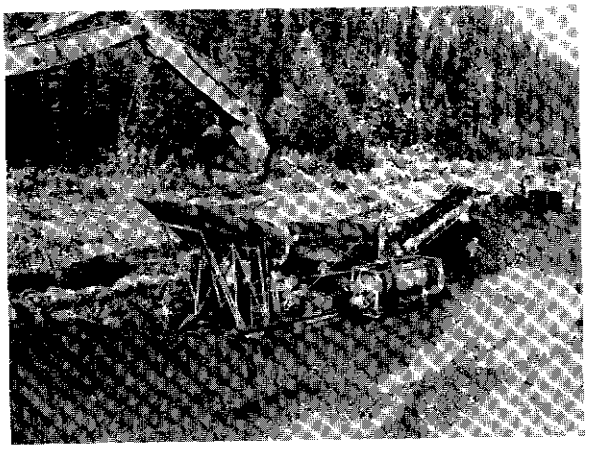
Operation/Location: A four person operation was sub-contracted by Earl and Kevin Chesney in 1992. It was located on the left fork of Bruin Creek about 4 miles upstream from the forks.

Equipment/Function: A 971 Liebherr backhoe with a 1¾ yard bucket was used to feed pay gravels into the wash plant. Two D8K Cat dozers were used to strip overburden and dig pay gravel, and a Cat 966 front-end loader was used to push tailings.

Wash Plant: Materials were fed through a hopper into a 54 inch diameter by 20 foot long trommel with 16 feet of screen. Oversize tailings were discharged by conveyor belt, and undersize materials passed through a 36 inch diameter by 8 feet long centrifugal concentrator. Around 70 cubic yards per hour were processed, using about 500 gallons per minute supplied by a submersible

4 by 4 inch Flygt pump, powered by electric motor.

Ground Description: Only 2 or 3 feet of organic overburden was encountered on top of the gravel layer, which was 4 to 5 feet deep. All gravel and about one foot of bedrock were sluiced.



Trommel sluice plant being fed by a Cat 235 backhoe at Bernie Gagnon's operation on Bruin Creek.

Mining Cuts: A series of narrow cuts were excavated from the middle of the valley bottom, working in the upstream direction, for a distance of nearly 5000 feet. The cuts varied in width from 30 to 100 feet, and averaged about 65 feet wide.

Water Supply and Treatment: A creek bypass channel was maintained on the left hand side of the operation. Water was pumped directly from the creek, and waste water was settled in a series of small out of stream ponds built in the mined out cuts.

Gold: A mixture of sizes and shapes were recovered, but most gold was fine powder which assayed around 800.

BROWNS CREEK **116 C 7**
C. Neuser **64°20'N 140°52'W**
Water Licence: PM91-004 **1992**

Operation/Location: This property was located on Browns Creek near the forks of the creek, about four miles upstream from its confluence with the Forty Mile River. Ed and Cindy Neuser ran a two person operation for one shift in 1992,

Equipment/Function: A Cat D9 dozer was used for stripping, digging gravels, road building, and tailings removal. A Cat 235 backhoe/excavator fed pay gravels into the wash plant.

Wash Plant: A 4 foot by 6 foot single screen deck classifying material to ¾ inch was followed by double sluice runs 4 feet wide by 6 feet long, each with New Zealand (hydraulic) riffles. An average of 30 loose yards per hour were processed, using roughly 300 gallons per minute supplied by a Gorman Rupp 6 inch by 6 inch pump.

Ground Description: The stratigraphic section included about 5 feet of overburden (peat moss on top of layers of soil and clay) over approximately 5 feet of mixed gravel (up to 6 inches diameter) over decomposed bedrock.

Mining Cuts: Two cuts were taken, approximately 30 feet wide by 300 feet long, and 30 feet wide by 400 feet long.

Water Supply and Treatment: Water was recycled out of stream in old mining cuts, with seepage discharge only.

Gold: Mostly flat grains with no nuggets and no flour gold.

FORTY MILE RIVER **116 C 7**
Forty Mile Placers **64°23'N 140°38'W**
Water Licence: PM89-033 **1991**

Operation/Location: Leslie Chapman and Bill Claxton ran a three person operation on a gravel bar on the left limit of the Forty Mile River in 1991. This was a continuation of the work begun in 1990 about two miles upstream from the Clinton Creek townsite.

Equipment/Function: An Hitachi UH10 backhoe was used to excavate the mining cut and to feed the floating wash plant. A D6 Cat dozer was used to level tailings piles and to build a protective berm around the mine site.

Wash Plant: A floating dredge plant consisted of a feed hopper with grizzly (grizzly bars were 7 inches apart) followed by a 12 foot long trommel 4 feet in diameter, with ¼ inch screen. The trommel fed double 6 foot by 6 foot sluice runs with hydraulic riffles, and then two 4 foot by 8 foot sluice runs with expanded metal riffles over

Nomad matting. Tailings were discharged by a conveyor belt 24 inches wide by 32 feet long. A submersible Flygt pump with 4 inch outlet, powered by a 13 horsepower electric motor, delivered around 700 igpm. The processing rate was about 100 loose yards per hour.

Ground Description: There was no overburden on the exposed river bar, and gravel depth varied from 12 to 18 feet from surface to bedrock. The water table was one foot below surface and all gravel was thawed. Materials excavated were mixed sand, gravel, and rounded rock boulders up to 2 feet in diameter. About 50% of the excavated material was minus ¼ inch. Bedrock was irregular and decomposed.

Mining Cuts: The wash plant was floated within the active mining cut, which averaged about 100 feet wide by 45 to 50 feet long. As the cut was excavated at the front end, it was filled in at the rear end. During the 1990 and 1991 seasons an area about 1500 feet long by 100 feet wide was mined.

Water Supply and Treatment: Water was recycled to the wash plant from within the active mining cut by an electric submersible pump. Water was supplied to the cut by groundwater seepage only, and there was no visible seepage discharge.

Gold: The bright yellow and flaky gold was mostly below 60 mesh, with nothing over 10 mesh. Fineness was 815.

FORTY MILE RIVER **116 C 7**
Forty Mile Placers **64°23'N 140°39'W**
Water Licence: PM91-063 **1991, 1992**

Operation/Location: Leslie Chapman and Bill Claxton ran a three person operation, during low water periods, in the middle of an island in the Forty Mile River about three miles upstream from the Clinton Creek townsite.

Equipment/Function: An Hitachi UH10 backhoe was used to excavate the mining cut and to feed the floating wash plant. A D6C Cat dozer was used to level tailings and to build a protective berm around the operation. One Cat 920 front-end loader was used for general duties.

Wash Plant: A floating dredge plant consisted of a feed hopper with grizzly. The grizzly bars were 7 inches apart, followed by a 4 foot diameter by 12 foot long trommel with ¼ inch screen, then double sluice runs 6 feet by 6 feet with hydraulic riffles, and then two more sluice runs, 4 feet by 8 feet, with expanded metal riffles over Nomad matting. Tailings were discharged by a conveyor belt 24 inches wide by 32 feet long. A submersible Flygt pump with 4 inch outlet, powered by a 13 horsepower electric motor, delivered around 700 igpm. The processing rate was about 100 loose yards per hour.

Ground Description: The exposed gravel on the river island had no overburden and averaged about 15 feet deep. All gravel plus about 2 feet of bedrock were sluiced.

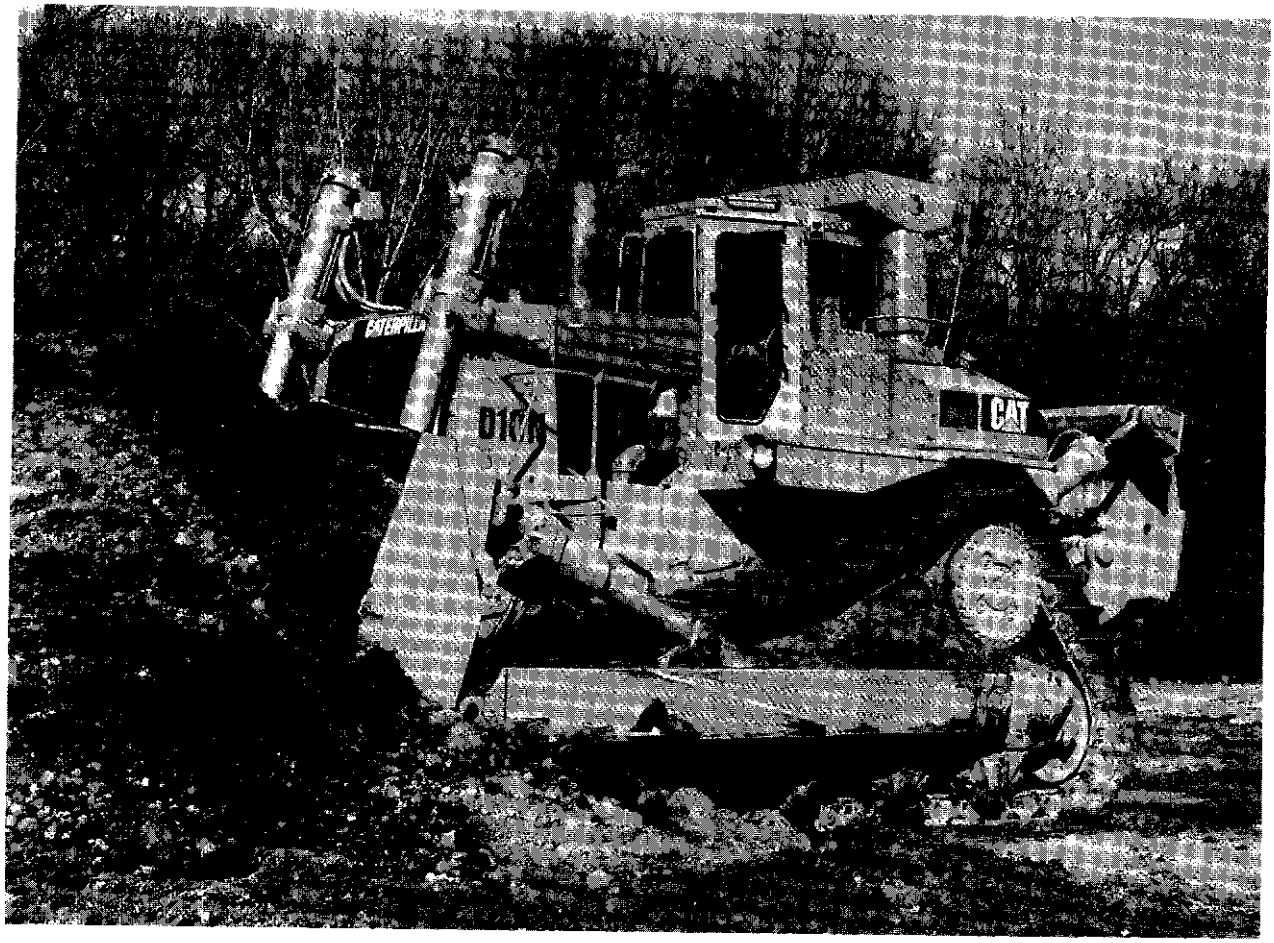
Mining Cuts: An area about 150 feet wide by 400 feet long was worked near the middle of the upstream end of the island.

Water Supply and Treatment: Water was recycled 100% within the mining cut. Make-up water was supplied by groundwater seepage, and no seepage discharge was visible.

An aerial view looking downstream at Forty Mile Placers' floating trommel plant.

Gold: The fineness was 835, and 95% was minus 20 mesh.

Comments: This water license was issued with special conditions for protection of fish and fish habitat. Daily river crossings were by boat only, and special permission was granted by the Department of Fisheries and Oceans, on a site by site basis, for crossings with equipment during low water.



The Right Machine for the Job

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Machines for surface mining operate in generalised economic zones based on distance and application conditions. Limits of these economic zones vary with underfoot conditions, operator skill, grade, and type of material, and mine managers need to evaluate all the factors to arrive at the lowest cost loading and hauling system, says **John H. Ingle**, Mining Engineer, Caterpillar Inc.

Production is a fundamental mining criterion, but the key is unit cost - cost per ton, bank cubic meter, or any other measure. Miners can cut that cost by carefully selecting the most effective system for a given set of conditions. Generally, miners can choose among five mobile systems:

- dozing with track-type tractors
- load and carry with wheel loaders
- loading and hauling with wheel-tractor scrapers
- excavators matched to articulated trucks
- wheel loaders, excavators, and cable shovels matched to rigid-frame trucks

Each system has an economic zone of application - an optimal set of conditions including distance, underfoot, grades, material type, production rate, and operator skill, where a specific machine system is most cost - effective. Of these factors, distance provides the best initial basis for system selection.

Systems for short distances (0-300 m)

Dozers have a very high empty weight-to-payload ratio, making them extremely productive and cost-effective at short distances - out to 150 m.

operator skill and adverse grades; an unskilled operator can reduce production as much as 40 percent. Dozing uphill reduces production about two percent for each percent of grade; dozing downhill assists by the same amount. Typically, operators are comfortable with maximum grades of 20-25 percent. **Figure 1** shows the derated, day-in, day-out production range of D8N (11.7 m^3/15 yd^3 blade, 212 kW) through D11N (32.4 m^3/42 yd^3 blade, 575 kW) tractors dozing on flat ground. **Figure 2** shows the cost-per-ton relationship based on each system's total owning and operating cost. The other short distance option, common in aggregates operations, is load and carry with a wheel loader. Empty weight-to-

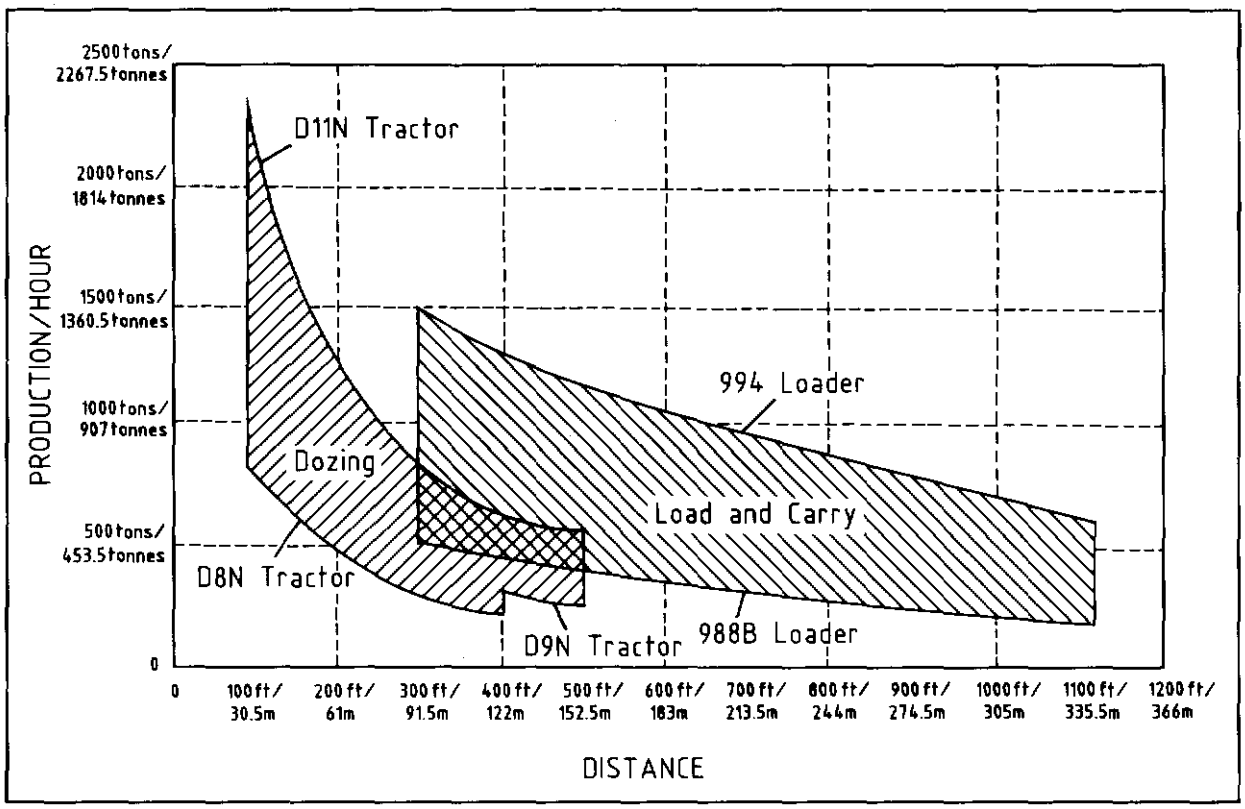

Figure 1. Short distance sytems: production

However, production and cost-effectiveness fall off quickly as the distance increases.

Dozers have the broadest material appetite of any mining system, and their tracked undercarriage permits work in conditions ranging from deep mud to jagged rocks. Dozers are sensitive, though, to

payload ratio remains high. Operator skill has less impact on load and carry production, but because the wheel loader uses tires, underfoot conditions become more significant; high rolling resistance requires more power - and fuel - to move material. Slippery underfoot conditions limit loading and hauling efficiency, while sharp rocks increase tire costs. Grades for load and carry should be limited to around +10 percent. **Figures 1** and **2** show production cost comparisons for the wheel loader range from 988B (6m^3/8 yd^3 bucket, 280 kW)

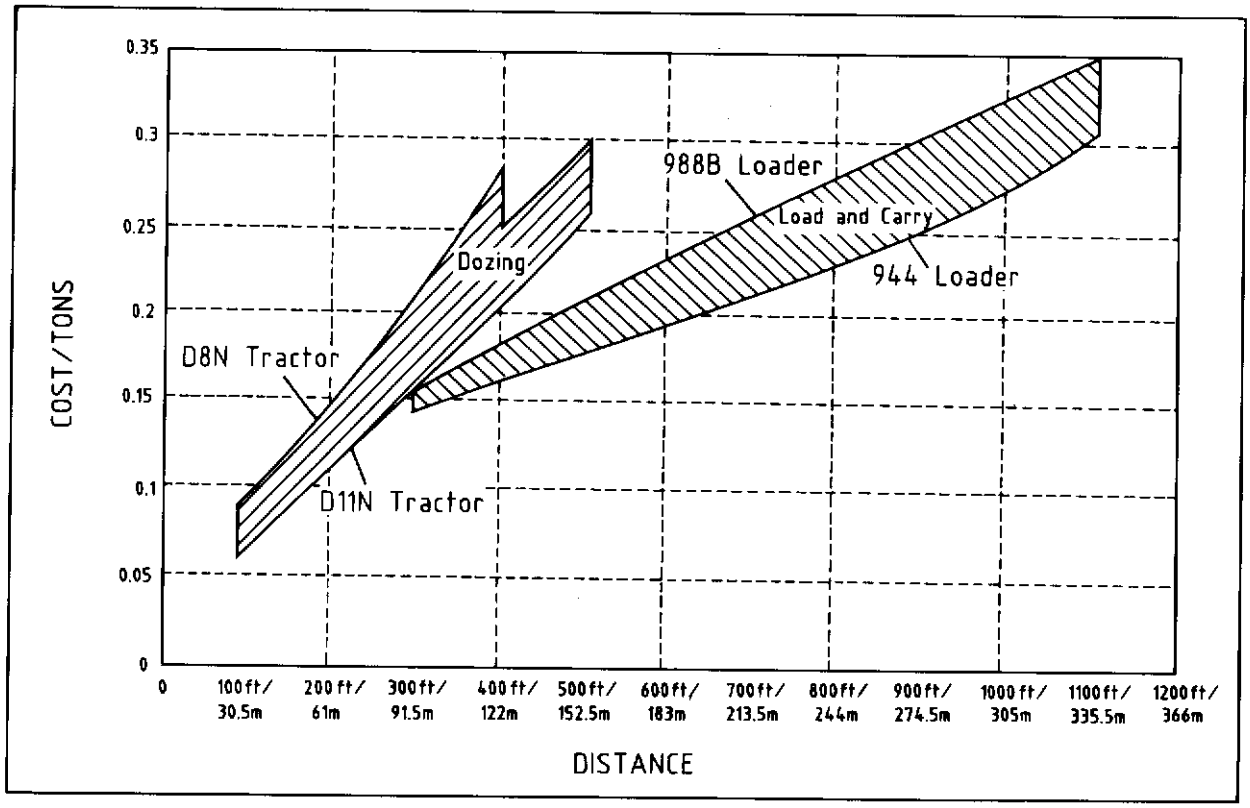

Figure 2. Short distance systems: cost

through the 994 (18 m^3/23 yd^3 bucket, 932 kW).If conditions are conductive to load and carry, dozing is more economical for distances up to 100m.

Load and carry distance is also limited by tire Ton Mile Per Hour (TMPH) ratings - the combination of load and speed acceptable for a given tire size and design. Exceeding the ratings can damage tires and significantly increase operating cost.

Systems for medium distance (300-2700 m)

Scrapers, articulated trucks, and rigid frame trucks are the choices for medium hauls.
Scrapers choices include self-loading elevating scrapers push loading with dozers, and push-pull loading with tandem scrapers. Scrapers carry a weight penalty because of their loading and dumping capability, but in the right material they load fast - giving a production advantage over trucks at shorter distances.

Scrapers are sensitive to operator skill and material. At longer distances, TMPH ratings limit scraper speed.

Articulated and rigid-frame trucks matched with wheel loaders, excavators and shovels become competitive with scrapers in the 2,100-2,700 m range. As rolling resistance increases and underfoot conditions deteriorate, articulated trucks can better maintain production - while production falls for single-engine scraper systems and rigid-frame trucks.

Figures 3 and 4 show production and cost relationships between scrapers and articulated and rigid-frame trucks.

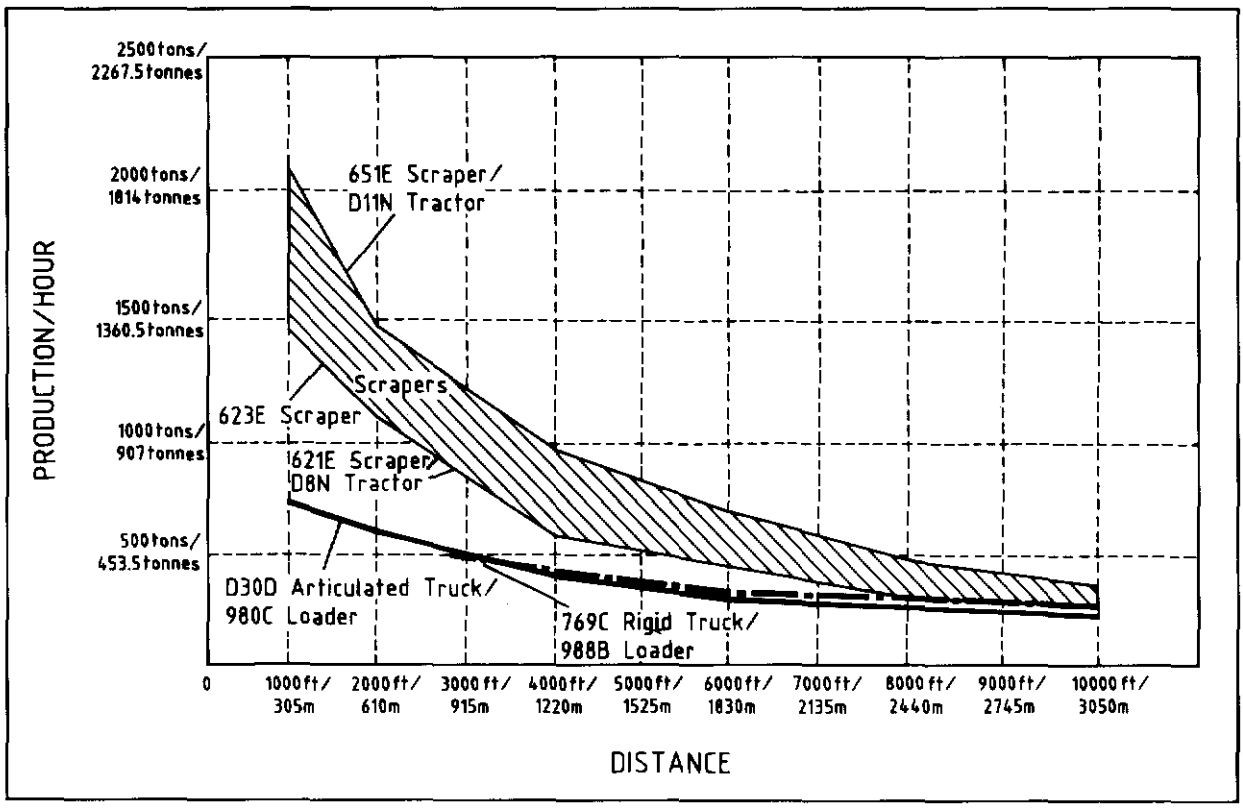

Figure 3. Medium distance systems: production

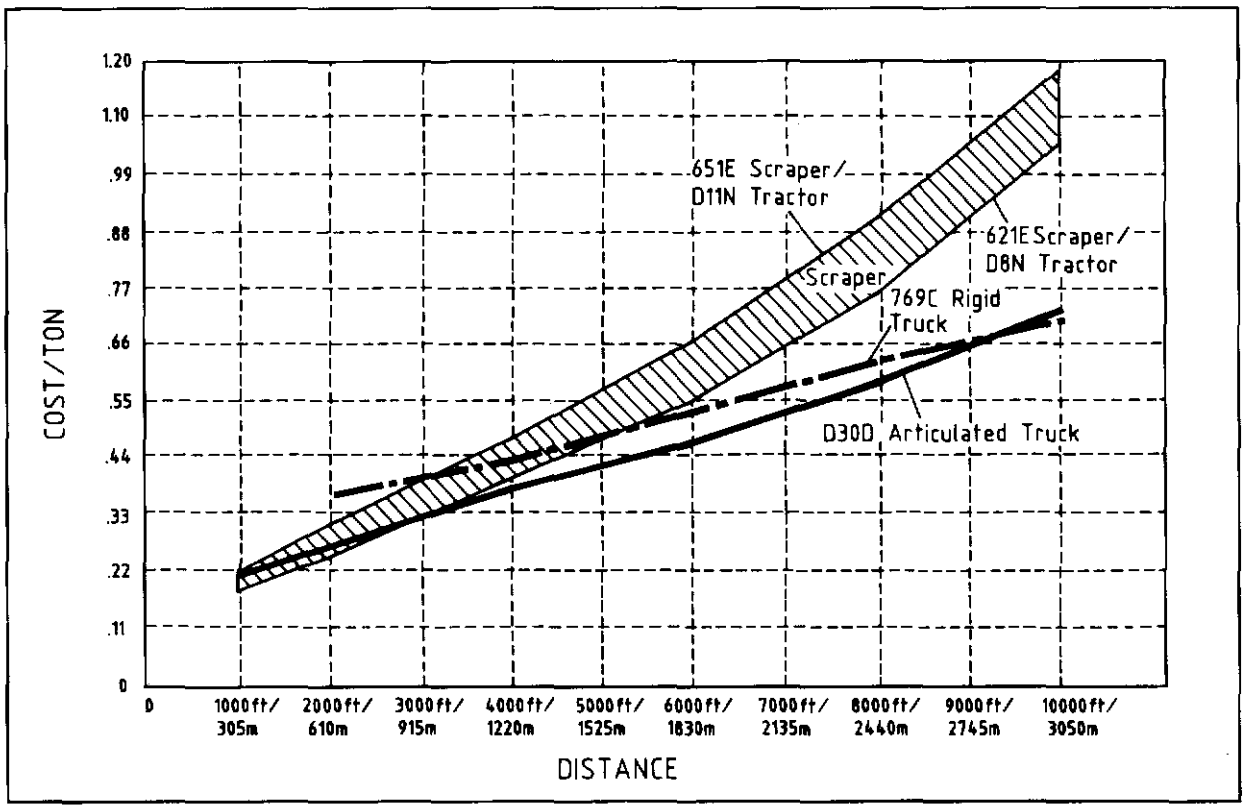

Figure 4. Medium distance systems: cost

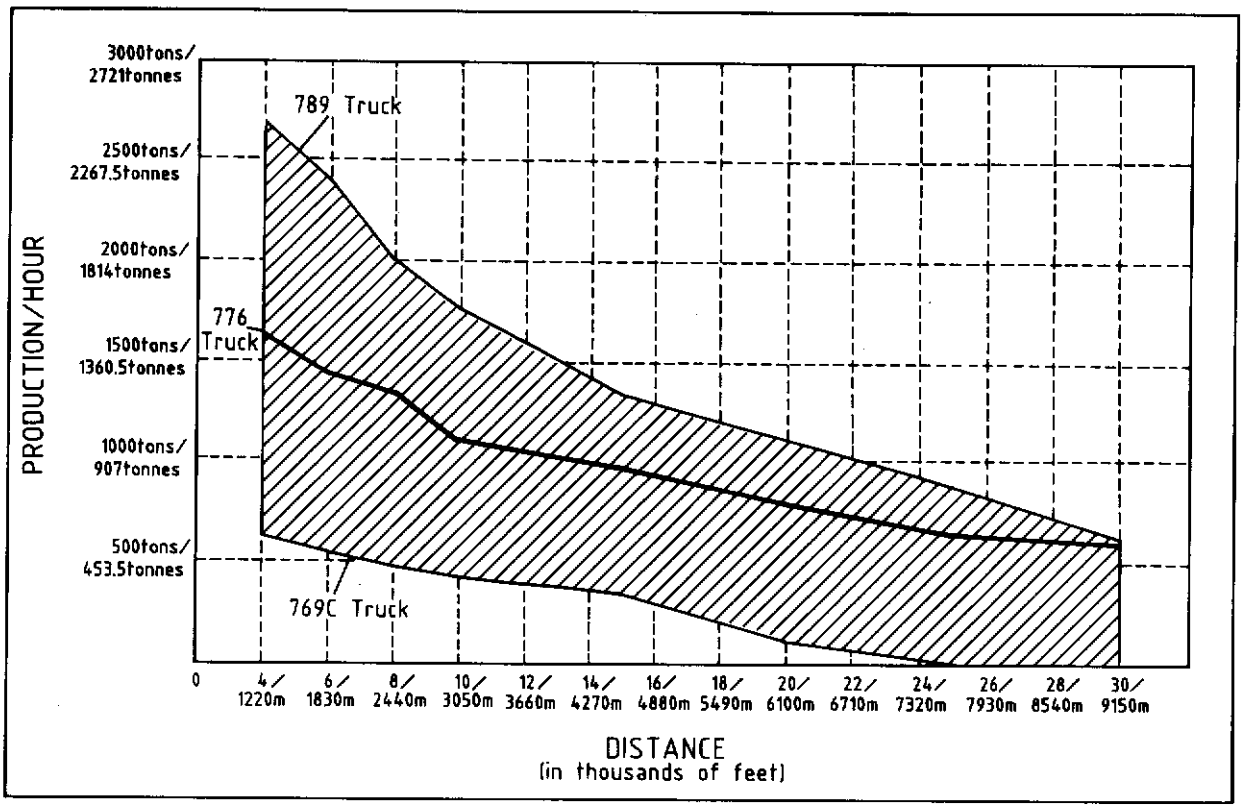

Figure 5. Long distance systems: production

Systems for long distance (2700 m) and longer

Rigid-frame trucks and wagons offer low empty weight-to-payload for long distance hauls. Experience shows the effects of operator skill decreases as haul distances increases; trucks require well maintained haul roads and are sensitive to underfoot conditions.

TMPH ratings on long hauls may require slowing trucks to save tires resulting in lower production and higher unit costs. Haul roads are typically designed with 8-10 percent maximum grades, but rigid-frame trucks can negotiate grades as high as 25 percent.

Wagons have the lowest empty weight-to-payload ratio for the best long-distance economics, but also have a low payload-to-horsepower ratio which limits them to continuous grades of less than about six percent. However, because they distribute loads over more tires, wagons offer improved TMPH ratings.

The 150-ton (136 tonne) wagon becomes economical over the 195-ton (177 tonne) truck at approximately 8,400 meters for the conditions examined. **Figure 5** shows the production range for rigid-frame trucks and wagons; **figure 6** compares cost for long-distance machines.

(Note: Graphs are based on tests with specific Caterpillar machines identified in the graphs. All tests are based on three percent total rolling resistance. All hauling units are matched to loading tools; fleet size remains the same as haul distance increases.)

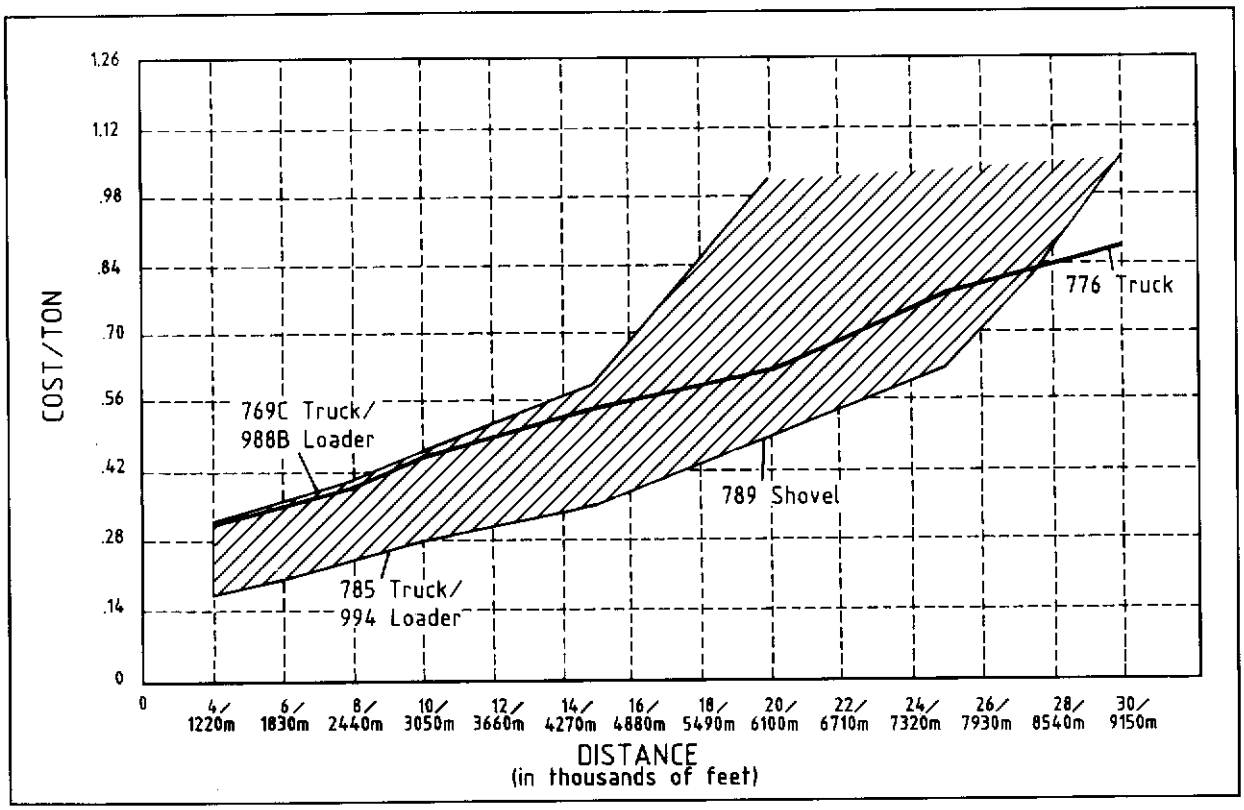

Figure 6. Long distance systems: cost

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