

O T T A W A

August 20, 1940.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 884.

Placer Sands from Beauce County, Quebec.

BUREAU OF MINES
DIVISION OF METALLIC MINERALS
—
ORE DRESSING AND
METALLURGICAL LABORATORIES



CANADA

DEPARTMENT
OF
MINES AND RESOURCES
MINES AND GEOLOGY BRANCH

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Investigation No. 834.

Placer Sands from Beauce County, Quebec.

Shipment:

A shipment containing 59 pounds of placer sand and gravel was received on July 31, 1940. The shipment was submitted by W. A. Marois, Box 22, Jersey Mills, St. George, Beauce County, Quebec.

The sample was taken from Lot 654, Aubert de Lisle, Beauce County, Quebec.

Purpose of the Investigation:

The sample was submitted for the purpose of determining the Gold content, and for amalgamation and concentration tests.

Character of the Sample:

The examination of the sample disclosed that it was made up of several different constituents, e. g., coarse, well-rounded quartz pebbles from about an inch in diameter to eight mesh, fine pebbles minus eight mesh, large lumps of clay, coarse and fine particles of iron-stained cemented sands, fine quartz sand and slimes.

Sampling and Analysis:

Due to the type of the material, it was not sampled, but all the various products of the tests were assayed and the Gold content of the whole shipment was calculated. It was found to contain 0.01 oz. Gold per ton.

Screen Test of Whole Shipment

<u>Products</u>	<u>Weight, per cent</u>
-1 3/4" Cemented Sands	2.09
-1.0 + 3/4 inches	0.83
-3/4 + 1/2 inches	1.71
-1/2 + 1/4 inches	2.89
-1/4 + 4 mesh	1.16
-4 + 6 mesh	1.21
-6 + 8 mesh	0.86
-8 + 20 mesh	8.87
-20 mesh sands	66.87
-20 mesh slimes	13.51
	<u>100.00</u>

The values in the shipment were all in the minus twenty material consisting of 80.4% of the weight of the shipment.

Investigative Procedure:

The material was screened on eight and twenty mesh screens. The various products were treated by panning, jigging, and blanket concentration to determine the distribution of gold in the sample.

Test No. 1

Screening Followed by Panning.

The whole shipment was screened on a minus eight mesh screen. The lumps of cemented sands and clay were picked out and the large pebbles were washed. The cemented sands were crushed and assayed for Gold. The clay was treated in Test No. 2.

A sample of the material passing through the screen was panned in a gold pan to determine the presence of Gold and black sands.

Panning Test on Minus Eight Mesh Sands

Product	Weight, per cent	Assays, Au oz./ton	Distribution of gold, per cent	Ratio of Concentration
Feed	100.0	0.006	100.0	909:1
Concentrate	0.11	0.75	14.2	
Tailing	99.89	0.005	85.8	

The cemented sands contained a microscopic trace of Gold.

A small amount of black sands was recovered in the pan concentrate. A few extremely small particles of Gold were seen in the concentrate.

The plus eight mesh pebbles were crushed, sampled, and assayed. This assay showed only a micro-

scopic trace of Gold. This test indicates that the cemented sands and large pebbles can be rejected without loss of Gold.

Test No. 2

Panning Test on the Clay.

The clay picked out on the eight mesh screen was broken up and washed through a twenty mesh screen. The slimes were poured off and the heavier particles panned.

A small amount of concentrate was recovered containing black sands; no Gold was visible under the microscope in this concentrate.

Panning Test on Plus Eight Mesh Clay

Product	Weight, per cent	Assays, Au oz./ton
Feed	100.00	
Pan Concentrate	0.03	None
Pan Tailing	95.21	Microscopic Trace
Slimes	4.76	Microscopic Trace

This test indicates that the clay can be rejected without appreciable loss of Gold.

Test No. 3

Panning Test on Minus Eight Plus Twenty Mesh Product

The coarse sand and pebbles, separated by screening through eight mesh and retained on twenty mesh, were panned.

The pan concentrate contained a few particles of black sands; no Gold was seen. The black sand was added to the concentrate obtained from the minus twenty mesh sands.

The pan Tailing minus eight plus twenty mesh assayed Au 0.005 oz./ton.

Test No. 4

Jigging Followed by Blanket Concentration
of the Minus Twenty Mesh Product

The minus twenty mesh sands were passed through a Denver Laboratory Mineral Jig. The jig overflow was passed over blanket strakes. The wash water containing the slimes from the wet screening operation also passed through the jig and over the blankets.

The jig and blanket concentrates were panned and examined microscopically for Gold. Both products contained Gold. A black sand concentrate was produced by this panning operation.

A screen test on the minus twenty mesh tailings shows:

Mesh No.	Weight, per cent	
	Sand Tailing	Slime Tailing
- 20 + 35	8.3	---
- 35 + 48	5.4	---
- 48 + 65	2.6	---
- 65 +100	22.0	0.5
-100 +150	22.7	0.9
-150 +200	15.2	1.0
-200	23.8	97.6
	100.0	100.0

Jig and Blanket Concentration
of Minus Twenty Mesh Product

Results:

Products	Weight, per cent	Assays, Au oz./ton	Distribution of Gold, per cent	Ratio of Concentration
Feed	100.00	0.013*	100.00	
Jig Conc.	0.10	5.99	45.58	1000:1
Blanket Conc.	0.06	2.90	13.24	1666:1
Slime Conc. (in blanket)	(0.002)	61.70	9.39	
Cleaner Sand Tailing (from Conc.)	12.70	0.02	23.21	
Sand Tailing	75.86	Microscopic Trace	-----	
Slime Tailing	11.28	0.01	8.58	
Combined Conc. (blacksands)	0.162	4.86*	68.21	617:1

* Calculated values from the assays of the products.

Combined Results on Whole Shipment

Product	Weight, per cent	Assays, Au oz./ton	Distribution of Gold, per cent	Ratio of Concentration
Feed	100.00	0.010	100.00	
+8 Mesh	10.75	Trace	-----	
-8 +20 Mesh	8.87	0.005	4.24	
-20 Mesh:				
Black Sand Conc.	0.12	4.86	55.73	833:1
Cleaner Sand Tailing	8.98	0.02	17.16	
Blanket Sand Tailing	57.77	Trace	-----	
Blanket Slime Tailing	7.98	0.03	22.87	
Clay Slimes	5.53	Trace	-----	

The cemented sands were included with plus eight mesh material.

The assay of the total shipment by calculation was: Gold, 0.01 oz./ton.

The test indicates that 2.4 pounds of black sand would be recovered from one ton of placer sands similar to that submitted for the investigation. If the deposit is uniform, 240 pounds of black sands would

be recovered from each 100 tons of placer sands.

Summary:

The investigation indicates that the plus eight mesh, pebbles, cemented sands, and lumps of clay do not carry appreciable values of Gold. Practically no values were found in the minus eight plus twenty material. The test indicates that the Gold contained in the shipment was extremely fine and all of it passed through a twenty mesh screen.

It is apparent that coarse pebbles, cemented sands, and clay can be rejected after washing off the fine sands which adhere to them.

All the Gold seen was bright and clean.

The small size of the shipment prevented accurate amalgamation tests. The work was confined to the investigation of the material and to determining the presence of Gold in the various constituents included in the shipment.

There was a high ratio of concentration of black sands, 833 to 1 in terms of the whole shipment. In placer sands of the same grade as the shipment, 833 tons of placer sands would be required to recover 1 ton of black sand concentrate containing \$160.00 worth of Gold at \$35.00 per ounce.

Conclusions:

The shipment contained approximately 35 cents worth of Gold per ton of placer sands.

The Gold was bright and clean, and should

offer no difficulties to barrel-amalgamation of the concentrate.

The results of the investigation are only applicable to the shipment submitted. The results of operations at the property are indicated, but will depend on the size and uniformity of the deposit.

WSJ:EPF