NIR 49-2 Report by Joesting IR Livengood 49 1938

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THE TOLOVANA DISTRICT.

The Tolovana District was visited by the writer from Oct. 26-28, 1938. As all open cut mining was suspended for the season and the ground was covered with snow, most of the data on mining and prospecting was obtained in the town of Livengood. A tabulation of mining and prospecting in addition to the Placer Mining forms covering the individual operations have been forwarded to the Territorial Department of Mines at Juneau.

Individual operations on Livengood Creek will be replaced by the dredging operation of Livengood Placers, Inc., which has taken over about five miles of ground and is now doing development work. The two remaining drift mines on Livengood Creek will cease operations in the spring of 1939.

The following information concerning Livengood Placers Inc. was supplied by D.C. Beyer, manager of the company. The company has exercized options on a little over five miles of ground on Livengood Creek. The drilling program has been completed. On the lower part of the holdings drill holes were put down 100 feet apart and the drill lines were 500 feet apart, while on the upper part holes were 100 feet apart and lines 1000 to 2000 feet apart. The dredging ground is on the right limit bench, 1000 to 2500 feet from the present creek channel. The drill logs show 0 to 100 feet of icy muck, 12 to 40 feet of medium fine gravel. The bedrock is decomposed chert and limestone. The deposits are all frozen. In the lower part of the ground, up to drill line 48, 12,000,000 cu.yds., averaging 64¢, and totaling $7,680,000 have been blocked out. The drill lines are 500 feet apart. In the upper portion, between lines 48 and 86, 20,000,000 cu.yds. averaging 43.4¢, and totaling $8,680,000 have been blocked out. The drill lines are 1000 feet apart. The pay streak is 600 to 800 feet wide and fairly uniform. The gold is medium fine, shotty and occurs mostly on bedrock. About two feet of bedrock will be taken up by the dredges.

An earth dam, 1500 feet long and 60 feet high and holding 6000 acre feet of water will be built next summer on Goldstream Creek (S. Fork of Hess River), above Helen Gulch. The water will back up to Alabam Creek from where a tunnel

will be run to Livengood Creek. Work on the tunnel was started in the fall of 1938 and will be completed by the following spring. The tunnel will be 6 x 6 feet in the clear and 3000 feet long. A six mile ditch will run from the outlet of the tunnel down the right limit of Livengood Creek. The maximum hydraulic head will be about 400 feet. Work on the dam and ditches will be completed in the summer of 1939. Two six cu.ft. diesel electric or electric dredges will be installed. The first will operate on the lower part of the ground and may be ready in the summer of 1940. The muck will be removed by hydraulicking. In working the ground, no departures from conventional methods are contemplated. The main development problem was to obtain an adequate water supply at not too great a cost. The management believes that it has solved this problem.

A comfortable, well constructed bunkhouse and messhouse, two stories high and 113 feet wide by 140 feet long, and a 40 by 110 feet warehouse containing office space were built last fall about a mile above Livengood. The bunkhouse has accommodations for 72 men.

300 tons of freight, consisting mainly of lumber and machinery, were hauled from Fairbanks last summer. Freight rates from Fairbanks are $15 a ton in ton lots and 1¢ a pound in smaller lots.

Present equipment includes two RD8 and one RD6 Caterpiller tractors, all with bulldozers, and one 12 cu.yd. Le Tourneau scraper. The scraper will be used mainly in the construction of the dam.

It is expected that the smaller operations in the district will continue for several years, at least, and prospecting should develop additional placers, both in Tanana River and Hess River drainages. The opening of the Elliott Highway from Fairbanks has materially reduced costs and permitted the working of lower grade ground. An increased use of machinery was noted. At present there are 11 tractors, two pumps and one small dragline being used for mining and related work.

In addition to the prospecting reported in the tabulation, two other prospecting outfits are working near Livengood. Howard Sparks, 09-105 Ole Shuros and Angelo Tadiotto will put down a shaft on Amy Creek in ground about 80 feet deep, and Charles Strandberg and Dan Olsen will prospect on Ester Creek in ground from 10 to 90 feet deep with a Fairbanks drill.

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NOTES ON MINING IN THE TOLOVANA PRECINCT (see also 1939 brief report)

B. D. STEWART

Little new prospecting was reported in the Tolovana Precinct this year.

Fred Parker & Son prospected on Olive Creek during the latter part of the season, using a 5" Fairbanks (Sjolseth) drill, and also stripped ground in preparation for ~~mining~~ hydraulic and bulldozer mining. Max Miller of Fairbanks is now a partner of Howard Sparks on Amy Creek, where they spent the latter part of the season building three miles of new ditches and stripping a large area in preparation for next year, when the ground will be worked on a larger scale.

Livengood Placers is pushing development work more rapidly since the R.F.C. loan became available. A crew of about 50 men are working now. About half are employed in driving the tunnel from Hess to Livengood Creeks and the remainder are working on construction and other surface jobs. About 600 feet of the the approximately 3500 foot tunnel have been completed to date. (Nov.30). The R.F.C. loan of $1,050,000 is supplemented by $250,000 raised by the company from private sources. The total amount is expected to be enough to carry on until one dredge is producing. If trouble is experienced with the dam it probably will be inadequate.

The miners depending entirely on gravity water worked only a small portion of the season, as last summer there apparently was even less rainfall than usual. The plants that use machinery to supplement gravity water are reported to have had good seasons.

The present high price of mercury should make the cinnabar deposits near Livengood worth investigating. A known prospect of cinnabar with stibnite occurs at the head of Lillian Creek and another is said to have been found on Olive Creek. In addition, cinnabar has been found in the concentrates from the following creeks: Ruth, Olive, Livengood, opposite mouth of Amy Creek, Lucky, Molly and Lillian. As cinnabar float disintigrates readily the sources should be nearby.

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TERRITORY OF ALASKA
DEPARTMENT OF MINES
JUNEAU, ALASKA

Brief Report on Mining in the Tolovana District in 1939

The Tolovana District was visited during the latter part of August, primarily in connection with the experimental geophysical survey conducted in 1939. At the time the bad condition of the side roads due to rain made it impracticable to visit the outlying mining operations. Some information was obtained from individuals in the town of Brooks and from the management of Livengood Placers, Inc.

Excepting that drift mining has ceased on Livengood Creek, all ground now being under the control of Livengood Placers, Inc., the operations are substantially the same as reported in 1938. The largest producers are N.R.Hudson on Olive Creek and Andrew Warwick on Wilbur Creek. No data on production of opencut mines was available as of Aug. 25. A general lack of water prior to Aug. 20 was reported. Since that date water has been more abundant.

The drifting operation of Anderson and Peterson on the Hidden Treasure Claim of Livengood Creek is still running to the extent that last winter's dump is still being sluiced. Underground worked stopped on March 1. Lack of water during the summer delayed the sluicing considerably. The production for last winter is estimated to be about $25,000.

The R.F.C. loan to Livengood Placers, said to amount to $1,050,000, was approved early in the summer and some of the money was placed at the disposal of the company in September. It is expected that development work will proceed more rapidly next summer.

Work on approaches to the tunnel which will carry water by gravity from the proposed dam on Hess Creek to Livengood Creek has been carried on during the summer, and consists of hydraulicking ditches at the intake and outlet of the tunnel. The intake will be 700 feet long and the outlet 1000 feet. They should be practically completed this summer.

At the damsite an area about 300 by 2000 feet has been stripped preparatory to removing the muck overburden. Test shafts and drill holes have been sunk to top of gravel at the damsite and an adequate supply of fine gravel mixed with finer material and some clay has been located nearby.on the left limit sidehill.

The remaining work done this summer has been reconstruction of seven miles of road from Brooks to near the divide at the head of Livengood Creek. The surface has been graveled heavily but it is difficult to say how much heavy freighting it will stand. The 12 cu.yd carryall, drawn by RD 8 Caterpillar, was used to good advantage in the road construction. Its automatic loading, dumping and spreading eliminated much hand labor. This work was done in cooperation with the Alaska Road Commission; expenses and machinery being shared about equally.

A crew of 15 to 20 men has been working during the summer on the several parts of the project. The main camp at present is on Hess Creek, just over the head of Livengood Creek, where crews stay who are working on the tunnel approaches. An office is maintained 1/2 mile above Brooks, where a large warehouse and a bunk and messhouse were constructed last fall.

Last winter 400 feet of the projected 3300 foot water tunnel were

completed, in addition to a 70 foot shaft 920 feet from the tunnel intake. The tunnel dimensions are 8' high by 8' wide at bottom by 7' wide at top, and when timbered are 6' x 6' x 5' in the clear. A 42" wood pipe will carry the water. The ~~shaft~~ cribbed shaft is 8' x 8' in the clear.

The earth filled dam on Hess Creek will measure 70' from foundation to crest; the crest length will be 2000' ~~feet~~ and the width 25', with 2.5 to 1 side slopes. There will be a canal type spillway and a 36" outlet pipe at the base for draining the dam each fall. The dam capacity will be about 5,000 acre feet. Of this, about 500 acre feet will be below the level of the tunnel and will be wasted each fall. 240,000 to 250,000 cu. yds. of muck will be removed so that the dam fill can be placed on frozen gravel. The fill, consisting of fine gravel and clay, will be moved in either by hydraulicking or by RD 8 tractors and carryalls. All of the material must come from the left limit sidehill, as no suitable supply has been found on the right limit. If filled by hydraulic methods, the dam will be faced with rock on both sides; if carryalls are used only the upstream side will be faced. The total volume of material in the dam will be 450,000 cu. yds.

To prevent seepage at the contact of dam fill and creek gravel, either sheet piling driven 20 feet into the gravel or a cutoff trench 15 feet deep will be used. As the creek gravel is frozen it is hoped that there will be no percolation of water at the contact; that the dam fill will freeze back and form a true union with the underlying gravel. This appears to be the crucial part of the project, and as there is no precedent, it cannot be said with certainty whether or not it will be successful. Any percolation would almost certainly cause trouble. Vertical pipes will be placed in the fill at regular intervals for the purpose of determining the internal temperature. No attempts have been made to determine how far below freezing is the creek gravel at the damsite.

The dam probably will require two years to build. It is of interest because it will be by far the largest dam to be built in the interior, and because of the unique conditions as regards the frozen ground.

Conditions permitting, some of the six miles of ditch which will carry water to the placer ground will be put in this ~~next~~ fall. The ditch will carry 75 sec. ft.

If development goes on schedule production will start in 1943, allowing two years for building the dam and assuming that there will be enough water the following year to fill it so that stripping and thawing can be started. The dredge could be constructed during the summer or fall of 1942 and be ready to operate the following summer. There are many uncertain factors which may alter the above schedule. The dam possibly could be constructed in one year if enough equipment is put on the job, necessitating a larger investment in machinery for which there would be no use after the dam is completed. Stream gauging has been carried out on Hess Creek which indicates that in normal years there is ample spring runoff to fill the dam. Following subnormal winters, such as last winter, there might be insufficient runoff for early stripping and thawing. However it is thought that Livengood Creek could supplement the main water supply to some extent, if a lower ditch were constructed.

As indicated in the 1938 report on the Tolovana District, the success of this operation appears to depend on whether ~~or not~~ an adequate and dependable water supply can be obtained at an expense that is not prohibitive.

A minor problem is presented in the uneven bedrock surface of the right limit bench of Livengood Creek, where the pay is found. The management of Livengood Placers would like to obtain an accurate contour map of the bedrock equivalent to that obtainable from drill holes spaced at about 10 foot intervals in the form of a grid. The expense of such detailed drilling would be prohibitive. The resistivity data obtained on Livengood Creek by the Department of Mines will be studied with the requirements in mind. At present it is doubtful if such detailed accuracy can be

attained at the depths (40' to 120') encountered.

Some difficulty has been experienced in driving the tunnel under the divide between Hess and Livengood Creeks. The fine, tight gravel is difficult to thaw and pick from the face. It may be that there are no experienced thawmen on the job, as few of the younger men in the country have done underground drifting. The management, which has had no experience with underground steam stawing, is considering the use of drills and slow blasting powder. Comparative data on the two methods will be of interest. Hitherto, as far as is known, blasting frozen ground has not been successful, but most trials have been of a haphazard nature.

The work is under the direction of Charles Lewis, mining engineer, and George (Tiny) Purser, civil engineer. W. A. Kraner, Construction Engineer, 1155 Jones St., San Fransisco, was consulting engineer for the dam. Mr. Kraner spent part of last summer in Livengood.

The following new equipment has been acquired since last fall by Livengood Placers, Inc. :

3 pumps, 10"x 12" De Laval, powered by 112 H.P. 6 cyl DHXB Hercules Diesels, delivering 3500 G.P.M. at 100' head and 1500 R.P.M.

1 D2 Caterpillar tractor for general utility work.

5 no.3 giants
10 no. 2 giants
1000' 24" hydraulic pipe
1000' 16" " "
3200' 12" " "

2 International pickup trucks
1 Ford 1 1/2 ton truck

The following equipment was on hand prior to last fall:

1 RD 8 Caterpillar tractor, Issacson bulldozer.
1 RD 6 " " " "
1 12 cu. yd. Le Tourneau scraper.
1 25 H P. boiler, with 4 wb. bucket, hoisting and thawing equipment- set up at tunnel shaft.

Henry R. Joesting

Henry R. Joesting,
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