

YMEP Exploration Final Report

Lake Creek

YMEP Grant # 2021-026

NTS Map 105E/08

Whitehorse District

Whitehorse Mining District

Yukon Territory

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01/31/2022

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Overview

The following is the final report on placer exploration work completed during the 2021 season on several claims as well as a lease owned by the applicant on Lake Creek, Yukon. This work program was a component in a multi-year regional program seeking to evaluate mineral and placer potential within the Livingstone area Gold Fields. Although significant quantities of gold have been withdrawn from the district throughout the past 120+ years the majority of the potential remains covered. Typically, difficulties testing local gravels with thick glacial cover and the remote logistics of the region (only road access is a winter road, summer access requires flight) have precluded thorough investigation of the placer potential of the region, in particular Lake Creek. During 2021 (as well as 2020) exploration work onsite was completed with assistance from the YMEP program.

Location

The Lake Creek placer project is located 61°21'50"N and 134°19'18"W; on NTS map sheet 105E/08, in the Whitehorse Mining District. Lake Creek is a right limit tributary of the South Big Salmon River. See **Figure 1 & 2**.

Access

Access to the property from Whitehorse during the mining season is restricted to fixed-wing or helicopter flights. During the winter, access can ephemerally be provided by the winter road that is only available at the height of winter season.

There are several intermittently maintained bush air strips and several ATV trails that traverse the Livingstone field area. A 1700 meter airstrip is situated in the South Big Salmon river valley near Lake Creek that is used by the applicant. The coordinates of that airstrip are 61°21'58"N and 134°22'19"W.

Placer Tenure

Table 1 Details the status of the Lake Creek claims and prospecting lease.

Grant Number	Status	Legth/Name	Claim Owner	Staking Date	Recording Date	Expiry Date
IW00737	Active	1 Mile	Logan Potter-100%	2020-04-02	2020-04-15	2022-05-11
P12170	Active	JENAB I	Kirk Potter-100%	1981-05-20	1981-05-21	2022-11-20
P12171	Active	JENAB II	Kirk Potter-100%	1981-05-20	1981-05-21	2022-11-20
P12172	Active	JENAB III	Kirk Potter-100%	1981-05-20	1981-05-21	2022-11-20
P12173	Active	JENAB IV	Kirk Potter-100%	1981-05-20	1981-05-21	2022-11-20
P527227	Active	Old Ed 1	Daniel Aitken-100%	2021-04-15	2021-19-04	2022-19-4
P527228	Active	Old Ed 2	Daniel Aitken-100%	2021-04-15	2021-19-04	2022-19-4
P527229	Active	Old Ed 3	Daniel Aitken-100%	2021-04-15	2021-19-04	2022-19-4
P527230	Active	Old Ed 4	Daniel Aitken-100%	2021-04-15	2021-19-04	2022-19-4
P527231	Active	Old Ed 5	Daniel Aitken-100%	2021-04-15	2021-19-04	2022-19-4
P527232	Active	Old Ed 6	Daniel Aitken-100%	2021-04-15	2021-19-04	2022-19-4
P527233	Active	Old Ed 7	Daniel	2021-04-	2021-19-	2022-19-4

			Aitken-100%	15	04	
P527234	Active	Old Ed 8	Daniel Aitken-100%	2021-04- 15	2021-19- 04	2022-19-4
P527235	Active	Old Ed 9	Daniel Aitken-100%	2021-04- 15	2021-19- 04	2022-19-4
P527236	Active	Old Ed 10	Daniel Aitken-100%	2021-04- 15	2021-19- 04	2022-19-4
P527237	Active	Old Ed 11	Daniel Aitken-100%	2021-04- 15	2021-19- 04	2022-19-4

Table 1: Lake Creek Claim Holdings

Work History

The Livingstone area was first prospected in 1894 by Joseph E. Peters (LeBarge, 2007). In 1898, Mr. Peters returned to the area with Mr. George Black and together they discovered Gold on Livingstone creek itself, naming it after Black's friend M. Livingstone.

Lake Creek was first prospected and staked during the 1898 rush to the Livingstone placer gold camp. Some small scale mining was done in the early 1900's, but by 1915 the creek was deserted and it was not until 1930 when T. Kerruish made a new discovery that any work was done. That year Mr. Kerruish installed a hydraulic plant and mined the creek nearly every year until his death in 1944. His claims were kept in good standing by Louise Kerruish until 1954. In the spring of 1959 G.Murdoch and J.Ballentine staked the ground on lake creek, which they worked a small scale until 1961.

During 1973 two small operations were on the creek; G. Asuchak and T. Ames/E.Hill. Mr.Asuchak continued on a small-scale until 1982 season. In 1983 E.Kosmenko began work on Lake Creek, and he has held the ground until transferring to Kirk Potter in 2019. Yukon Government royalty records show 653 ounces recovered from Lake Creek. Previous historic data has said that over \$40,000 in gold was recovered in the past, at much lower gold price than those of today (LeBarge, 2007).

Bedrock Geology

The Livingstone District is underlain primarily by metasedimentary and meta-igneous rocks of Yukon Tanana Terrane, and is bounded on the west with late Paleozoic volcanic and sedimentary rock (Semenof Formation) along the Big Salmon Fault. The Semenov block is assigned to Quesnellia Terrane, and those units are bounded on the west by metasedimentary rocks of the Stikinia terrane (Colpron, 2006).

East and north of the South Big Salmon River lie five successions of meta sedimentary and meta volcanic rocks: the Snowcap complex, Livingstone Creek, Mendocina, Last Peak and Dycer Creek successions (Colpron, 2006). These occur in two structural domains separated by d'Abbadie fault. The Dycer creek succession occurs east of the fault while all other successions occur west of the fault (Colpron, 2017). The lower reaches of Lake creek are dominated by quartzite, quartz-muscovite schist and meta sedimentary rocks (map unit PDS1) of the Snowcap complex. In Upper Lake creek, rocks include NW-trending black carbonaceous phyllite and schist. An outcrop of calcareous chloritic schist partially transects Lake Creek at its middle reaches (Colpron, 2006; 2017).

Surficial Geology

The Livingstone District lies within the late Wisconsinan McConnell glaciation (Duk-Rodkin, 1999) and the most obvious glacial features are of that age. Older glaciations certainly would have blanketed the area, however all features of those earlier episodes have been overprinted by the most recent glacial advance.

Glacial features and surficial deposits in the Livingstone District were mapped by Hughes et al (1969), Klassen and Morrison (1987) and later by Bond and Church (2006). Surficial deposits in the area are mainly till and colluvium, while an irregular glaciofluvial complex occurs in the South Big Salmon valley near the mouth of Martin Creek (Klassen and Morrison, 1987). The prominent valley that diverts the westerly flows of Livingstone, Lake and Summit Creeks is an ice-marginal channel (Hughes et al, 1969).

Indicators of former ice flow direction, mapped by Hughes *et al.*(1969) and Klassen and Morrison (1987) suggest that glaciers flowed north along the low valleys that cross the Semenov Hills into the South Big Salmon River Valley.

The Placer gold-bearing creeks in the Livingstone area (including Lake creek) are characterized by a sequence of interglacial stream gravels which are overlain by McConnell-age glaciolacustrine silts, glaciofluvial deltaic sandy gravel and boulder –rich glacial till (Levson,1992).

On Lake Creek, regional ice flow initially blocked the lower reaches of the drainage, filling the valley with glaciolacustrine silts and clays and glaciofluvial gravels, and covering the gold-bearing interglacial placer gravels. As the ice sheet thickened, it crossed over the drainage transversely from the south to north, and deposited a blanket of till which was later dissected by post-glacial meltwaters (Levson, 1992). The Placer gold-bearing interglacial placer gravels were re-exposed by this down-cutting, which allowed their subsequent exploitation by historic and modern-day placer miners.

2021 Exploration Program

The large 2021 bulk sampling program can be viewed as later stage component of a multi-year exploration program on the Lake Creek placer property. Although the property has produced significant quantities of historic placer gold using minimal labour and manpower, future production will only be successful after thorough and comprehensive testing of the complicated setting to outline remaining prospective placer gold.

The previous 2020 YMEP program was a success as cutting edge placer exploration techniques were able to provide valuable insight into potential locations for most likely economic buried cross-valley paleo-channels (pay gravel).

2020 GeoPlacer Exploration Work

Geoplacer Exploration Ltd. was hired as a contractor to complete an Aerial Imagery Survey and also to complete a Geophysical Resistivity Survey on the Lake Creek property. The high resolution imagery obtained by the drone allowed for identification of landforms and geomorphology which would not have been possible with existing available public online satellite imagery.

Interpreted geomorphology on the orthomosaics and the Digital Terrain Models(DTM) showed several surficial features which are not shown on the available public geology maps. These included a remnant glacial moraine, several cross-valley meltwater channels and a dissected kame

terrace (glaciofluvial gravels). Although not mapped, these geomorphic features are consistent with surficial mapping and ice-flow patterns in the drainage as previously defined by Bond and Church (2006) and Klassen and Morison (1987).

Bedrock was interpreted to be 12 m from surface on the longitudinal line (RES20-LAKE1M-01) and up to 16 m deep in the upstream cross-valley line (RES20-JENAB1-01). A buried boulder gravel channel was interpreted on line RES20-LAKE1M-01 at 8m below surface, which correlated well with observations of the mining exposure on the right limit of the creek below the survey. A potential gravel channel was interpreted in a bedrock depression on line RES20-JENAB1-01, at approximately 12 m below surface, and approximately 90 m from the start of the line. Bedrock appears to be relatively flat for the first 85 meters of the line (starting on the right limit or northside) although the thickness of overburden steadily climbs towards the left limit.

Meltwater channels may have provided areas of pre-concentration in the valley which would increase the values of placer gold in the overlying sediments. Additionally the places where the melt water channels transect the Lake Creek valley may be the locale for inflection points in the valley gradient, which could also correspond with increased placer gold values. These areas were targeted during the 2021 exploration programs.

Personnel and Dates of Work- SAMPLING

Between the dates June 15, 2021- July 16, 2021 a bulk sampling program was completed and rehabilitated on JENAB IV-I claims.. Mr. Kirk Potter's experienced and knowledgeable field crew consisted of Ben & Adam Sternbergh, and Daniel Aiken, all of whom were present for the duration of the program. With the help of heavy equipment (D-7R Dozer, 270D Excavator, 35 Ton Terex Articulated Truck) two large pits were prepared, stripped, excavated and subsequently reclaimed over the course of the exploration program. The surface footprint of each pit typically measured ~ 90m-50m, however the perimeter of the bottom of the pit was generally 30m x 30 m, due to the requirement to properly slope the pit. Therefore the pit did not resemble a cubic shape, more of an inverted cone with a 1/3 (tip end) having been truncated. Pits were both dug into the left limit bank of Lake Creek on claims JENAB 4 and JENAB 3. The west boundary of the pits had already been exposed by Lake Creek and past geomorphological process and as a result the large majority of sediment was excavated as the pit expanded to the east. Depths of the pits (bedrock bottoms) did not exceed 10m in depth, although both were deeper than 8m. A roughly 5:1 'strip vs. sluice ratio' most adequately describes the development of each cut. Each cut was estimated to contain approximately 15,000 m² bank yards of overburden and ~2000 m² of pay gravels.

Pay gravels from each pit were stockpiled near the trommel and were processed separately through the 4'x20' testing trommel (see attached pictures) in respective tests at approximately 50m²/hr for a rough total of 4000 m² of processed pay gravel. Stripping, sluicing, and reclamation (tailings replaced during Rock Truck backhauls) were able to operate contemporaneously thanks to having the labour and equipment available on site.

Sediment excavated from the pits during the bulk sampling program typically began with an upper unit (A) 5-6 m thick consisting of what is interpreted as glaciolacustrine clays, with sporadic but penetrable permafrost, interbedded with lenses of sand. Beneath unit A, a subsequent 1.5-1.0 m thick, weak 'mustard yellow' coloured well-sorted non gold-bearing cobble gravel (Unit B) was discovered in both pits. Unit C (lowest 1.5-2 m), located directly above bedrock in both pits, was a rusty compacted boulder/cobble-sized sandy gravel (likely a meltwater paleo-channel that displayed imbrication perpendicular to current drainage direction) containing noticeably abundant quartz clasts and economic quantities of placer gold.

Map2 and Table 1 outline the relative locations of each bulk sample pit.

Results

The 2021 bulk testing program sought to essentially groundtruth previous remote sensing surveys that indicated the presence of buried cross valley meltwater channels. The 2021 bulk sampling program was able to both locate these channels with the support of heavy equipment.

Approximately 20 days went into preparing, stripping, and reclaiming the two bulk sample pits while 10 days were spent testing the pay material. The 2021 program also indicates that although the upper units were essentially barren, the buried channels did in fact contain economic quantities of placer gold. Gold grades recovered from both pits average approximately 0.75 g/m³, delineating a potentially economic reserve of gold in each location. Gold recovered was typically a wide range of calibers from a rare 4 gram nugget (1) down to fine gold (75% of total). Approximately 20 days went into preparing, stripping, and reclaiming the two bulk sample pits while 10 days were spent testing the pay material.

Table 1 details the results of the excavator bulk sampling test pits.

Table 1: Hand Test Pits Sample Results

Test Pit	Depth of Pit (meters)	Material	Economic Gold <u>Yes or No</u>	LAT (Y)	LONG(X)
21-TP-1	~8 m	Clay (A) above 2 gravel units (B&C)	Unit C	61.363201 N	134.328712W
21-TP-2	~10 m	Clay (A) above 2 gravel units (B&C)	Unit C	61.363140 N	134.329039W

Total Expenditures

Please see attached completed YMEP 2021 Expense Claim form and invoices.

Item	Cost/day	Days/Quantity	Total
Labour	\$350	60	\$21,000
Truck Cost	\$50/day/truck	30	\$1,500
Field Expenses	\$100	120 (4 men x 30 days))	\$12,000
Atv (x2)	\$40*2	\$80*30 days	\$2400
ATV trailer	10	30	\$300

Gas Generator (2000W)	\$10	30	\$300
4" diesel pump	25	25	\$625
Tintina Air Invoice*	\$1155	1	\$1155
Star Mountain Resources Equipment Rental*	\$117,600.00	30 days, 4 pieces heavy equipment	\$117,600.00
Report Writing			\$3000.00
Total			\$154,280.00

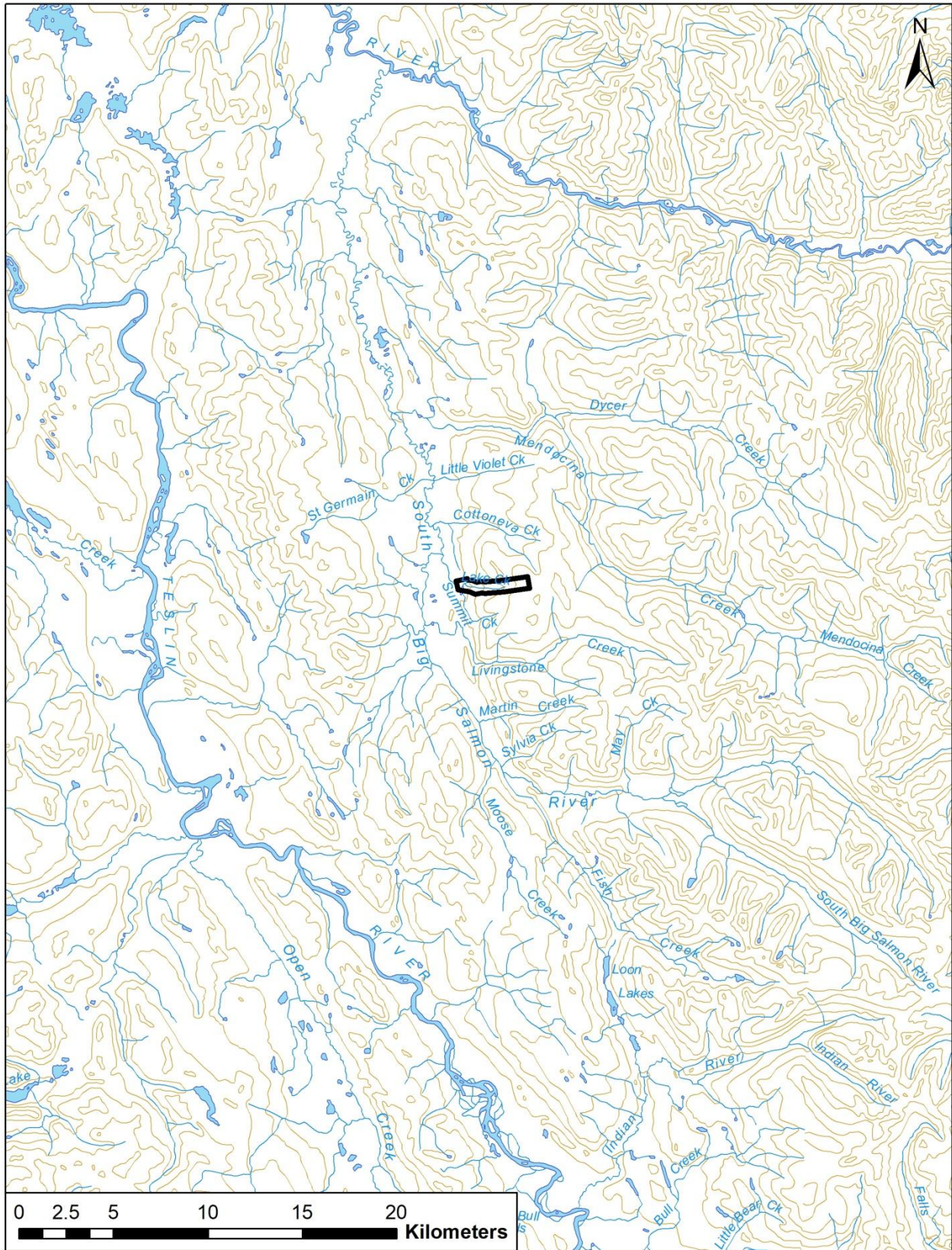
* Invoices attached

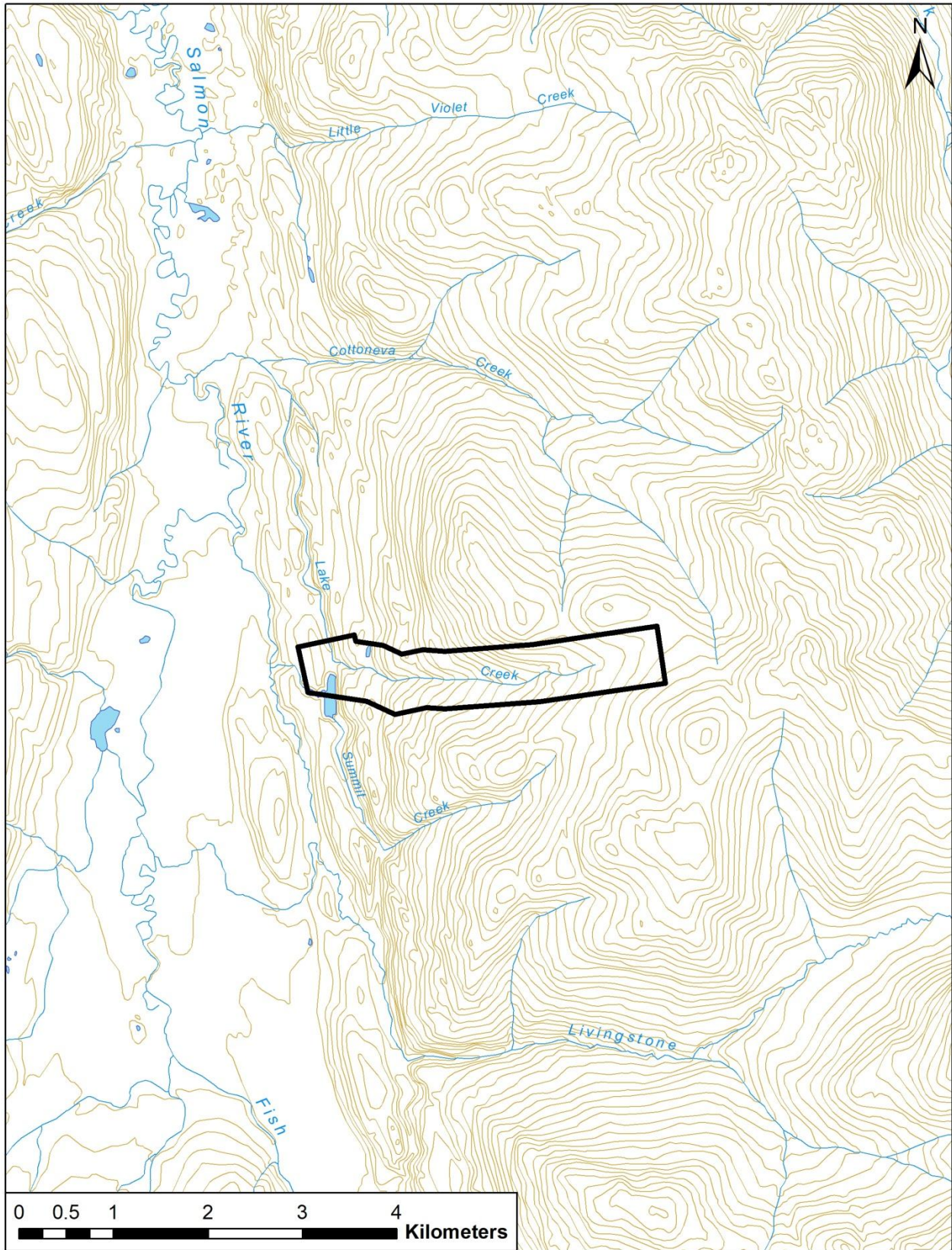
Conclusion and Recommendations

Lake Creek has produced placer gold for several decades. The main floodplain of the creek has been mined historically however considerable potential remains to discover significant placer reserves buried within the adjacent banks. These covered deposits, having been incised by the modern creek, are likely the source of historically mined surface gravels in Lake Creek. The past two seasons of exploration, supported by contributions from the YMEP program can be considered as successful. Using cutting edge remote sensing technologies, potentially economic pay gravel units (cross-valley paleo- meltchannels) were located in 2020. The 2021 program concentrated trying to expose these pay units in order to examine whether they in fact contained economic concentrations of placer gold. Approximately 20 arduous days went into preparing, stripping, and reclaiming the two bulk sample pits while 10 days were spent testing the 'suspected' pay material. Testing confirmed that the tested gravels contained placer gold at approximately .75g/yd³. However a significant amount of sterile overburden needed to be displaced (and subsequently replaced) prior to any testing of pay gravels. 20 long hard days were required to produce 10 casual and careful days of testing pay. A further 20 days were also spent outside of the YMEP program during February and March hauling fuel to Lake Creek by snowmachine from Whitehorse on the Livingstone Trail, a 200 km round trip.

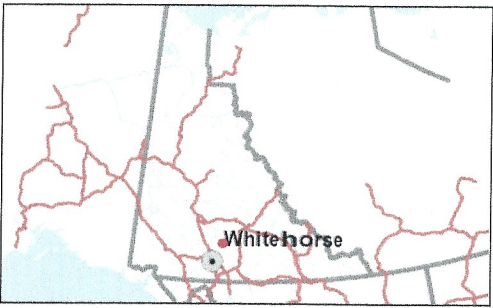
Considering the time and resources expended the grade of the pay is satisfactory and could potentially (with continued high gold price) support a small efficient placer operation maintained by a thorough pre-mining exploration program. This exploration program would hopefully continue to use remote sensing and geophysics to indicate further buried cross-valley paleo-meltwater channels of pay gravel located in the lateral benches of Lake Creek. If possible, a drill should be brought in to confirm interpreted depths and sample the gold content of the pay channels indicated by the remote sensing. Given the boulder-rich nature of the ground, the drill should either be a reverse circulation(R/C) drill (which has an inside diameter of 6 inches or greater) or similarly-sized sonic drill. Further drill testing of targets will give a final say on whether full scale placer mining is feasible in the near future.

Figures & Appendices





Lake Creek Claims



Legend
Contours - 50k - Canvec

Notes

0 0.51 1.0 Kilometers
 Projection: Yukon Albers Equal Area Conic
 Produced from: GeoYukon application
 1: 20,000

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.
 Date Printed: 31-Jan-2022



LOOKING FROM PLANT UPSTREAM TO CUTS



KIRK, BEN, ADAM @ CLEANUP - JULY 10/22

6" tree
(diameter) →

UNIT A - CLAY + SILT

UNIT B - COBBLE-GRAVEL

UNIT C - SAND

BEDROCK

