Placer gold exploration in the

Yukon Territory

SECOND TARGET EVALUATION CAMPAIGN AT BIG CREEK

(Map 115P15p)

June - September 2014

by Sandro Frizzi, geologist and prospector

Introduction:

At the end of June 2014, as soon as the snow melted from the top of the West Range Mountains, we drove a convoy of mining equipment (1 excavator Hitachi 200, 1 wash plant with shaker, able to process 15-20 m³/hr, a 6" water pump) towards the new "Oz" property, at Big Creek. The purpose of this second expedition was to perform an extended bulk sampling campaign, with the aim to establish if the gold found during the summer of 2013 holds the potential for a profitable mining enterprise.

The exploration campaign of the past year revealed signs of a wide distribution of gold along the entire Big Creek valley. The discovery leads us toward the decision to convert our prospecting leases into claims: 59 regular claims along the valley plus 6 co-discovery claims on the tributaries and 3 bench claims in the lower part.

By the end of September of 2013, under the first snowstorm of the season, the "Oz" property was finally staked and a few days later recorded in Dawson City (we called this property "Oz" after "The wonderful wizard of Oz", for the surreal atmosphere of these valleys, where we witnessed the most fantastic rainbows of ever).

During the winter of 2013-2014 we applied for the full package of permits (water license and land use) necessary to perform a conclusive sampling campaign.

This expedition of 2014 ended up quite successfully and we managed to locate an area with a consistent coarse gold deposition that could possibly be mined in a profitable way.

At UTM 406677-7085668 we tested and sampled an upper bench, easy to dig and with a good gold content. By sluicing the gravel right above the shallow bedrock we recovered a noticeable quantity of coarse gold with fineness of 81% (see the chapter "Gold"). Same type of gold has been extracted from the floodplain below the bench.

On the negative side, we observed that the original placer has been deeply disturbed by different glacial activities; more than previously thought, especially along the upper section of the creek.

The central portion of the ancient floodplain, starting from the headwater and going toward the middle of the "Oz" property, has been eroded, transported downstream and later re-deposited, possibly with part of its gold content.
Stretches of left over benches are well visible on the right side of the valley (on the left at pit O), to witness these drastic events.
It's always a challenge to explore regions where the surficial geology has been re-arranged and complicated by glacial activities.
We had to struggle to find and to expose areas escaped from the action of the glaciers. The interpretation of the depositional events was also complicated: the difference between a fluvial and a glaciofluvial deposition in this type of watercourse is hardly recognizable, but it's very important for our research.

The bulk sampling campaign performed along the zones interested by glacial activities only produced small quantities of fine and ultra-fine gold, partially flattened and visibly grinded.

The good news is that the range of these glaciers was locally limited to the upper part of "Oz" (south). Downstream, around UTM 406799-7089235 seems to lie the boundary of the glacial episodes.
The lower section of our property could possibly hold the potential to host enriched pockets of gold.

Towards the end of the summer we tried several times to reach the bedrock along the north end of the property. Unfortunately the presence of a thick layer of permafrost (absent in the upper part) and an increased depth of the bedrock, didn't allow our excavator to dig deep enough. The many attempts performed in this area ended up with frustration and lack of results. Drilling it would be the only way to test.

After the exploration campaign was completed, we agreed to lease the Oz property to a well established placer mining company, which will continue our research. By the end of 2015 we should be able to witness the first mining attempt on this new area.

Sandro Frizzi

Location of Big Creek

In the Yukon Territory, there are several creeks named "Big Creek". The name originates from the aboriginal population or from the first explorers.

Our Big Creek is the one visible on **Map 115P15p** and it flows in the central part of the Yukon, between Mayo (located 60km south-east) and Dawson City (located 125km north-west).

This creek is tributary of the Little South Klondike. Its headwater starts from the mountains of the West Ridge and is separated from the headwater of Clear Creek by the Rhosgobel Stock, a superb, 1,800 meters high granitic dome.

Big Creek is accessible by road. From Dawson City you must drive south on the Klondike highway until Clear Creek road (110 km), then follow Clear Creek road until the Harpers mine (42 km), at the top of the left fork of the creek. From here starts the road to Red Mountain (drivable with 4x4). The camp is at km 14.

The distance between Big Creek and Whitehorse is roughly 500 km.

In case of necessity, there is an airstrip at Arizona Creek, a few kilometers from Big Creek, toward Red Mountain.

For any emergency there is a maintained landing area for helicopters in the upper part of Big Creek, at UTM 406428-7085801.

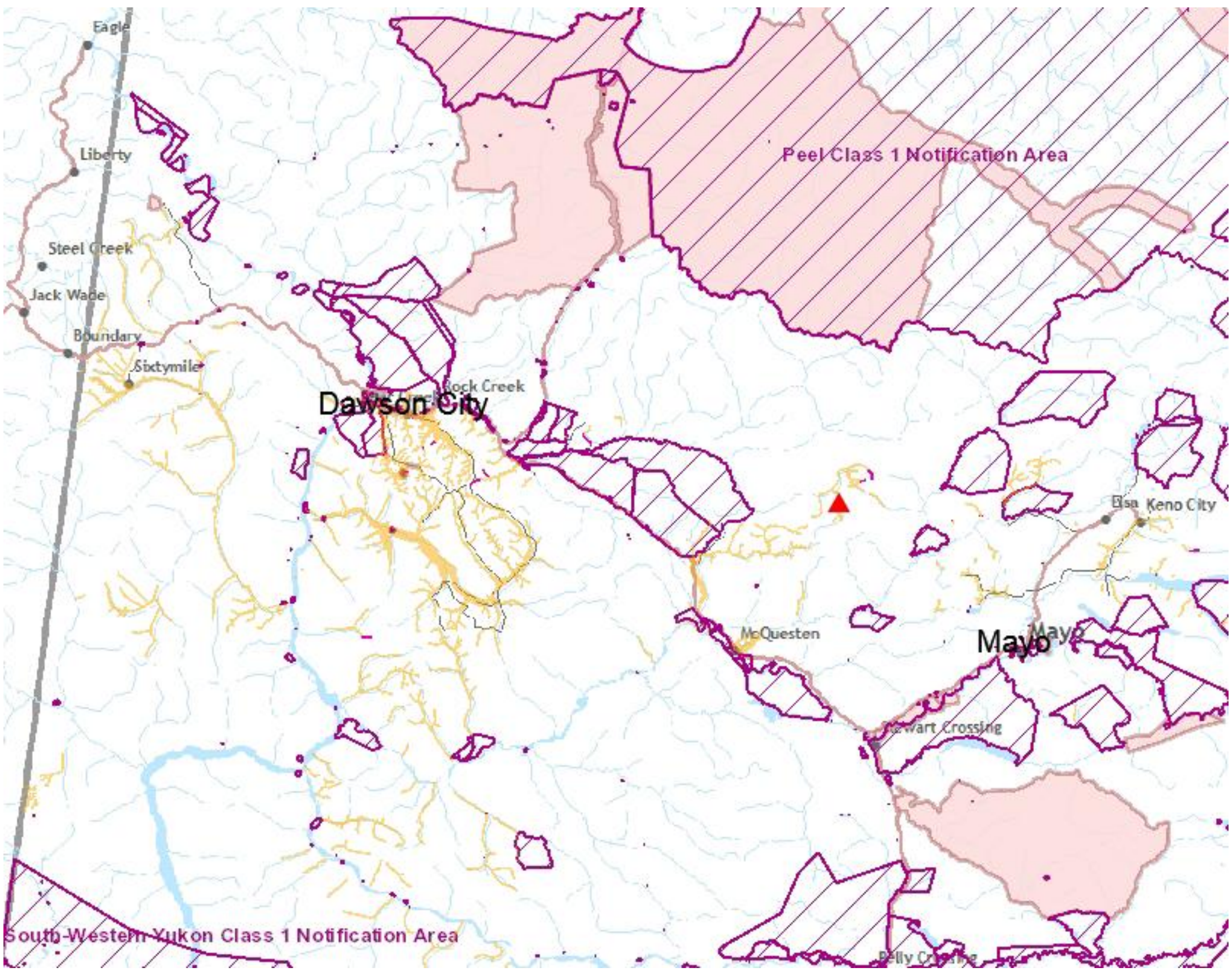
Big Creek

Location on map

(red triangle)

Scale 1:1,500,000

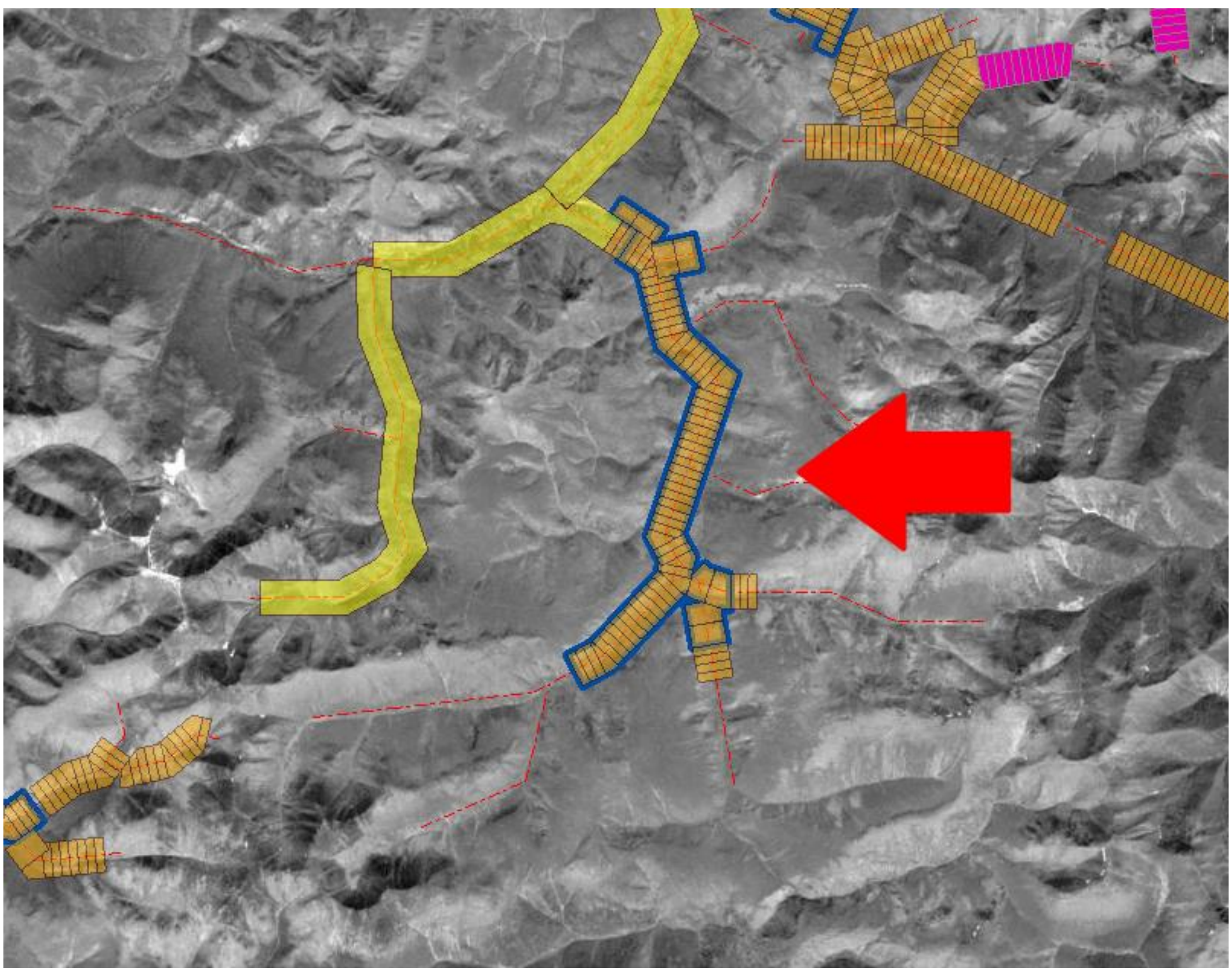
North ∆



The new "Oz" property

Map 115P15p

Scale 1:100,000



Workers at Big Creek

Here is the list of those who contributed to the testing campaign of 2014 at Big Creek:

- **David Algotsson**, miner and operator of Dawson City with years of experience in this business. David has been in charge of the majority of the digging; he also supervised all the steps of the sluicing process up to the final recovering of the gold.

- **Hans Algotsson**, former prospector of Dawson City, now in retirement, father of David. Hans contributed to the logistic between Dawson City and Big Creek. He delivered parts and fuel. He's also helped with the prospecting.

- **Bruce McArthur**, businessman and farmer from Trochu, Alberta. Bruce is an excellent operator, a truck driver and an expert of heavy-duty equipment. He worked at Bell Creek and at Big Creek. Like David, he's the right man to have on the excavator when the ground is particularly rough.

- **Joerg Lotz**, civil engineer from Germany. Since the last 3 years Joerg is approaching the placer gold mining industry with excellent results, thanks to his skill and his experience in calculating the behavior of rivers and creeks.

- **Sandro Frizzi**, geologist and prospector from Dawson City. He spent years to explore several remote areas of the Yukon and in South and Central America. Sandro organized and supervised this target evaluation campaign.

From left: Luca, David, Roy, Joerg, Sandro and Bruce

Equipment

Here is the list of the equipment used at Big Creek:

- Excavator on tracks Hitachi 200. This is a 20 tons piece of equipment with a strong engine and the possibility to dig up to 6m of depth. We used ¾ yard digging bucket.

- Wash plant with vibrating shaker. Made to process 15-20 m^3/hr. This is a great testing unit with a smart, easy to clean design and able to recover fine gold with almost no lost. The shaker is powered by a 13 Hp Honda engine. It requires a 4” water pump. Very strong machine, fairly easy to move around.

- 6” water-pump Multiquip. A powerful trash-pump with a Deutz diesel engine, essential at Big Creek to eliminate the ground water present in every pit, in order to be able to observe the depositional patterns along the cut.

- Two 4x4 trucks (GMC Sierra and Toyota) with trailers for the transportation of gears, ATV, fuel barrels and food. One Volvo 18 wheels, with low-bed trailer.

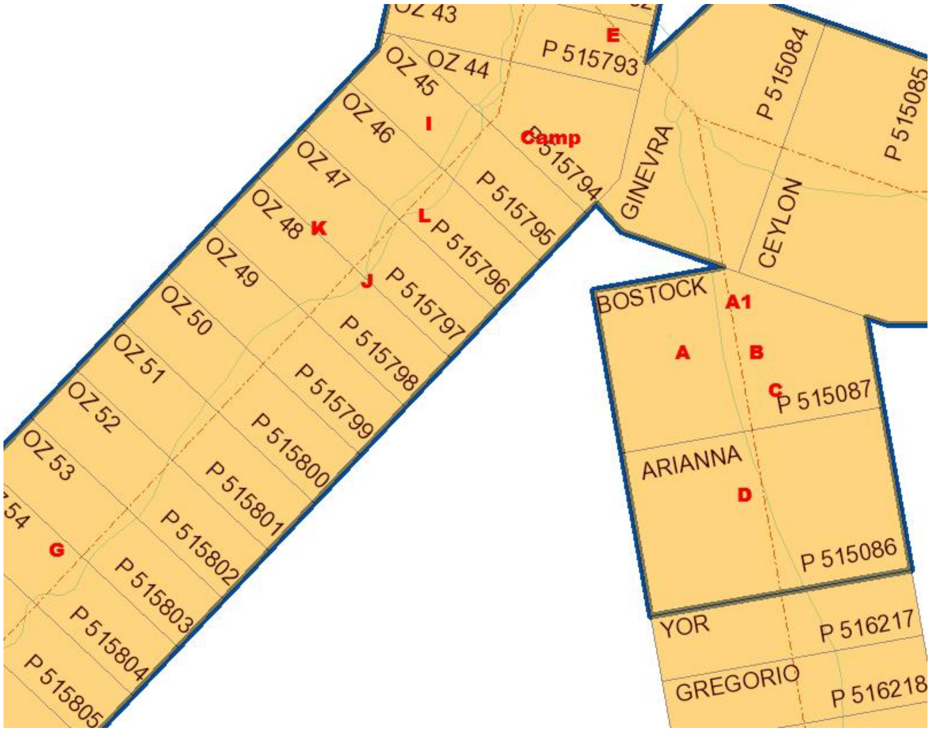
- One ATV (Honda 500 and Yamaha) with trailers.

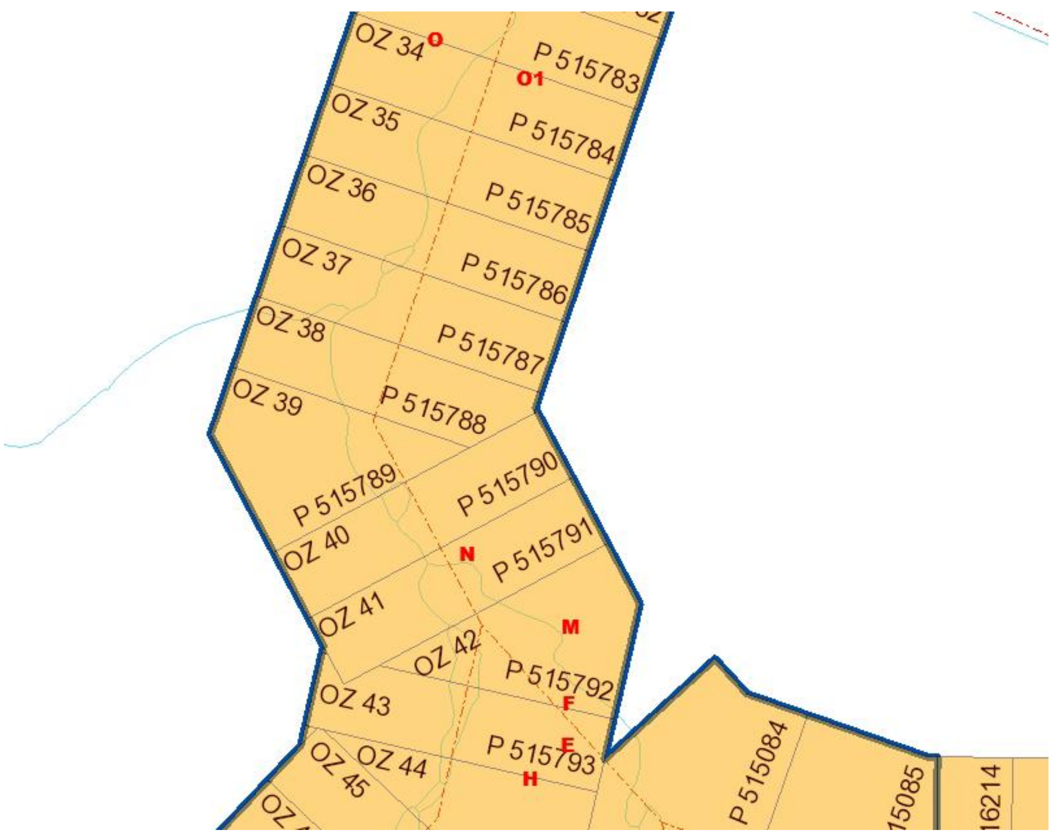
- Two water pumps, 2 generators, long-tom, 2 chainsaws, 1 air-compressor, 2 GPS, compasses, 2 laptops, varies mechanical tools, geological tools (picks, scratchers, portable auger-drills, shovels), 5 tents, 2 stoves, water filters, 2 shotguns, coolers, solar chargers, radios, phones and a standard first-aid package.

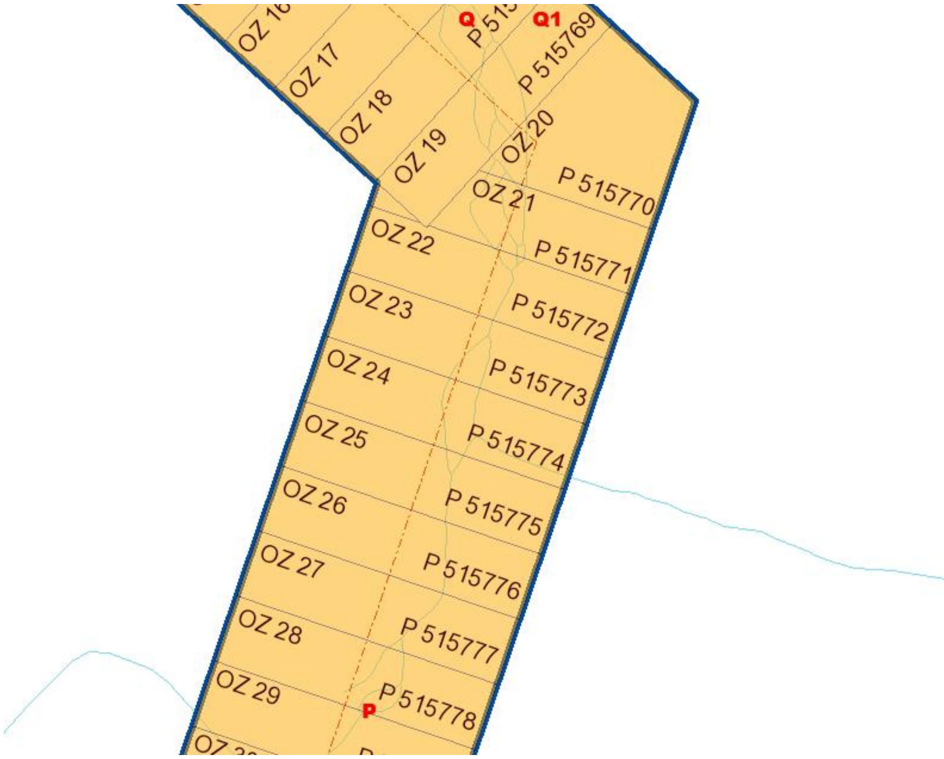
equipment at pit H

Locations of the pits

Scale 1:10,000 **North Δ**



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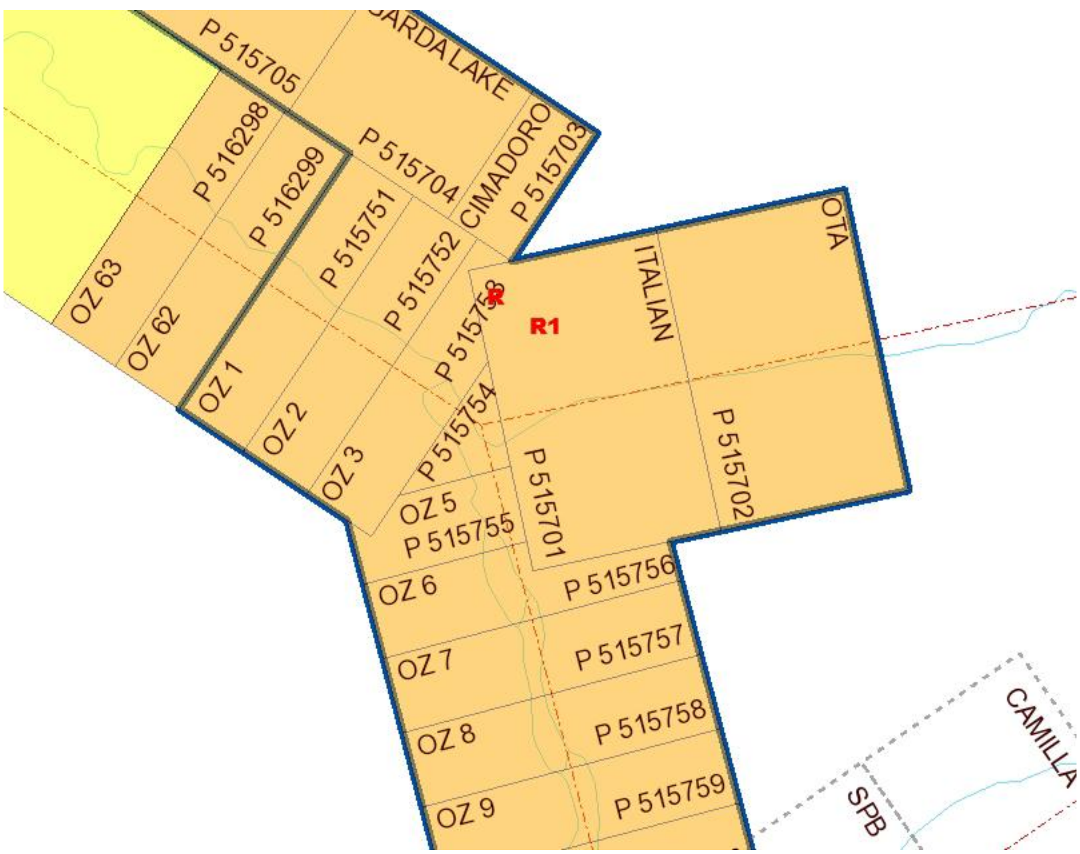
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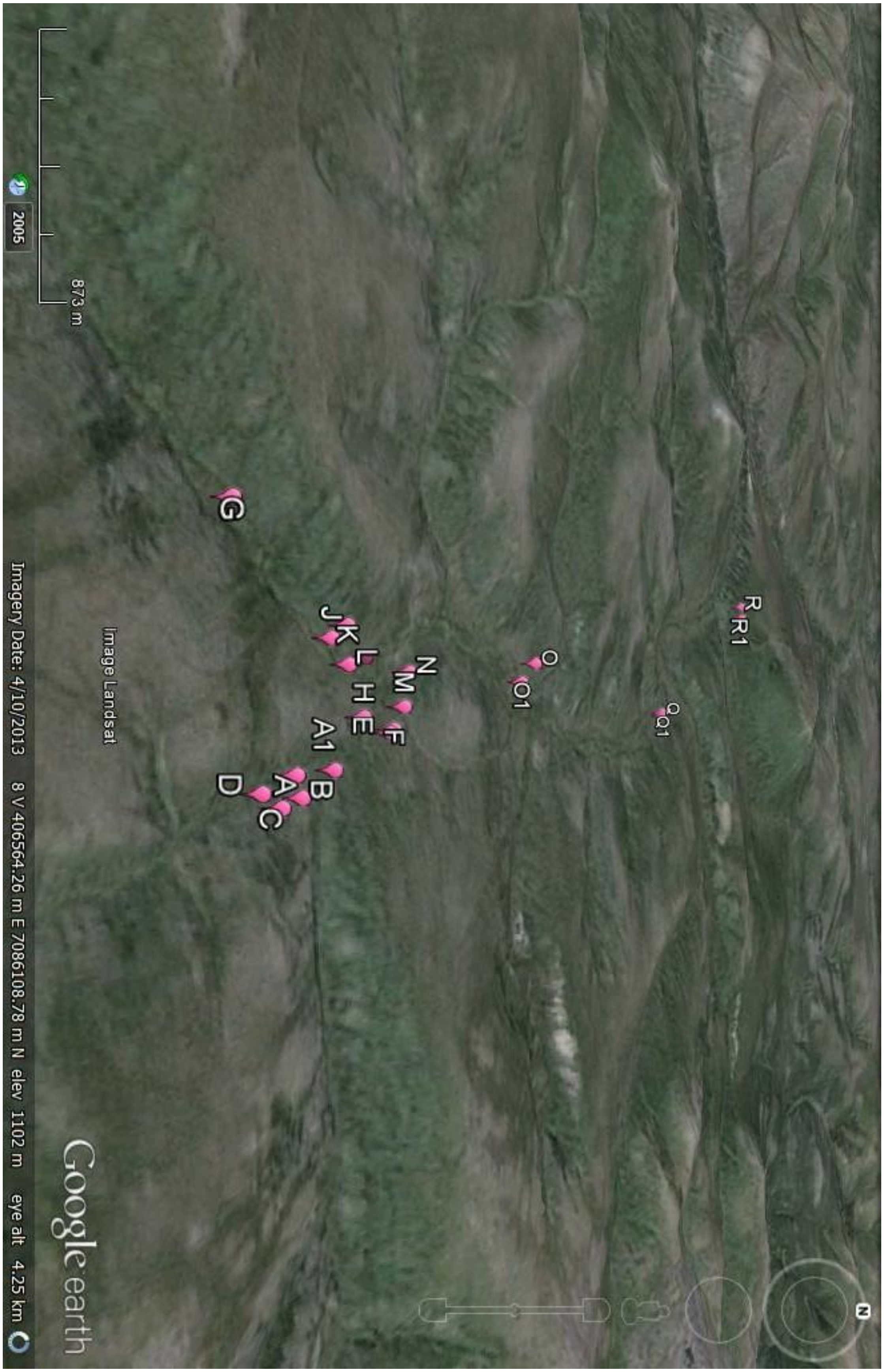

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Oz1	post1	405628	7091032
Oz59	post2	405215	7083889
Blackjack	post1	404219	7091757
Garda Lake	post1	405512	7091508
Cimadoro	post1	405824	7091309
Cimadoro	post2	405972	7091242
Italian	post1	405905	7090817
Ota	post1	406232	7090932
Ota	post2	406567	7091010
Ginevra	post1	406847	7085486
Ceylon	post1	407170	7085301
Camilla	post1	407533	7085186
Tommaso	post1	407554	7085114
Paula	post1	407704	7085128
Paula	post2	407895	7085128
Bostock	post1	407016	7085021
Arianna	post1	407122	7084651
Yor	post1	407208	7084274
Gregorio	post1	407021	7084432
Herbert	post1	407080	7084296
Mia	post1	407173	7084168
Mia	post2	407239	7084042

PitA	406928	70854846
PitA1	407064	7084933
Pit B	407017	7084713
PitC	406988	7084698

PitD	406986	7084610
PitE	406729	7085643
PitF	406758	7085542
PitG	405756	4084500
PitH	406741	7085504
PitI	406423	7085372
PitJ	406342	7085118
PitK	406299	7085143
PitL	406419	7085229
PitM	406677	7085668
PitM1	406729	7085643
PitO	406443	7087112
PitO1	406540	7087104
PitP	406869	7087613
PitQ	406799	7089235
PitR	405930	7091078
PitR1	405930	7091062
Camp	406650	7085431
Old pit1	405989	7084778
Old pit2	404988	7083656
Old pit3	405724	7084450
Old pit4	406657	7085650
Old pit5	406875	7087643
Old pit6	406069	7089944
Old pit7	406686	7089359
Old work	406312	7086321
Drill holes from Queenstake	406786	7089235

adding new claims to the property along No-Name Creek

Test pits description

(in chronological order)

Pit A: at UTM 406928-7084846.

4m x 6m x 5m (depth). Groundwater at - 60cm. No permafrost.
Mixed material along the entire pit: rounded, sub-angular and angular. The angular is mostly quartzite (which is the main component of the left side of the valley), the rest is slate/phyllite and some milky quartz. No signs of imbrications or clasts classification. Few very round cobbles and boulders revealed a past energetic fluvial activity. Minor amount of sand. Layer of clay around –4m (it probably indicates more interglacial conditions). High fractured bedrock (starting at – 4.7 m) made of black slates.
Gold recovered (by panning): small grains and few flattened flakes, some of decent size (≈2 mm) from a dozen of pans. Unfortunately we couldn't manage to dig deeper in the fractured bedrock.

Pit D: at UTM 406986-7084610.
4m x5 m x 4.5m (depth). Groundwater at - 1.6m. No permafrost.
Black layer at – 1m: a manganese oxide horizon typical of this area (noticeable in most of the pits). The black layer could represent a period of higher temperature, during an interglacial phase. These stains are normally influenced by clay minerals and/or reactions in bedrock material.
The rest of the pit shows a chaotic mix of angular and sub-angular rocks mixed with sand. Bedrock not reached. Gold recovered: none.

Pit C: at UTM 406988-7084698.

3m x 4m x 2.5m (depth). No permafrost.

The morphology of this right side of the valley shows a bench. We decided to climb up with our excavator to test it. In the first 2.5m we exposed only angular rocks and sand (colluviums). Then digging became too risky for our operator and we decided to quit. The question is still open and need to be solved.
Bedrock not reached. Gold recovered: none.

Pit B: at UTM 407017-7084713.

3m x 5m x 1.5m (depth).

No permafrost.
This trench has been dug only few meters north of pit C, at the same elevation. Under the thin layer of organic soil we found the same situation exposed at pit C.
No way to dig without risk: it has to be drilled.
Gold recovered: none.

Pit A1: at UTM 407064-704933.

6m x 4m x 6m (depth). No permafrost.

Overburden (<50cm), then a layer (>5.5 m of thickness) of a random mix of silt, sand, angular and subangular rocks with few rounded clasts here and there.
This is just a cut on the right side of the hill, few meters north-east from pit A. Our intention was to found the sign of a bench. Under a thick layer of colluviated till are visible few well rounded cobbles. No signs of bedrock. No reasons to process this material for gold. This terrace should be further investigated (too big of a side-project for our schedule).

Pit E: at UTM 406758-7085542.

4m x 6m x 5m (depth). Groundwater at -120cm. No permafrost.

Originally excavated to verify the existence of a bench on this right side of the valley. This pit has been dig into the foot of the hillside. After 4.8 meters of a debris-flow type of mixed materials (angular quartzite, sub-angular phyllite, cobbles, pebbles, gravel and sand) we

finally encountered the usual fractured bedrock of black slates/phyllite. We sampled with a long-tom the gravel above the bedrock.
Gold recovered: 3 grams of decent size flakes (1-5 mm) from an hour of sluicing.

Pit F: at UTM 406729- 7085643.

5m x 6m x 5.6m (depth).No groundwater.No permafrost.
This is a cut on the lower part of the right side of the hill. We decided to test this part of the property for benches, because the morphology definitely reveals sign of terraces. The loose coverage here is represented by colluviated till: a random mix of sand, gravel, angular and subangular rocks and round boulders of decent size (30-50cm). The number of rounded rocks seems increases while digging horizontally into the hill. Are they indicating the presence of a bench?
Bedrock not reached. Gold recovered: none.

Pit H: at UTM 406741-7085504.
35m x 3.5m x 5m. Groundwater at -70cm. No permafrost. This pit is the extension of Pit#1, dug during the last summer (see report of 2013). Pit#1 has been our best hole at that time and is the reason why we are back in this country.
We cut a long trench perpendicular to the valley, in order observe the distribution of the gold along the bedrock. We registered a homogenous distribution of coarse gold (1 to 10mm) along the bottom of the entire trench. After a thin layer of organic soil (<60cm) it starts a composition of sand, gravel, cobbles, angular and sub-angular rocks until -3.5m. At this point starts is a layer (<1m) of rounded boulders (30-60cm), mostly made of quartz, quartzite or granite; then again a layer of angular and sub-angular unsorted material with few rounded clasts in it.
The bedrock lie at -4.8 m and is composed by the highly fractured black slates. We processed the last meter of loose deposition, right above the bedrock, along the entire bottom of the pit: from 20-25 cubic meters (≤30 cubic yards) we recovered 16 grams of coarse gold. From another pile of 15-20 cubic meters (≈ 20-25 cubic yards) we recovered 9 grams of gold.
We averaged roughly 1oz per 50-60m^3 of washed material (32-35 tons).
Definitely a good result, considered the easy mining condition of this ground (bedrock at shallow depth, no permafrost, thin layer of overburden). The area shows the right characteristic for a possible mining operation.

Pit M: at UTM 406677-7085668.

40m x 10m x 6.5m (depth). No permafrost

Technically this is not a pit, is more a side cut. By digging into the right slope of the hill, 3-4 meters above the floodplain, we exposed the remains of an ancient fluvial deposition. The left part of alluvium is represented by a layer (≈ 1m) of rounded cobbles and boulders (30-70 cm) lying above the original bedrock, which is composed by quartzite and graphitic phillite. The boulders are mixed with gravel. All the clasts are rounded and apparently sorted. It seems to be part of an old, energetic deposition: the type of stuff we were looking for!

Above these alluvial remains there is a thick coverage of angular rocks randomly immersed in a matrix of fine sand. The percent of sand increases toward the top: probably the talus was mixed with the glacial till. Few meters (50) downstream from pit M, later in the season we dug a parallel cut into the hillside and we exposed a deposition of huge rounded boulders (see pic above) of unmistakable glacial origin.

These boulders are probably part of a lateral moraine that overrode a pre-existing fluvial deposition.

At pit M we performed a bulk sampling by processing a decent amount of different materials (≥120 m^3). We recovered more than 2 ounces of coarse gold. This gold must be added to the gold recovered from the same bench by panning above the bedrock and along the cut (3-4 grams).

Here at pit M we can't reliably determine the rapport between the percent of gold recovered per processed material because we performed a too random test, aimed just to establish if there really was good gold in this deposition.

Later on, by carefully panning above the contact with the bedrock, we confirmed that the gold is definitely part of this older fluvial deposition and its quantity rapidly decreases as soon we encounter the moraine.

The quantity of gold recovered at pit M proof that a remarkable concentration of precious metal was deposited from an ancient fluvial system, before the invasive glacial episode occurred at the same bench (during Reid-age?).

Note: under the microscope the gold recovered from the ancient bench M looks the same as the one coming from the actual floodplain (from pit H and F).
Question: the gold recovered from pits H and F is originally coming from older benches (eroded and then re-deposited)? Or maybe is part of a younger depositional phase of No-Name and Granite Creek?
We don't have an answer yet; it will certainly show as soon as the mining begins.

Pit N: 70 meters downstream from pit M.

15m x 10m x 5m (depth). No permafrost.

As already mentioned above, here the alluvial bench disappears, replaced by a moraine composed of huge boulders, sand and mixed material. Part of the original bedrock is partially preserved and we managed to recover few flakes of gold from the fractured quartzite.

Pit G: at UTM 405756-7084500.

6m x 4.5m x 5m (depth). Groundwater at -80 cm. No permafrost.

This is the farthest of our pits, dug upstream the Big Creek (toward south). We chose to dig here after analyzing the results of the ground penetrating radar survey conducted by geo-physicist Boris Logutov. The bedrock profile revealed the presence of a mysterious 'false bedrock' at – 4 m and something else at -5.5 m. This intriguing pattern convinced us to dig a testing hole. After the first 4 meters of usual random mix of high discharge type of sediments, with unsorted rounded and angular clasts, sand and gravel, it starts a thick, uniform layer of light brown/green sand with scattered traces of gravel and cobbles here and there. At first this deep deposition could remind the weathered surface of an intrusion but to a closer examination it actually reveals glacial origins: ground moraine? Glaciolacustrine sediments? We couldn't manage to dig deeper because that soft ground was constantly collapsing and the mystery is still unsolved.
With a big frustration we decided, after panning this layer, to don't sample any further. No gold has been recovered.

Pit I: at UTM 406423-7085372.

9.5m x 5.5m x 6m (depth).
Groundwater at -1.2m. No permafrost.

Overburden = 30cm, then mix of round cobbles, boulders and sub-angular rocks mixed with sand. From -2.5m are starting layers of more rounded, still poorly sorted cobbles, pebbles, boulders, and less sub-angular clasts, gravel and sand, apparently more packed. At -4m there is a thin layer of clay (≈30 cm). Then the same high discharge type of mix, with more angular clasts and evidence of more glacial conditions.
Sadly we couldn't reach the bedrock. Gold recovered: none.

Pit J: at UTM 406342-7085118.

3.5m x 6m x 8.5m (depth). Groundwater is visible on the lower part of the pit (below the groundwater level, where the bench meets the plain). No permafrost.
Pit J is a cut done to expose a bench on the right side of Big Creek Valley. This bench lies 3.5-4 meters above the present floodplain.
The cut revealed an interesting stratigraphy (see pic. at left): - layer (>80cm) of very light brown fine sand: a kind of periglacial loess, possibly of glaciolacustrine origin. – A black layer stained by manganese oxide (1.2m), composed by of round and flattened gravel, pebbles and cobbles, with minor sub-angular clasts and mixed in a minor quantity of sand. – A tick deposition of unsorted material mixed with brown sand. - Another black layer (at -4m) of rounded pebbles and cobbles. – a final package of debris-flow type of deposit in brown sand.

We interpreted these layers of rounded, angular and sub-angular clasts as 'interglacial fluvial episodes' and the debris-flow as fluvioglacial.
If we are right, the bench at J should be younger than the bench at M (which is possibly pre-glacial).

The bedrock is composed by quartzite.
We processed through the washplant ≈10 cubic meters (15 tons) of material and we recovered a small amount of gold (≤2 grams).
The gold is mostly fine, mix of flattened flakes with roundish grains (see chapter: "Gold").
We weren't expecting a great recovery from this bench, which is located too far from the main depositional channel (this is the external bend of the creek).

Pit K: at UTM 406299-7085143.

20m x 6m x 5m (depth). Groundwater starts at -90cm. No permafrost.

We dug this log trench crosscutting the valley, to double check the result of the pit #6, dug during 2013, where we recovered an interesting amount of gold (≥ 1gr from a dozen of pans). The top of the floodplain consists in a uniform, thick layer of poorly sorted rounded and sub-angular clasts mixed with gravel, sand and minor silt (debris-flow type).

The usual layer of clay (30-50cm) appears around a depth of 4m, similar to the one found at pit I and at pit A, to indicate possibly interglacial conditions.
Then again the same high energy depositional trend of above. Toward the east of the trench the bedrock was too deep for our excavator (>5.5m). By the opposite end (west) we reach it at -4.3m. The bedrock is represented by the same highly fractured black slates/phyllite recorded in the precedent holes. We tested almost 15 cubic meters of material (20-25 tons) collected just above the bedrock and we recovered a bit more than 1 gram of fine, flattened gold: definitely a poor result!
Later in the season, along this trench we performed a surveying with the ground penetrating radar (see the line 2 in chapter "Geophysical survey) and we find out that we missed for a dozen of meters a channel located more east.
Apparently we washed material deposited far away from the paystreak.
Despite the poor results obtained from this pit, from pit #6 (dug in 2014) and from pit J (upper bench just across from pit K), we highly recommend for the future further investigation with a more extended cross-cutting trench: there is a possibility that we missed a better gold deposition or we just didn't dig deep enough in the fractured bedrock.

Note: we are dealing with a braided stream, which open the possibility for the existence of multiple channels of deposition and for a very low grade, yet extended gold distribution.
However, keep in mind that what we recovered here is still far from been considered profitable.

Pit L: at UTM 406419-7085229.

20m x 10m x 7.5m (depth). Some water at the very bottom. No permafrost.

This is a huge pit located on top of the right bench of Big Creek, 4-5 meters of elevation above the creek bed.
The purpose of this work was to test this upper bench of Big Creek, after the good gold found at pit M. We intended to verify the possibility of a correlation between the bench exposed at pit L (and pit J) and the one tested at pit M.
The coverage of organic soil is almost 1 meter thick. Below, for the first 1.5 meters, it starts a random mix of sand with angular, sub-angular and sub-rounded clasts (colluviated till? Debris-flow?), of glacial origin.
Then, there is the black layer of manganese oxide (<1m), recorded in all the pits excavated along the upper benches. It's made by better packed, rounded, angular, and sub-angular unsorted rocks. We presume is part of a fluvial deposition occurred during an interglacial phase.
After this layer there is a succession of unclassified packages of reddish sand mixed with gravel, angular rocks and/or more rounded cobbles. This deposit seems to be part of glaciofluvial events.
Deeper down, the size of the cobbles increases.
We managed to dig until a depth of – 7.5 meters, by building lower steps with the excavator. We didn't find traces of bedrock and at that depth the walls of the hole began to collapse. Nevertheless, toward the bottom of the pit we noticed an increase in the number of the boulders (30-50cm) and the cobbles, and less angular and sub-angular rocks. We couldn't dig deeper for the continuous collapsing. After several unsuccessful attempts, we finally decided to move on.

Later on we regret it; we left behind an important unanswered question: are those boulders uncovered along the bottom of this pit, possibly part of a fluvial deposition, like at pit M? This is a crucial point and has to be solved.
Further investigation is strongly recommended, with a bigger excavator (> 300).
We panned the material coming from the bottom of the pit and from the walls: no gold has been found.

Pit M1: at UTM 406729-7085643.

15m x 3.5m x 6m . No groundwater. No permafrost.

After digging at pit L, we decided to go back to bench M and dig further up, to better understand the origin of the deposition that covered that entire hillside.
At first we dug the external margin of the terrace and we immediately found the bedrock of quartzite after a layer of mixed till and colluviums (colluviated till). Then we drove the excavator in the central part of the terrace and we dug a deeper hole (6m) in a thick layer of the same material.
We soon discovered that the bedrock exposed near the margin of the terrace is steeply dipping toward the hill. Just twenty meters inside the terrace the bedrock is too deep to be reached!
Apparently this is a second bench, located above bench M and obviously older.
Before reaching – 6m, we started to encounter big round boulders (30-60cm) and cobbles: are those the remains of another ancient alluvium?
Part of the moraine recorded at the north end of pit M?
We couldn't determine it for sure as the glacial action on this bench was powerful enough to mess up the original depositional pattern.
By panning the gravel collected from the lower part of this pit, between the boulders, we recovered few flakes of gold of decent size: is the prove that we needed?
This discovery increases the impression that this area of the "Oz" property, at the mouth of No-Name Creek (and Granite as well), could reserve positive surprise to a gold miner.

Pit O: at UTM 406443-7087112.

10m x 3.5m x 5.5m. Groundwater at -2.5m.
No permafrost.
This long and narrow pit is cutting into the remains of another upper bench located on the left side of a wide part of the valley. The surface of the bench is just 2.5-3 meters above the level of the modern floodplain.
After a thick, black layer of angular clasts deeply stained by manganese oxide (see picture), begin a mix deposition (2m) of rounded, angular and sub-angular clasts of different size, mixed with brown-red sand (glaciofluvial debris-flow). At -3 meters, there is another black layer, this time of round pebble and cobbles, well packed and with weak signs of imbrications (interglacial fluvial).
We dug until -5.5m without reach the bedrock. We panned the material randomly recovered from the pit, from top to the bottom, and we didn't recover any gold. The amount of the heavy minerals was also insignificant. This bench lies in a peripheral part of the valley: a noticeable gold deposition wasn't expected.

Pit O1: at UTM 406540-7087104

10m x 10m x 6m.
Groundwater at – 50cm. No permafrost.
We choose this point to place our test pit after analyzing the result of the GPR (ground penetrating radar) survey performed by geophysicist Boris Logutov. The cross section produced by the radar (see line 4 on chapter "GPR survey") shows the existence of a possibly shallow bedrock (-5.5m). Logutov used the conditional (dashed line) because the radar couldn't decide if that's real bedrock or maybe the contact with softer, fine-grain type of material (clay? Till?).

This is an important area: the crossing point of the two main structures present in the area (the N-S fault forming No Name Creek and the SW-NE fault forming

the left tributary just upstream from here). These intersections of structures hold always a good potential for be excellent gold-traps.
We decided to give it a try and we dug a wide pit in a mix of unsorted material (sand, gravel, pebbles, cobbles, boulders; rounded, angular and sub-angular). Scarce the fine sediments. The walls were constantly collapsing. We didn't reach the bedrock and, after several attempts we decided to resign: too deep for our Hitachi 200 (as expected, in the middle of such of wide valley). We conducted a quick test for gold without luck. The concentrates show also a scarcity of heavy minerals, sign that we are still quite above from the level of pay-dirt.

Pit P: at UTM 406869-7087613

4m x 5m x 3.5m. No Groundwater. No permafrost.

This is a lateral cut into an upper bench. The bench stands 2.5 meters above the valley, on the right side of Big Creek.
The upper part of the bench (see the picture beside) is composed for the first 2 meters by the common black layer of rounded and flattened rocks of different size mixed with sub-angular rocks and sand, all stained by manganese oxide.
The lower part shows a much different type of deposition (see the left picture): possibly till, where the main component is a greenish mix of sand, silt and clay mixed with a small amount of gravel and rare pebbles.
This particular deposition resembles weathered phyllitic bedrock but is actually of glacial origins.
Glaciolacustrine? Till? Part of a ground moraine?
We dug deeper into the layer, from the base of this bench, and we couldn't reach the bedrock.
We also tried to reach the bedrock from different points: nothing to do.
We sampled for gold along the walls of the pit, from top to bottom, without results.
This bench should be drilled, in order to find what's below the glacial coverage.

Pit Q: at 406799-7089235

10m x 10m x 5.5m. Groundwater at -60cm. No permafrost.

Pit Q has been dug in the middle of the line chose by Queenstake Resources for the drilling campaign conducted between the end of the 70s and the beginning of the 80s. The posts at the drilling sites are still visible across the valley (see picture below).

Before chose where to dig, we performed a surveying of the bedrock by using the ground penetrating radar (see chapter "Geophysical survey").

The GPR indicated the presence of a buried paleochannel located in the middle of the valley around a depth of ≈ 6.5m, barely accessible for our excavator. We decided to take the chance for a failure and we started to dig.

Pit Q is roughly located in the center of the property; here the valley become narrower and more V shaped. We are probably just below (downstream) the limits of the glacial activities recorded on the upper section of "Oz" property (toward south).

As soon we at began to dig at pit Q we started to deal with problems: the level of the groundwater starts right below the surface (-50cm) and the alluvium is composed by rounded pebbles, cobbles and boulders with a minor amount of fine sediments. These conditions induce the walls of the pit to constantly collapse and the operator has to move back the excavator at every scoop.

We tried to use the 6" trash-pump, but the sealing broke down. These are dangerous conditions, where the excavator can easily flip into the pit full of water; David managed to arrive to a depth of –5.5m but he couldn't go deeper. Once again we didn't reach the bedrock.

Several attempts from different angles ended up with multiple defeats.

We had to resign to move on with the research. That was probably the most frustrating moment of our campaign: we wanted absolutely double check the results of Queenstake

along the line where they performed them most important tests.
We quit digging and we start panning with no enthusiasm (the gravel was way too clean) but with some hope. We didn't recover gold or heavy minerals.

Note: Later on we tried to dig into the ground few meters downstream, where the valley is narrower. We immediately exposed permafrost and black muck: starting from here, the characteristics of the loose coverage are completely changing with the morphology of the valley as well. The glacial action didn't affect this portion.

Pit Q1:

This is just a side cut in a potential upper bench located on the right side of the valley, 60 meters away from pit Q. We exposed a couple of meters of talus which was covering a thin layer of flow-debris and then bedrock (quartzite and schist).
No traces of gold.

Pit R and R1: at UTM 405930-7091078 and UTM 405930-7091062

6m x 4m x 4.5m and 5m x 3.5m x 4m.
No groundwater. No permafrost.

After another unsuccessful attempt to dig to the bedrock along the last right tributary, by the north end of our property (the un-named creek which hosts "Italian" and "Ota" claims), we decided to drive the excavator up the ridge road toward the Red Mountain, to test an upper bench visible from Big Creek Valley.
These very high benches (≈80 meters) are probably the products of a separate glacial activity occurred in along the north end of the property, along the wide valley where Hobo Creek join Big Creek.
Here a glacier was probably active between Hobo Creek all the way down to the Little South Klondike.
Part of it was probably plugging the right fork, where the upper Big Creek starts and where today lies our "Oz" property.
The remains of a lateral moraine are nowadays visible along the ridge of the mountain which hosts the road to Red Mountain: huge boulders are well visible all along the ridge.
The benches revealed a deposition composed by angular and sub-angular rocks of different size, mixed by minor round clasts (pebbles, cobbles and boulders). The matrix is composed by sand and fine gravel.

The bedrock is made by a kind of quatzose grit, extremely hard.

As the end of our exploration season was getting closer (the 15 of September), we couldn't afford to spend enough time on those benches: our mission here was to find gold.

We process by panning (with difficulties, as there is no water up the hill) the material extracted from few different levels. No gold has been recovered from pit R.

As soon as we were getting discouraged, we started to find gold in the material coming from pit R1 (located on the same bench, just few meters away).

The gold is fine, flattened and apparently grinded.

The next days we decided to spend more time to prospect the area; beside the access road there are piles of gravel and rocks fallen from the bench intruded by the road.

We panned the fine material accumulated with the cobbles and we recovered small flakes of gold.

This upper area probably deserves further exploration.

Geophysical survey

(ground penetrating radar system)

During the exploration campaign of 2013 we dug a number of useless pits, where the bedrock was too deep to be reached by our excavator (at Big Creek the groundwater starts right below the surface and that particular condition prevented us from digging lower steps).
To dig a large pit is a complex operation and it usually takes an entire day of work for an operator and his helper. It's obviously expensive: the wage of the workers is added to the cost of running an excavator (which in remote areas can be double).

Last year we tried to pre-determine the depth of bedrock by using an auger drill, which is the most common way to operate. Unfortunately, the presence of shallow groundwater and the type of deposition with the presence of big rocks prevented us from obtaining good results in a desired short time.

To avoid a waste of time and energy, this year we chose to use geophysical surveying. We decided to experiment a ground penetrating radar for its easy portability, for the quick response and for the extremely low cost of this operation.

The surveying campaign has been performed by Boris Logutov, a brilliant geophysicist from the University of Perm, Russia.
Boris used a Russian made GPR, the Python-3, a piece of equipment tested with many others and declared "the best ground penetrating radar for placer exploration" by the geophysical department of Perm University.
Two different antennas have been used to prospect at Big Creek: a 25 MHz and a 50 MHz. The best results have been achieved with the 25 MHz antenna.

We established a grid of 5 lines distributed along the most interesting areas of the upper part of the property. Each line was measuring between 100 and 150 meters and cutting across the valley.

The results of the GPR have been precisely interpreted by Boris and his previsions lately confirmed by our pits, subsequently dug along the lines.

As you will notice by observing the bedrock profiles traced by the Python-3, this surveying revealed the existence of higher benches on line 2, 3 and 4 (keep in mind that in the graphics the surface appears flat, because the GPR doesn't show the profile of the valley, only the one of bedrock. The terraces are obviously located on the hillside).

These benches probably constitute the most important discovery of the summer, as we didn't expect such great extension under the coverage of rock debris (from the valley those stretches seem to be small remains).

After the geophysical survey we exposed the bench M, on line 3, and we found the best gold deposition of the entire property, in a hidden ancient alluvium.

For the future we will strongly recommend (when the depositional condition are favorable = in absence of clay) the use of a GPR for a preliminary investigation. We have been well impressed by this Python-3, a great-little device.
This technology could save to the prospectors a considerable amount of money, time and energy and, more important, it's a non invasive tool and can preserve the natural environment from unnecessary digging.

Boris Logutov with his GPR Python-3

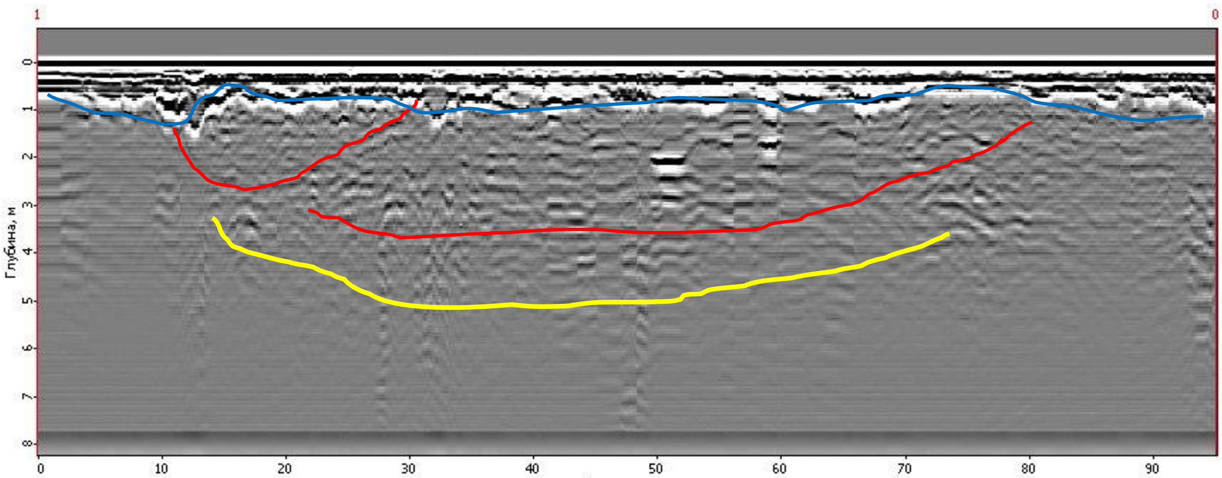
Location of GPR lines

Bedrock profiles

(by Boris Logutov)

PR 1 (line 1, claim 53)

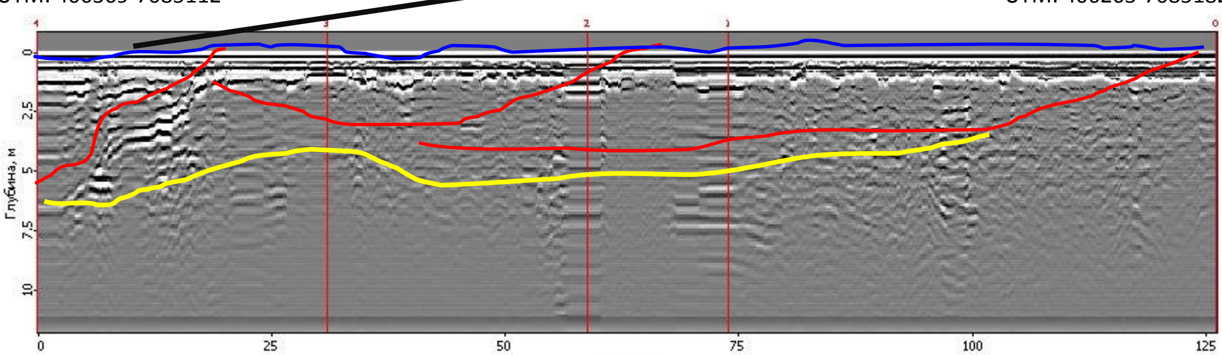
UTM: 405804-7084457 UTM: 405737-7084510



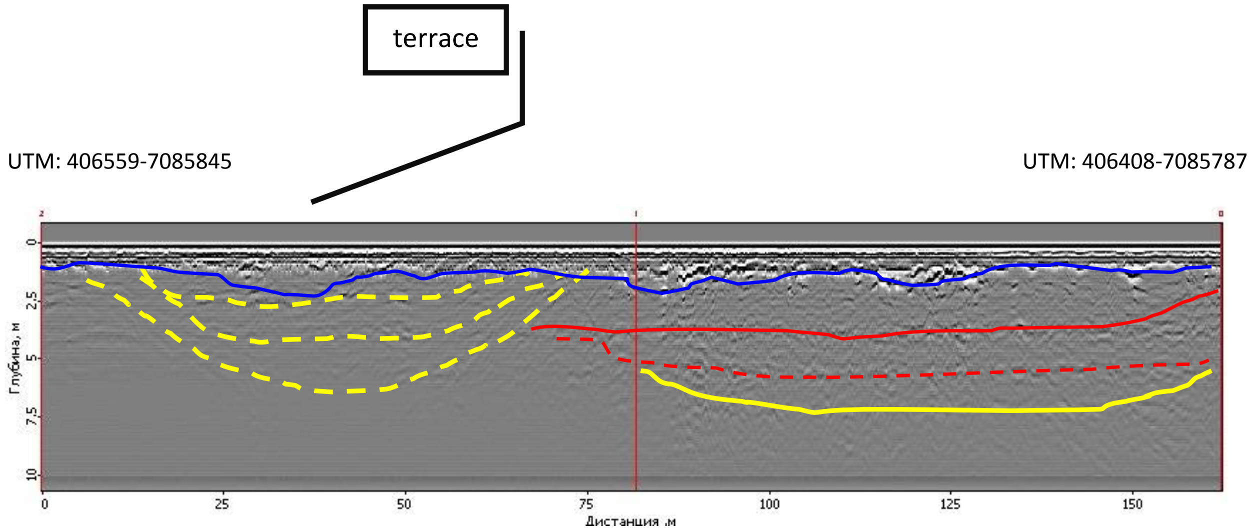
PR 2 (line 2, claim 48)

terrace

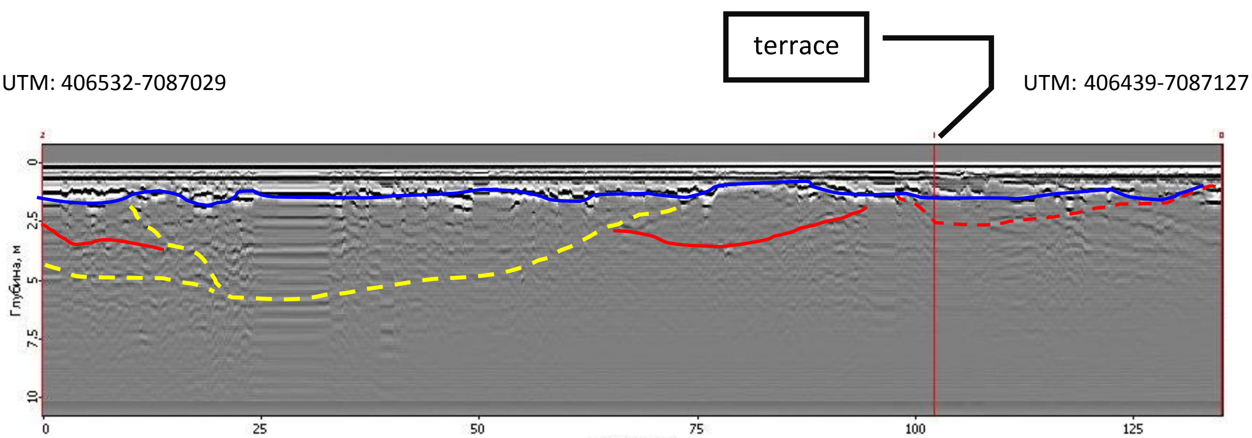
UTM: 406369-7085112 UTM: 406263-7085182



PR 3 (line 3, claim 42)

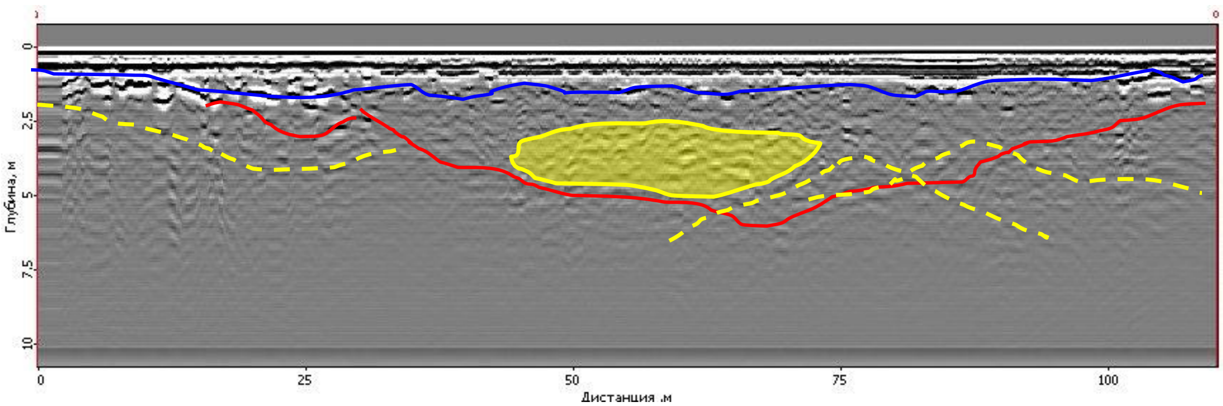


PR 4 (line 4, claim 34)



PR 5 (line 5, claim 17)

UTM: 406859-7089260 UTM: 406752-7089240



roof of sands

sole of sands

prospective sole of sands

bedrock

prospective bedrock

concentration of coarse fraction

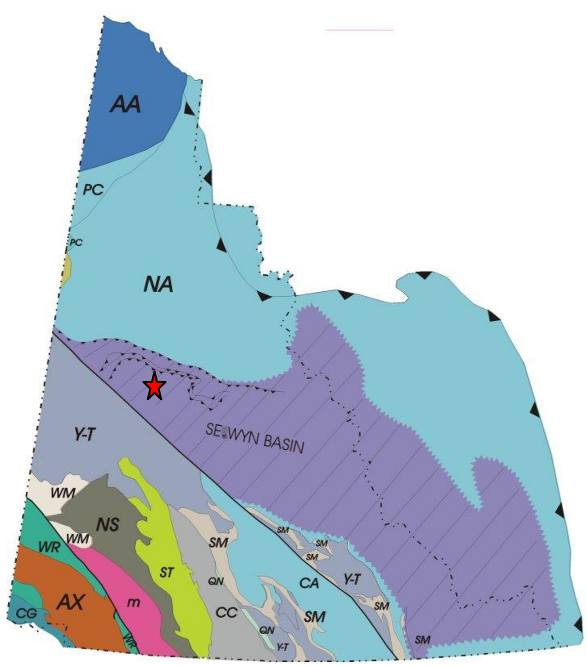
(note: depth and distance are in meters)

Bedrock geology

Big Creek runs along that geological "province" called the "Selwyn Basin".

Spatially, the Selwyn Basin is bound to the north by the Dawson Fault; it grades into platformal faces to east (Mackenzie Platform) and southwest (Cassiar Platform); may be bound by a Mesozoic thrust fault separating it from the Tanana Terrane in the Anvil district; and is offset to the southwest by the Tintina Fault.

The Selwyn Basin is an ancient continental margin basin (late Precambrian to Middle Devonian) characterized by the deposition of thick sequences of black carbonaceous shales. Sandstone has also been commonly deposited along this basin, in shallower water. Today in the surrounding area of Big Creek it's possible to find patches of schist or quartzite overlying black slates/phyllite.



Big Creek (red star)

Through the ages, several events of extensional tectonism with subsidence and faulting occurred along the basin. These events produced the deposition of different coarse clastic sediments and the beginning of a volcanic activity. Some epigenetic mineralization occurs in this environment.

Major metallogenic events in the Cordillera are Early Cambrian, Early Silurian and Middle Devonian to Middle Mississippian. Rocks of Selwyn Basin and Earn Group span this prospective time interval and hosts deposits of these ages" (*Yukon Geological Survey 2007*).

The last extensional phase of the basin (toward NNE) resulted in a fault system with an ESE trend and subvertical dip.

The deposition of the gold from Clear Creek to the surrounding of Red Mountain (Big Creek and Josephine Creek included), is associated with these events (faulting and extensional tectonism) and particularly with the consequent uplift of intrusive bodies related with Tombstone plutonic suite, 92 millions of years ago (*see map of gold occurrence at Clear Creek, by Allen and al., 1998*).

At the headwater of Clear Creek, Big Creek and Josephine Creek, there are six Tombstone intrusions: the Saddle, Eiger, Pukelman, Rhosgobel, Josephine and Big Creek stocks. They have a surface exposure ranging from 0.2 to 3.5km and they all contain gold (*Marsh Allen and Hart, 1998*).

The Saddle, Pukelman and Rhosgobel stocks are composed of medium- to coarse-grained quartz monzonite with large alkali feldspar phenocrysts.

The Josephine and Big Creek stocks are composed of fine- to medium-grained equigranular granodiorite. The Eiger stock is composed of fine-to medium-grained equigranular diorite with rare mafic phenocrysts.

Contact metamorphism rocks (hornfels) are surrounding the stocks for as much as 0.5km. Small skarns are also noticeable in the surrounding.

Low-sulphide quartz veins are predominant and characterize the Tombstone gold belt.

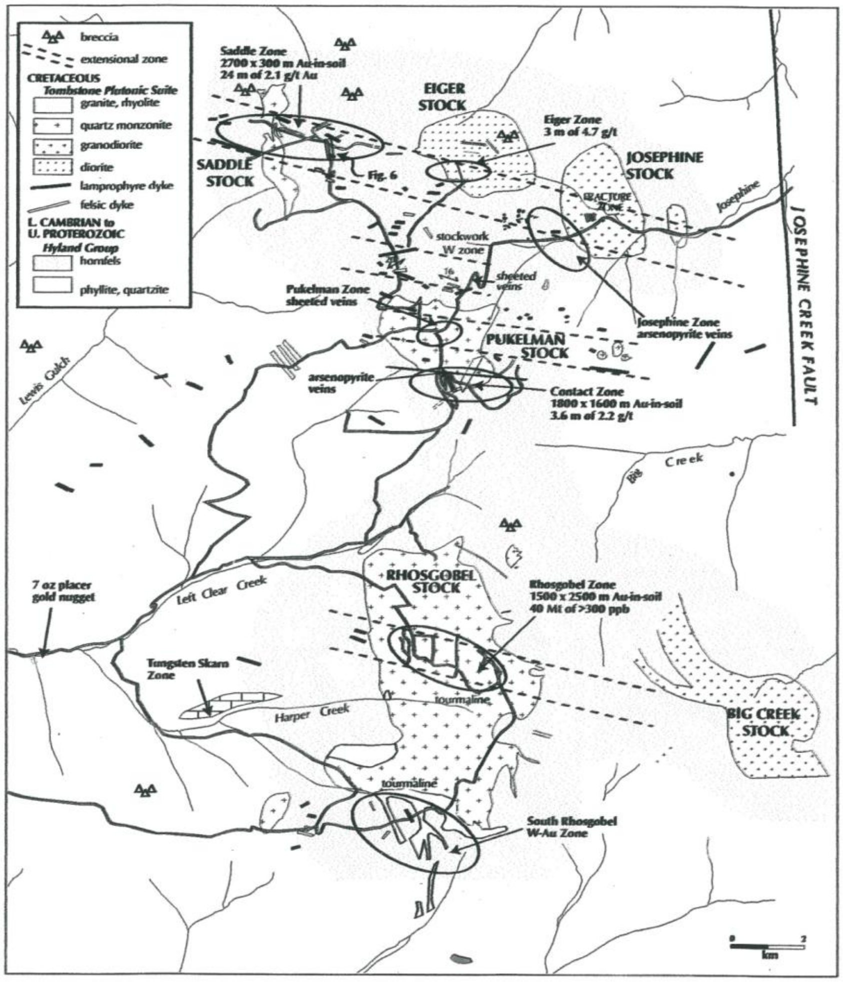
Irregularly spaced auriferous quartz veins are found in the adjacent hornfels.

K-feldspar, muscovite, biotite and carbonate are common gangue minerals, with less abundant tourmaline, albite and sericite.

In the Clear Creek area, felsic dikes are a common feature. They present an ESE trending, dip steeply, with a width of 0.5 to 2m.

Lamprophyre dikes are up to 12m wide, contain sparse biotite phenocrysts and biotite-diopside nodules, and cut all intrusive phases.

Some of these dikes contain high value of gold (*Marsh Allen and Hart, 1998)*.



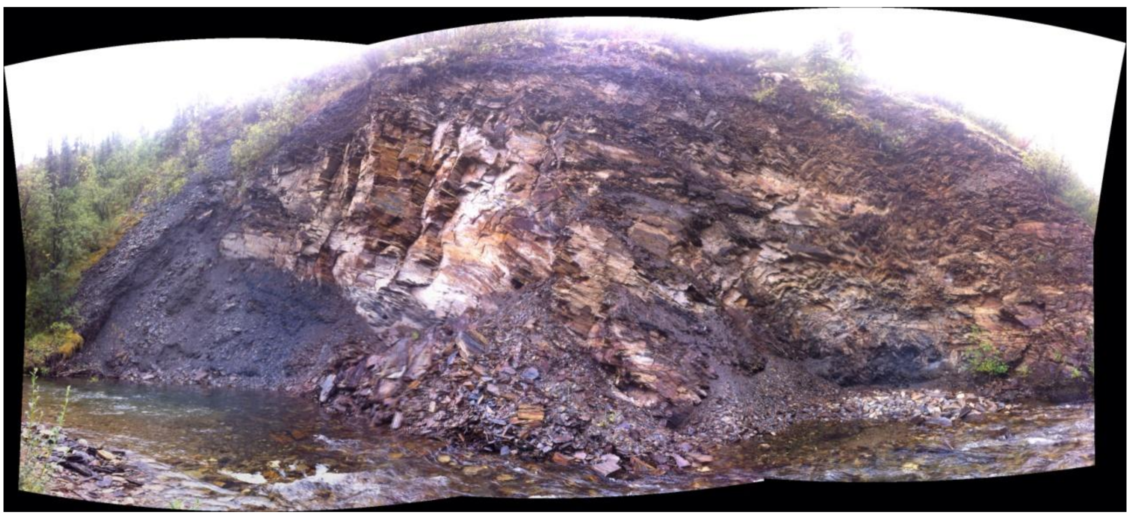
At Big Creek the attention of the several mineral exploration companies active in the area has been mainly concentrated on the intrusions present at the headwater of Clear Creek or at the Red Mountain.

During our first exploration campaign of summer 2013 we verify the existence of placer gold along seven miles of alluvial deposit, today part of the new “Oz” property.

We excavated 15 large test pits and only in 4 of these we managed to reach the bedrock. Despite the many failures, we had the chance to become familiar with the surficial and the bedrock geology of the area.

In three of the successful test pits (pit1, pit9 and pit13) the bedrock consists of crumbled black slates/phyllite, which definitely are the main constituent of all the rocks visible in the area.

The second target evaluation campaign conducted during this summer of 2014, confirmed the presence of an highly fractured bedrock made by black, foliated, pelitic rocks (from slates to phyllite) underlying a thick deposition of hard schist and quartzite (the most common rocks along the sides of the valley).



Black slates underlying quart-rich schist at UTM 406848-7089000.

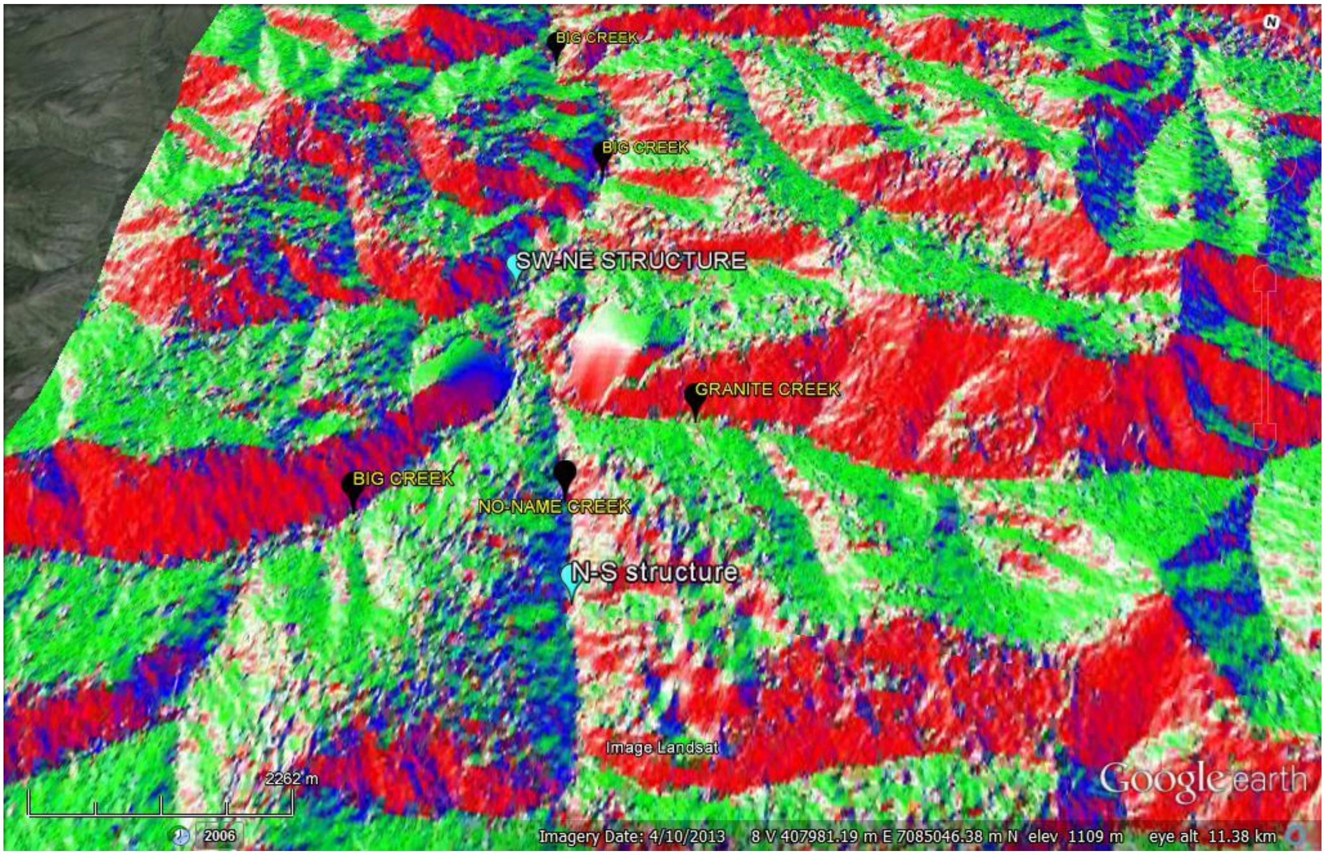
Metasedimentarian rocks are the majority of the components of these alluvial deposits, as evident from the analysis of the concentrates (see chapter "Concentrates").

Regarding the structures present in the area:

During the exploration campaign of 2014, our attention has been mostly catalyzed by what we consider to be the most important structure in the area for our research: the No-Name Creek fault (see picture on next page).

This fault with N-S direction seems to be a deep structure and it's hosting the entire course of No Name Creek and, on its northern extension, part of the Big Creek Valley (the very upper section of Big Creek runs along a system with SW-NE trend).

North Δ



The No-Name Creek fault (N-S), crossing downstream a SW-NE structure.

What we called the No Name fault is also extended toward south, through the southern margin of the watershed, where the upper part of Fortymile Creek runs.

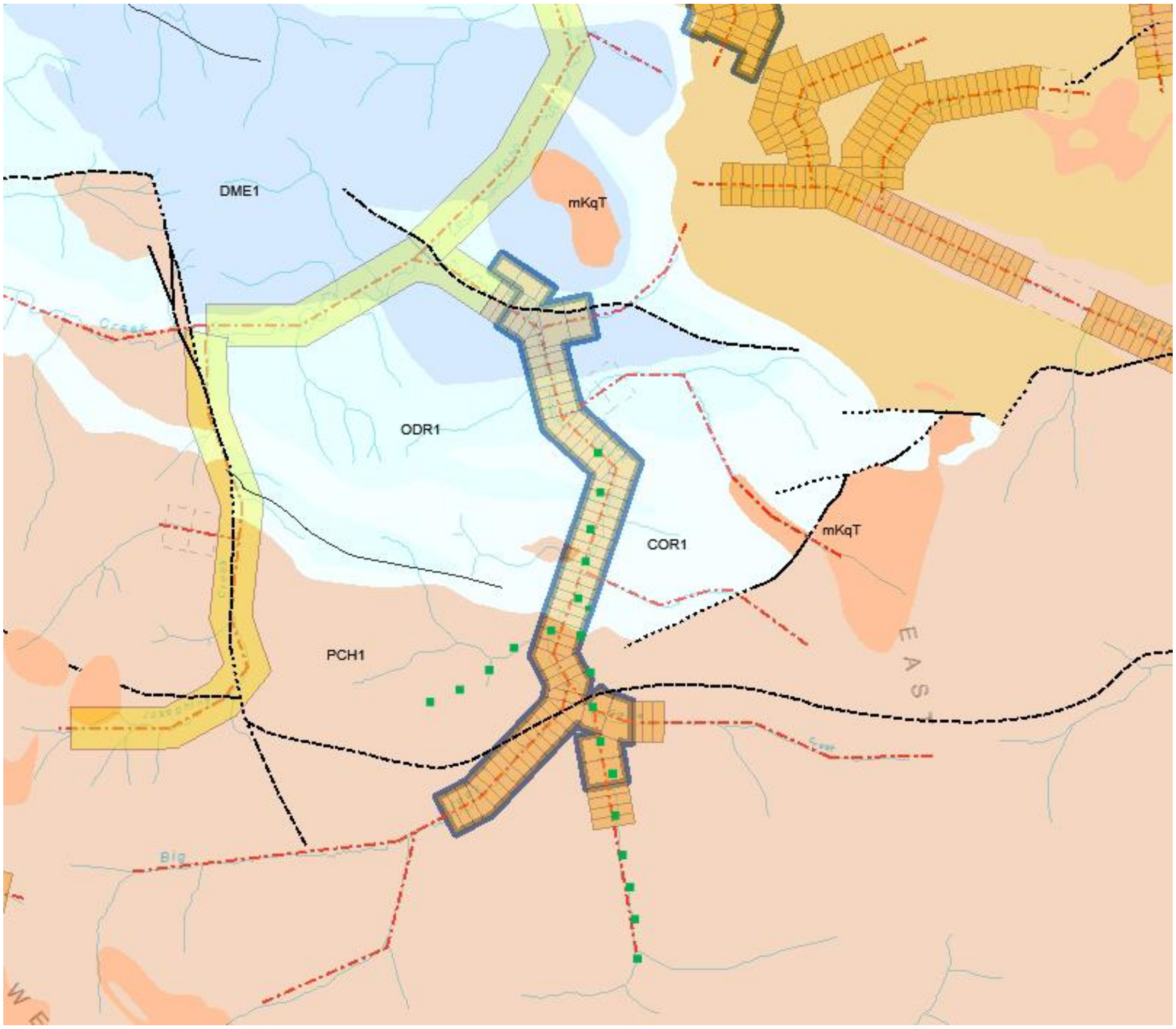
After the gold discoveries achieved during the exploration campaign of 2014, we are now suspecting this big S-N structure to be the responsible for the presence of a substantial coarse gold distribution along the upper part of "Oz" property.

The ancient paleo-benches M and M1, where we collected a significant quantity of gold, seem to be laying along this fault that originally cut through the hill visible at UTM 406645-7086319 before kept running toward north, to form the central part of the Big Creek Valley.

It's also important to pay attention to the structures with SW-NE direction: where those are intersecting the main valley there is potential for the existence of excellent gold traps.

Geological map

scale 1:80,000



Legend:

- PCH1: Hyland group (Proterozoic to Cambrian). Coarse turbiditic clastic units. Pale green shale, quartz rich sandstone, grit, phyllite, limestone, mafic volcanic rocks.
- COR1: Rabbitkettle (upper Proterozoic to lower Cambrian). Basinal limestone. Silty limestone, grey lustrous calcareous phyllite, black slate, quartzose

Siltstone, chert.

- ODR1: Road-River group (Ordovician and lower Devonian). Black shale and chert, resistant grey weathering, thin to medium bedded, light grey to black, greenish-grey chert; minor argillaceous limestone.
- DME1: Earn group (Devonian and Mississipian). Assemblage of submarine fan and channel deposits. Thin bedded, laminate slate with interbedded chert-quartz arenite and wacke; black siliceous siltstone.
- mKqT: Tombstone suite (mid-Cretaceous). Plutonic suit of felsic composition. Coarse grained granite, quartz monzonite and granodiorite.

The green dots are indicating the N-S "No Name fault" and the SW-NE fault (downstream).

Graphitic phyllite at Pit M *Quartzite at UTM 406748-7085408* *Grit from Pit R*

Note: the best gold recovered during our bulk sampling campaign seems to be deposited along that N-S fault where No Name Creek is running. The main Big Creek Valley, toward the headwater, doesn't seem to be as rich. The interesting point is, as easily noticeable from the geological map of the area, the absence of intrusive bodies in that part of the country. Question: where are the feeders (primary deposits) of this coarse placer gold? Further investigation is recommended along this area to the hard-rock exploration companies interested in gold.

Glacial history

The research of placer gold deposits in regions affected by glacial activities is often a complicated matter and a big challenge. Nevertheless, in many cases, the right interpretation of the events and a correct reconstruction of the glacial flows, could lead towards rewarding discoveries (as happened in the Cariboo district of British Columbia).

When we first approached this remote area in 2010, we were well aware to be dealing with a territory interested by, at least, three glacial events (McConnell, Reid and pre-Reid). It must be said; however, that our acquired information indicated only mild activities which occurred in these valleys, due to the peripheral location of Big Creek from the range of the big glaciers.

Here's the report written in 1998 from T.L.Allen, and C.J.R.Hart of the Yukon Geology program, with E.E.Marsh from the University of Colorado:

"The McQuesten River drainage basin, including the Clear Creek region, was affected by the pre-Reid (early Pleistocene), Reid (middle Pleistocene), and McConnell (late Pleistocene) glacial periods. The pre-Reid glacial period, the most extensive glaciations in the Yukon with multiple stages, was the only event that directly affected the valleys of Clear Creek. Pre-Reid glacial deposits include till, resedimented till, and glaciofluvial sediments on the lower slopes of the valley sides. Pre-glacial fluvial gravels deposited by multi-channelled river systems are preserved under 2m of pre-Reid diamicton characterized by a clayey silt matrix with subrounded to rounded clasts, thought to represent a melt-out (Morison, 1984). A series of resedimented melt-out till units, up to 5.5m thick, overlie the diamicton. These deposits are massive with subangular to subrounded clasts within a silty sand to fine sand matrix separated by 10cm tick bed of fine sand to grey clay (Morison, 1984). The pre-Reid fluvial system, as noted at the mouth of left Clear Creek, was multi-channelled and auriferous (Morison, 1984). Alpine glaciers also formed during the pre-Reid glacial period in the headwater of Left Clear Creek, however, most of the sediment from this glaciations has been eroded from the valley sides.

Clear Creek is beyond both the Reid and McConnell clacial limits of the Cordillera ice sheet (Bostock 1966; Huges and al., 1969). ***Local alpine glaciers formed during the Reid or McConnell glacial periods in the neighbouring of Josephine and Big creeks.*** *The northwest portion of Vancouver Creek and the right fork of Clear Creek demonstrate a large U-shaped valley, suggesting previous glacial activity up southern tributaries of Clear Creek. As a result of the McConnell glaciations, fluvial system eroded and downcut through thick pre-existing glacial deposits resulting in the formation of creek and gulch placer deposits."*

What we actually found out during our exploration campaign of 2014, is a quite more invasive and extended glacial action than what was previously recorded.

Since our arrival in these valleys, we noticed the signs of a glacial environment, well visible in the upper part of Big Creek.
The valley here is wide and slightly rounded; along its surface are laying scattered, rounded, big size boulders of certain glacial origin. Some of the tributaries of the upper part of Big Creek seem to have originally been part of some sort of moderate 'hanging valley' (a good example is the little right tributary visible at UTM 405178-7083752).
The remains of paleo-benches are recognizable along the main valley. From the pits dug during last summer, they revealed alternations of glaciofluvial and interglacial type of deposits (except for pit M which showed us the remains of an ancient fluvial system).

The actual floodplain also shows a braided stream type of deposition with the influence of a high energetic action due to glacial meltwaters. The pits dug along the modern valley are showing at – 4 meters of depth, an interesting, common layer of clay probably deposited during more interglacial conditions.

During the first target evaluation campaign of 2013, we intentionally didn't pay much attention to the glacial history of the area as we chose to focus our attention just into finding the gold. Our mission at that time was to prove the existence of placer gold depositions in this part of the region. During 2013 we achieved our goal.

The second target evaluation campaign of 2014 instead, has been specifically planned with the intention to evaluate the potential for a profitable mining enterprise.
At this point the comprehension of the dynamics of these glacial activities becomes fundamental.

During the past summer we recorded the following observations:

- The glacial activities at Big Creek took place along two separate sections:

  a) The first one is located in the upper part of the creek (toward south), starts from the headwater and end downstream roughly at UTM 406786-7089235 (this point probably corresponds to the very northern limit of these local glacial activities). Three ages are probably

recognizable along this upper part: pre-Reid, Reid and McConnell.

b) The second is visible by the very north end of “Oz” property, downstream from “Oz1”, where Big Creek meet Hobo Creek (see picture above). Along the road to Red Mountain, above from pit R and R1, are well visible the remains of a lateral moraine (represented by a big number of huge and round boulders).
The glacier was probably plugging the upper part of Big Creek Valley, until the point where today are laying the first claims of our property (Oz1, Oz2, Oz3).
At pit R1, more than 80 meters above the floodplain, we dug a high terrace, probably of glacial origin, and we recovered gold.
We obtained the same type of gold by panning the material accumulated along the road to Red Mountain that climbs this hill, at 70 meters of elevation above the floodplain (see picture on the left). As already written, this gold is finely grinded and extremely flattened, certainly of glaciofluvial origins.

Note: the central part of the “Oz” property (from UTM 406786-7089235 to Oz5) probably escaped from the erosional power of the glacial meltwater and could possibly be the place where the gold, ‘flushed’ down from the upper section, has been lately re-concentrated.
During the past summer of 2014 we tried unsuccessfully to verify this hypothesis by digging this part of the valley.
The presence of a thick layer of permafrost (which doesn’t exist along the upper part of the valley) didn’t allow our Hitachi 200 to arrive to the bedrock.
A drilling campaign is recommended, with the use of a powerful hydraulic auger drill and bits of 6-8”.

- Going back to the upper section of the Oz property: at UTM 406806-7085422 (pit M) we exposed the remains of a lateral moraine (see picture below), possibly belonging to a Reid episode. The moraine eroded an ancient fluvial deposition discovered in 2013.
During 2014, gold has been recovered at pit M from the fluvial material, until the point where the bench has been crosscut by the moraine.
Then the gold stopped.

The bench and the moraine are both buried under a thick deposition of till. Which period is related with the deposition of this till?
It's hard to say: it possibly occurred during a final phase of the Reid-age.

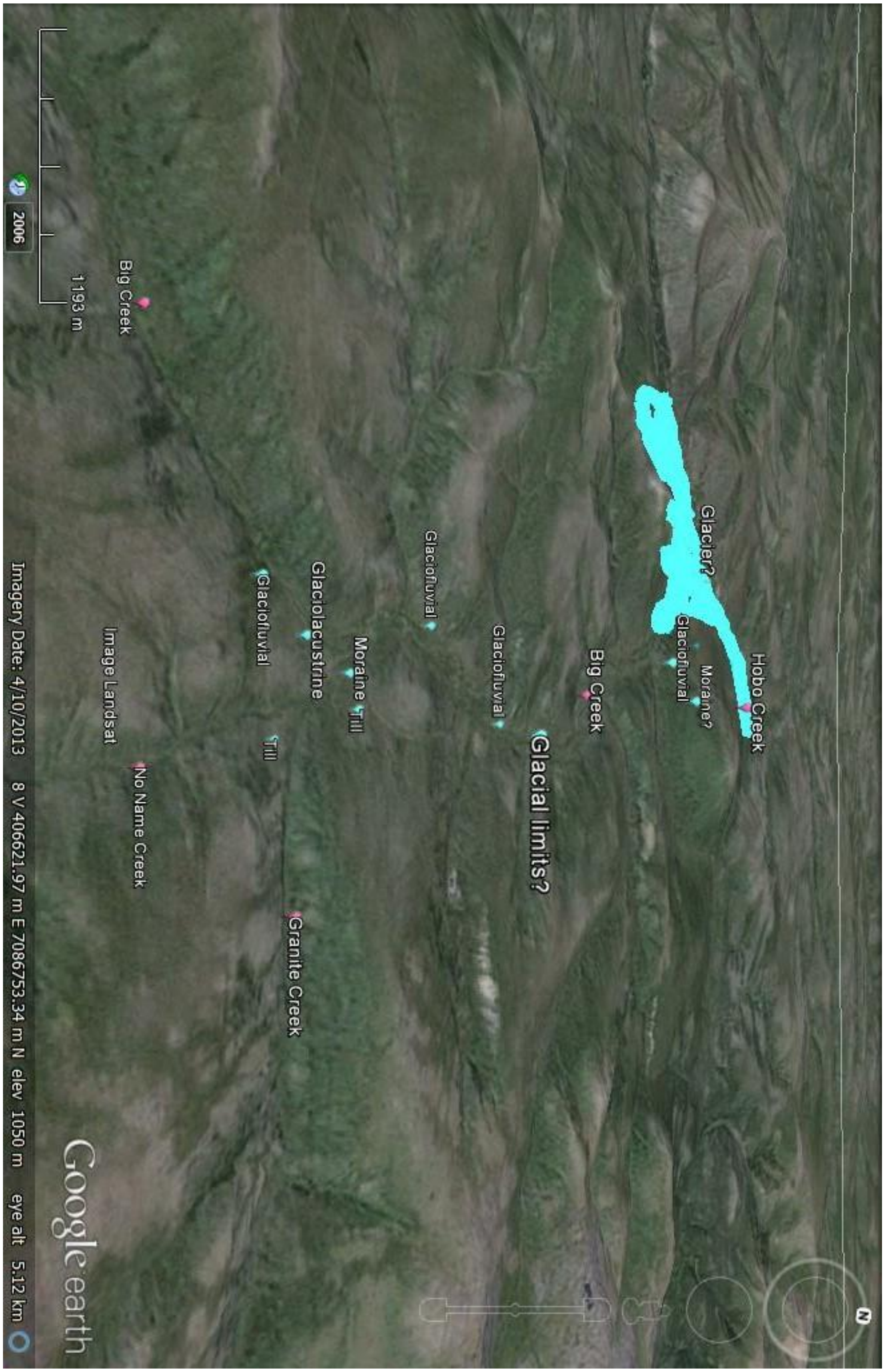
Few meters above Pit M we excavated through the thick layer of sandy till and we discovered the signs of a second bench, certainly older: Pit M1.
We couldn't manage to reach the bedrock here but, by testing the deepest part of the pit, we exposed layer of boulders (<50cm), cobbles, pebbles, gravel and sand. By panning that gravel we recovered few coarse flakes of gold.
The existence of a higher paleo-channel seems to be almost guaranteed.

Note: the benches exposed at pit M and at pit M1 are probably not belonging to an ancient deposition of Big Creek. They seem to be part of an old fluvial episode related with No-Name Creek, the right tributary well visible on the upper part of the property.
No-Name Creek runs along the major N-S structure of the area (see the chapter "Bedrock geology") and joins Granite Creek before flowing into Big Creek.
No Name Creek (and probably Granite Creek as well) could be the carriers of the coarse gold found along the benches at M and M1 as well as the coarse gold recovered from the actual floodplain at pit H and E.
As already written this part of the property has been tested by us and produced good results (≈1oz/60m^3).

- The upper benches belonging to the Big Creek basin are well visible on the right side, along the upper part of the “Oz” property, where pit J and pit L are (see picture below). They seems to be coeval with the benches located a couple of kilometers downstream, along the left side of the valley (pit O), and with the one visible further down, on the right side of the valley (pit P). These benches are the products of glacial and interglacial episodes.
  They all showed a common black layer of manganese oxide, which probably suggests the existence of higher temperatures and consequently an interglacial fluvial episode (well visible at O, pit J and pit P).
  These black layers are interbedding high discharge type of deposition, definitely of glaciofluvial origin.
  All these episodes are probably belonging to the Reid-age.

The more recent ice age (McConnell), was the least invasive of all.
At Big Creek the range of this glacial episode was probably confined on the very upper part of the valley, in the proximity of its headwater.
Although the glacial activity during McConnell wasn’t as extended and dramatic as the precedent, it still affected the depositional trend of our actual placer.
Around 4 meters of depth, the pits sampled along the modern floodplain are showing a common, thin layer of clay (visible at pit A, I, E, H, K) typically formed during interglacial conditions.
Above and below this layer, it’s a flow-debris type of deposition (a chaotic mix of unclassified rounded, angular and sub-angular clasts mixed with sand), which shows the characteristic of the high energy transportation which usually occurs during more glacial conditions. The young age of these depositional layers, noticeable in the pits right below the surface, is undisputable and more probably related with the Mc Connell-age.

Signs of glacial activities at Big Creek



Surficial geology

As we wrote in the previous chapter, the exploration campaign of 2014 indicated that at Big Creek the glacial activity has been more extended and invasive than what previously believed.
We saw that the signs of the work done by the ice during the different ice ages are recognizable in part of the morphology as well as in the depositional trends observed in the pits dug on the upper benches and along the floodplain.

At pit M we also found an original alluvium with coarse gold in it and we decided to try to retrace the history of this ancient deposition along with the successive phases of its erosion and re-deposition due to the glacial activities subsequently occurred.
Our mission is to locate the new depositional areas where the placer gold has been re-concentrated and where is hiding at these days.

In order to find the new location where has been re-deposited the placer gold previously removed by glacial action, we need to:
(a) be able to distinguish between a fluvial and a glaciofluvial type of depositions (not always easy),
(b) found the limits of the glacial activities,
(c) establish a correct chronological order for the different glacial episodes recorded.

Example: at Big Creek the richest gold deposition possibly occurred (c) during a pre-Reid fluvial event (pit M and M1). Along the valley we recorded for the majority, signs of fluvioglacial activities (a), mostly detrimental for a good, 'mature' placer gold deposition.
We located the most extended glacial limit (b) between the pits P and Q; below this point there is possibly a chance for enriched pockets of gold.

Here below we are listing different depositional patterns recorded in more than 30 pits dug during two years of exploration. It hasn't always been easy to interpret the different types of depositions, due to the variety and alternation of occurred events.
Here is a simplified classification:

- Glaciolacustrine sediments: homogenous layer (≤1m) of fine and very fine clear sediments with traces of gravel and pebbles. It could also possibly be interpreted as interglacial loess. It's covering the upper benches and is well visible at pits J and way less at pit L. A similar type of sediment is the constituent of the bottom layer at pit G and maybe at P: the appearance is almost identical but they shouldn't be coeval. Probably at G and P we are dealing with glacial till.

- Till and/or colluviated till: superficial layer of variable thickness (50cm to > 1m) mostly sandy (coarse and fine), mixed with smaller quantities of gravel, pebbles and cobbles. Noticeable a concentration (>in the 'colluviated till') of angular and subangular clasts. This deposition is commonly found as upper layer at pits M, M1, N, A1, C and B.

- Glaciofluvial (debris-flow type): layers of different thickness (from <1m to >2m) present at different depth, sometime interbedded with others (fluvial). Represented by a random mix of unsorted, unclassified clasts (5-40cm), angular, sub-angular and rounded, mixed with gravel and sand. With minor presence of silt and fine sediments. Clearly the product of energetic flows, mostly caused by glacial meltwater. These layers are representing the most common deposition in the pits tested along the upper section of floodplain of Big Creek as well as in some of the upper benches (pit J, L, O,).

- Alluvial deposition: In the upper part of Big Creek, the fluvial deposits are visible on the surface, along the creek bed, which represent the latest depositional occurrence. This floodplain is showing the characteristic of a braided stream system, with a chaotic mix of unsorted, unclassified clasts of different size (mostly < 50cm), with shape ranging from round to angular (when close to the bedrock). A classic feature of this type of fluvial deposition is the scarcity of fine and ultrafine sediments. This type of fluvial deposition is easy to be mistaken for that high energy type of deposits originated by glacial meltwaters.

  Both these deposits are well permeable with high circulation of underground water and absence of permafrost.

  Few kilometers downstream (around the center of "Oz" property), the fluvial deposition change and the energy decrease. Here there is an increasing of the round clasts and fine components. After UTM 406786-7089235, the muck covers the surface here and there. The vegetation change and under the moss it starts the permafrost.

  This area is showing a more 'mature' and less tormented depositional history. For these reasons the potential for better gold recovery is here.

Pit A

Pit M1

Pit H

Pit J

Pit M

Pit L

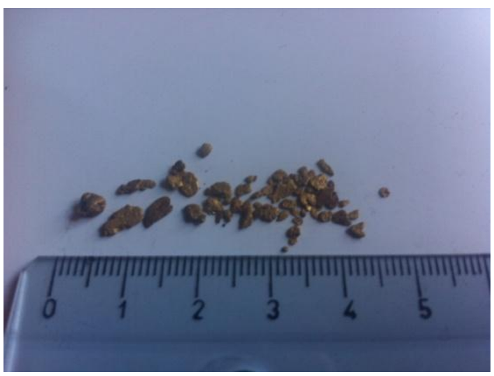
Pit P

Pit O

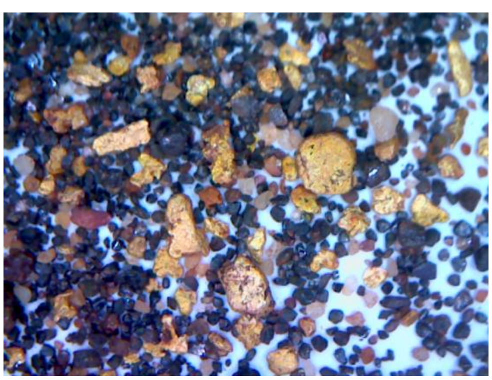
Gold


gold from pit M


gold from pit H


gold from pit E


gold from pit J


gold and concentrate from pit K (x 65)


gold from pit J (x 65)

Our best recovery of gold (> 2 ounces from ≈ 120 cubic meters of mixed materials) occurred at pit M, on the remains of an ancient bench which was probably part of No-Name Creek, a right tributary of Big Creek in the upper section of Oz property. Good results were also obtained from the pits excavated along the section of the floodplain right below pit M, where No-Name Creek join Big Creek.
From pit H we extracted 25 grams of gold from ≈ 40-45 cubic meters of gravel and by hand-sluicing at pit E we produced 3 grams of gold from a couple of cubic meters.
Gold has been also found in the pans at pit A (former pit 4, during the 2013 exploration campaign). Here we couldn't dig deeper in the bedrock because it was too deep for our excavator; the gold recovered by panning was represented by coarser flakes (≈2 mm).
The gold coming from pit M, H and E and A shows a great similarity and is probably coming from the No-Name Valley (the big structure with N-S orientation).
The gold has been tested for fineness and showed purity of 81%.
This part of the "Oz" property should be mined first, for its favorable features (no stripping is needed); it could possibly be profitable and cheap to operate.

A different situation has been recorded along the Big Creek Valley, where the gold recovered at pit K, at the former pit 6 (2013), at pit J (bench) and from the bedrock exposed along the creek at UTM 406848-7089000, is mostly fine and ultrafine.
The gold extracted from the upper bench (J) is actually coarser and rounded than the one deposited along the floodplain below. More probably, part of the gold recovered from pit K and former 6 has been eroded and re-deposited during a modern episode of Big Creek; that will explain why part of this gold is flattened and apparently grinded.
We didn't manage to recover noticeable quantities of gold along the main valley (≤ 2 grams from pit J, pit 6 and the bedrock along Big Creek, from ≈ 15 cubic meters processed at each pit).
The bench exposed at pit J and pit L deserves further exploration: it can host a better gold deposition than the one recovered by us. While processing pit M, the miner should invest some time to test this part of the property.

The main valley seems to be hosting a scattered 'low grade' type of deposition.
We are still convinced that this upper section of the main valley could be better prospected with bigger excavators.
Unfortunately we couldn't manage to dig deeper in the highly fractured bedrock and we probably missed the lower part (the richest) of the gold deposition.
We suggest for the future to cross this valley with a more extended trench, preferably dug along the GPR line number 3 (the UTM are in chapter "Geophysical survey"); we are dealing with a braided stream here and there are probably more than one pay-streak to test.

Gold flakes have also been found at pit R1, on a very high bench close to the northern end of “Oz” property. This deposition has probably only glacial origin and we don’t expect to be able to host a great quantity of gold; nevertheless we cannot exclude the presence of pockets with better concentration.
Further exploration is always recommended.

The central part of the property from Oz19 to Oz5, according with our field observation hasn’t be interested by invasive glacial activities and for this reason could be the place where to look for the gold eroded and removed from the upper section by the glacial flows. As already written, the characteristics of this part of the placer are different: here there is permafrost, the size of the clasts is bigger and the bedrock is deeper. This part of the property required to be drilled. The potential for surprises is definitely high.

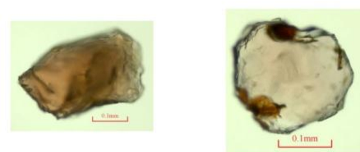
this gold is probably coming from the No-Name Valley

CONCENTRATES

Dr. Tim Liverton, mineralogist and structural Geologist of Watson Lake, conducted for us a first mineral evaluation of the concentrates collected with a long-tom at pit H.

Pit H is the place where we obtained the best exposure of bedrock (at 4.8m).

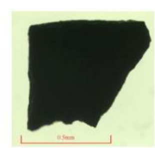
From the concentrate we separated by panning 1.93 grams of coarse and medium-size gold. While sluicing, we were surprised by the small amount of "black sand" recovered, in comparison with the large amount of gold (almost 2gr from less than ¾ cubic meter of material).



Garnets, in oil under transmitted plane polarised light

The concentrate was examined by Dr. Liverton under the binocular microscope and selected minerals were picked for photography (immersed in oil) using the petrographic microscope.

Tourmaline (schorl) transmitted plane polarised light



Wolframite, cleavage normal to view

The sample appears to be too "dirty" for a complete evaluation, mostly due to the excessive presence of very fine-grained muscovite schist, rare biotitic schist and quartz.

Magnetite is present as mostly fractured <<0.5mm grains, but some smaller (0.1mm) perfect octahedral are present, together with coarser 0.5mm abraded crystals.

A few <0.25 mm red garnets are present, which are mostly abraded. Rounded ilmenite is noticeable. Limonite pseudomorphs after pyrite (quite euhedral), together with fractured pyrite, are also occasional constituents.

Tiny schorl crystals <0.2mm were seen, one zircon and possibly some wolframite.

The depositional environment is dominated by metasediments and the stream sediment represents a mixture of locally derived and distal, transported material.

CONCLUSIONS

The second and final target evaluation campaign performed at Big Creek during the summer of 2014, is part of a project started in 2010 with the intention to explore, test and develop several placer mining sites for the future, in areas previously neglected for different reasons.
Today our group is purely dedicated to the research of new mineable land for the necessity of a growing number of enterprises arriving in the Yukon during the last few years.
We are trying to extend the old frontiers, since the historical mining sites of the Klondike are rapidly running out of production.
The high gold price created in the last years by an unstable global economy, boosted the placer mining industry and gave the start to a new gold rush.
Typical of the placer industry of the Yukon is the phase of rush, characterized by a quick, chaotic exploitation of the resources and a successive abandon of the activity when the rush is over. This form of aggressive behavior and the lack of a modern way of planning the future, in a way depleted the research.
A reduced placer exploration and the sudden grow of interest for the placer gold mining are now creating a stage of panic between the well established enterprises which are forced to slow-down the production in order to go scouting for new mineable areas, with a loss of production and high costs of research.

In this optic we intend to create a bond with the mining companies active on the Territory, to fulfill them necessities and to help them to locate new targets for the future. At the same time we are well determined to collaborate with the Yukon government for a proper evaluation and compilation of the mineral resources present on this land.

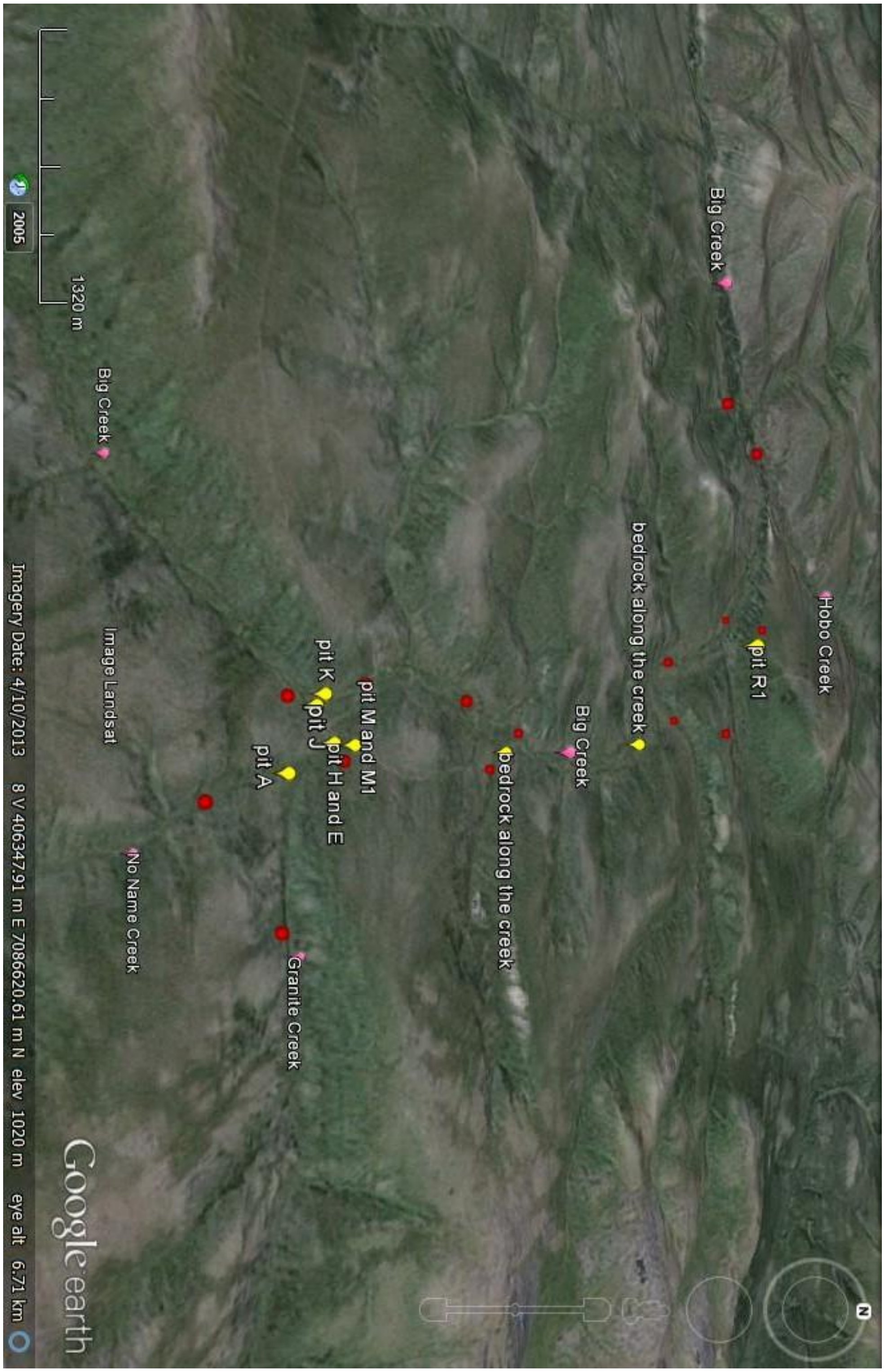
At Big Creek, during two session of exploration, we proved the existence of a coarse gold deposition in an area previously neglected and barely explored.
We faced a big challenge, as the glacial activity in the area turned out to be more invasive and extended of what previously recorded. However, we managed to locate the limits of these activities and to expose areas escaped or less influenced by the action of the glaciers.
We recovered a noticeable quantity of gold to show the potential for a possible mining exploitation of this new area.

At the conclusion of this exploration campaign, we optioned the “Oz” property to a well established mining company. Next year this enterprise will start a preliminary mining operation, hopefully with a great success.
In case of positive results, an extended new area will become productive in the Yukon.

To conclude this report, we would like to bring out one of the strongest commitments of our group: the research of a responsible way to manage the natural resources.
Gold is an important component of the global economy and also in our daily life (even this computer which I'm using to write requires gold to function), and so it's the nature.
For many years the placer mining industry didn't pay enough attention to the natural environment and left too many awful scars around this fabulous northern wilderness.
Now it's time to change.
The placer mining industry of the Yukon has the responsibility to show to the rest of world that it's possible to mine in a responsible manner, with a minimal impact on the surrounding environment.
Our group is working to create a net of information about existing "green solution" for the placer mining industry; we intend to promote the less invasive technologies already available on the market and to develop new, clean methods for exploit a placer.
We should all remember that the good health of mother Earth is the only way to reach our wealth. Above all it should be our duty to preserve it for the future generations.

Gold occurrence at Big Creek

(yellow=gold occurrence, red=suggested new testing)



ACKNOWLEDGEMENTS

The last target evaluation campaign at Big Creek is finally over.

In the next years somebody will try to mine this part of the Yukon, and we wish him a great success.

Now we will move on, following our dream to explore new areas and to dig untouched placers. This corner of the Yukon with its magical atmosphere and its challenges will always be in our memory, together with the many nights spent around the camp-fire talking about life and listening to the wolves.

As the ending of any story, it's now time to say bye to those fabulous mountains and to thank the workmates for the job done during the past summers.

Our expedition wouldn't have been possible without the help of many.

Everyone here has played an important role for the realization of this project. In the following list nobody was less important than others.

Thanks to David Algotsson, for the great work done as a heavy duty operator and for the effort profuse to deal with the daily problems that the outdoor life can cause.

Thanks to Bruce McArthur, for his usual selfless help and for the energy that he always transmits to others.

Thanks to Joerg Loetz, our new partner and friend, for his enthusiastic help and for the courage that he showed while dealing with new, unknown situations.

Thanks to Luca Malerba, a young man and possibly a future operator. He came to visit us for the adventure and he ended up helping in all the camp activities. He also discovered here a great passion for heavy equipment.

Thanks to Roy Algotsson, the Swedish uncle of David. He also came as a tourist and ended up to be very helpful around camp. Roy is a professional nurse and a great person to have around.

Thanks to Boris Logutov, brilliant geophysicist from the Perm University, in Russia. Boris performed here a surveying with ground penetrating radar which saved us a lot of effort in digging to the bedrock. He also collaborated to the interpretation of the glacial events which occurred in this area.

Thanks to the Yukon Government and to its brilliant Geological department, for financing a big part of this research and for the assistance provided in many occasions.
The YMEP (Yukon Mining Exploration Program) has been a fundamental help for our group and we hope that the product of our effort will meet the expectations that this program deserve.

And once again, thanks to the many friends of this Territory, they are now too many to mention and I prefer to remember them as a peculiar bunch of women and men whom arrived from every corner of the planet to create a great, warm community in the land of the ice.

Sandro Frizzi,

23 December 2014