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Geophysical Surveys • Prospecting • Consulting

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2D Resistivity / IP Data Release for Placer Mining and shallow Quartz Mining – Yukon 2010

Los Angeles Creek, Wolf Creek, Ladue River, and Rice Creek

PERFORMED BY
Arctic Geophysics Inc.

FOR
Yukon Geological Survey
Yukon Government

AUTHORS
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FIELD WORK
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DATE OF PUBLICATION
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1. Introduction

This geophysical exploration, conducted by **Arctic Geophysics Inc.,** focuses on the discovery of subsurface conditions in remote wilderness areas in the Yukon, where little or no prospecting information for mining is available.

The data should be of value for **placer mining** and **shallow quartz mining**.

The study was initiated by **Yukon Geological Survey** as an incentive for investors, prospectors and miners to develop promising new areas for mining in the Yukon.

Target areas are **Los Angeles Creek, Wolf Creek, Ladue River** and **Rice Creek**.

For the investigation of the ground **2D Resistivity** and **Induced Polarization (IP)** were employed. As a result **10 975m of measuring line** have been produced in this exploration.

2. Goal

The geophysical exploration focuses on the determination of the following **subsurface characteristics** that are of interest for the **placer mining** industry:

1. Depth and topography of bedrock (main goal)
    - Paleochannels
    - Bedrock benches
    - Bedrock terraces
2. Sedimentary stratification
3. Permafrost conditions
4. Groundwater table

For the exploration of these placer mining related subsurface properties 2D Resistivity was used. The Resistivity imaging system simultaneously measured IP data being of interest for **shallow quartz mining**. These IP data covering the upper 100m of the subsurface might be of help for the advanced prospecting of primary deposits.

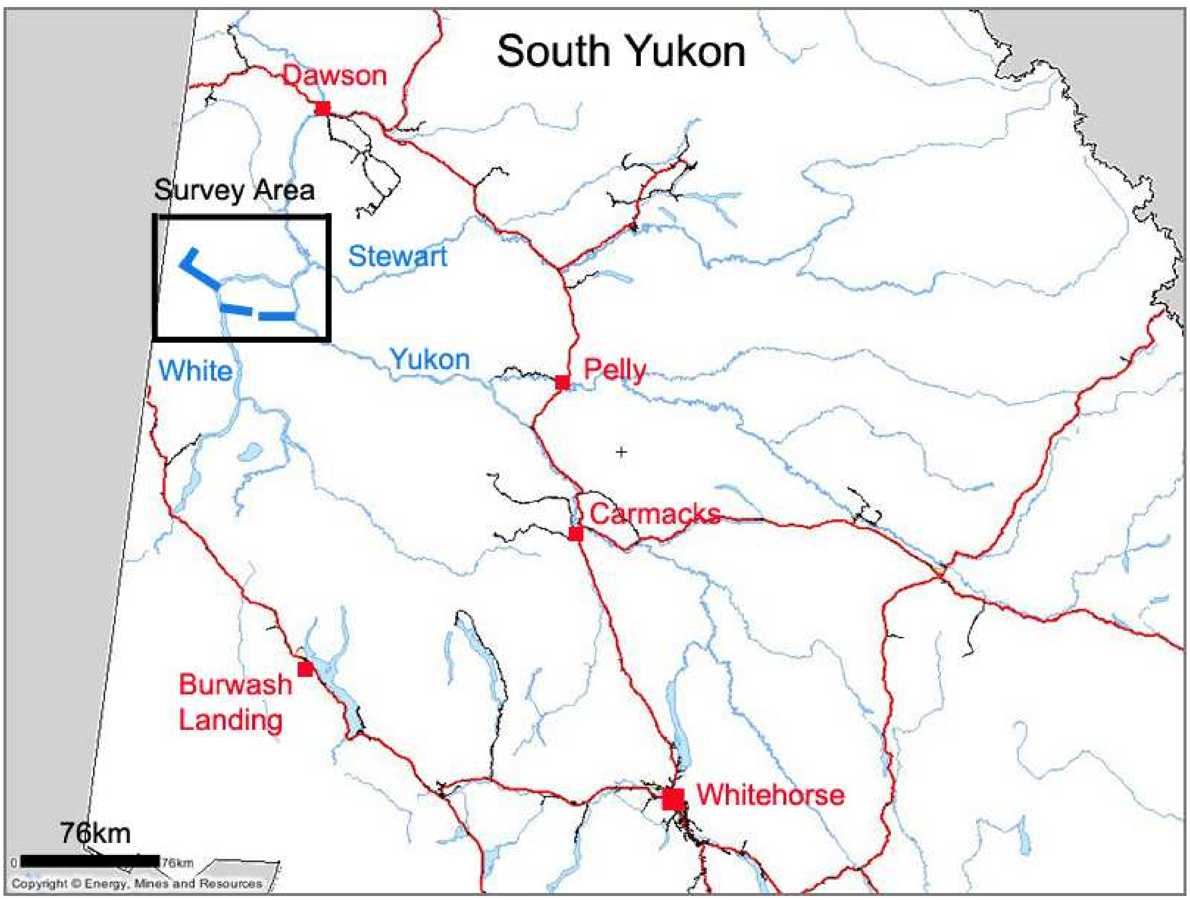
Furthermore this survey provides a contribution to the **geosciences about the Yukon**.

3. Exploration Area

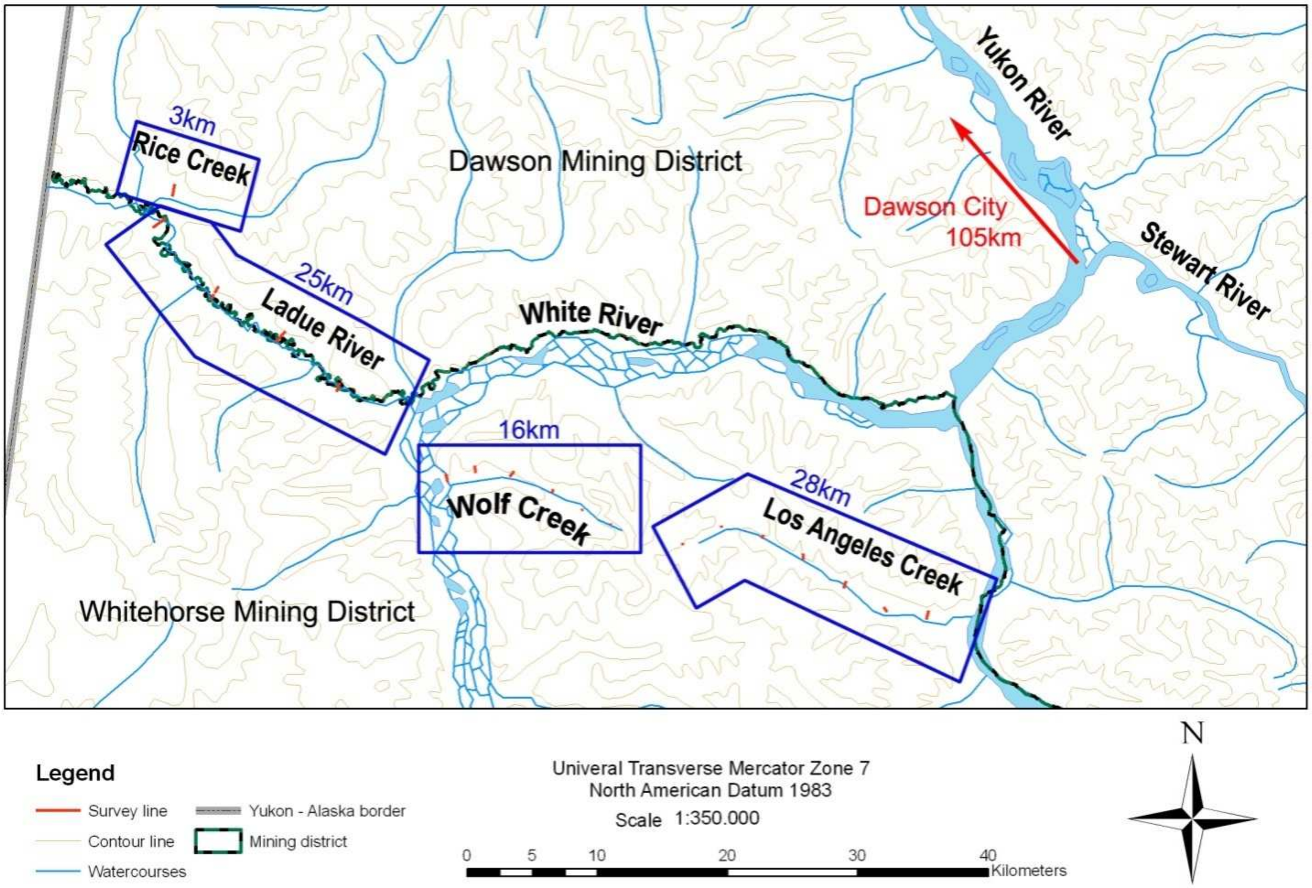
The exploration project has been carried out in the following areas:

Stream	Flowing into…	Mining District	Map
Los Angeles Creek	Yukon River	Whitehorse	115O/04
Wolf Creek	White River	Whitehorse	115N/01
Ladue River	White River	Dawson	115N/01, 02
Rice Creek	Ladue River	Dawson	115N/07

Yukon Map



Target Area Map



4. Crew

Leader: Stefan Ostermaier
Scientific Director
Arctic Geophysics Inc.

Prospecting Assistants: Eloi Mayano-Vinet
Alexandre Duhamel Gingras

5. Choice of Geophysical Method

5.1. Placer Prospecting

Ground Penetrating Radar (GPR)

Radar is not an appropriate method to prospect unknown ground for placer in the Yukon, since the radar waves are rapidly absorbed in water saturated sediments such as clay and Klondike-typical black muck. Even in good conditions radar waves can usually not penetrate deeper than 25m into sediments. For ground with discontinuous permafrost, which is common in the Yukon, the reflection lines in the radargram are significantly deformed; thus GPR data taken on changing frost are quite vague. Additionally the 12 feet antennas, needed to reach maximum depth penetration, are hard to move and use in the bush.

Seismic

Seismic soundings have difficulties detecting very shallow layer interfaces. Even by including refraction seismic the technology reaches the limits of what the instruments can measure. Measuring shallow interfaces for a long distance is not very economic. Discontinuous permafrost extensively changes the velocity of the sound waves and thus makes any interpretation difficult. The reflection and refraction on decomposed bedrock below gravel might be indistinct. Difficulties also arise when a survey has to be done on soft ground such as moss, tussocks, or over creeks. Furthermore a bigger crew is required because there is no light weight seismic system available at the moment.

Resistivity

In this survey 2D Resistivity was used. Resistivity is a reliable geophysical method for the detection of very shallow and deep layer interfaces in nearly all surface and subsurface conditions in the Yukon. Measuring shallow interfaces for a long distance is more economic than with seismic. Data taken in discontinuously frozen ground often provide a plausible interpretation since the profile matrix is consistently filled with data representing a material property. There are no “blind zones” in a resistivity profile like they appear in other geophysical methods purely based on signal reflection. A lightweight system is available for flexible use with a small crew.

5.2. Mineral Prospecting

Induced Polarization (IP)

IP data are simultaneously taken when measuring Resistivity, with the same equipment and staking. So these data are automatically at hand when using Resistivity. IP is an industry proven standard method for the detection of primary mineral deposits in hardrock mining.

6. Use of Geophysical Methods

6.1. Instrumentation

For this survey a lightweight, custom-built 2D RESISTIVITY and INDUCED POLARIZATION (IP) imaging system with rapid automatic data acquisition was used. The system includes:

- “4 POINT LIGHT” EARTH RESISTIVITY METER[1]
- 100 ELECTRODE CONTROL MODULES[2]
- 100 STAINLESS STEEL ELECTRODES[3]
- 500m MULTICORE CABLE 100x5m[4]

This system weighs approximately 60 kg which is about one third of regular standard equipment. It can be run with a 12V lead battery charged by 60 Watt solar panels. The equipment facilitates high mobility and rapid data acquisition with a small crew.

6.2. Data Acquisition

The **data acquisition** is carried out by the automatic activation of 4-point-electrodes. Thus several thousand measurements are taken, one every 1-2 seconds. The AC transmitter current of 0.26 to 30 Hz is amplified by the electrode control modules, up to a maximum of 100mA and 400V peak to peak. The voltage measured at the receiver electrodes (M, N) is also amplified.

In this geoelectrical survey the **Schlumberger array** was used. This array is appropriate to image horizontally running layers as is needed for placer prospecting.

The **Resistivity data** up to 100m depth require just about 25% of the device’s measuring capacity. The data acquisition was optimized for Resistivity: It was designed to get highest data quality at lots of line meters in shortest time possible. Therefore the quality of the Resistivity data is very good in all profiles.

The **IP data** were simultaneously taken with the Resistivity data while the data acquisition was optimized for Resistivity. Thus the quality of the IP data ranges from usable to good. Only the IP data at the Los Angeles Creek profiles 01-04 are getting noisy below 50m. – As this survey was designed for placer investigation no time was invested in optimizing the IP data in greater depth. To get less noisy IP data at 50-100m depth a more time-consuming way of data acquisition would have been required.[5]

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[1] Constructed and produced by LGM (Germany)

[2] Ditto

[3] Constructed and produced by GEOANALYSIS.COM (Germany)

[4] Constructed and produced by GEOANALYSIS.COM (Germany)

[5] 1) Tuning the transition resistance between probes and ground below 1 Kilo*ohm. 2) Use of a more extensive data averaging mode compared to Resistivity.

6.3. Processing

The measured Resistivity/IP data were processed with the **RES2DINV** inversion program[6].

Both data, **Resistivity** and **IP**, were processed using program settings individually fitted to the characteristics of each data set. Thus the data might sometimes vary for the same ground material in different profiles.

6.4. Interpretation

The geophysical data collected in this survey are “pioneering data”. They cannot be linked with other local geophysical information or technologically acquired data which were gained by drilling, trenching, shafting, or mining.

The Interpretation of the measured data is supported by:

Experience - 5 years of measuring practice with Resistivity/IP in Yukon/BC
Discussion - with governmental placer geologist William Lebarge et al.[7]
Comparison - between geophysical and technogenic information found in other surveys
Observation - of surficial conditions in the field
Sources - Bedrock Geology Map, Surficial Geology Map[8],

The **Resistivity profile** is the foundation for the interpretation of the subsurface conditions for the **placer** prospection. It usually allows for good interpretation of depth, topography and rock type of the bedrock as well as the overburden consisting of humus, muck, mud, and different layers of gravel; permafrost and groundwater. Besides the Resistivity reading can support the interpretation of the IP model.

The **IP profile** serves as basis for the interpretation of the mineral and petrologic conditions in **hardrock**. However, this study does not deliver a deeper analysis of the IP data since the interpretation of chargeability patterns of the subsurface requires much more geological background information than an interpretation of an Ohm meter mosaic for placer prospecting does require. Nevertheless the IP data might help in secondary studies. Additionally the IP profile can help to interpret the bedrock and overburden for placer.

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[6] Produced by GEOTOMO SOFTWARE (Malaysia)
[7] Lebarge, William; Placer Geologist, Yukon Geological Survey
[8] Gordey, S.P., Williams, S.P., Cocking, R.B, and Ryan, J.J, 2006:
Digital geology, Stewart River area, Yukon; Geological Survey of Canada, Open File 5122

6.5. Profile image

In the **Resistivity profile** the interpreted layer interfaces are marked with a black line. Please be aware: The profiles show ground-layers approximately 15% thicker than they are in reality. The thickening of the model layers is caused by the inversion software. The **correction factor** of 0.85 for the determination of the true layer thickness has been established by the Arctic Geophysics Inc. team on the basis of numerous geoelectrical profiles verified by drilling, trenching, and mining done by our customers.

The **graphical markings** showing the interpreted layer interfaces in the profiles (using the black lines) are done accordingly to the data structure in the profile itself. This means: the layers there will also show up approximately 15% thicker than they are in reality. In the interpretation text the layer thicknesses and depths have been recalculated to the expected real values.

7. Line Arrangement

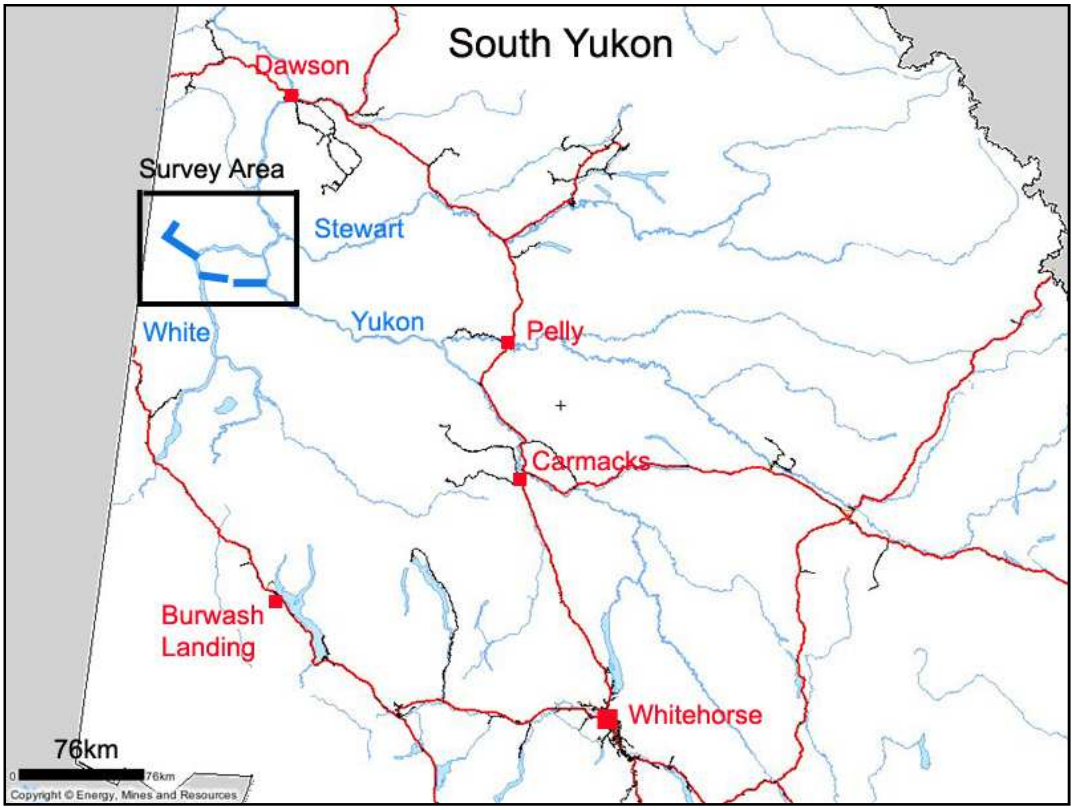
The locations of the profiles show a linear pattern along the valleys:

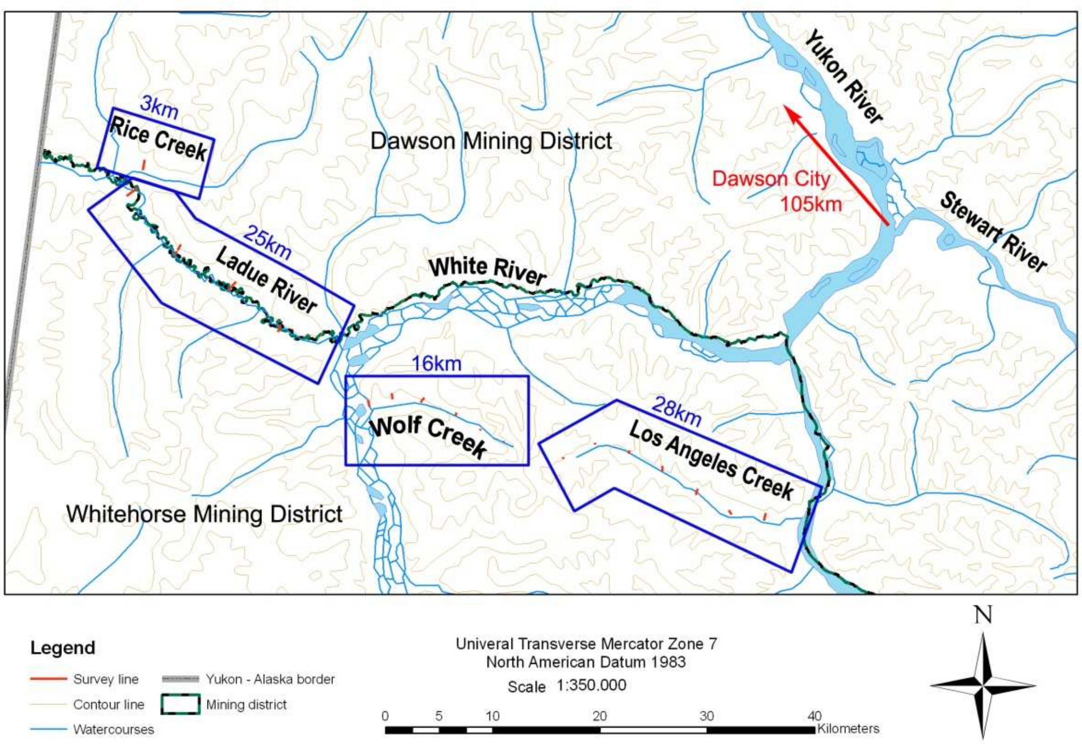
The **roughly equidistant pattern** of the lines gives a suitable information base for a systematic analysis of the progression of the subsurface parameters along the valley.

The **locations of the cross valley profiles** do stay away from tributaries since they could falsify the recording of systematic parameters of the subsurface along the valley, for example bedrock depth and thickness of gravel. The discharge of side creeks could also interfere with the identification of the placer-creating features such as the channel system and bedrock benches in the investigated valley.

8. Resistivity/IP Survey at Los Angeles Creek

8.1. Survey Area





8.2. Access

The survey crew reached the confluence of Los Angeles Creek with the Yukon by motorboat (with propeller unit) starting from Dawson City and riding the Yukon River for about 130 km upstream. From there the crew hiked along the valley while running the lines, supported by one helicopter flight.

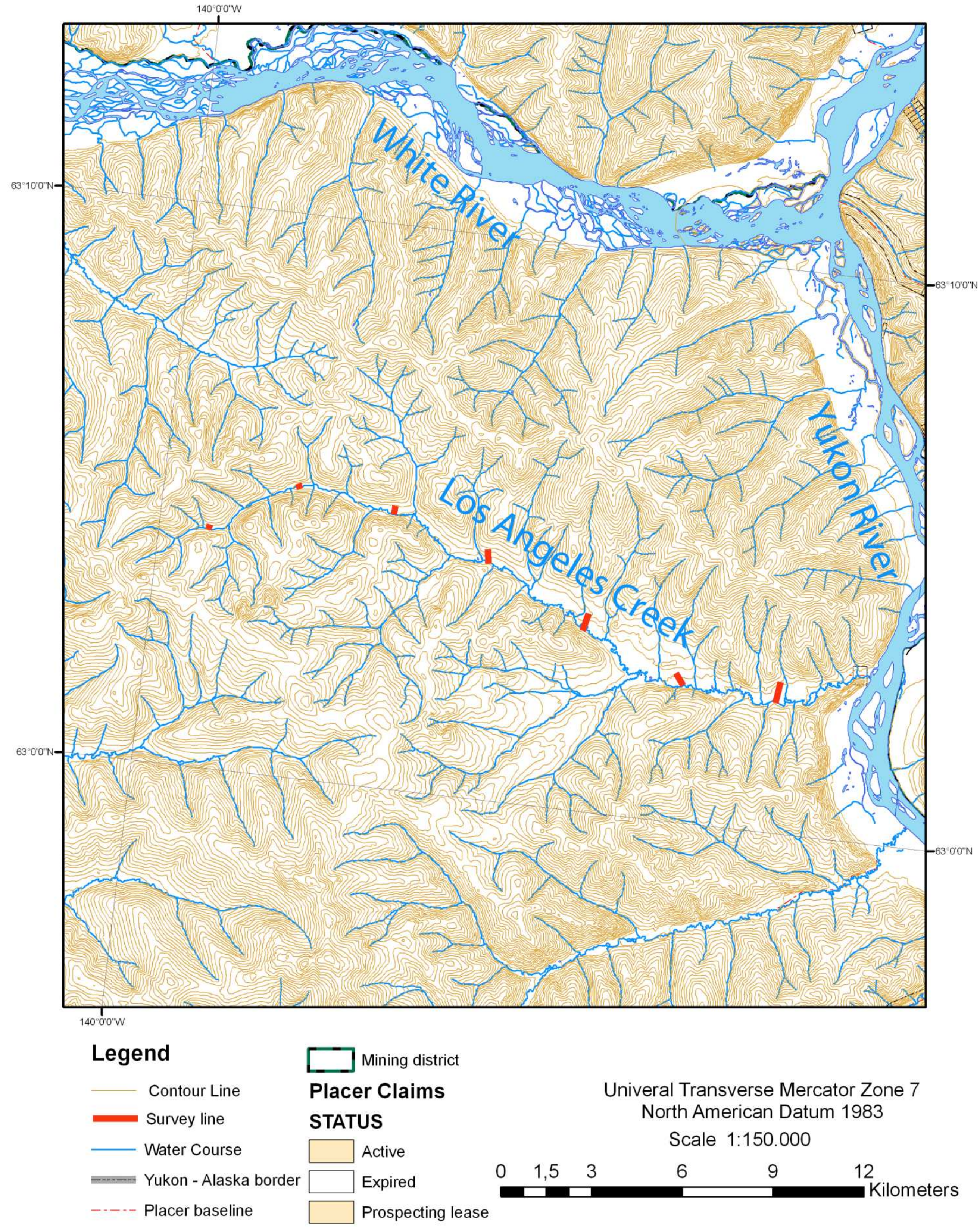
Los Angeles Creek could be accessed with heavy equipment by crossing the Yukon River using a barge. Right on the opposite side of the Yukon (eastwards) intensive Quartz Mining might come into existence.

In 2010 and earlier extensive staking of quartz claims was carried out around Los Angeles and Wolf Creek and all the way southwards. This could indicate a quickly growing infrastructure towards Los Angeles Creek. If this were the case, a mining road coming from the south would most likely be built.

8.3. Vegetation

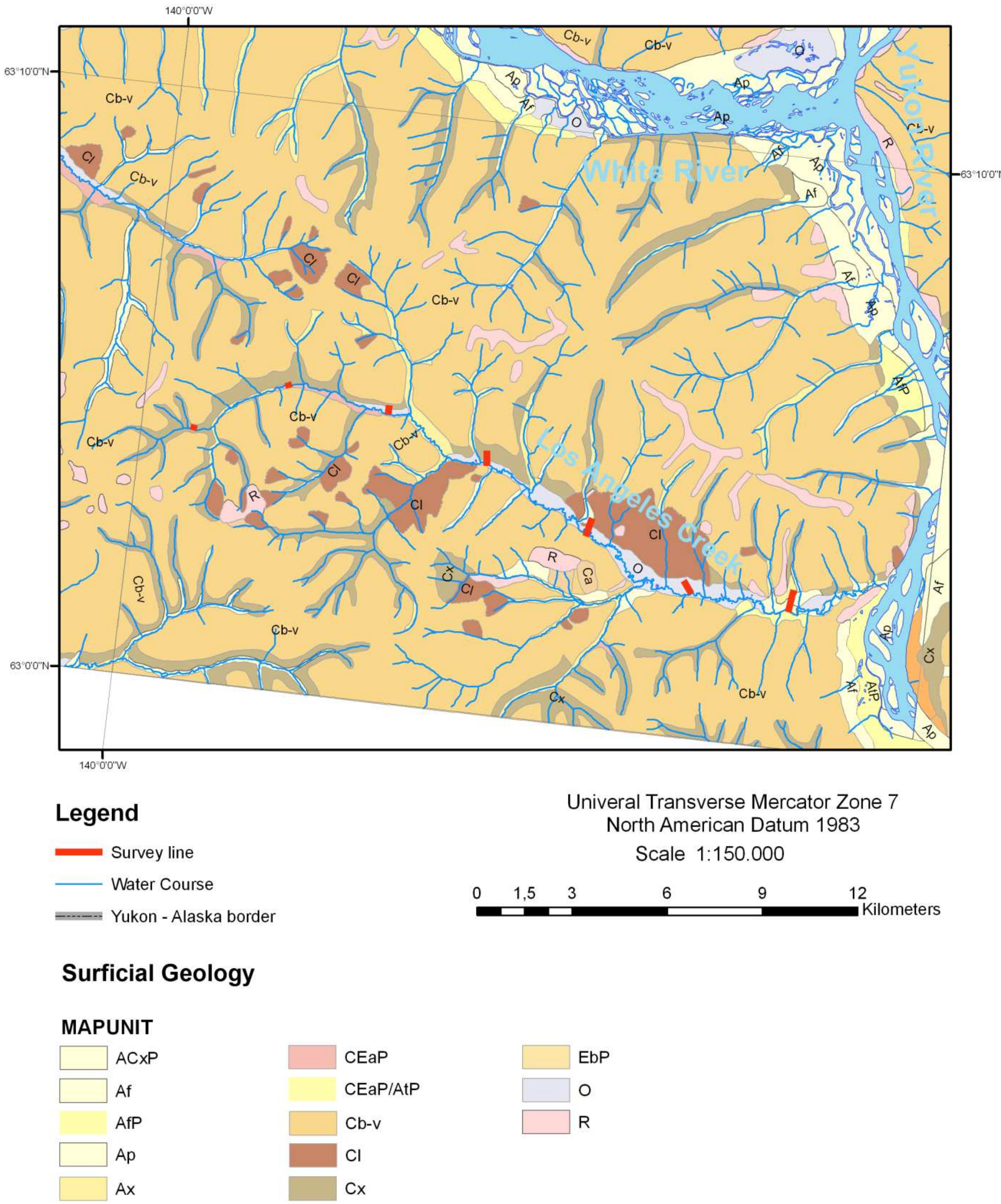
Up to 7km the Los Angeles valley shows significant influences because of forest fires within the last few years: burnt spruce trees and green vegetation between 1-2 feet high were seen. Up to 15km the valley bottom is overgrown with dense bushes and spruce trees beside the current creek. The rest of the valley is covered by a few tussocks and open spruce forest. After 15km the valley floor is abundantly covered with moss and willow bushes, the latter of varying density. The north-faced slope is very steep supporting only a few spruce trees. The south-faced slope shows lots of poplar forest sometimes mixed with spruce trees. – All in all the hiking conditions are moderate. Moving with ATV is impossible. Helicopter landing places can be found.

8.4. Prospecting Map



8.5. Geological Maps

Surficial Geology Map



Gordey, S.P., Williams, S.P., Cocking, R.B, and Ryan, J.J, 2006:
Digital geology, Stewart River area, Yukon; Geological Survey of Canada, Open File 5122

ACxP
CATEGORY: ALLUVIAL DEPOSITS: gravel and sand deposited by streams that were not fed by glacial meltwater; sediments may have experienced several cycles of alluviation and erosion, but are now inactive due to burial or fluvial incision; basal gravels within these sediments commonly contain placer gold
DESCRIPION: Alluvial/Colluvial Complex Sediments: silt, sand and gravel, poorly to moderately sorted; thin to thick bedded, interstratified with colluvial diamicton; sediments underlie the floors and margins of narrow upland valleys and grade laterally up slope into colluvial blankets; sediments may represent several depositional cycles; thickness may exceed 10 m in mid-valley locations

Af
CATEGORY: ALLUVIAL DEPOSITS: gravel to silt size sediments, well stratified, deposited by streams
DESCRIPION: Alluvial Fan Sediments: gravel, sand, silt, and diamicton, massive to well stratified; sediments form fan-shaped landforms or complexes of coalesced fan-shape landform at the confluence of tributary streams; may be subject to flooding accompanied by sudden stream migration and inundation; thickness up to 10 m

AfP
CATEGORY: ALLUVIAL DEPOSITS: gravel and sand deposited by streams that were not fed by glacial meltwater; sediments may have experienced several cycles of alluviation and erosion, but are now inactive due to burial or fluvial incision; basal gravels within these sediments commonly contain placer gold
DESCRIPION: Alluvial Fan Sediments: single fans or aprons of coalesced fans formed of gravel and sand, poorly to moderately sorted, now isolated from water and debris floods due to fluvial incision; sediments disturbed by cryoturbation; thickness up to 10 m

Ap
CATEGORY: ALLUVIAL DEPOSITS: gravel to silt size sediments, well stratified, deposited by streams
DESCRIPION: Floodplain Sediments: gravel, cobble to pebble; massive to well stratified, capped by sand and silt; flat lying; includes lacustrine and organic deposits in abandoned channels and backswamp areas; subject to periodic inundation and reworking by floods; thickness 1 to 5 m

Ax
CATEGORY: ALLUVIAL DEPOSITS: gravel to silt size sediments, well stratified, deposited by streams
DESCRIPION: Alluvial Sediments Complex: sediments forming floodplains, fans, and terraces as above that cannot be subdivided at this map scale

CEaP
CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPION: Colluvial/Eolian Apron (muck): primary deposits of eolian fine sand and silt resedimented and interstratified with organic silt, and detritus, alluvial fan gravel and sand and variable amounts of stony colluvial diamicton; forms aprons along valley bottoms through resedimentation of eolian sediments from valley sides to valley floor, commonly preserved on north-facing slopes; thickness 1 to 20 m; commonly contains segregated bodies of ice and buried ice wedges

CEaP/AtP
CATEGORY: ALLUVIAL DEPOSITS: gravel and sand deposited by streams that were not fed by glacial meltwater; sediments may have experienced several cycles of alluviation and erosion, but are now inactive due to burial or fluvial incision; basal gravels within these sediments commonly contain placer gold

DESCRIPION: Alluvial Terrace Sediments: gravel, cobble to pebble with a sandy matrix; massive to well stratified; capped by sand and silt; sediments are of flood plain origin now isolated from flooding by stream incision; thickness 1 m to 10 m

Cb-v

CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPION: Colluvial Blanket and Veneer Sediments: diamicton, stony with a sandy matrix; massive to poorly stratified; colluviated blankets generally conform to underlying bedrock and exceed 1 m in thickness; veneers are < 1 m in thickness and are commonly discontinuous over bedrock

Cl

CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPION: Landslide Sediments: silt loam to boulders, poorly sorted to unsorted; massive; clasts are subangular to angular and are locally derived; thickness varies greatly

Cx

CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPION: Colluvial Complex Sediments: areas of intergrading colluvial and alluvial sediments which are too complex to subdivide at the scale of mapping; unit may include colluvial and alluvial fan, colluvial blanket, landslide sediments and colluviated drift within the limits of glaciation; the unit commonly occurs along the lower slopes of valley margins

EbP

CATEGORY: EOLIAN DEPOSITS: well sorted medium sand to silt initially transported and deposited by wind action during glaciations and commonly resedimented through fluvial and colluvial processes; deposits of very fine sand and coarse silt < 1 m thick are distributed discontinuously throughout low lying areas
DESCRIPION: Eolian Blanket: fine sand and silt, well sorted; massive; may form crescent-shape and linear dunes and featureless or gently undulating inter-dune eolian plains; thickness 1 to 5 m

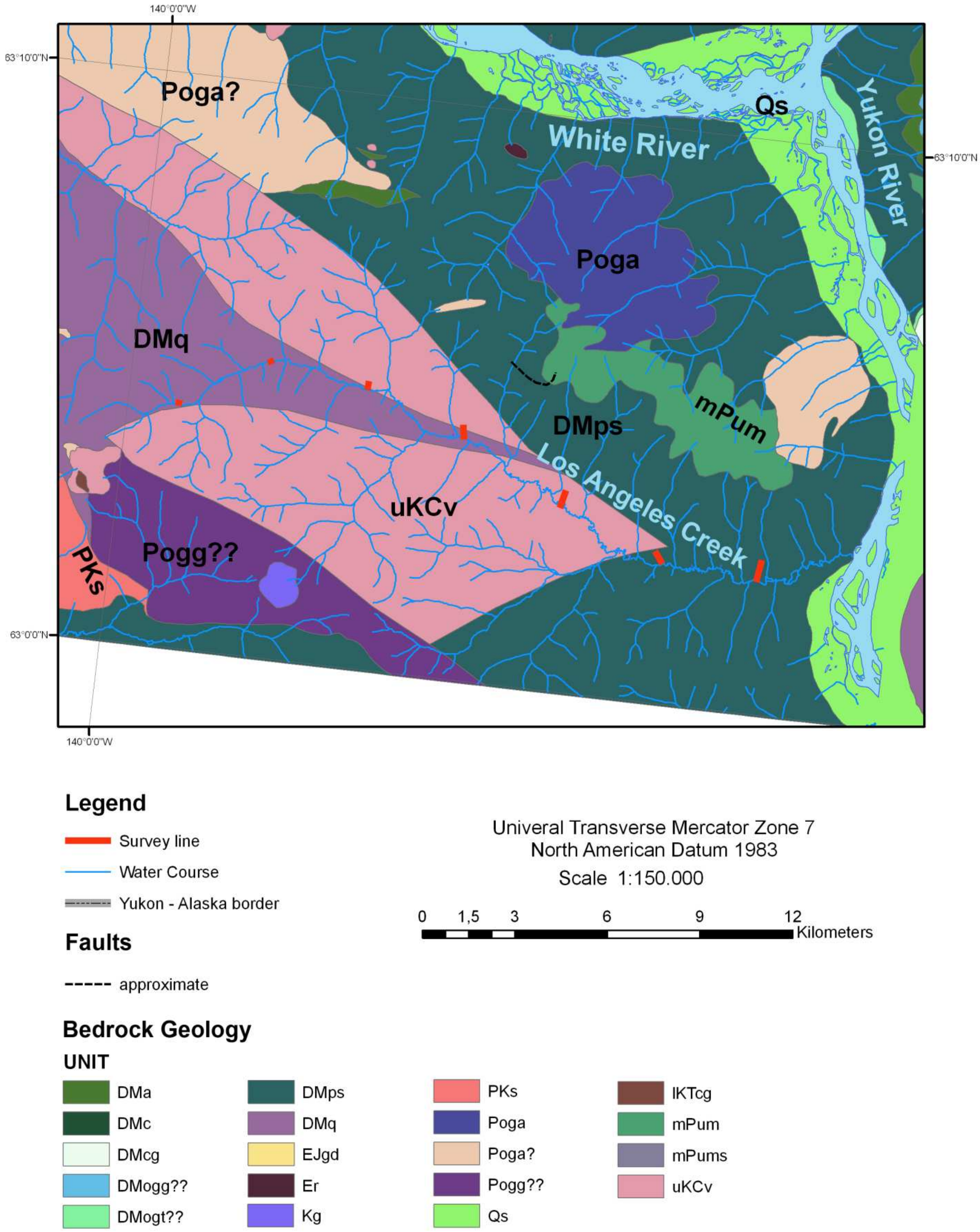
O

CATEGORY: ORGANIC DEPOSITS: peat and organic silt formed predominantly by the accumulation of vegetative material in bogs, fens, and swamps situated on valley bottoms; permafrost is commonly encountered within 1 m of the surface. Thermokarst collapse is common.
DESCRIPION: Organic Blanket: undivided; thickness > 1 m to 5 m

R

DESCRIPION: Bedrock: schist, gneiss, ultramafics, granodiorite, monzonite, marble, and basalt; includes areas of thin colluvial cover, blockfields, and sorted stone polygons in alpine areas

Bedrock Geology Map



Gordey, S.P., Williams, S.P., Cocking, R.B, and Ryan, J.J, 2006:
Digital geology, Stewart River area, Yukon; Geological Survey of Canada, Open File 5122

DMa
DESCRIPTION: AMPHIBOLITE: amphibolite schist and gneiss; metabasite; probably derived from mafic to intermediate volcanic or volcaniclastic rocks; locally associated with psammite or interlayered with orthogneiss

DMc
DESCRIPTION: MARBLE: marble (metacarbonate) derived from pure to impure limestone; associated calc-silicate schist derived from calcareous metapelite

DMcg
DESCRIPTION: METACONGLOMERATE: pebble- to cobble-sized rounded clasts; mainly massive white vein quartz, but including some granitoid clasts (tonalite?); has an arkosic matrix; grades into quartzite; matrix supported

DMogt??
DESCRIPTION: ORTHOGNEISS (OLDER, 363-343 Ma): **DMog**, undivided orthogneiss; **DMogg**, pink to orange K-feldspar rich, granitic orthogneiss, commonly with biotite, banded to layered, commonly includes or associated with DMoga; **DMoga**, mainly K-feldspar augen orthogneiss, commonly includes or associated with DMogg; **DMogt**, mainly tonalitic or intermediate to mafic orthogneiss, generally grey, banded to layered, commonly veined; commonly interlayered with amphibolite schist and gneiss, biotite and/or hornblende bearing; **?**-age assignment probable, **??**-age assignment assumed (alternatively could be part of Pog)

DMps
DESCRIPTION: QUARTZ-MICA SCHIST: undivided metasedimentary rocks dominated by metapsammite, semipelite and metapelite; commonly quartz-garnet-biotite-muscovite schist possibly derived from siliceous siltstone; commonly finely interlayered with garnet metapelite; commonly contains members of micaceous quartzite; rare conglomerate; grades locally to paragneiss

DMq
DESCRIPTION: QUARTZITE: banded to massive, grey to white quartzite; apparently clastic in origin, or in part, possibly derived from metachert

EJgd
DESCRIPTION: GRANODIORITE: chlorite-altered hornblende and biotite-bearing granodiorite, monzogranite, quartz monzonite and quartz monzodiorite

Er
DESCRIPTION: PORPHYRY: Smokey quartz and K-feldspar phyric rhyolite to rhyodacite stocks and dykes, and possible rare flows

Kg
DESCRIPTION: GRANITE/GRANODIORITE: Kg, pink to grey, locally porphyritic syenogranite to monzogranite plutons and dykes; **Kgd**, biotite-hornblende bearing granodiorite, locally foliated

PKs
DESCRIPTION: KLONDIKE SCHIST: muscovite-chlorite-quartz-feldspar schist, chlorite schist, chlorite phyllonite; local cleaved lapilli tuff with preserved primary texture, probably derived from Pv

Poga?

DESCRIPTION: ORTHOGNEISS (YOUNGER, 264-259 Ma): **Pog**, undivided orthogneiss; Pogg, pink to orange K-feldspar rich, granitic orthogneiss, commonly includes or associated with Poga; **Poga**, mainly K-feldspar augen orthogneiss, exhibits various states of strain including porphyroclastic straight gneiss, commonly includes or associated with Pogg; **Pogt**, rare, mainly tonalitic orthogneiss; Pogq, orthogneiss derived from quartz monzonite; refers to highly strained, mafic poor, Sulphur Creek orthogneiss; **?**-age assignment probable, **??**-age assignment assumed (alternatively could be part of DMog).

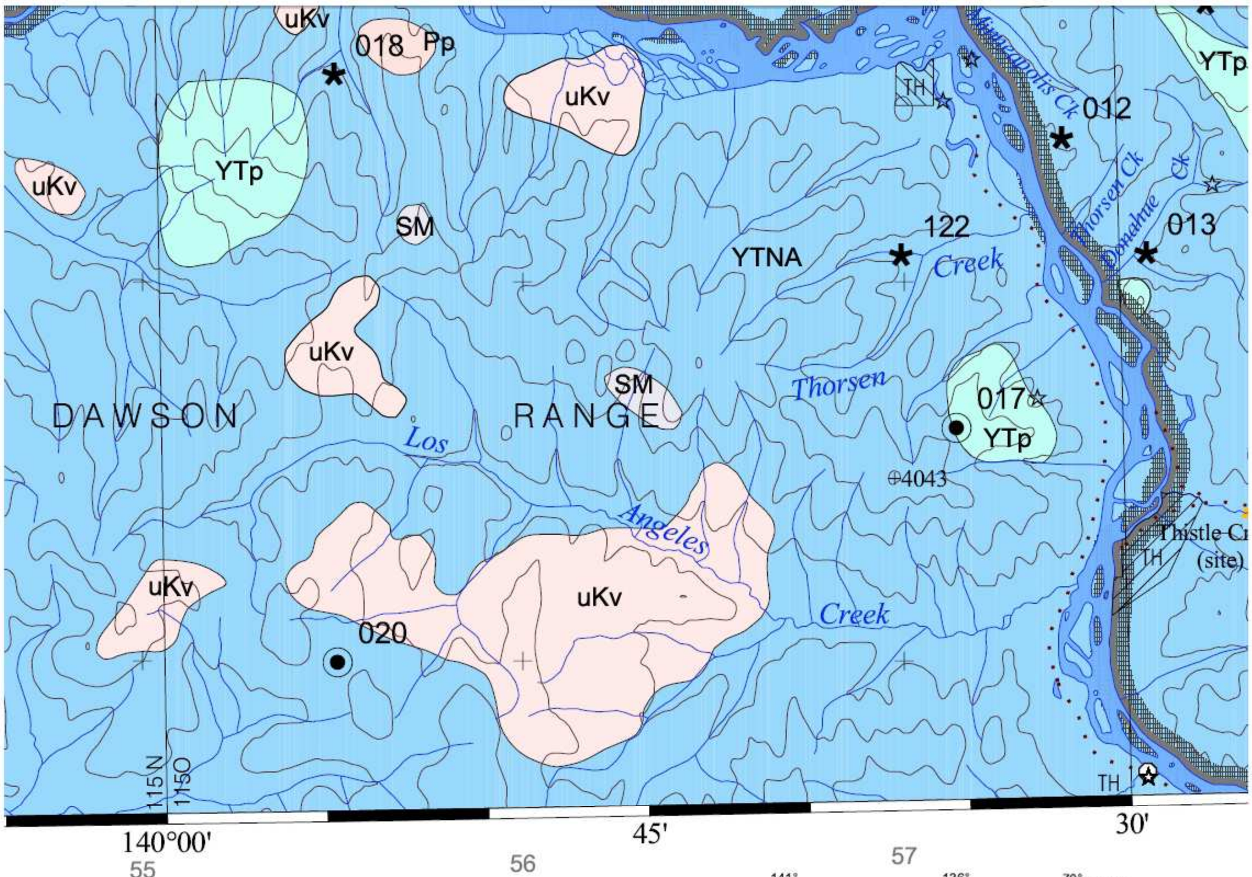
Qs
DESCRIPTION: Fluvial silt, sand and gravel

lKTcg
DESCRIPTION: TANTALUS(?) FORMATION: clast-supported pebble to cobble conglomerate with clasts of vein quartz and foliated quartzite

mPum
DESCRIPTION: ULTRAMAFIC-GABBRO: foliated to unfoliated amphibolite facies metagabbro, metapyroxenite, serpentinite and talc-siderite schist; **mPums**, dominantly serpentinite

uKCv
DESCRIPTION: CARMACKS GROUP: rhyodacite and dacite, commonly biotite and hornblende phyric, dominated by lesser andesite and basalt; minor rhyolite

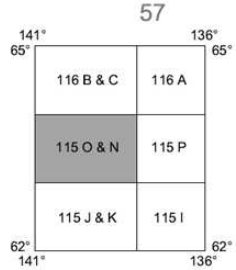
Mineral Occurrence Map

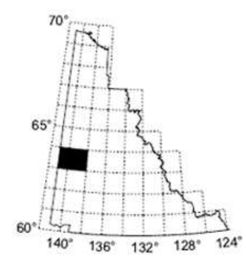


115 O & 115 N (EASTERN HALF) - STEWART RIVER

YUKON MINFILE - MINERAL OCCURRENCE MAP 1 : 250 000

5 0 5 10 Kilometres





GENERALIZED GEOLOGY:

POST-TERRANE AMALGAMATION/ACCRETION UNITS:

PLUTONIC:

Pp - Paleogene post-accretion plutons

SEDIMENTARY / VOLCANIC:

uKv - Upper Cretaceous mafic and lesser felsic volcanic rocks, mostly Carmacks Group

TERRANES:

PERICRATONIC: rocks possess elements of passive margin sedimentation but differ in stratigraphic or structural characteristics from the ancestral North American margin

YTNA - NASINA SUBTERRANE: Metamorphosed early(?) to mid-Paleozoic continental margin with superposed Late Devonian and Early Mississippian arc volcanic (= Nasina assemblage) and (YTp) plutonic rocks

YTp - Plutonic rocks superposed on Nasina and Klondike Schist Subterranes

ACCRETED, INTERMONTANE SUPERTERRANE:

SM - SLIDE MOUNTAIN: Oceanic and/or marginal basin volcanic and sedimentary rocks of Devonian to Late Triassic age including chert, argillite, sandstone, conglomerate, mafic intrusions, basalt, alpine-type ultramafic rocks, carbonate rocks and local blueschist and eclogite

MINFILE STATUS:

- ★ Unknown
- Anomaly
- Showing
- Prospect
- Drilled Prospect
- Underground Past Producer
- Open Pit Past Producer
- Placer Occurrences

MINEFILE NAME

- 012 Northern Lights (unknown)
- 013 Donahue (unknown)
- 017 Jack (unknown)
- 018 Pearson (unknown)
- 020 Apollo (unknown)
- 122 Vanessa (unknown)

Magnetic declination 1988 varies from 29°45' easterly at centre of west edge to 30°38' easterly at centre of east edge. Mean annual change decreasing 14.7'.

CONTOUR INTERVAL 200 METRES
Elevations in Feet above Mean Sea Level
North American Datum 1983
Transverse Mercator Projection
Ten Thousand Metre Univeral Transverse Mercator Grid
ZONE 7

YUKON GEOLOGICAL SURVEY
Energy Mines and Resources, Yukon Government
Map Version 2004-3, updated July 14, 2004

8.6. Geology

Surficial Geology

Surficial sediments are typical of the Klondike Plateau, with the valley sides lined by a frozen complex of colluvium, alluvial gravel overlain by wind-blown silt, sand and organic material. Along the valley the modern stream channel contains angular immature gravel, as well as sand and organic deposits. Occasional sandy alluvial fans occur at the mouths of tributary valleys and a Pleistocene alluvial terrace lies near the mouth of the creek on the right limit. This alluvial terrace is prospective for the occurrence of placer gold (Jackson, 2005)

Bedrock Geology

Three main geological units are mapped along Los Angeles Creek. These are DMq (Devonian Mississippian quartzite), DMps (Devonian Mississippian quartz-mica schist) and uKCv (Upper Cretaceous Carmacks volcanics). The volcanic package lies in vertical fault- bounded contacts with the older quartzite and schist units (Gordey and Ryan, 2005).

Mineral Occurrences

Minfile # 115O/020 (porphyry Cu-Mo-Au) was staked in an area of lightly-gossaned rhyolitic volcanic rocks near stream sediment anomalies which were weakly anomalous in copper and molybdenum. Minfile # 115O/017 is a work target with unknown characteristics (Deklerk, 2009). Only one bedrock outcrop was observed in the field during the survey. It was located approximately 1 km upstream from the mouth of Los Angeles Creek. This was described as a greyish schist or gneiss.

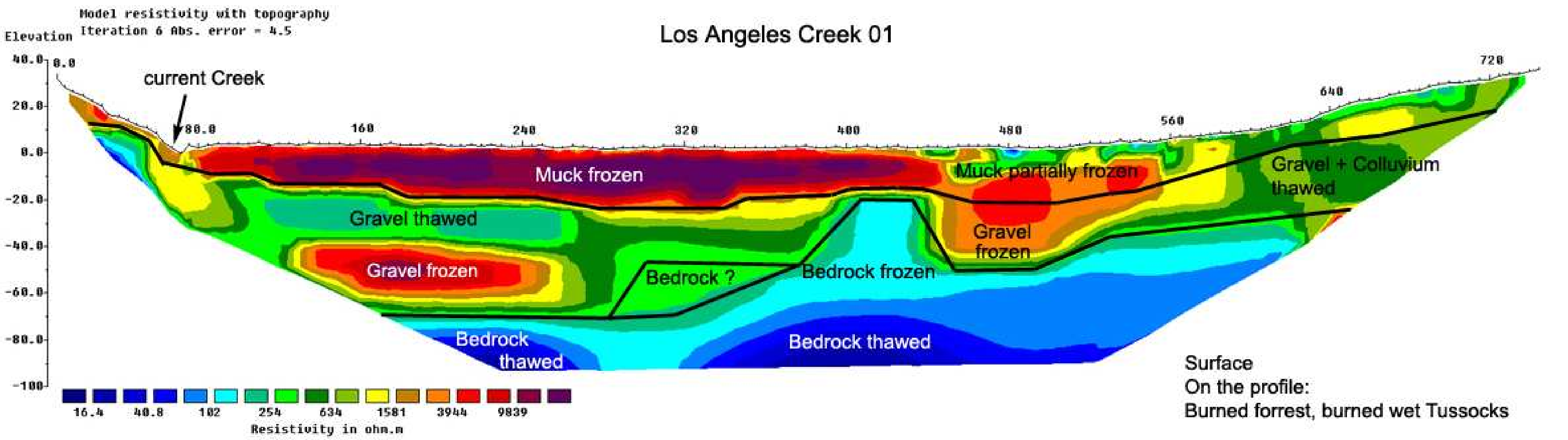
8.7. Profiles

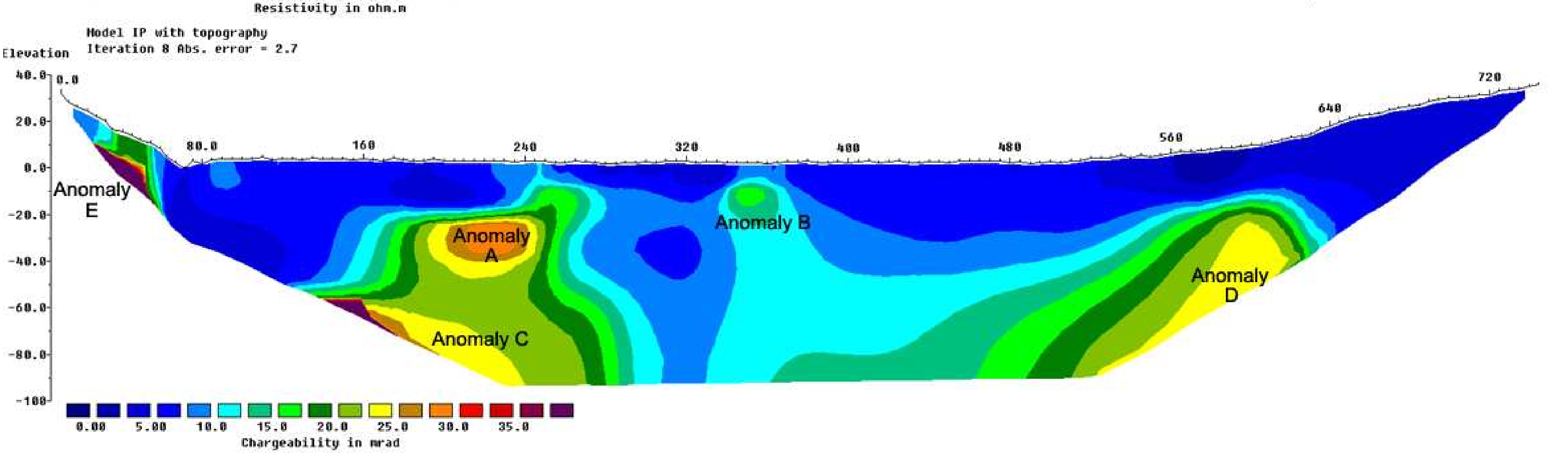
Preliminary Note!

The subsurface information of this study is an interpretation.

Los Angeles Creek 01

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, May 31st, 2010 **Processing:** Philipp Moll, July 2010
View: Upstream	**Vertical measure:** in [meter]	
Electrodes: 150, spacing 5m	**Iteration error:** in [%]	**Location:** 0m (N63° 02' 19.4'', W139° 35' 09.8'') **(WGS 84) 745m** (N63° 02' 42.6'', W139° 35' 02.3'')
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.86	





Interpretation

We are looking **upstream** at this profile – like at all other profiles on Angeles Creek.

The **Resistivity** profile points to 44-60m of overburden[9] on top of possible quartz-mica schist **bedrock**[10] in discontinuously frozen conditions. The **overburden** seems to represent the Klondike-typical stratification of muck (20-29m) on top of gravel (15-40m).

The bedrock interface shows a peak at 400-440m in the profile coming up to about 18m depth. On both sides of the bedrock peak there seems to be a **paleochannel** filled with gravel and muck.

The **channel to the left** might be 60m deep. It should be filled with about 40m of gravel and 20m of muck on top of **bedrock**. In this channel, at 300-380m in the profile, there could be a **bedrock step** about 42m deep. On the left side of the channel, at 100-250m, the upper portion of the gravel might be thawed. The overlying muck is frozen.[11] Less likely this could be a layer consisting of a different material such as basalt.

The **channel on the right-hand side** should be about 44m deep. It might be filled up with 20m of muck and 24m of gravel on top of **bedrock**. The overburden is partly thawed, most likely from the influence of the sun increasing to the right side (south-facing slope).

[9] Bedrock peak at 400-440m not considered

[10] This bedrock type fits with the data and with the Bedrock Geology Map.

[11] This scenario of a thawed gravel layer between two frozen layers has been observed on several occasions in the Yukon and BC when verifying a Resistivity profile by trenching. The groundwater in such a layer is usually quite mobile: In this case the water flow acts as a dynamic system of defrosting. The frozen layer on top of the groundwater-bearing layer does frequently consist of different materials such as mud, muck, or clay.

On the **right slope** the **bedrock** rises. At 560m in the profile its depth might be 33m being filled with possibly 15m of muck and 18m of gravel. The ground there seems to be mostly thawed. Very likely the overburden there is mixed with **colluvium**.

The **IP** model shows some zones in the subsurface with higher chargeability.

Anomaly A and B, located in the alluvial sediments, could be explained by clay deposits.[12] They could also be interpreted as a local mineralization in the gravel matrix. Alternatively these anomalies could represent placer deposits consisting of sulfide minerals e.g. pyrite, chalcopyrite, chalcosite, graphite, and copper.

Anomalies C and D indicate some larger bedrock zones that might contain a higher amount of IP-active minerals[13]. But in this profile the IP data are noisy below 50m, so this indication is vague.[14]

Anomaly E might point to bedrock showing a concentration of IP-active minerals.

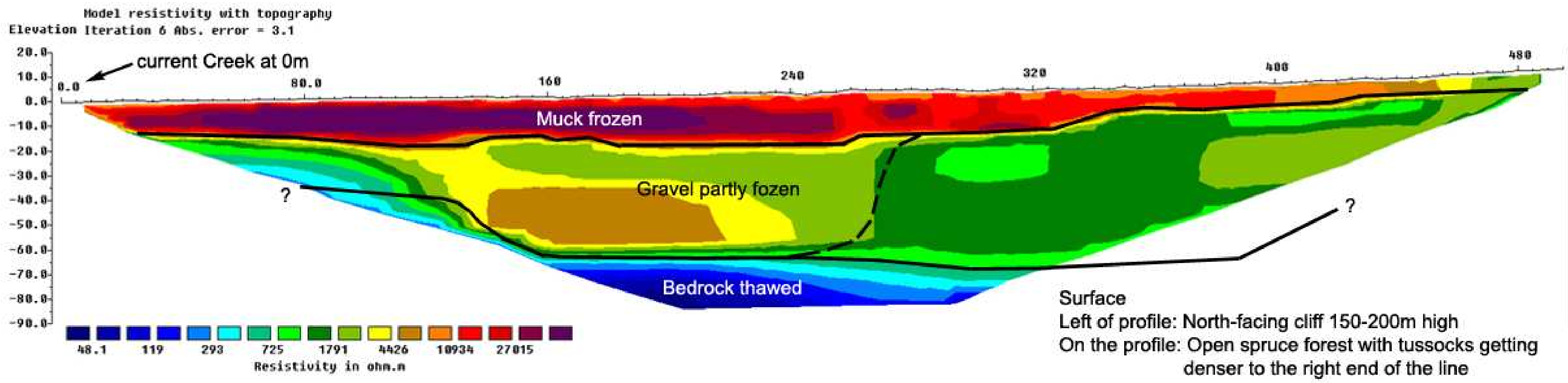
[12] They would be created by a local effect at the interfaces between electrolytic groundwater and the mineral particles of the sediment (membrane polarization).

[13] IP signals in solid rock are mostly produced by sulfide accessory minerals indicating a large range of possible ore types. As mentioned above: For an in-depth interpretation of IP-data more geological background information would be required.

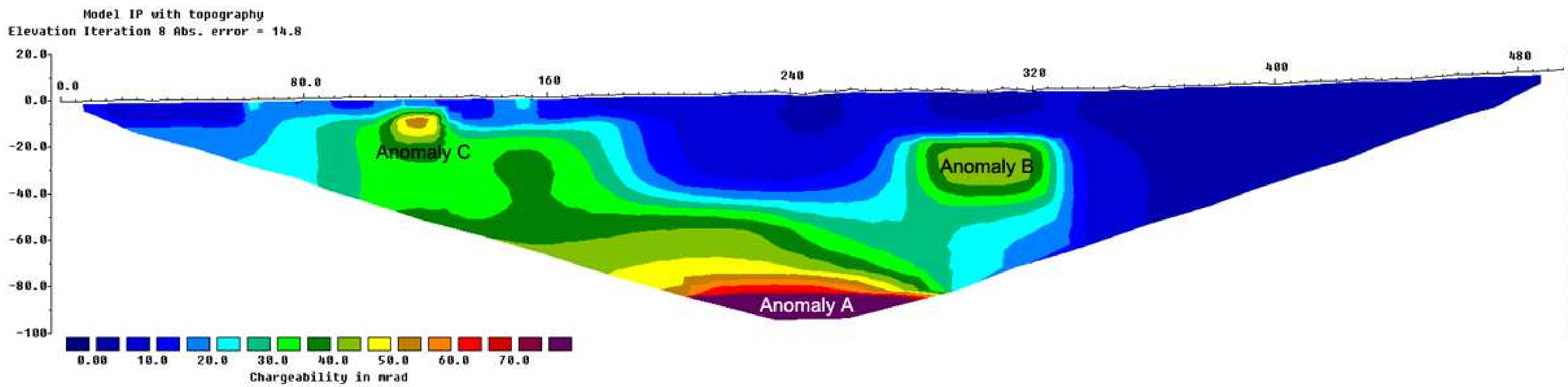
[14] As this survey was designed for placer investigation the data acquisition was optimized for Resistivity, not for IP (see 6.2. Data Acquisition).

Los Angeles Creek 02

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, June 2nd, 2010 **Processing:** Philipp Moll, July 2010
View: Upstream	**Vertical measure:** in [meter]	
Electrodes: 100, spacing 5m	**Iteration error:** in [%]	**Location:** 0m (N63° 02' 27.2'', W139° 38' 49.9'') (WGS 84) 495m (N63° 02' 39.4'', W139° 39' 09.9'')
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.81	



Surface
Left of profile: North-facing cliff 150-200m high
On the profile: Open spruce forest with tussocks getting denser to the right end of the line



Interpretation

The **Resistivity** profile points to 30-61m of overburden on top of quartz-mica schist **bedrock**[15] in frozen conditions. The **overburden** might consist of 12-16m of muck plus 15-46m of gravel.

In this section of the valley there seems to be just one big **channel**. On its left side there seems to be a **bedrock bench**.

At 0-160m the **channel** seems to decline. This structure looks unclear because it approaches the edge of the profile.[16]

At 160-240m the flat **bedrock** on the bottom of the **channel** is measured at 60m depth, with possibly 45m of gravel and 15m of muck on top of it. The upper third of the **gravel layer** is showing lower Resistivity than the one below, as was the case in the previous profile 01. This could also indicate less frost plus higher water saturation there. The two different data layers inside of the gravel matrix could alternatively be caused by gravels consisting of different kinds of rocks (basalt, quartzite…), particle size, or by association with other ground materials such as silt, clay or sand.[17]

After 240m the **bedrock** is slightly sinking down. The deepest spot of this **channel** could be outside of the profile. Alternatively the channel could be less wide (dashed line); this interpretation is supported by the IP model; however, regarding the progression of the main channel along the valley the channel seems to be too small at this location.

[15] This bedrock type fits with the data and with the Bedrock Geology Map.
[16] Sometimes the structure of the profiles is getting rougher toward the edges.
[17] Material changes of only 1-3 feet thickness would hardly be seen in the profile run with an electrode spacing of 5m.

The **IP** model indicates a higher percentage of possible ore minerals in the bedrock at Anomaly A. But at this profile the IP data are noisy below 50m, so this indication is vague.[18]

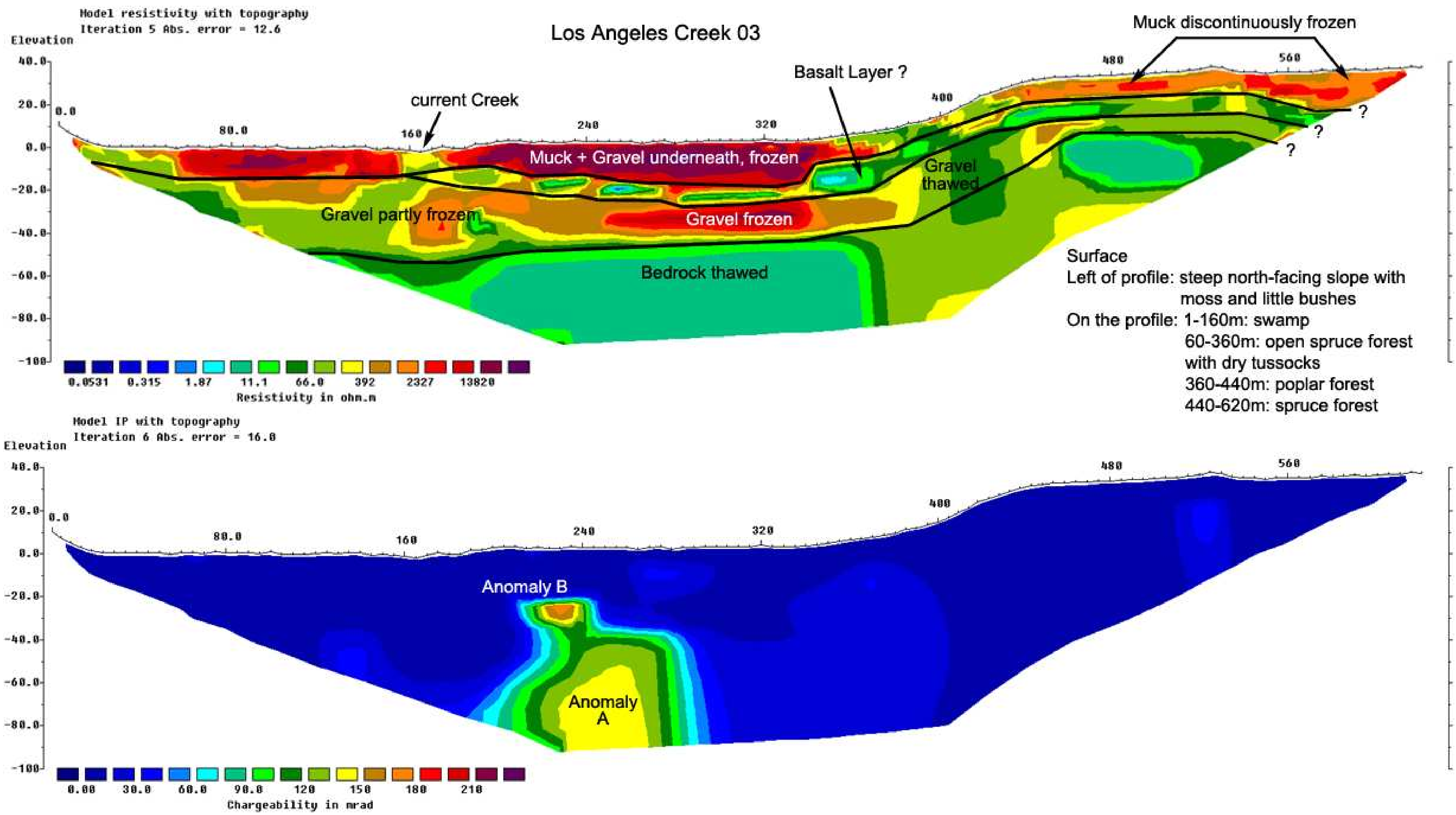
Anomaly C, located in the sediments, shows a chargeability that is too high to be explained by clay deposits. It could be interpreted as a local mineralization in the gravel matrix, or as a placer deposit consisting of IP-active minerals as described in profile 01.

Anomaly B could be located in gravel or in bedrock. The interpretations for Anomaly A and C can be used.

[18] As this survey was designed for placer investigation the data acquisition was optimized for Resistivity, not for IP (see 6.2. Data Acquisition).

Los Angeles Creek 03

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, June 19th, 2010 **Processing:** Philipp Moll, July 2010
View: Upstream	**Vertical measure:** in [meter]	
Electrodes: 125, spacing 5m	**Iteration error:** in [%]	**Location:** 0m (N63° 03' 12.9'', W139° 43' 00.2'') (WGS 84) 495m (N63° 03' 32.1'', W139° 42' 49.9'')
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.96	



Interpretation

The **Resistivity** profile shows 23-39m of overburden on top of **bedrock** identified as Carmacks Group: rhyodacite, dacite.[19] The overburden might have 6-12m of muck, 13-24m of gravel – bearing a possible **basalt** layer probably 3-4m thick (or more)! The ground is partly frozen.

In this section of the valley there seems to be a wide **main channel** and a **bedrock terrace**.

At 0-360m the **bedrock** interface appears to be staying between 37-40m showing a possible depression around 160m. The **overburden** might consist of 12-18m, of about 80% frozen muck and 18-30m of 40% frozen gravel.

At 160-360m, in the overburden we see a thin "track" of well conducting material (green) between the two low conducting layers (red). This layer could be **basalt,** here about 3m thick, which could have flown down from the terrace.[20] The hypothetic basalt layer will likely be covered with gravel below muck. Underneath the basalt there might just be gravel. And the bedrock seems to start at perhaps 39m. So, all in all, the overburden (at 300m in the profile) could consist of 12m of muck, 7m of gravel, 3m of basalt, and again 17m of gravel on top of bedrock.

At 360-620m we see a **bedrock terrace**. Its **overburden** apparently shows the same layering as the valley floor. It seems to extend up the slope covering the old river bank. In the steep section of the slope (around 400m) the layering looks disturbed by down slope creep. On its way up the layering is getting thinner and loses frost. On the terrace we might find **bedrock** at around 23m depth buried under probably 6m of muck, 4m of gravel, 4m of basalt, and again 9m of gravel. At the very end of the profile the layering seems to sink deeper: This could mark the beginning of a channel right on top of the terrace.

The **IP** model shows a column-shaped anomaly of very high data in the bedrock (A). These data around 140 Milliradian seem too high for being an ion-affected induction which is typical for hardrock. They could be caused by noise below 50m depth.[21] However, the existence of an ore deposit signaled by a higher amount of sulfidic accessory minerals could be true.

Anomaly B might be caused by sedimentary effects as was described in profile 01.

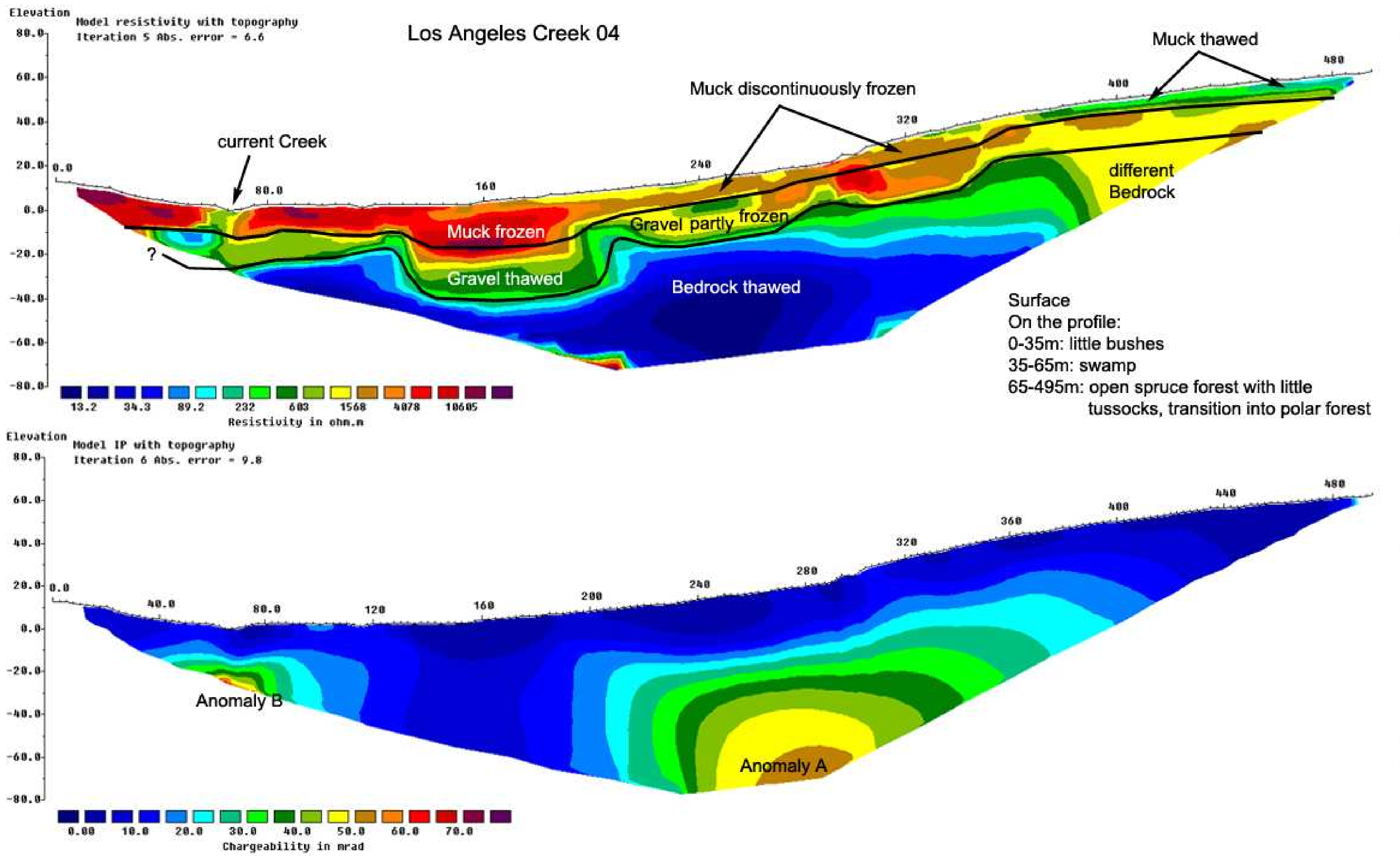
[19] This bedrock type fits with the Bedrock Geology Map. Note: The data of the bedrock seen in the profile cannot be directly compared with the bedrock data of other profiles because when processing this profile, different settings have been used in the computer.

[20] This assumption would fit with the Resistivity data as well as William Lebarge's description of volcanic activity in this section of the valley. William Lebarge; Placer Geologist, Yukon Geological Survey.
It also fits with the Mineral Occurrence Map describing upper cretaceous mafic and lesser felsic volcanic rocks, mostly Carmacks group, in this section of the valley.

[21] As this survey was designed for placer investigation the data acquisition was optimized for Resistivity, not for IP (see 6.2. Data Acquisition).

Los Angeles Creek 04

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, June 21st, 2010 **Processing:** Philipp Moll, July 2010
View: Upstream	**Vertical measure:** in [meter]	
Electrodes: 100, spacing 5m	**Iteration error:** in [%]	**Location:** 0m (N63° 04' 12.8'', W139° 46' 58.5'') (WGS 84) 495m (N63° 04' 28.2'', W139° 47' 02.8'')
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.78	



Interpretation

The **Resistivity** profile shows 20-37m of overburden on top of **bedrock** which is most likely schist.[22] About one third of the **overburden** might be muck; two thirds should be gravel. Again the frost in the subsurface diminishes towards the south-facing slope on the right-hand side.

Same as in the profiles before we see a **prominent channel** abundantly filled with gravel. However in this part of the valley, the drainage seems to have formed some **neighbour channels** on both sides of the main channel. And we see again the beginning of the **bedrock terrace** on the slope on the right-hand side.

At 0-120m in the profile the **bedrock** rises which might indicate a possible **channel** continuing to the left, outside of the profile. At 80m its bedrock is measured at 19m depth and probably covered by 9m of muck and 10m of gravel.

Between 120 and 200m we see a deep bowl-shaped depression in the **bedrock** which does represent the **main channel.** It should be filled with about 17m of muck and 20m of gravel on top of bedrock (37m).

At 200-350m there seem to be two possible **side channels** of almost the same dimensions. They both measure about 25m to bedrock, they are most likely filled with 9m of muck and 16m of gravel. At the left channel, again, we can possibly see the phenomenon of a groundwater bearing gravel layer underneath a frozen layer of different material (see around 240m). At the channel on the right side the layering of the overburden might be disturbed. The existence of these two side channels is very likely due to the local bedrock topography as well as the layer-like structure of the overburden inside of these channels which looks like the continuation of the layering in the main channel. Less likely there could also be a deposition dominated by **colluvium**.

At 350m the **bedrock terrace** starts. Here the layering is unclear because of the vertical data change in the bedrock.[23] The bedrock map suggests Carmacks Group: rhyodacite, dacite bedrock on the right slope.[24] The **overburden** should be muck and river gravel on top of bedrock, which is homologue to the interpretation of the terrace downstream (profile 03). This interpretation of the overburden harmonizes with the principle in this valley that frost decreases to the right-hand side: the data of the gravel would be just a bit lower than on the left side where the side channels are interpreted. – Less likely this section of the terrace could be covered by a majority of colluvium.

The **IP** model indicates a higher concentration of possible IP-active minerals in the bedrock. However at this profile, the IP data are noisy below 50m, so this indication is vague.[25] The core of Anomaly A that shows the highest data, located right at the edge of the profile bottom (brown), seems to be caused by noisy data in greater depth.

[22] Schist bedrock fits with the data. However, the Bedrock Geology Map shows quartzite which doesn't fit with the data at all.

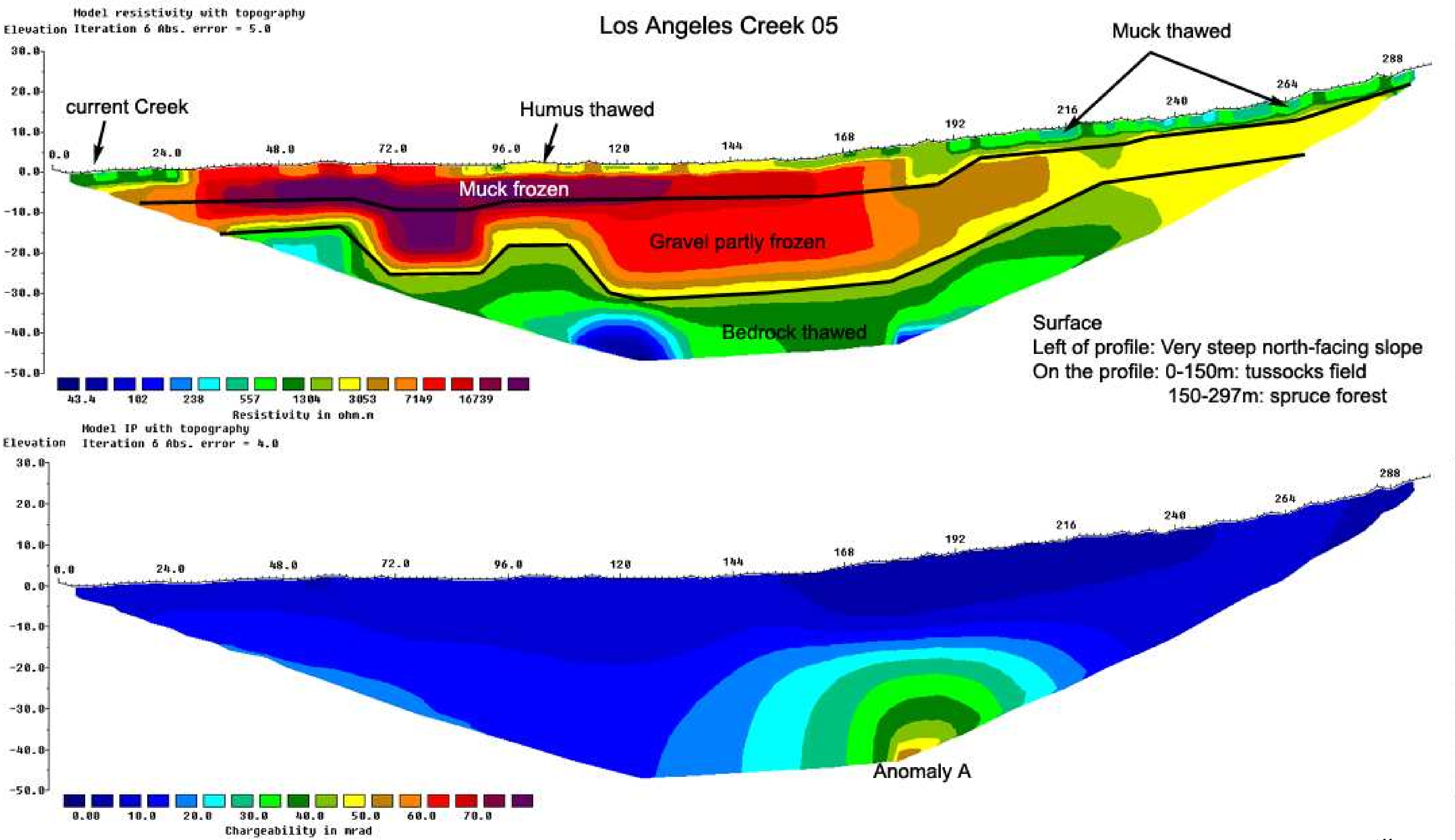
[23] The Schlumberger array used for data acquisition makes it sometimes difficult to detect zones showing a sharp vertical data contrast. The Dipole Dipole array would be more suitable for that. However for the detection of the stratification as for placer prospecting, the Schlumberger array is the most appropriate.

[24] This type of bedrock is in the range of possibility for the data.

[25] As this survey was designed for placer investigation the data acquisition was optimized for Resistivity, not for IP (see 6.2. Data Acquisition).

Los Angeles Creek 05

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, June 23rd, 2010 **Processing:** Philipp Moll, July 2010
View: Upstream	**Vertical measure:** in [meter]	
Electrodes: 100, spacing 3m	**Iteration error:** in [%]	**Location:** 0m (N63° 04' 52.9'', W139° 50' 52.7'') (WGS 84) 297m (N63° 05' 02.4'', W139° 50' 51.6'')
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.85	



Interpretation

The **Resistivity** profile suggests 16-31m of overburden on top of possible schist **bedrock**[26]**.** The **overburden** might consist of 5-11m of muck as well as 7-22m of gravel. 70% of the overburden look like frozen.

At this location in the valley the forking of the former stream seen in profile 04 (downstream) might have been reduced to the **main channel** and one **side channel.** The profile is probably too small to see possible high channels. At the edges of the profile there might be some **bedrock benches**.

At 0-60m there seems to be a **bedrock bench**. It should be 16m deep, covered with 9m of muck and 7m of gravel.

At 60-100m a **side channel** is located. It might show bedrock at 23m depth, filled up with 10m of muck and 13m of gravel.

At 100-200m the **main channel** is located. It measures 31m to bedrock, filled with about 9m of muck and 22m of gravel.

After 200m a possible **bedrock bench** is starting. It should show bedrock in 18m depth with 6m of muck and 12m of gravel on top of it. There is less frost.

The **IP** model presents a bedrock zone that consists of higher chargeability. There a higher concentration of sulfidic minerals in the rock can be assumed. The core of Anomaly A that shows the highest data, located right at the edge of the profile bottom (brown-yellow), doesn’t seem to be realistic.

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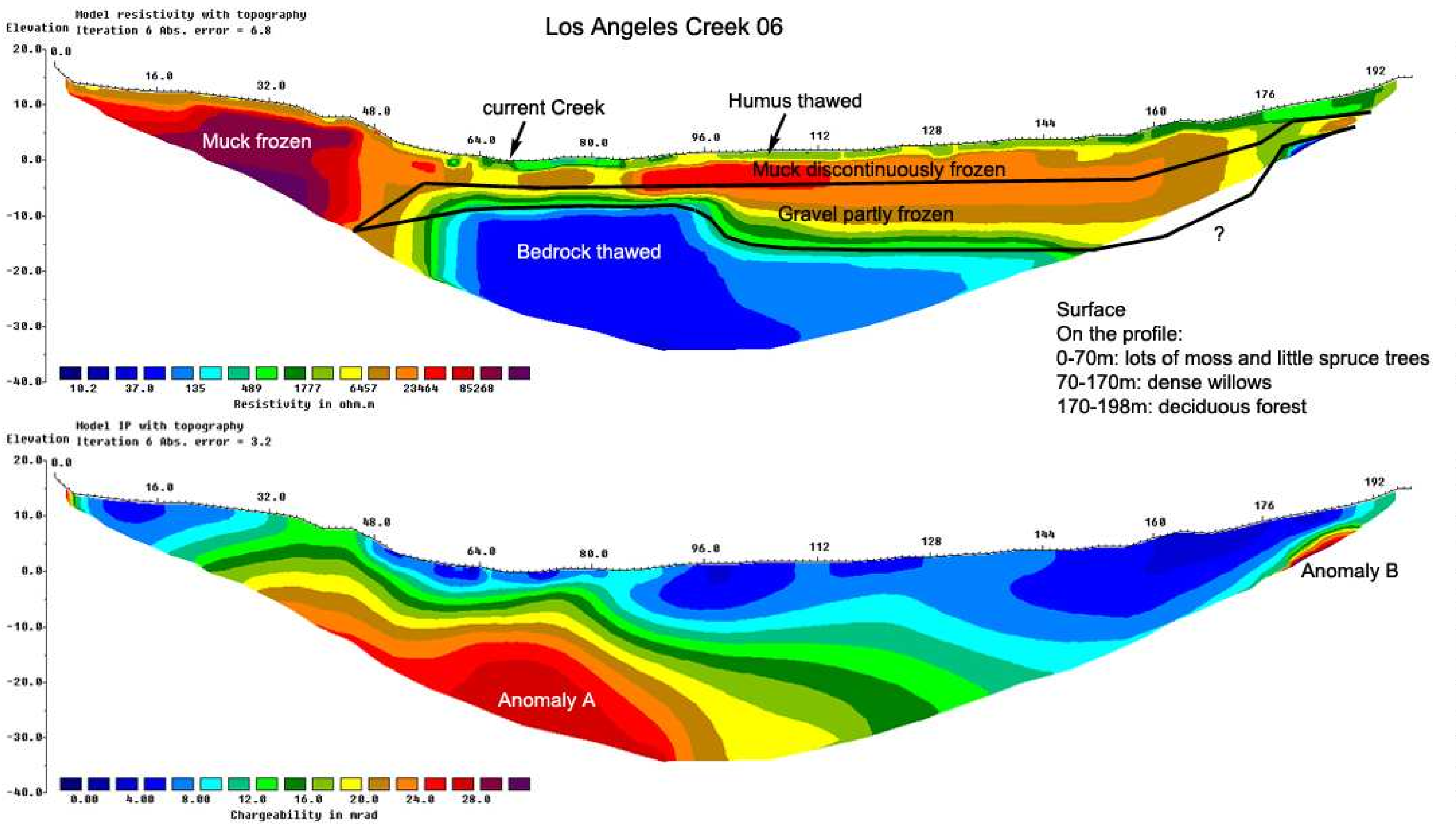
[26] Schist bedrock fits with the data. However, the Bedrock Geology Map shows quartzite which doesn’t fit with the data at all.

Los Angeles Creek 06

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, June 25th, 2010 **Processing:** Philipp Moll, July 2010
View: Upstream	**Vertical measure:** in [meter]	
Electrodes: 100, spacing 2m	**Iteration error:** in [%]	**Location:** 0m (N63° 05' 08.4'', W139° 54' 39.8'') (WGS 84) 198m (N63° 05' 13.9'', W139° 54' 45.2'')
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.78	



Interpretation

In this section of the valley the **bedrock,** possibly schist[27], significantly comes up to 8-17m, as is evident in the **Resistivity** profile. The **overburden** has 4-6m of about 80% frozen muck, and 3-11m of about 90% frozen gravel.

In this section of the valley a **bedrock plateau** appears. On its right side the **main channel** starts – probably leading to a shallow **bedrock bench** on the right side.

At 0-60m there seems to be just frozen muck, or less likely another kind of bedrock. This structure could represent the remains of a landslide.

Between 60 and 90m we see a **bedrock dome**, 8m deep, with probably 5m of muck and 3m of gravel on top of it.

At 100 to probably 175m the **main channel** is located. Its **overburden** is thickening towards the right-hand side, and it seems as if the channel ends at around 175m. At 140m we measure 17m to bedrock, overlaid by perhaps 6m of muck including a thin 'skin' of humus (green layer)[28], and 11m of gravel.

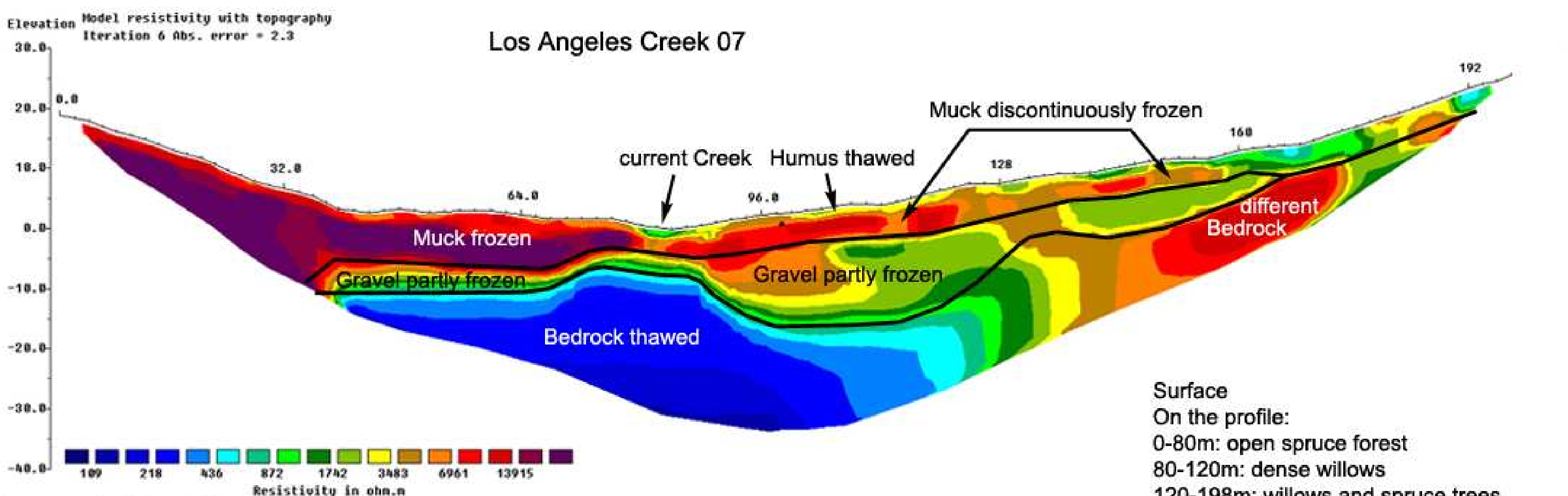
After 175m a **bedrock bench** might start. In the profile it looks very shallow. Its existence is also indicated by the IP model: The bedrock seems to appear at this location. This bench could be covered with alluvial deposits.

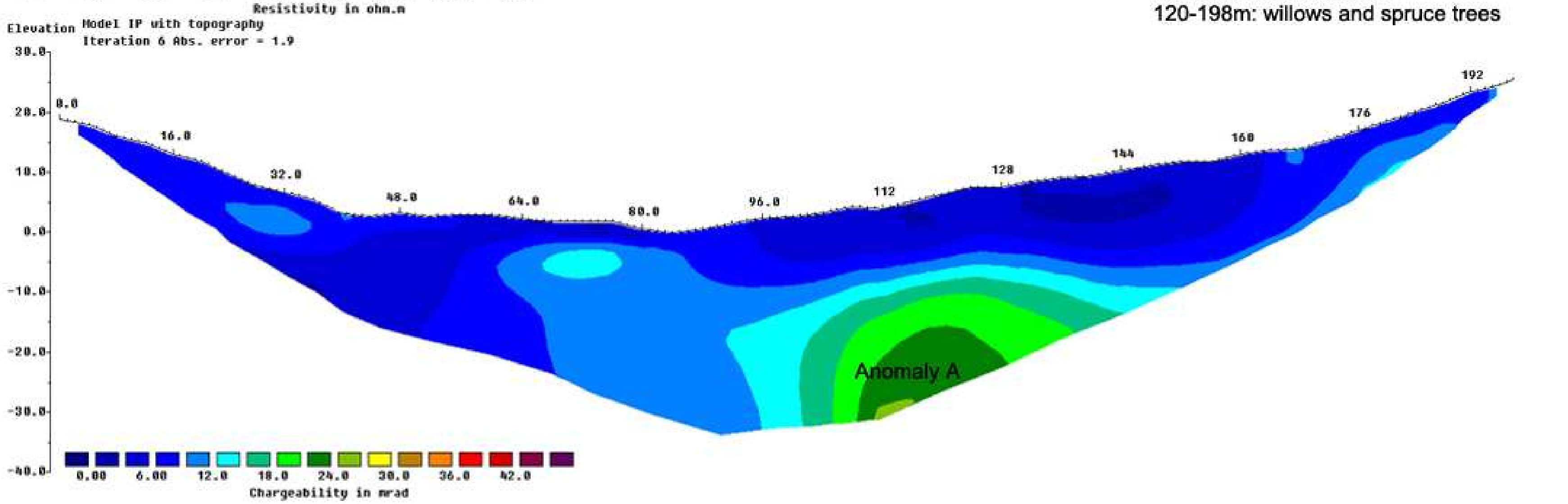
[27] Schist bedrock fits with the data. However, the Bedrock Geology Map shows quartzite which doesn't fit with the data at all.
[28] The thawed humus is now clearly seen because of the shorter electrode spacing of 2m in this measurement.

The **IP** model presents a bedrock zone with 20-25 Milliradian. There a higher amount of IP-active minerals could be expected.

Los Angeles Creek 07

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, June 27th, 2010 **Processing:** Philipp Moll, July 2010
View: Upstream	**Vertical measure:** in [meter]	
Electrodes: 100, spacing 2m	**Iteration error:** in [%]	**Location:** 0m (N63° 04' 13.8'', W139° 58' 03.5'') (WGS 84) 198m (N63° 04' 19.8'', W139° 58' 01.6'')
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.78	





Interpretation

This **Resistivity** profile shows 7-17m of overburden on top of **bedrock** possibly consisting of schist[29]. 4-6m of muck might lie on top of 3-11m of gravel – both about 90% frozen.

Again we see the bedrock plateau, now narrower, separating the **main channel** (right side) from a possible **shallow channel** (left side). Up the slope there should be a **side channel**.

At 0-40m there seems to be a huge deposition of **muck** or different kind of bedrock, it could also be the remains of a landslide.

At 40-70m a possible **flat streambed** can be seen. Its bedrock should be at 11m depth, covered with 7m of muck and 4m of gravel (measured at 55m).

At 70-88m we see a **bedrock plateau** about 7m deep. It should be covered with 4m of muck and 3m of gravel.

At 88-130m the **main channel** is located. It shows bedrock at 17m depth. It should be filled with about 5m of muck and 12m of gravel. Again some of the shallow gravel seems to be thawed below frozen muck.

Around 130m, very low conducing bedrock starts on the slope (red). This bedrock could be orthogneiss. [30]

At 135-165, a **side channel** should be located. It shows 10m to bedrock being filled with 4m of muck and 6m of gravel. The overburden on the channel looks well layered which lets us assume that there should still be original river gravel, not colluvium.[31] The resistivity data show about 90% frost on the slope.[32]

After 165m the overburden looks like an undefined diamicton consisting of possibly muck, gravel, and **colluvium**.

The **IP** model shows a bedrock zone of around 20 Milliradian. This suggests a higher percentage of inducible minerals.

[29] Schist bedrock fits with the data. However, the Bedrock Geology Map shows quartzite which doesn't fit with the data at all.

[30] The bedrock map shows small zones of orthogneiss in some distance. It is interesting that the Wolf Creek profile 06 (being located far upstream on the other side of the hill) shows the same subsurface structure: the beginning of another kind of bedrock in the 10 000 ohm meter range right on the south-facing slope.

[31] Surprisingly, at several different locations in Yukon/BC, we have measured alluvial overburden on steep slopes without any disturbances by colluvium. Permafrost seems to be the precondition for that. But in frozen conditions we have also measured the opposite: some disturbed overburden with colluvium, even on slopes with moderate inclination.

[32] Frozen muck was found one foot below the surface.

8.8. Conclusion

Basics

Los Angeles Creek is a 27km long Yukon stream flowing eastwards into the White River (Map 115O/04). Near its confluence with the Yukon (profile 01) the Los Angeles Creek shows **bedrock** at about 60m in the main channel. Far upstream (profile 07) the bedrock rises to about 6m depth; the bedrock in the main channel might be 17m deep. The bedrock is alternating, likely between: Quartz-mica schist, rhyodacite / dacite, orthogneiss.

Los Angeles Creek exhibits the Klondike typical **stratification** of muck-gravel-bedrock. Along the valley the muck should be about 85%, the gravel about 60% frozen, on average.

Historically Los Angeles Creek might have been a larger stream with a high alluvial transport capacity.

In the lower section (profile 03) a **basalt** flow could have covered the gravel deposit. Later the basalt would then have been covered with new river gravel and muck.

In the mid and upper section (profile 04 and 07) the valley floor might have been tilted by **folding** as the alluvial stratification shows some inclination being parallel to the south facing slope.

Progression of Subsurface Parameters

The historic streambed of **Los Angeles Creek** shows a discontinuous progression of the following subsurface parameters along the valley:[33] **1_bedrock-depth** and **2_gravel-thickness** of the **main channel.** Both parameters strongly correlate. These properties show 'chair-shaped' curves along the valley. (Diagram A). This chair-shaped graph also describes the depth of the **bedrock benches**. The bedrock depth of the **side channels** does not follow this graph.

[33] The (roughly) equidistant pattern of the lines covering the whole valley might give an appropriate database for a systematic analysis of the progression in the subsurface.

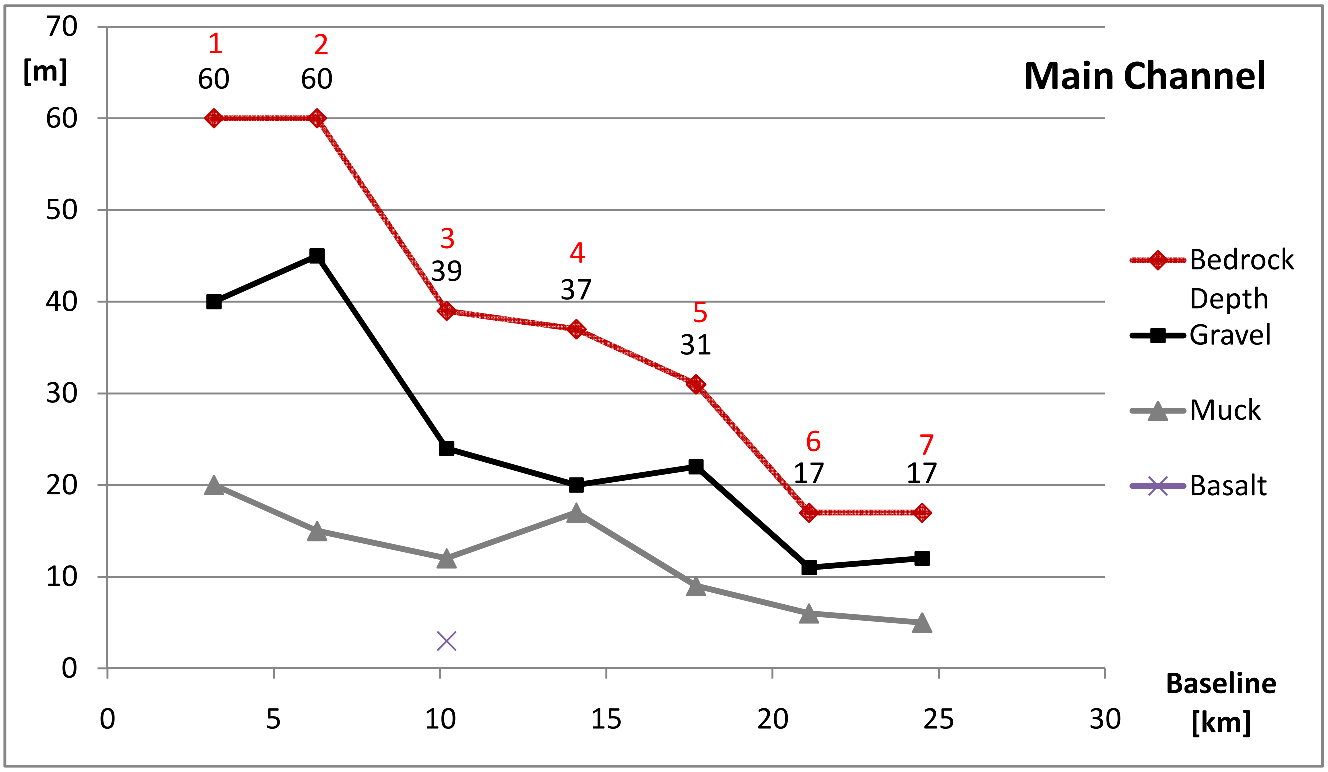


Diagram A: **Sedimentation of Main Channel**, Los Angeles Creek
Profiles Resistivity 1-7: Spacing 3.1-3.9 km of Baseline upstream
Interpretation, Arctic Geophysics Inc., Yukon 2010

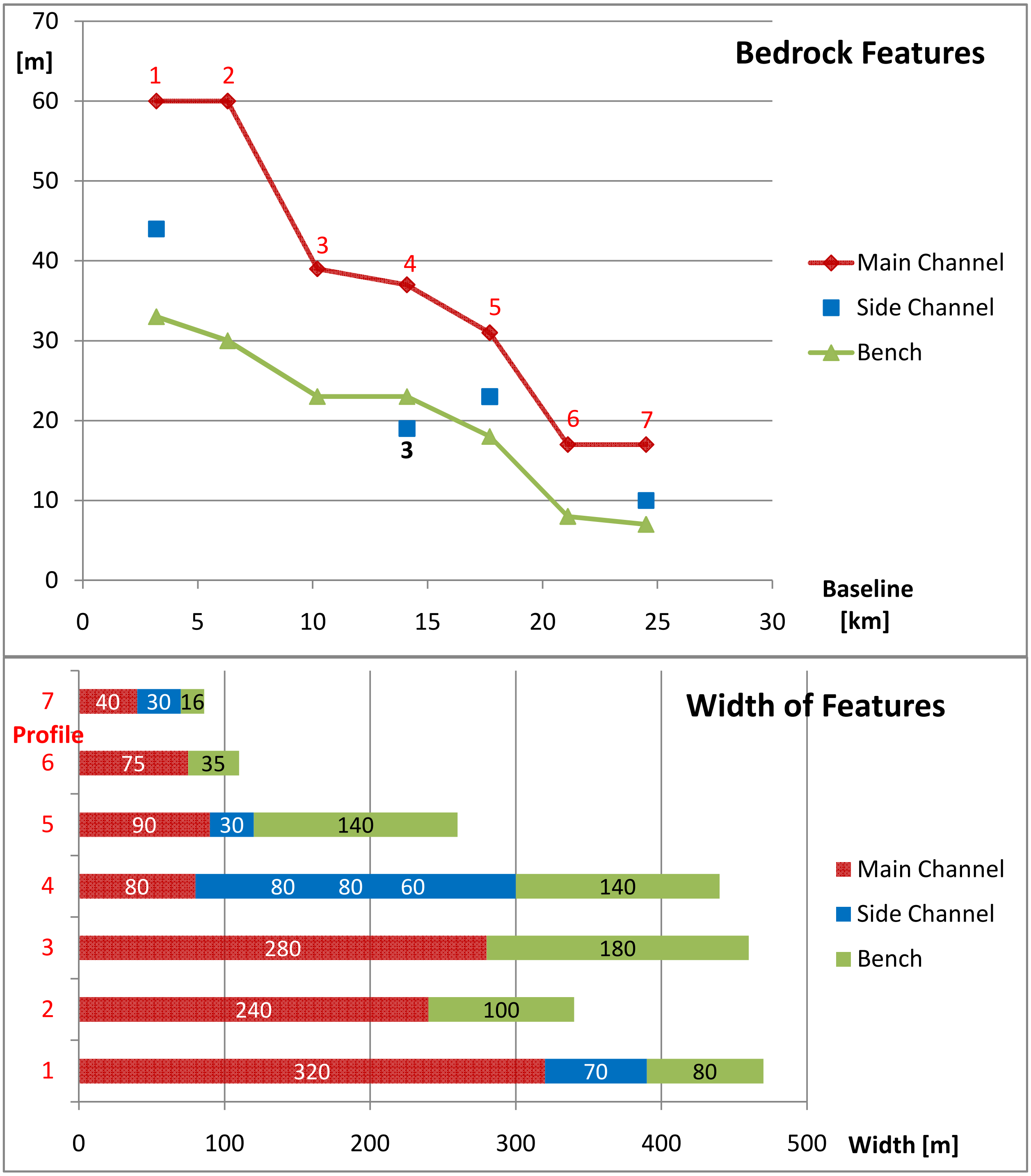


Diagram B: Top: **Bedrock Features** [Depth in Meter], Los Angeles Creek
Bottom: **Width of Features** [in Meter]
Both: Profiles Resistivity 1-7: Spacing 3.1-3.9km of Baseline upstream
Interpretation, Arctic Geophysics Inc., Yukon 2010

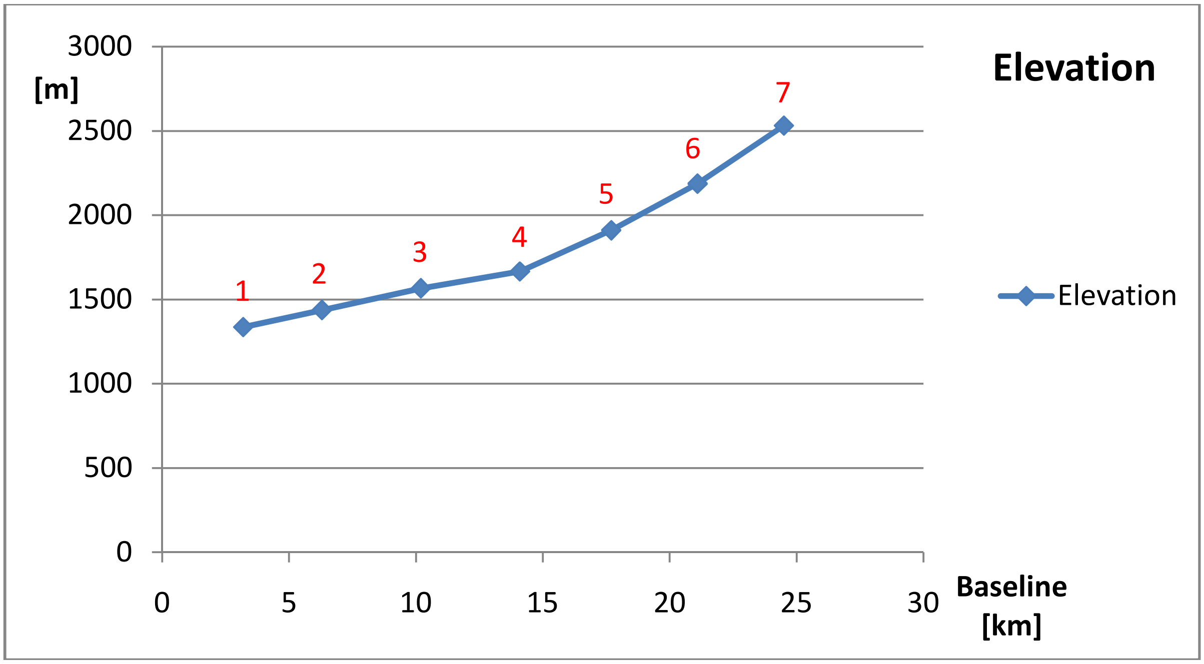


Diagram C: **Elevation Valley Bottom** [in Meter], Los Angeles Creek
Profiles Resistivity 1-7: Spacing 3.1-3.9 km of Baseline upstream
Arctic Geophysics Inc., Yukon 2010

Interpretation of Diagrams

The first plateau of the curves at **profiles 01-02**, indicating that the bedrock in the main channel does not get deeper downstream (diagram A and B), might be produced by the backflow of the Yukon as well as by a lack of water influx by the side streams (Survey Map).

The significant upstream drop of the bedrock-depth **(profiles 02-03)** might also correlate with the influx: a bigger tributary is draining from south into Los Angeles Creek in this section of the valley.

At **profiles 03-04** the curve plateau, describing the bedrock-depth of the main channel, should be affected by low water influx in this section of Los Angeles Creek.

At **profiles 04-05** the continuity of this bedrock-plateau, despite high influx from north and south (!), might be caused by the widening of the stream into a channel system including 3 or 4 channels (diagram B).[34] So in this section of the valley the main channel did get less water and therefore likely wasn't able to deepen its streambed much. One more reason for the lower upstream-decrease of the bedrock-depth (Diagram A) might be the

[34] The two side channels up the slope on profile 04 might have been active at the same time like the main channel because the bottom of all three channels is running parallel to the surface. This structure might have been lifted up by folding. The bottom of the side channel down the slope could easily have been active in former times, too; its streambed not being parallel to the bedrock interface up the slope could have been changed by the current stream.

beginning of a lower stream gradient around profile 04 (Diagram C). This also slows down the stream velocity causing less cutting down of the main channel. Consequently the increase of the gravel-thickness in this section of the valley (Diagram A) seems plausible.

The upstream drop from the second plateau to the third plateau (**profiles 05 to 06**) might have been created by the significant reduction of the total width of the channel system (Diagram B), and because the water influx there is relatively high.

The third plateau (**profiles 06-07**), showing almost constant bedrock depth, might exist because the total width of the channel systems is congruent.

Assessment for Placer Mining

Regarding **Los Angeles Creek** this survey allows a quantitative assessment concerning the thickness of the overburden as well as a qualitative assessment of some features being attractive for placer mining such as paleochannels. No information can be provided about the amount of gold in this valley.

The lower part of Los Angeles Creek, **profile 01 and 02**, might have too much overburden (60m) to be viable for commercial placer mining.

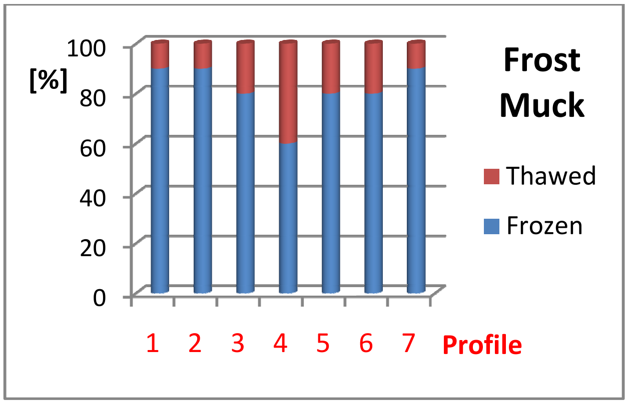
At **profile 03** the bedrock in the main channel is still around 40m deep and it looks quite flat, not having a pronounced depression. But there could be the chance of a basalt layer starting at around 19m depth which could possibly have collected placer gold below 7m of gravel and 12m of muck. On the terrace there seems to be a moderate depth to bedrock, at around 23m; there could be the chance of shallow placer gold stopped by basalt at about 10m depth. Still the existence of basalt-supported shallow placer gold seems vaguer than the existence of other targets detected on this survey.

In **profile 04** the bedrock in the main channel is still at around 37m depth. Nevertheless up to three side channels with bedrock between 20 and 25m are probable. In this part of the valley the historic water flow might have slowed down. This should have created a higher amount of gravel deposited in the channel system. So, all in all, the area around profile 04 is showing good parameters for possible commercial placer gold.

At **profile 05** similar conditions as in profile 04 are detected. The bedrock in the main channel is now close to 30m depth and the gravel is thickening. A side channel 23m deep appears. These are again good conditions for possible commercial placer gold.

On the way upstream to **profile 06** the bedrock of the main channel rises to around 17m depth. This depth might be attractive for placer mining.

At **profile 07** the main channel has the same depth: 17m. A possible side channel appears which allows the prospector to check bedrock at 10m depth covered with probably 4m of muck and 6m of gravel. These depths are attractive for placer mining. But the drainage area is getting smaller which decreases the potential of connections to primary deposits.



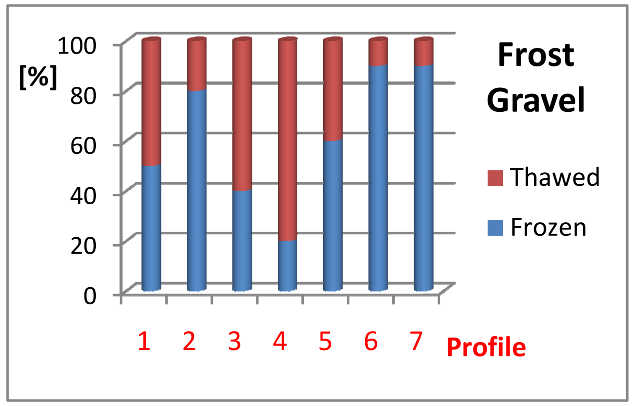
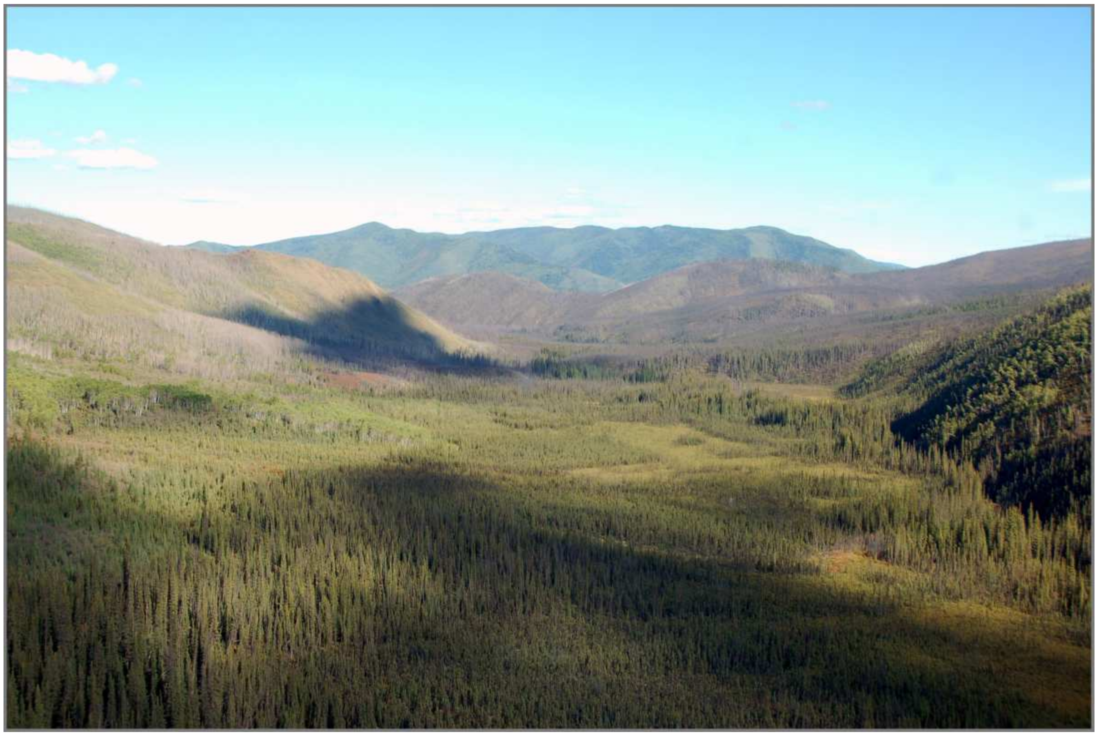


Diagram D: **Permafrost: Overburden**, Los Angeles Creek
Profiles Resistivity 1-7: Spacing 3.1-3.9 km of Baseline upstream
Arctic Geophysics Inc., Yukon 2010

Assessment for Quartz Mining

This documentation does not provide an in-depth interpretation of the IP data measured at **Los Angeles Creek**. A reasonable interpretation of the chargeability patterns would require a lot more geological background information which is not available at this time. The IP data point at plenty of hardrock anomalies seen in the profiles. This might help in further studies.

8.9. Gallery

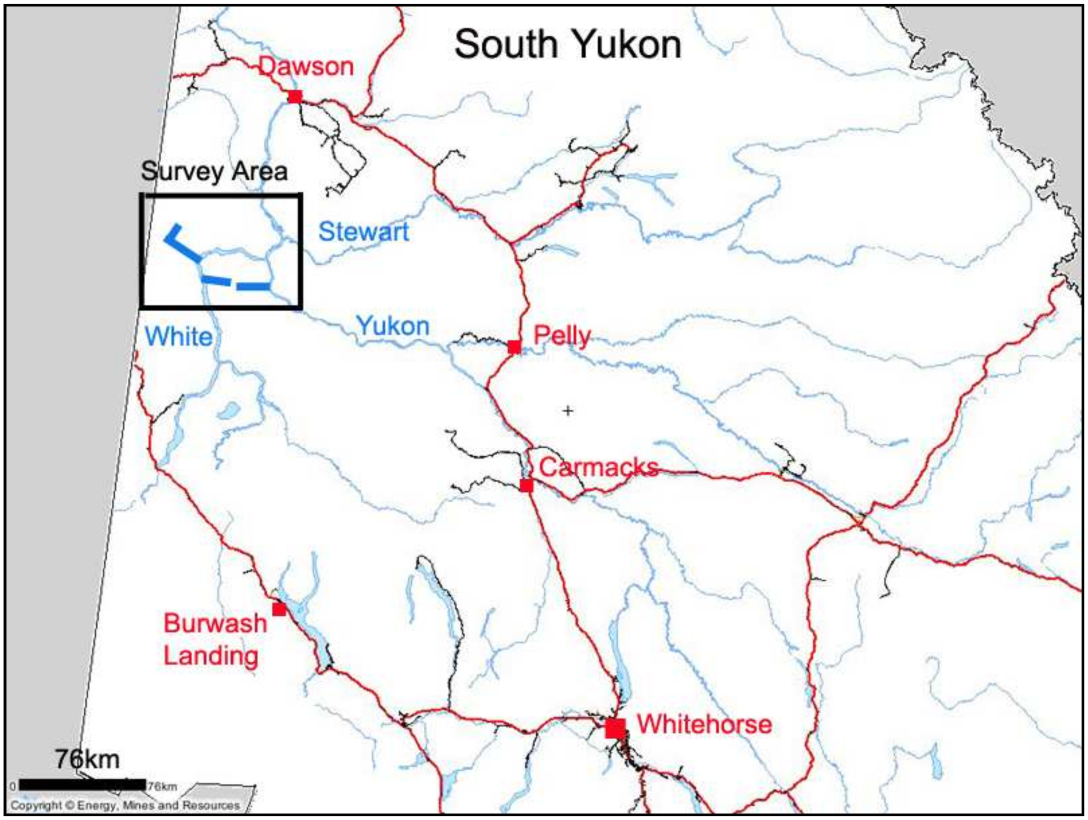


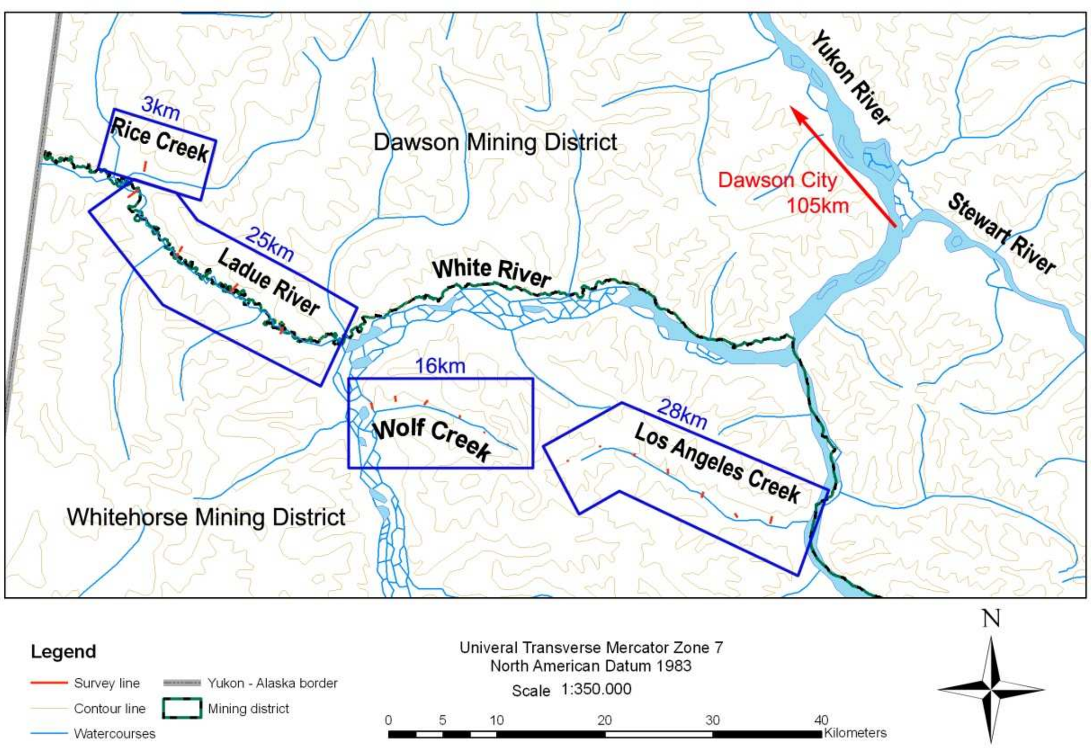
Los Angeles Creek, about 10km upstream, view downstream, location of profile 03

Los Angeles Creek, 3.2km upstream, view cross valley, location of profile 01

9. Resistivity/IP Survey at Wolf Creek

9.1. Survey Area





9.2. Access

The survey crew reached the confluence of Wolf Creek with the White River by motorboat (with propeller unit) starting from Dawson City and riding the Yukon River and the White River for about 200km upstream. From there the crew hiked along the valley while running the lines and being supported by one helicopter flight.

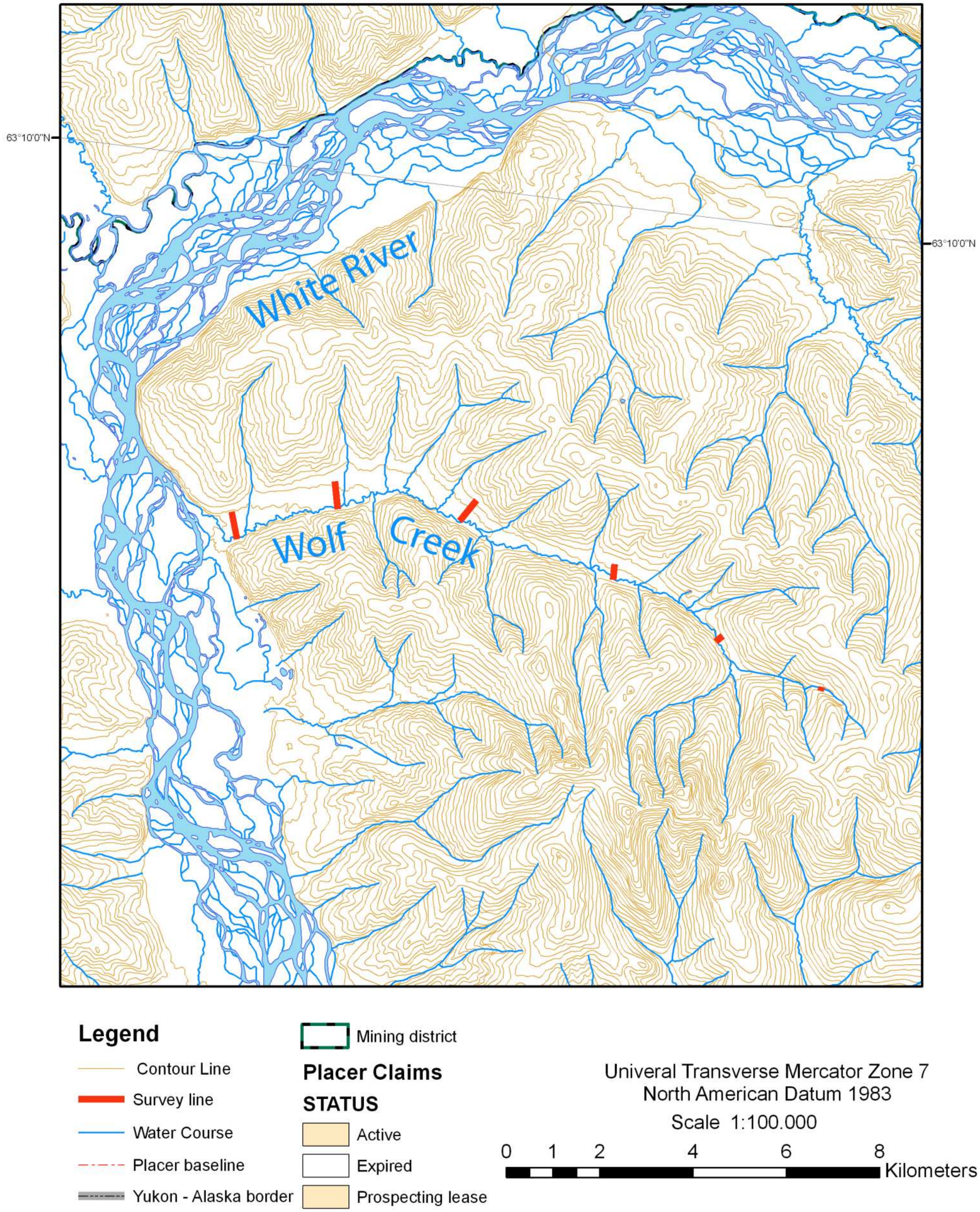
In 2010 and earlier extensive staking of quartz claims was carried out around Los Angeles and Wolf Creek including all the way southwards. This could indicate a quickly growing infrastructure towards Los Angeles Creek. In this case the building of a mining road coming from the south seems very likely.

9.3. Vegetation

Wolf Creek shows dense vegetation all along the valley. In the lower part from the confluence with the White River up to profile 02 there is a lot of dead fall in the forest. On the other hand, up until profile 04 the forest is mainly spruce forest with some willows and poplars on the south facing slope. From profile 04 to the headwaters of the creek a dense willow growth is found.

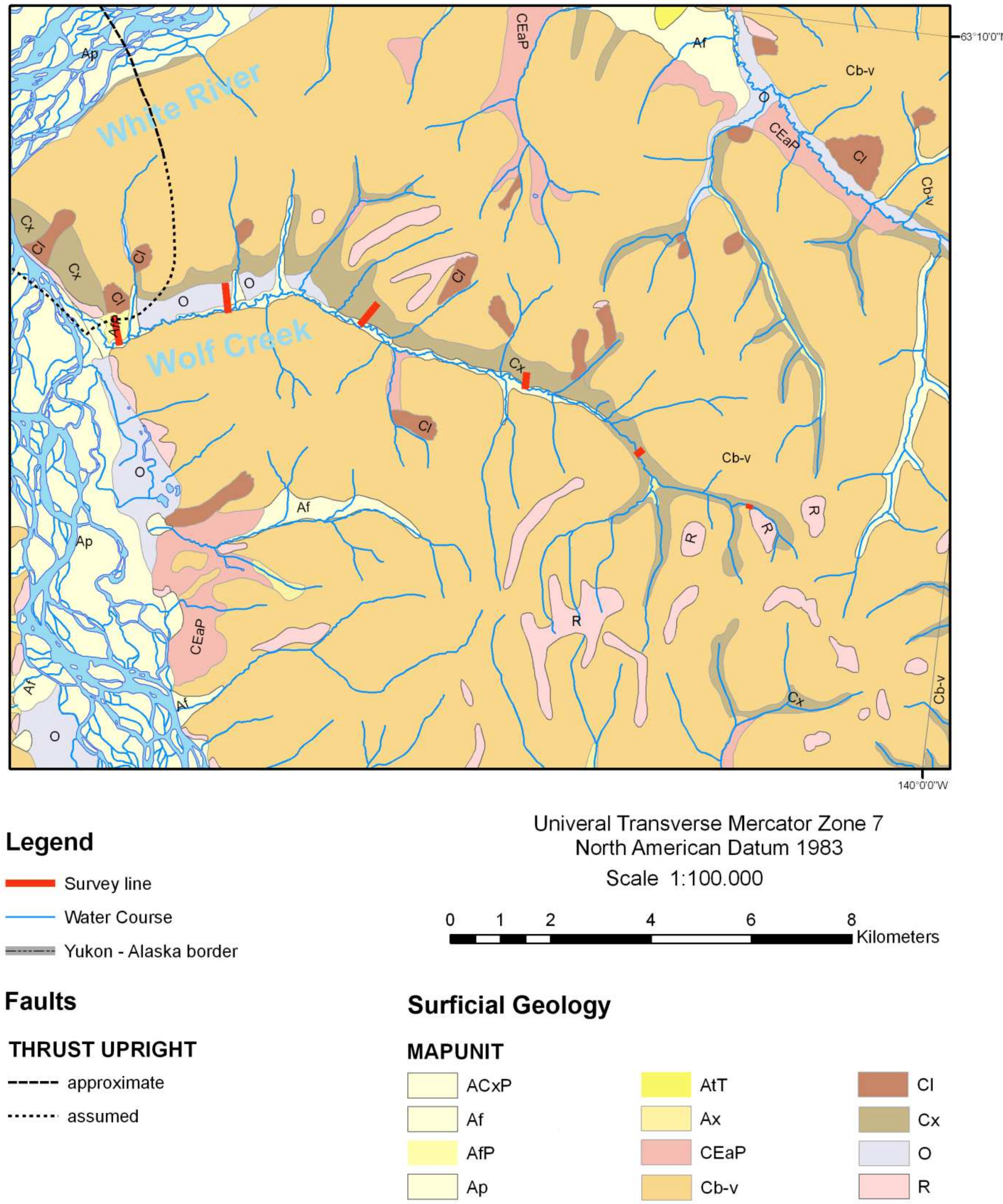
The only reasonable trail that can be found in the valley is a cut line from an old prospecting lease. There are only a few places where a helicopter can land and the use of an ATV is impossible

9.4. Prospecting Map



9.5. Geological Maps

Surficial Geology Map



Gordey, S.P., Williams, S.P., Cocking, R.B, and Ryan, J.J, 2006:
Digital geology, Stewart River area, Yukon; Geological Survey of Canada, Open File 5122

ACxP
CATEGORY: ALLUVIAL DEPOSITS: gravel and sand deposited by streams that were not fed by glacial meltwater; sediments may have experienced several cycles of alluviation and erosion, but are now inactive due to burial or fluvial incision; basal gravels within these sediments commonly contain placer gold
DESCRIPTION: Alluvial/Colluvial Complex Sediments: silt, sand and gravel, poorly to moderately sorted; thin to thick bedded, interstratified with colluvial diamicton; sediments underlie the floors and margins of narrow upland valleys and grade laterally up slope into colluvial blankets; sediments may represent several depositional cycles; thickness may exceed 10 m in mid-valley locations

Af
CATEGORY: ALLUVIAL DEPOSITS: gravel to silt size sediments, well stratified, deposited by streams
DESCRIPTION: Alluvial Fan Sediments: gravel, sand, silt, and diamicton, massive to well stratified; sediments form fan-shaped landforms or complexes of coalesced fan-shape landform at the confluence of tributary streams; may be subject to flooding accompanied by sudden stream migration and inundation; thickness up to 10 m

AfP
CATEGORY: ALLUVIAL DEPOSITS: gravel and sand deposited by streams that were not fed by glacial meltwater; sediments may have experienced several cycles of alluviation and erosion, but are now inactive due to burial or fluvial incision; basal gravels within these sediments commonly contain placer gold
DESCRIPTION: Alluvial Fan Sediments: single fans or aprons of coalesced fans formed of gravel and sand, poorly to moderately sorted, now isolated from water and debris floods due to fluvial incision; sediments disturbed by cryoturbation; thickness up to 10 m

Ap
CATEGORY: ALLUVIAL DEPOSITS: gravel to silt size sediments, well stratified, deposited by streams
DESCRIPTION: Floodplain Sediments: gravel, cobble to pebble; massive to well stratified, capped by sand and silt; flat lying; includes lacustrine and organic deposits in abandoned channels and backswamp areas; subject to periodic inundation and reworking by floods; thickness 1 to 5 m

AtT
CATEGORY: ALLUVIAL DEPOSITS: preglacial gravel and sand; highly dissected and deeply weathered
DESCRIPTION: High Level Terrace Sediments (includes White Channel Gravel and equivalent sediments): weathered pebble to cobble gravel > 1 m thick; surface soils may extend to 2 m depth with well developed clay skins on clasts, frequent signs of cryoturbation (ice wedge pseudomorph and sand wedges), and strong chemical weathering; terraces above the 500 m contour may be remnant features from the southward-flowing paleo-Yukon drainage system
Ax
CATEGORY: ALLUVIAL DEPOSITS: gravel to silt size sediments, well stratified, deposited by streams
DESCRIPTION: Alluvial Sediments Complex: sediments forming floodplains, fans, and terraces as above that cannot be subdivided at this map scale

CEaP
CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPTION: Colluvial/Eolian Apron (muck): primary deposits of eolian fine sand and silt resedimented and interstratified with organic silt, and detritus, alluvial fan gravel and sand and variable amounts of stony colluvial diamicton; forms aprons

along valley bottoms through resedimentation of eolian sediments from valley sides to valley floor, commonly preserved on north-facing slopes; thickness 1 to 20 m; commonly contains segregated bodies of ice and buried ice wedges

Cb-v

CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPTION: Colluvial Blanket and Veneer Sediments: diamicton, stony with a sandy matrix; massive to poorly stratified; colluviated blankets generally conform to underlying bedrock and exceed 1 m in thickness; veneers are < 1 m in thickness and are commonly discontinuous over bedrock

Cl

CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPTION: Landslide Sediments: silt loam to boulders, poorly sorted to unsorted; massive; clasts are subangular to angular and are locally derived; thickness varies greatly

Cx

CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPTION: Colluvial Complex Sediments: areas of intergrading colluvial and alluvial sediments which are too complex to subdivide at the scale of mapping; unit may include colluvial and alluvial fan, colluvial blanket, landslide sediments and colluviated drift within the limits of glaciation; the unit commonly occurs along the lower slopes of valley margins

EbP

CATEGORY: EOLIAN DEPOSITS: well sorted medium sand to silt initially transported and deposited by wind action during glaciations and commonly resedimented through fluvial and colluvial processes; deposits of very fine sand and coarse silt < 1 m thick are distributed discontinuously throughout low lying areas
DESCRIPTION: Eolian Blanket: fine sand and silt, well sorted; massive; may form crescent-shape and linear dunes and featureless or gently undulating inter-dune eolian plains; thickness 1 to 5 m

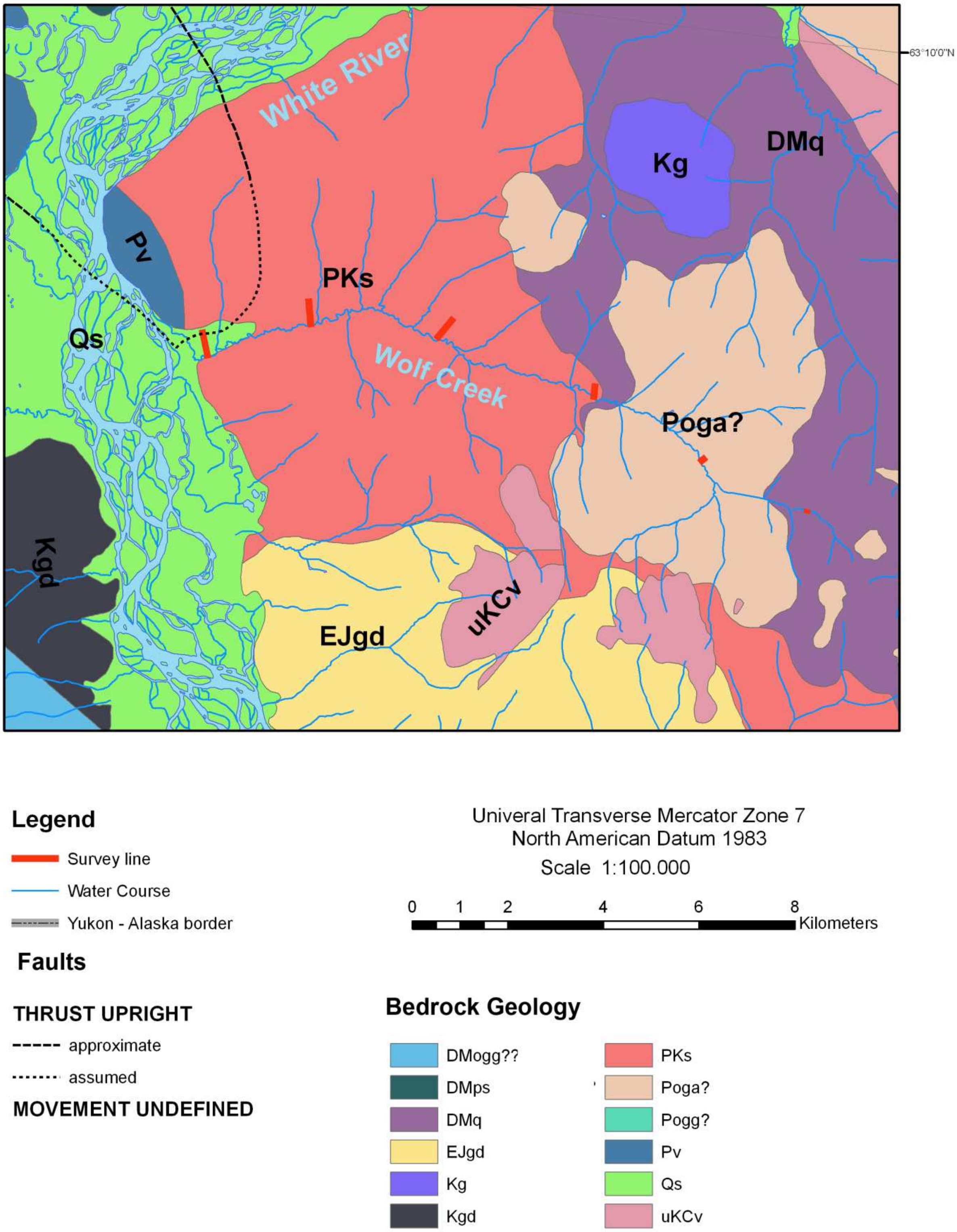
O

CATEGORY: ORGANIC DEPOSITS: peat and organic silt formed predominantly by the accumulation of vegetative material in bogs, fens, and swamps situated on valley bottoms; permafrost is commonly encountered within 1 m of the surface. Thermokarst collapse is common.
DESCRIPTION: Organic Blanket: undivided; thickness > 1 m to 5 m

R

DESCRIPTION: Bedrock: schist, gneiss, ultramafics, granodiorite, monzonite, marble, and basalt; includes areas of thin colluvial cover, blockfields, and sorted stone polygons in alpine areas

Bedrock Geology Map



Gordey, S.P., Williams, S.P., Cocking, R.B, and Ryan, J.J, 2006:
Digital geology, Stewart River area, Yukon; Geological Survey of Canada, Open File 5122

DMogt??
DESCRIPTION: ORTHOGNEISS (OLDER, 363-343 Ma): **DMog**, undivided orthogneiss; **DMogg**, pink to orange K-feldspar rich, granitic orthogneiss, commonly with biotite, banded to layered, commonly includes or associated with DMoga; **DMoga**, mainly K-feldspar augen orthogneiss, commonly includes or associated with DMogg; **DMogt**, mainly tonalitic or intermediate to mafic orthogneiss, generally grey, banded to layered, commonly veined; commonly interlayered with amphibolite schist and gneiss, biotite and/or hornblende bearing; **?**-age assignment probable, **??**-age assignment assumed (alternatively could be part of Pog)

DMps
DESCRIPTION: QUARTZ-MICA SCHIST: undivided metasedimentary rocks dominated by metapsammite, semipelite and metapelite; commonly quartz-garnet-biotite-muscovite schist possibly derived from siliceous siltstone; commonly finely interlayered with garnet metapelite; commonly contains members of micaceous quartzite; rare conglomerate; grades locally to paragneiss

DMq
DESCRIPTION: QUARTZITE: banded to massive, grey to white quartzite; apparently clastic in origin, or in part, possibly derived from metachert

EJgd
DESCRIPTION: GRANODIORITE: chlorite-altered hornblende and biotite-bearing granodiorite, monzogranite, quartz monzonite and quartz monzodiorite

Kg
DESCRIPTION: GRANITE/GRANODIORITE: Kg, pink to grey, locally porphyritic syenogranite to monzogranite plutons and dykes; **Kgd**, biotite-hornblende bearing granodiorite, locally foliated

PKs
DESCRIPTION: KLONDIKE SCHIST: muscovite-chlorite-quartz-feldspar schist, chlorite schist, chlorite phyllonite; local cleaved lapilli tuff with preserved primary texture, probably derived from Pv

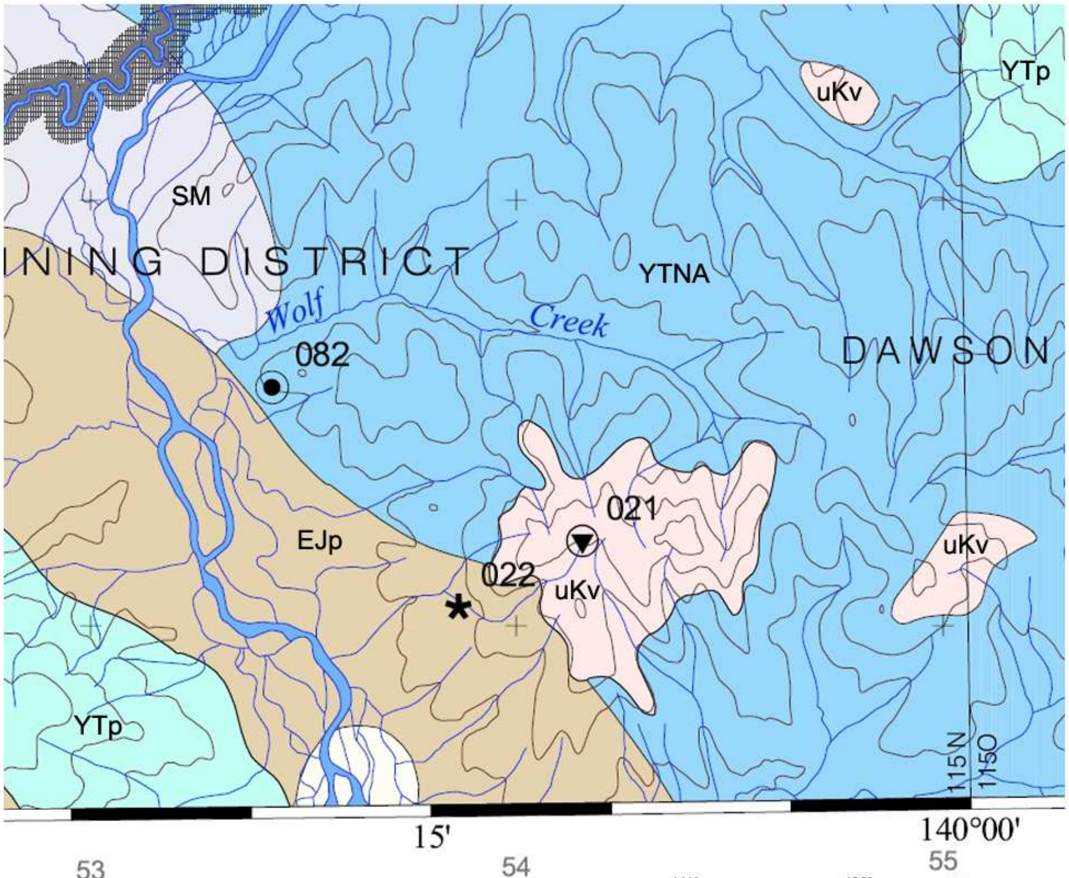
Poga?
DESCRIPTION: ORTHOGNEISS (YOUNGER, 264-259 Ma): **Pog**, undivided orthogneiss; Pogg, pink to orange K-feldspar rich, granitic orthogneiss, commonly includes or associated with Poga; **Poga**, mainly K-feldspar augen orthogneiss, exhibits various states of strain including porphyroclastic straight gneiss, commonly includes or associated with Pogg; **Pogt**, rare, mainly tonalitic orthogneiss; Pogq, orthogneiss derived from quartz monzonite; refers to highly strained, mafic poor, Sulphur Creek orthogneiss; **?**-age assignment probable, **??**-age assignment assumed (alternatively could be part of DMog).

PV
DESCRIPTION: FOLIATED VOLCANIC: chlorite-altered weakly foliated intermediate to mafic aphanitic volcanic flows and tuffs, locally with clastic textures preserved

Qs
DESCRIPTION: Fluvial silt, sand and gravel

uKCv
DESCRIPTION: CARMACKS GROUP: rhyodacite and dacite, commonly biotite and hornblende phyric, dominated by lesser andesite and basalt; minor rhyolite

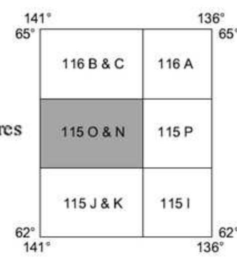
Mineral Occurrence Map

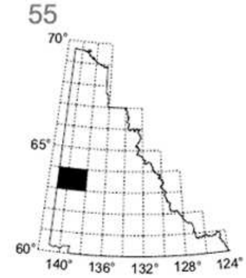


115 O & 115 N (EASTERN HALF) - STEWART RIVER

YUKON MINFILE - MINERAL OCCURRENCE MAP 1 : 250 000

5 0 5 10 Kilometres





GENERALIZED GEOLOGY:

POST-TERRANE AMALGAMATION/ACCRETION UNITS:

PLUTONIC:

EJp - post-amalgamation plutons characteristic of Stikinia but also intruding Yukon-Tanana Terrane; coeval and compositionally similar plutons characteristic of Quesnellia also intruding Yukon-Tanana Terrane

SEDIMENTARY / VOLCANIC:

uKv - Upper Cretaceous mafic and lesser felsic volcanic rocks, mostly Carmacks Group

TERRANES:

PERICRATONIC: rocks possess elements of passive margin sedimentation but differ in stratigraphic or structural characteristics from the ancestral North American margin

YTNA - NASINA SUBTERRANE: Metamorphosed early(?) to mid-Paleozoic continental margin with superposed Late Devonian and Early Mississippian arc volcanic (= Nasina assemblage) and (YTp) plutonic rocks

YTp - Plutonic rocks superposed on Nasina and Klondike Schist Subterranes

ACCRETED, INTERMONTANE SUPERTERRANE:

SM - SLIDE MOUNTAIN: Oceanic and/or marginal basin volcanic and sedimentary rocks of Devonian to Late Triassic age including chert, argillite, sandstone, conglomerate, mafic intrusions, basalt, alpine-type ultramafic rocks, carbonate rocks and local blueschist and eclogite

MINFILE STATUS:
- ★ Unknown
- Anomaly
- Showing
- Prospect
- Drilled Prospect
- Underground Past Producer
- Open Pit Past Producer
- Placer Occurrences

MINEFILE NAME
021 Aries (unknown)
022 Libra (unknown)
082 Prospect (unknown)

Magnetic declination 1988 varies from 29°45' easterly at centre of west edge to 30°38' easterly at centre of east edge. Mean annual change decreasing 14.7'.

CONTOUR INTERVAL 200 METRES
Elevations in Feet above Mean Sea Level
North American Datum 1983
Transverse Mercator Projection
Ten Thousand Metre Univeral Transverse Mercator Grid
ZONE 7

YUKON GEOLOGICAL SURVEY
Energy Mines and Resources, Yukon Government
Map Version 2004-3, updated July 14, 2004

9.6. Geology

Surficial Geology

Surficial sediments are typical of the Klondike Plateau, with the valley sides lined by a frozen complex of colluvium, alluvial gravel overlain by wind-blown silt, sand and organic material. Along the valley the modern stream channel contains angular immature gravel, as well as sand and organic deposits. Occasional sandy alluvial fans occur at the mouths of tributary valleys and a Pleistocene alluvial fan lies near the mouth of the creek in the centre of the valley and on the right limit. Basal gravels within this alluvial fan are prospective for the occurrence of placer gold. (Jackson, 2005)

Bedrock Geology

Three main geological units are mapped along Wolf Creek. These are PKs (Permian Klondike Schist, DMq (Devonian Mississippian quartzite) and Pag (Permian Orthogneiss). Other rock units outcrop on the ridges above Wolf Creek including uKCv (upper Cretaceous Carmacks volcanic) and JKg (mid-Cretaceous granodiorite (Gordey and Ryan, 2005.

Mineral Occurrences

Minfile # 115N/082 (unknown) on the lower reaches of Wolf Creek is a work target staked in 1994, in an area of malachite staining (Deklerk, 2009).

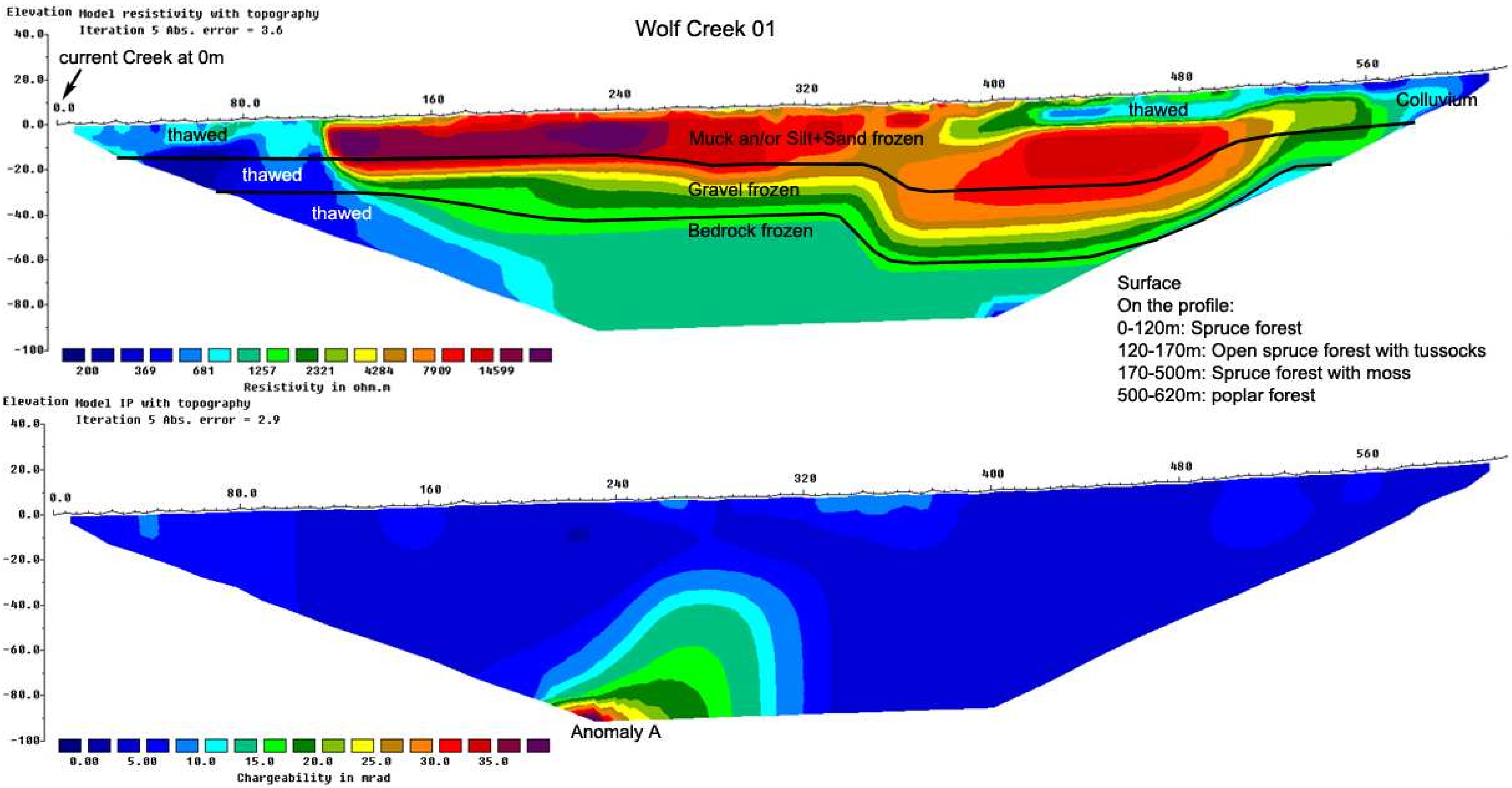
9.7. Profiles

Preliminary Note!

The subsurface information of this study is an interpretation.

Wolf Creek 01

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, July 10th, 2010
View: downstream	**Vertical measure:** in [meter]	**Processing:** Philipp Moll, July 2010
Electrodes: 125, spacing 5m	**Iteration error:** in [%]	**Location:** 0m (N63° 05’ 39.0’’, W140° 20’ 03.4’’)
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.96	(WGS 84) 620m (N63° 05’ 57.6’’, W140° 20’ 17.2’’)



Interpretation

We are looking **downstream** at this profile – like at all other profiles on Wolf Creek.

The **Resistivity** profile points to 40-61m of overburden on top of possible frozen Klondike Schist[35] **bedrock.** The **overburden** might consist of 21-33m of muck and 19-28m of gravel. The muck seems to be about 80% frozen, the gravel about 90%.

This cross valley profile presents a **large paleochannel** adjoining to an underground **riverbank** both indicating a pronounced alluvial transportation history.

At 0-100m in the profile the ground is thawed by the current stream. That is why the continuity of the layering can hardly be seen left of 120m.[36] In this section a **river bank** could be located showing bedrock probably at 28m depth covered with 15m of muck and 13m of gravel.

At 100-340m the structure of a **wide, deep river bank** can clearly be seen. At 290m the bedrock is measured at 40m with 21m of muck plus 19m of gravel on top of it.

At 340-520m the profile shows a **large channel**, 61m deep, deposited with probably 33m of muck and 28m of gravel.

At 520m a short **bedrock bench** might start being about 30m deep, covered with two thirds of muck and one third of gravel. It might be mixed with **colluvium** after 560m.

The **IP** model shows a copula-shaped bedrock zone containing moderately higher chargeability. It could contain a moderate amount of IP-active minerals.[37] The core of Anomaly A that shows the highest data, located right at the edge of the profile bottom (violet-red), doesn't seem to be realistic.

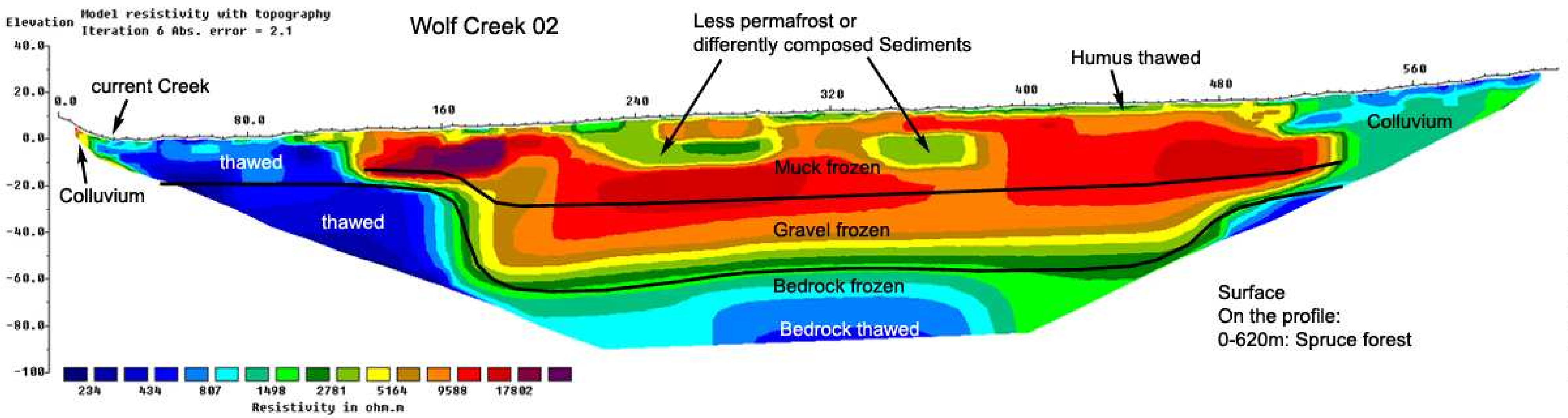
[35] This bedrock type fits with the data. The Bedrock Geology Map does not show any solid rocks at this location; it says fluvial silt, sand, and gravel.

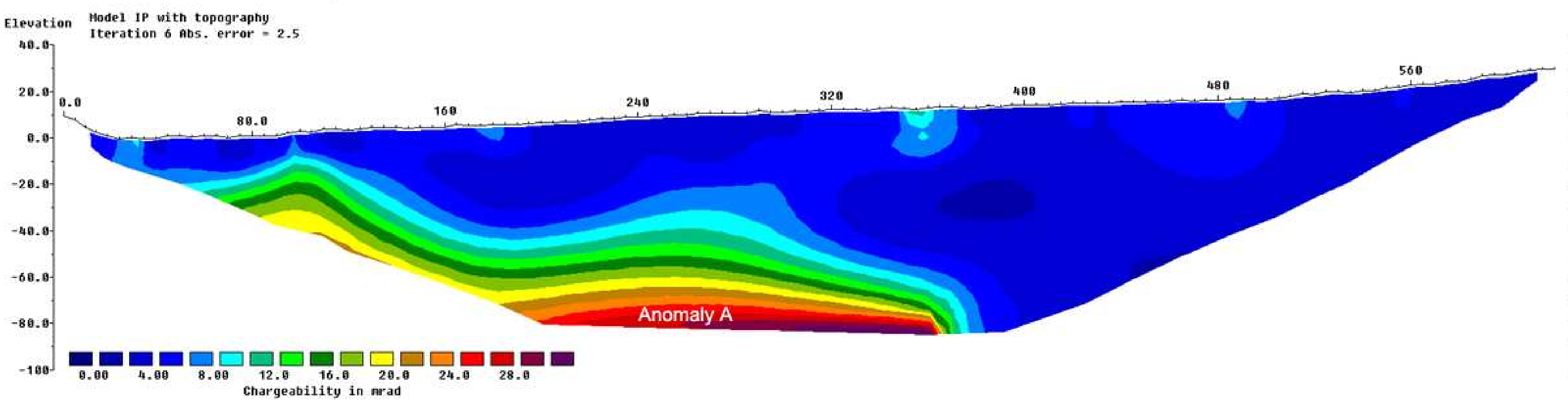
[36] The Schlumberger array used for data acquisition sometimes makes it difficult to detect zones showing a sharp vertical data contrast. The Dipole Dipole array would be more suitable for that. However for the detection of the stratification as for placer prospecting, the Schlumberger array is most suitable.

[37] IP signals in solid rock are mostly produced by sulfide accessory minerals indicating a large range of possible ore types. As mentioned above: For an in-depth interpretation of IP-data more geological background information would be needed.

Wolf Creek 02

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, July 8th, 2010 **Processing:** Philipp Moll, July 2010
View: downstream	**Vertical measure:** in [meter]	
Electrodes: 125, spacing 5m	**Iteration error:** in [%]	**Location:** 0m (N63° 06' 08.3'', W140° 17' 36.5'') (WGS 84) 620m (N63° 06' 27.3'', W140° 17' 45.5'')
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.96	





Interpretation

The **Resistivity** profile shows 21-61m of overburden on top of **bedrock** described as Klondike Schist[38]**.** The **overburden** might consist of 14-30m of muck and 7-31m of gravel. About 70% of the muck and 80% of the gravel look like they are frozen.

At this profile the **main channel** covers almost the whole width of the valley. The rectangular contour of this channel, deeply cut into the bedrock and presumably richly filled with alluvial gravels, represents the characteristic shape of the main channel along the valley (see next profiles). To the left of the channel there seems to be a **bedrock bench**.

At 0-160m the subsurface is thawed by the current creek. That is why the continuation of the **bedrock bench** hardly shows left from 120m. It shows bedrock probably at 21m depth which continues at this level to the left side and is covered with 14m of muck and 7m of gravel. The IP model supports the interpretation of the continuation of the bedrock bench.

The **main channel** is located at 160-480m. It shows bedrock at probably 61m depth filled with 30m of muck and 31m of gravel. This riverbed has a flat bottom being parallel to the surface which suggests that this ground could have been tilted by tectonic processes.[39] The deep incut, the flat bottom, and the enormous dimensions of this channel do suggest that this stream might have been a big, fast flowing river showing a very high alluvial transportation capacity.[40] At 480-620m there does not seem to be much fluvial sedimentation. **Colluvium** seems to start at the data boundary.

The **IP** model presents a chair-shaped zone in the bedrock measuring a chargeability of 20-30 Milliradian. A higher percentage of sulfidic minerals can be assumed in this rock zone.

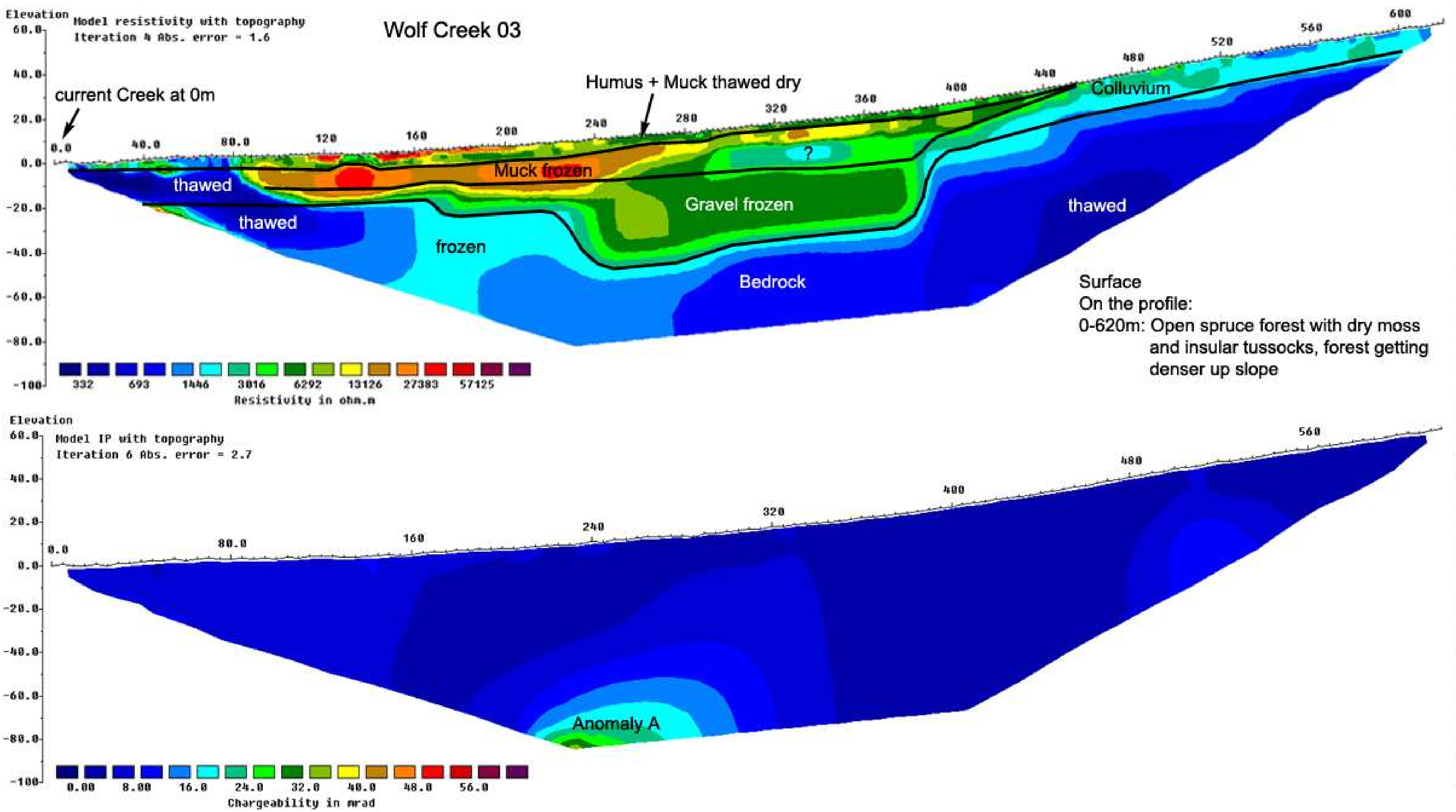
[38] This bedrock type fits with the data and with the Bedrock Geology Map.

[39] The Bedrock Geology Map doesn't show any indicators for folding. This fits in with the bedrock structure seen on the profile series. However, tectonic processes would be the only reasonable interpretation for the parallel alignment of the channel floor and the surface – from our point of view.

[40] This assumption is supported by the observation of 2feet-sized round-washed boulders seen at profile 05 far upstream the valley.

Wolf Creek 03

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, July 5th, 2010 **Processing:** Philipp Moll, July 2010
View: downstream	**Vertical measure:** in [meter]	
Electrodes: 125, spacing 5m	**Iteration error:** in [%]	**Location:** 0m (N63° 06' 11.1'', W140° 14' 29.0'') (WGS 84) 620m (N63° 06' 26.3'', W140° 14' 06.5'')
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.96	



Interpretation

In this **Resistivity** profile the depth to **bedrock,** most likely schist[41], is clearly indicated at 19-51m depth. The muck seems to be 13-17m thick, the gravel 6-34m. The overburden might be mostly frozen: Muck about 70%, gravel about 90%.

Again we see the deep rectangular **main channel**, now accompanied by some cascading **bedrock benches**.

At 0-80m the ground is thawed which hides the continuation of the **bedrock bench**, for the same reason as in the previous profiles. The bedrock of the bench is likely to continue to the left edge of the profile.

At 80-240m there might be two shallow **bedrock benches**, both 80m wide. The left one shows 19m to bedrock containing 13m of muck and 6m of gravel. The right bedrock bench measures 24m, with 14m of muck and 10m of gravel on top of it.

The rectangular **main channel** is located at 240-380m. On its right side the bedrock is 46m deep. On its left side the bedrock sinks 5m deeper representing a channel in the channel! Compared to the previous profile (02) the deepest point in the main channel might be 10m shallower being only half as wide (140m). Anyhow it still seems to present the same thickness of gravel (at least 26m). The overburden on top of the gravel, measuring 19m, could partly consist of colluvium (grey turquoise) and muck (yellow). Alternatively all of it is muck which contains different amounts of frost. Again the surface is running parallel to the bedrock interface; all the same the structure is now more tilted by some **tectonic processes** than in profile 02. This might be a reason that the channel in the channel is located on the left side.

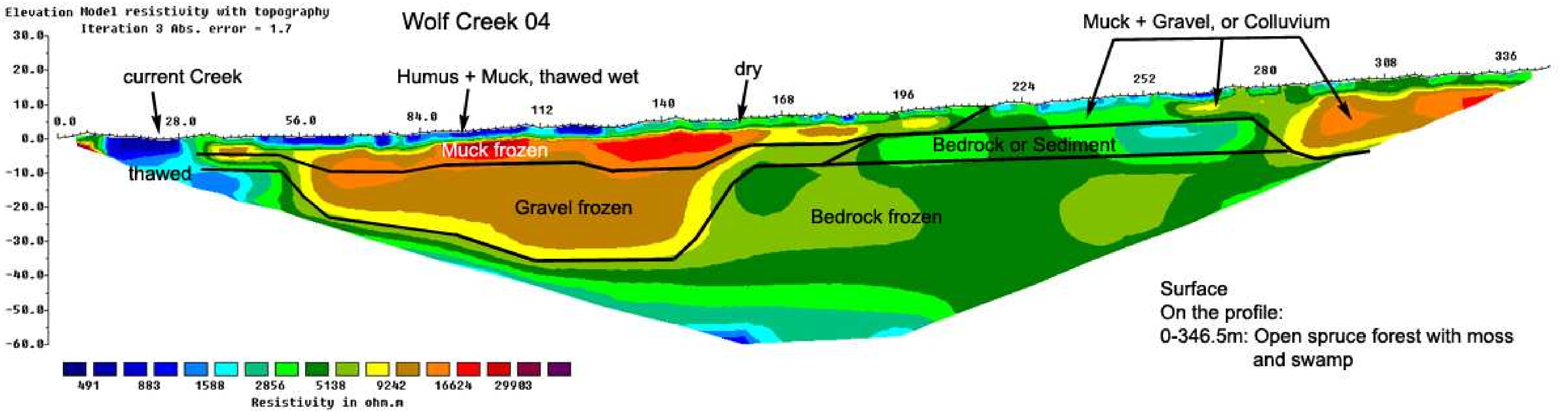
At 380-620m some shallow **bedrock** might be located; its fluvial overburden seems to be mixed with colluvium at around 480m. Up the slope there might be **colluvium**.

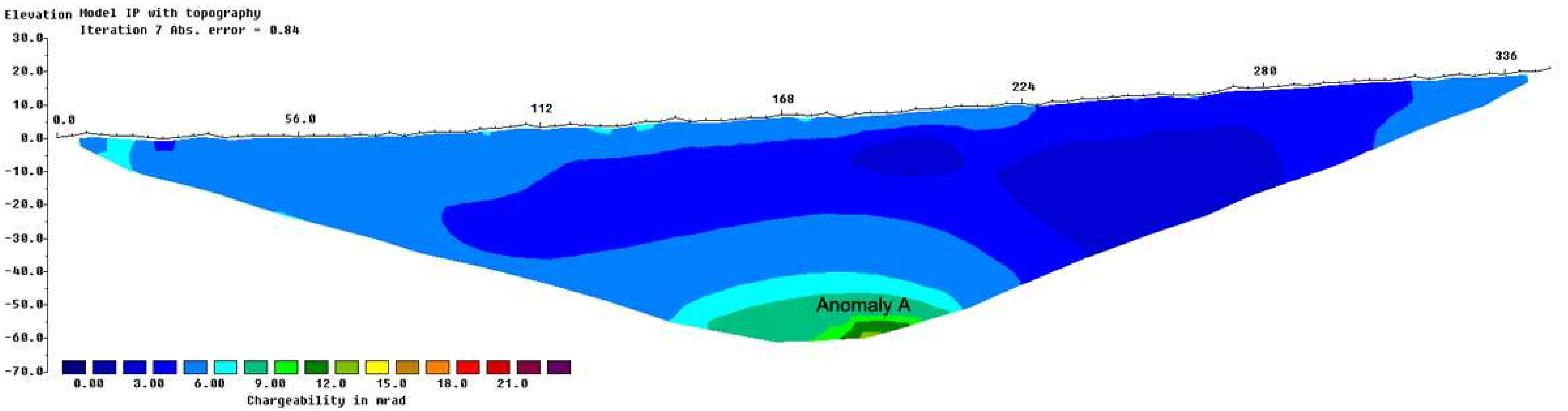
The **IP** model shows an Anomaly (A) whose core of maximum data is located at the edge of the bottom in the profile (green). Starting from this core a relatively continuous gradient of chargeability is released. The zone of higher data is small. – Regarding all this aspects the structure might be a false anomaly.

[41] This bedrock type fits with the data and with the Bedrock Geology Map.

Wolf Creek 04

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, July 3rd, 2010 **Processing:** Philipp Moll, July 2010
View: downstream	**Vertical measure:** in [meter]	
Electrodes: 100, spacing 3.5m	**Iteration error:** in [%]	**Location:** 0m (N63° 05' 43.0'', W140° 10' 24.6'') (WGS 84) 346.5m (N63° 05' 53.9'', W140° 10' 24.8'')
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.78	





Interpretation

The **Resistivity** profile suggests 8-32m of overburden on top of possible quartzite[42] **bedrock.** The **overburden** might consist of 4-10m of muck and 3-22m of gravel. The muck seems to be about 80% frozen; the gravel about 90%.

The **main channel** with its typical angular shape can once again be seen in this profile but the prominent bedrock benches to the left of the main channel seen in the previous profile 03 are gone. A possible **high channe**l appears in this section of the valley.

At 0-55m there might be a short shallow **bedrock bench** about 8m deep, covered with probably 4,5m of muck and 3,5m of gravel. Its layering disappears towards the current creek (compare previous profiles).

At 55-150m the **main channel** is located. Its deepest level measures about 32m to bedrock showing another channel in the channel. Again this channel is abundantly filled with gravel, probably 22m below 10m of muck. Compared to the previous profile 03 the bedrock in the channel came up about 19m. Moreover the channel has narrowed from 160 to 95m downstream. Afresh the surface is running parallel to the bottom of the channel. However, this time the surface is less tilted compared to the previous profile which perhaps indicates that the channel in the channel has moved to the right side.

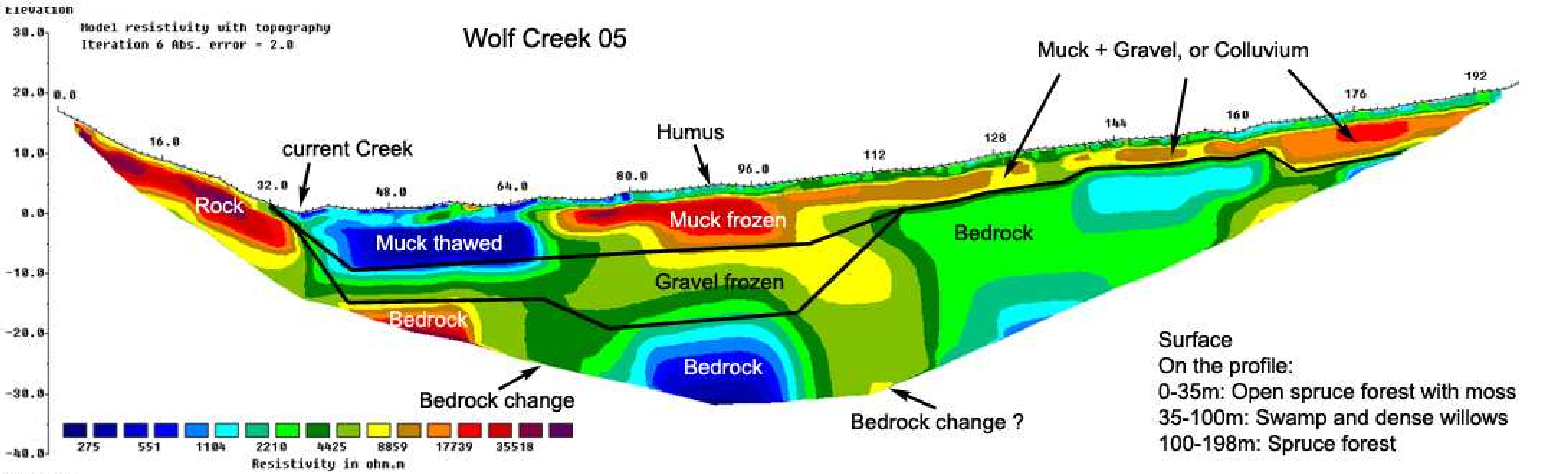
After 150m, bordering the main channel, there seems to be some shallow **bedrock** which measures about 12m, probably being filled with 7m of muck and 5m of gravel near to the channel. Further uphill a possible **high channel** can be seen starting at 280m. It would be about 18m deep and is likely filled with 6m of muck and 12m of gravel. Between the main channel and high channel the data allow for interpreting different combinations of muck + gravel and **colluvium** at various depths. Looking back from profile 05 upstream, which shows the same structure along the slope, the interpretation that the overburden might be alluvial in nature is suggested (see below). So the existence of the high channel appears quite likely.

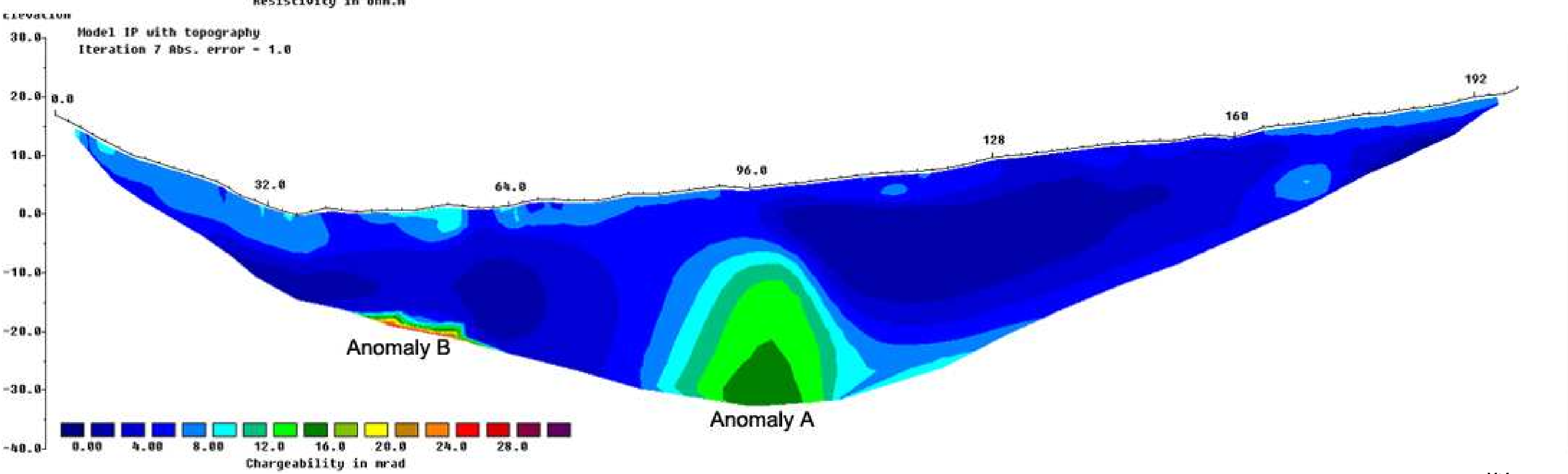
The **IP** model shows some slightly increased chargeability in the lower bedrock. A moderately higher percentage of IP-active minerals can be interpreted. The core of Anomaly A that shows the highest data, located right at the edge of the profile bottom (green), doesn't seem to be realistic.

[42] On the Bedrock Geology Map the measuring line is located on Klondike Schist. However, the data fit with quartzite which is seen on the bedrock map close to the measuring location.

Wolf Creek 05

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, July 1st, 2010 **Processing:** Philipp Moll, July 2010
View: downstream	**Vertical measure:** in [meter]	
Electrodes: 100, spacing 2m	**Iteration error:** in [%]	**Location:** 0m (N63° 05' 08.9'', W140° 07' 36.7'') (WGS 84) 198m (N63° 05' 13.4'', W140° 07' 27.3'')
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.78	





Interpretation

The **Resistivity** profile shows some highly diverse bedrock[43] at 6-19m depth. The **overburden** should consist of 4-9m of muck and 2-10m of gravel. Approximately 50% of the muck and 90% of the gravel might be frozen.

The **main channel**, still showing its typical in-cut structure seen all along the valley, can again be located in this profile.[44] Also the hypothetic **high channel** that appeared in the previous profile is found.

At 0-37m the slope might consist of **solid rock**.

At 37-110m the **main channel** can be identified clearly in this rougher looking profile. On its deepest part the channel measures about 19m to **bedrock** with possibly 9m of muck and 10m of gravel on top of it. On the left side in the channel a 'stair' is located showing bedrock at about 14m depth covered with roughly 8m of muck and 6m of gravel. The muck on the 'stair' is thawed most likely by the influence of the current creek. Compared to the previous profile 04 the bedrock in the channel has risen from 32 to 19m and the channel itself has narrowed from 95 to 70m. The bedrock floor and the surface are again running parallel to each other.

[43] By the data, the blue bedrock zones point to schist and the green bedrock fits with quartzite. The Bedrock Geology Map shows orthogneiss which would fit with the data of the red bedrock zones. Schist and quartzite are seen on the Bedrock Geology Map about 2km away from the measuring location.

[44] The zoning in this profile looks rougher than in the previous profiles. This seems to be affected by the mosaic of highly contrasting data zones localized opposite each other (blue and red). The inversion program has to manage these difficulties.

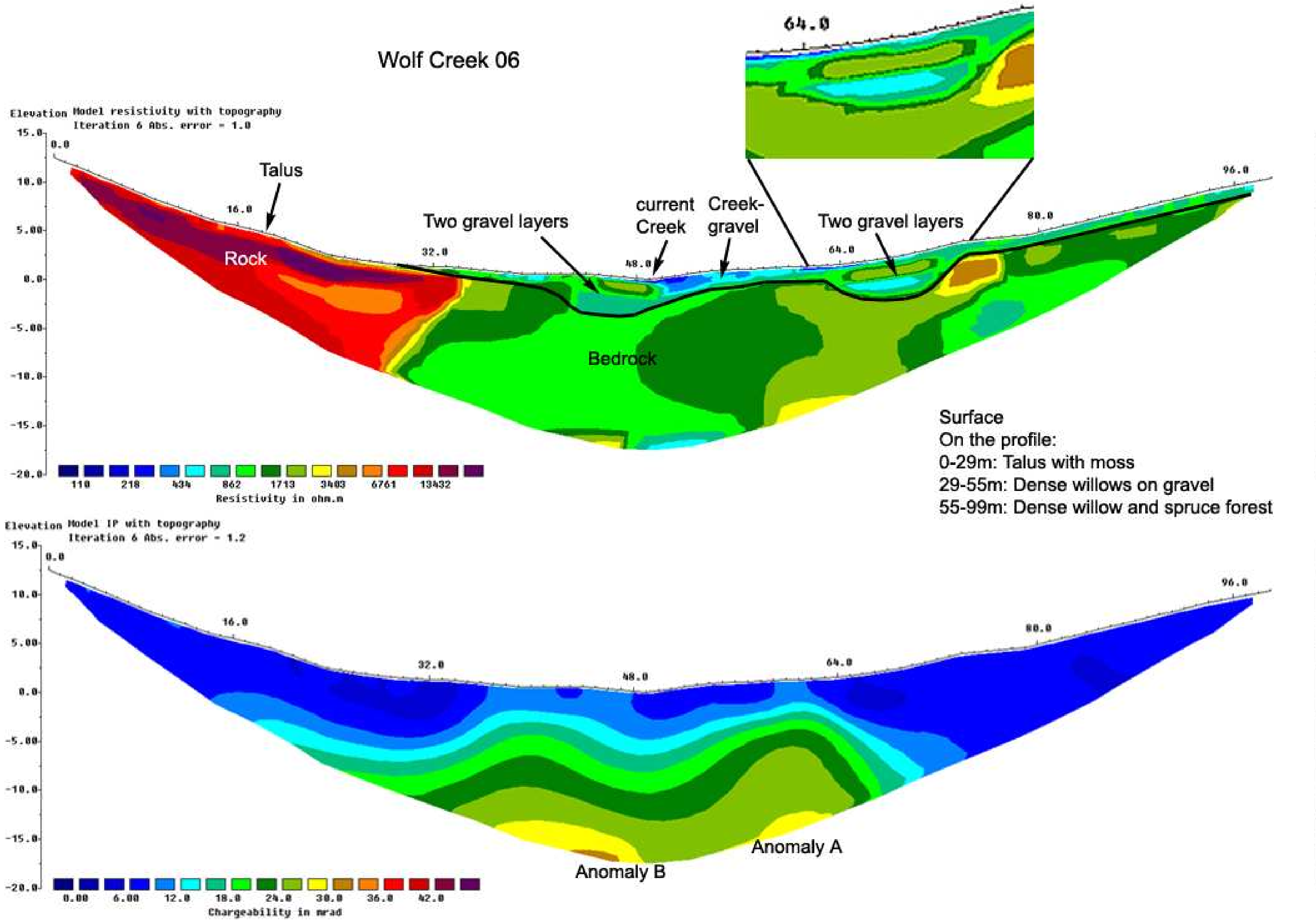
After 110m the **overburden** might be just 3-5m thick. On top of the hypothetic **high channel** it would probably be 7m thick: 3m of muck, 4m of gravel. Most likely this overburden mainly consists of muck and gravel and less likely of colluvium which might dominate just on the surface. This interpretation is suggested by the data of the overburden as well as by the shape of the bedrock interface. The interpreted lack of colluvium in spite of the current down-grade seems due to the history of the valley: The parallel alignment between the channel bottom and the surface seen all along the valley leads to the interpretation that there should not have been much down-grade in the past. So the colluvial transport energy might have been low. – This interpretation contradicts the analysis of the Surficial Geology Map.[45] One more argument in favor of the existence of the high channel is the homology of the profiles 04, 05, and 06: They all show this hypothetic high channel summing up indications about an alluvial phenomenon. In the following profile 06 (upstream) two channels can still be detected.

The **IP** model consistently shows the pattern of bedrock alterations seen in the Resistivity profile. All bedrock types show different chargeability. The interpreted schist (Anomaly A) seems to have a moderate concentration of IP-active minerals. The interpreted orthogneiss (Anomaly B) might contain a higher percentage of those minerals. The interpreted quartzite shows low chargeability which is also plausible.

[45] The Surficial Geology Map shows colluvium all the way up the valley from profile 03! This classification is probably based on aboveground indications only.

Wolf Creek 06

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, June 30th, 2010
View: downstream	**Vertical measure:** in [meter]	**Processing:** Philipp Moll, July 2010
Electrodes: 100, spacing 2m	**Iteration error:** in [%]	**Location:** 0m (N63° 04' 43.7'', W140° 04' 49.3'')
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.76	(WGS 84) 198m (N63° 04' 46.7'', W140° 04' 47.5'')



Interpretation

In this section of the creek, just about 1.5 km away from the headwaters, possible quartzite[46] **bedrock** (green) seems to come up substatually, to 1-4m depth, as seen in the **Resistivity** profile. The **overburden** might just be gravel without any permafrost.

This profile suggestst two **shallow channels**.

At 0-35m there could be orthogneiss interpreted by comparison of the bedrock data. In this section **talus** has been observed on the surface. Here another bedrock, interpreted as quartzite, might start.

At 48-63m **round washed gravel** has been observed in the streambed underneath of moss. At 49m the current creek is located. At 43-50m the stream might have produced a **channel** about 3.5m deep.

At 63-73m a **paleochannel,** about 4m deep, was detected. It seems to be filled with two different layers of alluvial gravel.

At 73-98m the surface is covered with vegetation.

The **IP** model points to moderate amounts of IP-active minerals in the bedrock.

[46] This bedrock type fits with the data and with the Bedrock Geology Map.

9.8. Conclusion

Basics

Wolf Creek is a 16km long Yukon stream flowing westwards into the White River (115N/01). Near its confluence with the White River (profile 01) Wolf Creek shows bedrock at about 60m depth in the main channel. Near its sources (profile 06) the bedrock rises up to about 2 meters of depth, in the channel the bedrock might be 3.5m deep. The bedrock is likely to alternate between Klondike Schist, quartzite and orthogneiss.

Wolf Creek shows the Klondike-typical **stratification** of muck-gravel- bedrock. Along the valley the muck is about 80%, the gravel about 90 % frozen, on average. Far upstream (profile 06) the overburden is thawed.

The **historical Wolf Creek** might have been a larger stream with high alluvial transportation energy.

The valley bottom of Wolf Creek might have been tilted by **folding** as the alluvial stratification shows inclination parallel to the south facing slope. The inclination of the surface by tectonic processes might have controlled both the location of bedrock benches created by alluvial processes, and the location of secondary channels inside of the main channel.

Progression of Subsurface Parameters

The historic streambed of **Wolf Creek** shows a continuous progression of the following subsurface parameters along the upper 3/4 section of the valley:[47] **1_bedrock-depth** and **2_gravel-thickness** of the **main channel.** Both parameters strongly correlate showing a linear graph along the valley (Diagram A). The homogeneous character of Wolf Creek can also be seen in these criteria: The stream shows some guiding features which have been observed throughout the valley: 1_the rectangular shape of the **main channel** which has deeply cut into the bedrock being richly filled with gravel as well as 2_the appearance of a possible **side channel** consequently repeated on the slope along the upper 1/3 section of the valley.[48]

At the lower 1/4 section of the valley these parameters don't vary a lot.

The bedrock depth of the **underground benches** and of the possible **side channel** does not change linearly along the valley.

[47] The roughly equidistant pattern of the lines covering the whole valley might give an appropriate database for a systematic analysis of the progression in the subsurface.

[48] The strong homology of these features along the valley increases the likelihood of the interpretation.

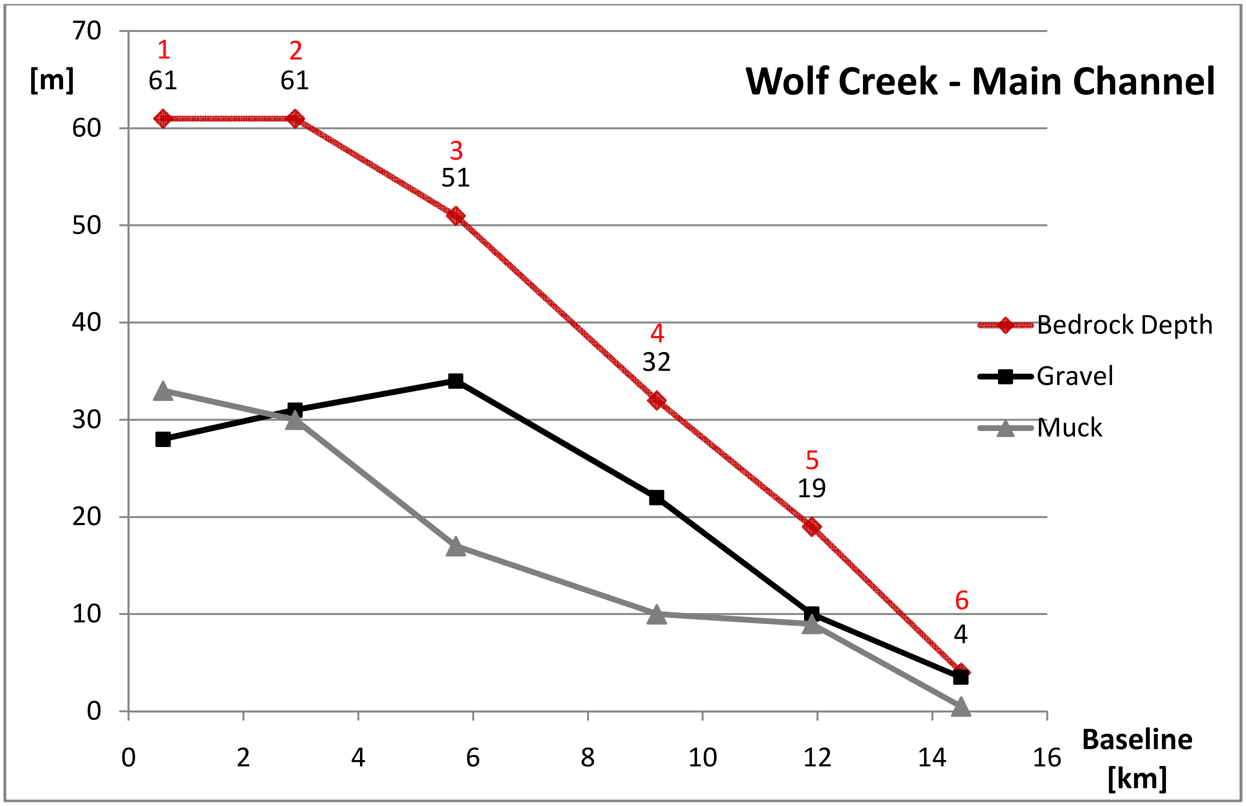
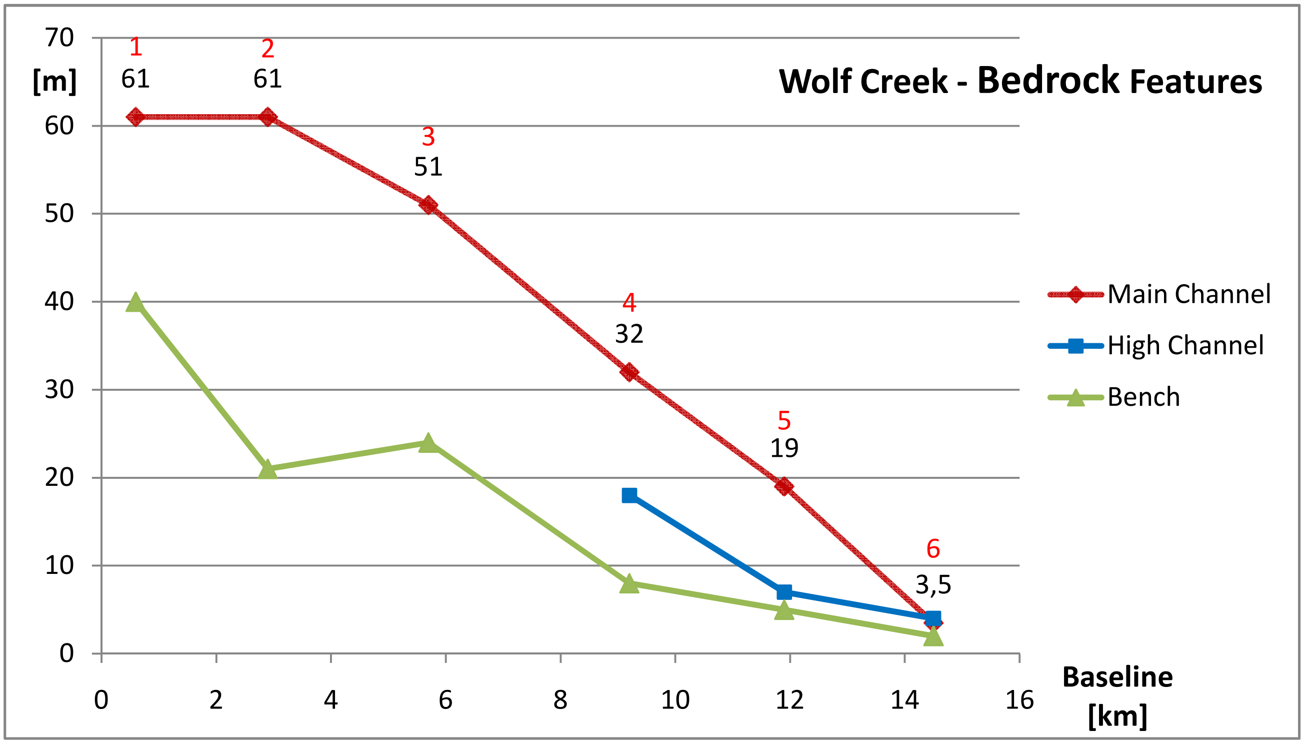


Diagram A: **Sedimentation of Main Channel**, Wolf Creek
Profiles Resistivity 1-6 upstream: Spacing 1.7-3.5 km of Baseline



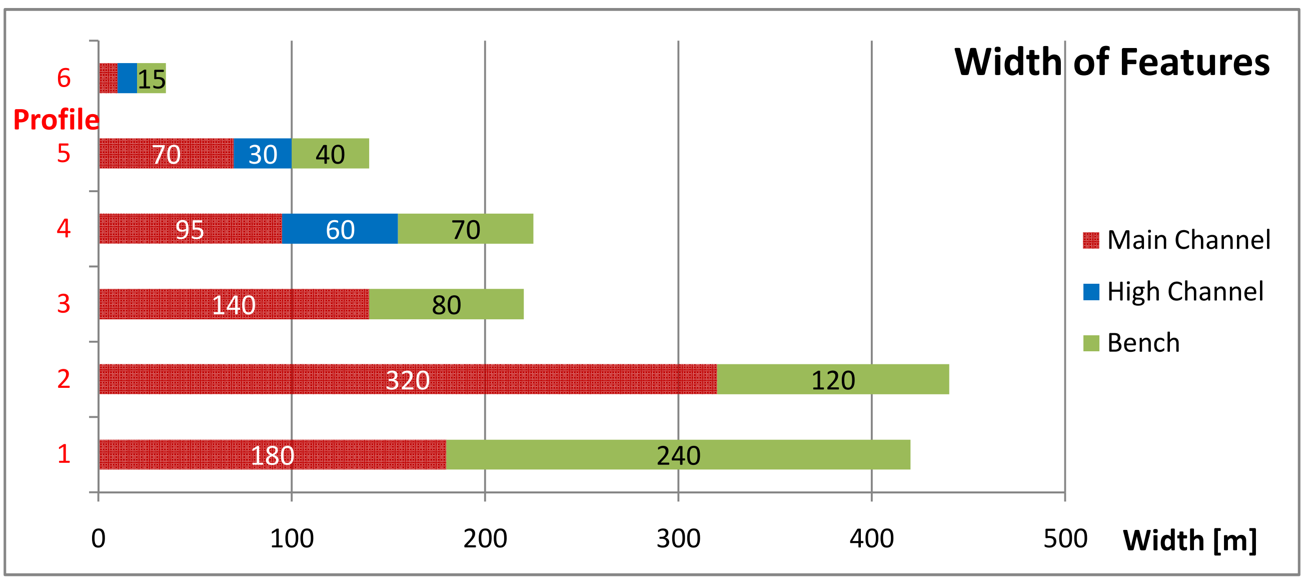


Diagram B: Above: **Bedrock Features** [Depth in Meter], Wolf Creek
Below: **Width of Features** [in Meter]
Both: Profiles Resistivity 1-6: Spacing 1.7-3.5km of Baseline upstream
Interpretation, Arctic Geophysics Inc., Yukon 2010

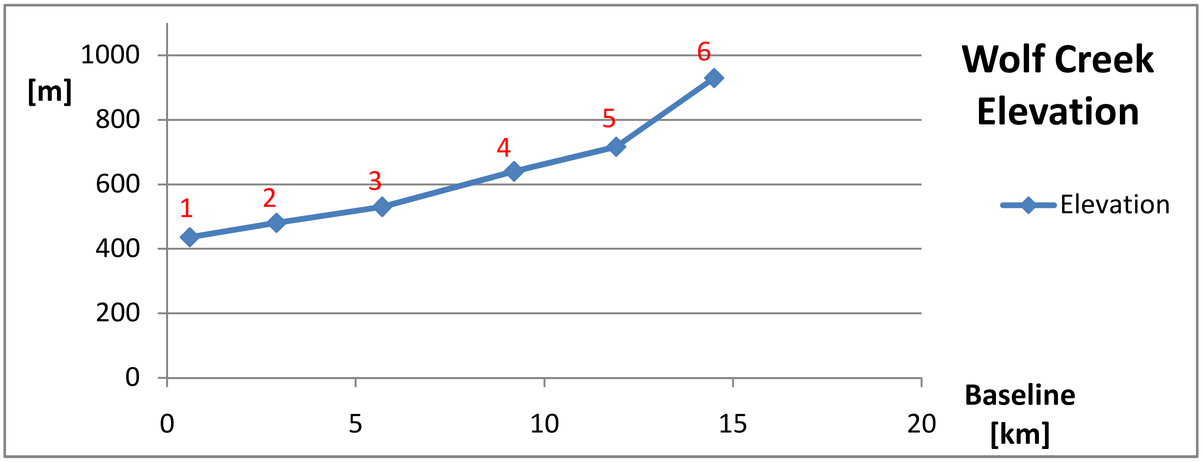


Diagram C: **Elevation Valley Bottom** [in Meter], Wolf Creek
Profiles Resistivity 1-6: Spacing 1.7-3.5km of Baseline upstream
Arctic Geophysics Inc., Yukon 2010

Interpretation of Diagrams

In the lower 1/3 section of Wolf Creek (**profiles 01-02**) the main channel shows a constant bedrock-depth and even a low increase of the gravel-thickness upstream (diagram A). This might be caused by the back flow of the White River.

At the upper 2/3 section of Wolf Creek (**profiles 02-06)** the stream shows a consistent linear progression of the above mentioned subsurface aspects (bedrock-depth, gravel-thickness, shape of main channel, and appearance of a side channel) upstream along the valley. The homogeneous character of the former streambed seems to lead back to firstly the invariable amount of water influx by the side creeks along the valley (Survey Map); and secondly the quite linear, relatively high stream gradient along the valley (Diagram C).[49]

Assessment for Placer Mining

Regarding **Wolf Creek** this survey allows a quantitative assessment concerning the thickness of the overburden and a qualitative assessment considering some features that are attractive for placer mining such as paleochannels. No information can be provided about the amount of gold in this valley.

In **profiles 01-02** 40-60m of overburden seem to negate better chances for commercial placer mining.

In **profile 03** the bedrock benches created by alluvial processes are likely about 24m deep. They could be a first target for advanced prospecting for placer deposits.

[49] Outside from the section of profiles 05-06 which is high up the valley.

The ground in **profile 04** looks attractive for placer investigation. There we interpret the following subsurface conditions: Main channel showing bedrock at 32m; bedrock bench being shallower than 10m; plus the appearance of a possible high channel with 18m to bedrock. The promising conditions in this section of Wolf Creek are confirmed at section 05.

At **profile 05** the main channel now seems to measure 19m to bedrock. The bedrock benches and the high channel present bedrock likely at 5-7m depth – probably still being wide enough to provide sufficient bedrock space, respectively volume for river gravel.

Further up the valley at **profile 06** there is less river gravel. But there might be two small channels showing bedrock at 4m depth, being 10m wide. These small channels are probably suitable targets for testing the ground for gold even with a small budget.

Wherever a prospecting program would start: the consistent progression of the subsurface parameters at Wolf Creek will probably allow for reliable estimates of the bedrock depth between the measured sections.

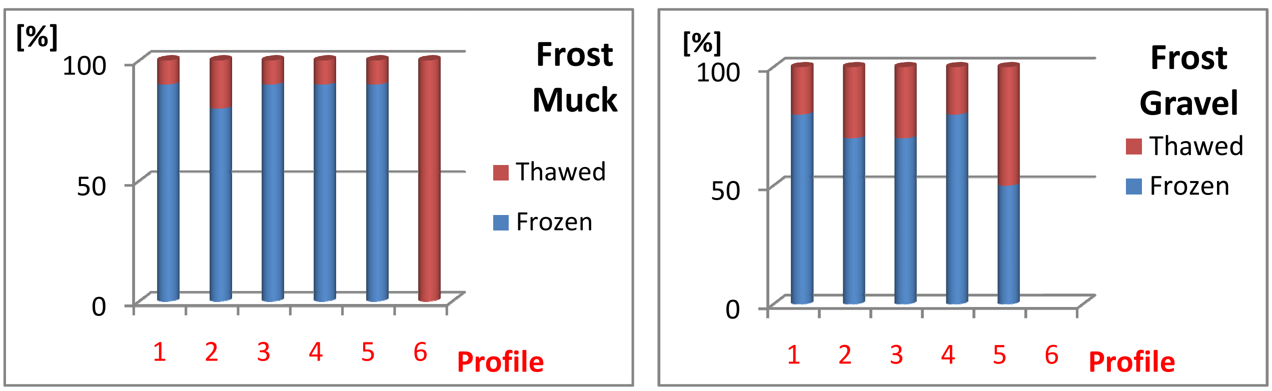


Diagram D: **Permafrost: Overburden**, Wolf Creek
Profiles Resistivity 1-6: Spacing 1.7-3.5km of Baseline upstream
Arctic Geophysics Inc., Yukon 2010

Assessment for Quartz Mining

This documentation does not provide an in-depth interpretation of the IP data measured at **Wolf Creek**. A reasonable interpretation of the chargeability patterns would require a lot more geological background information which is not available at this time. The IP data point at plenty of hardrock anomalies seen in the profiles. This might help in further studies.

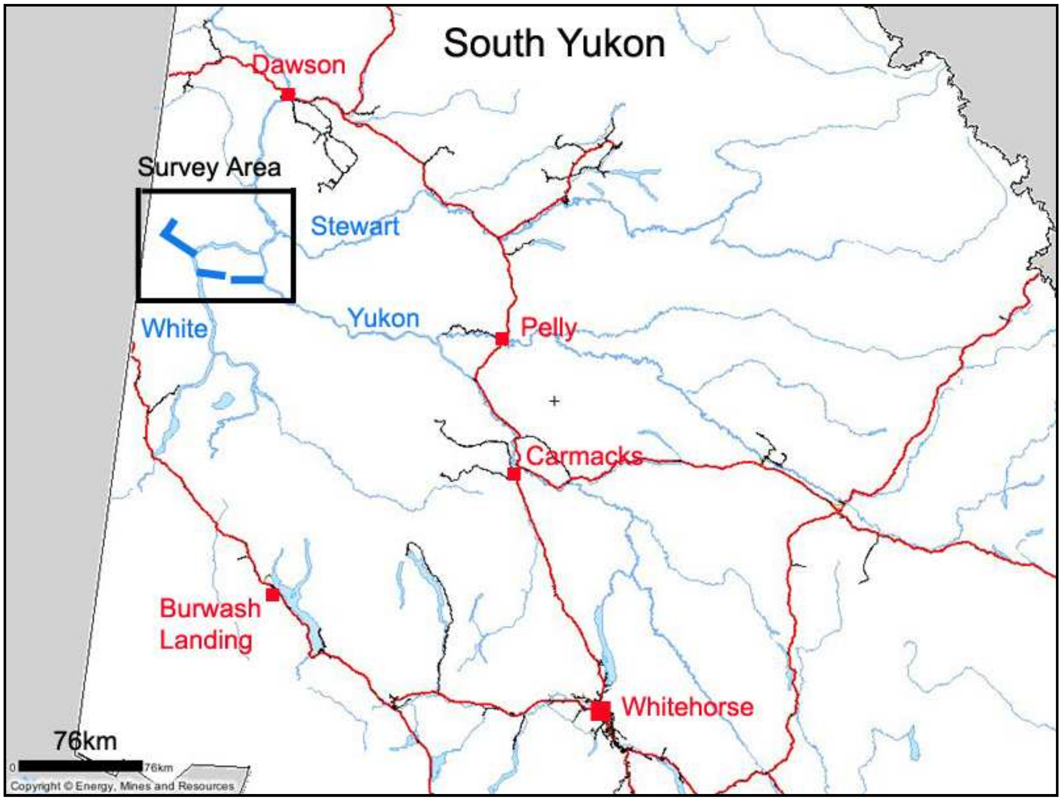
9.9. Gallery

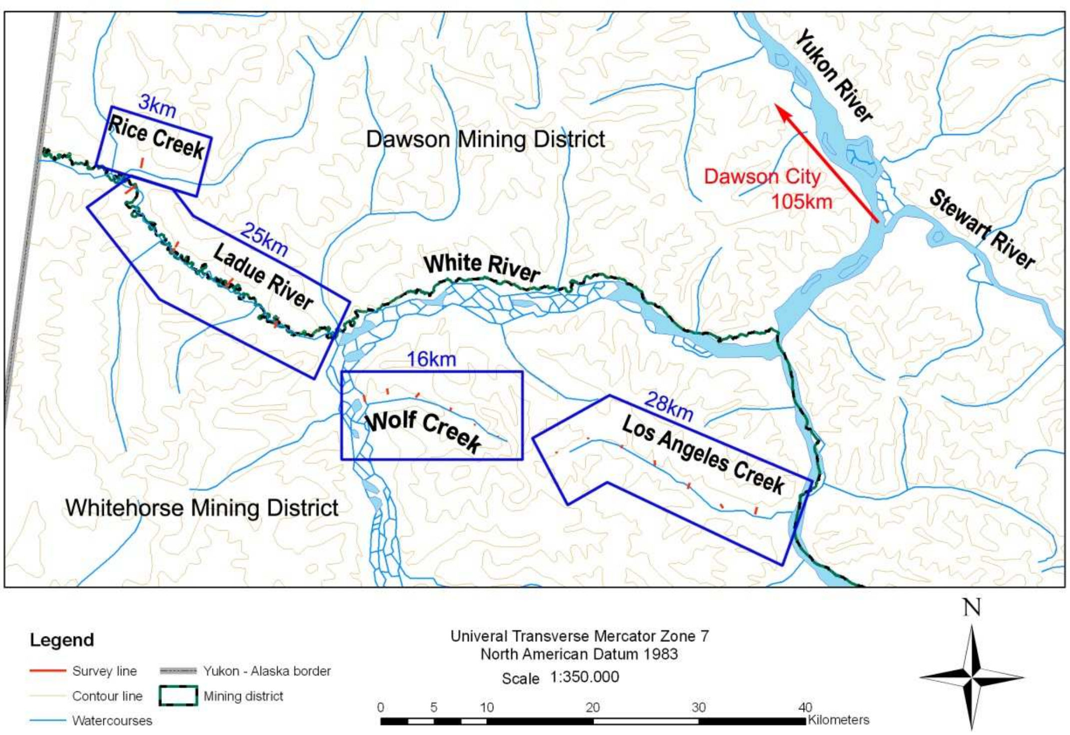
Wolf Creek, about 1km upstream, view upstream

Wolf Creek, at the sources, looking downstream, about 1.5km upstream of profile 06

10. Resistivity/IP Survey at Ladue River

10.1. Survey Area





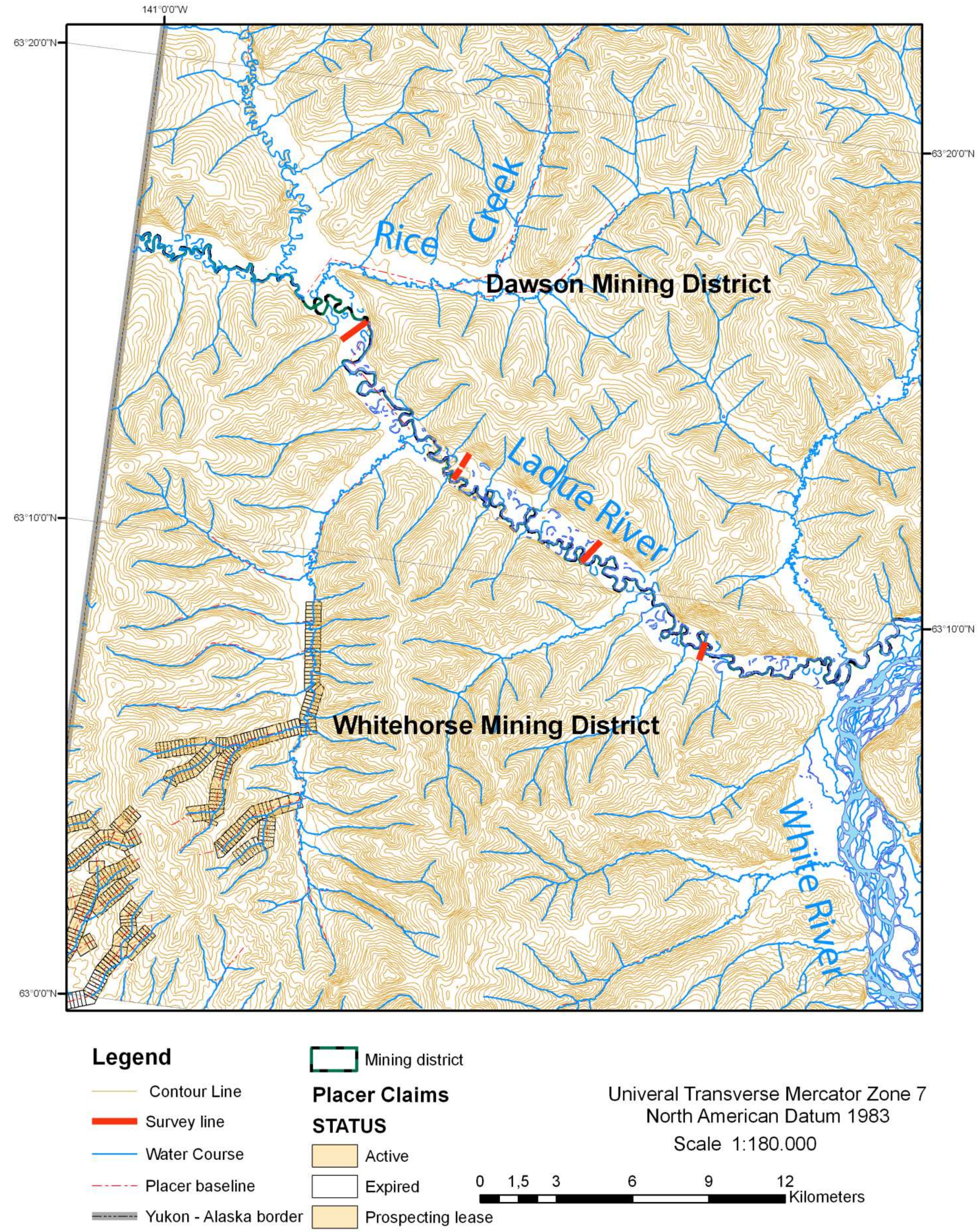
10.2. Access

The survey crew reached the confluence of Ladue River with the White River by motorboat (with propeller unit) starting from Dawson City riding upstream the Yukon and the White River for about 190km. From there we took a jet unit up the Ladue River because the water level was low this season. Normally the River can be ridden with a propeller machine.

10.3. Vegetation

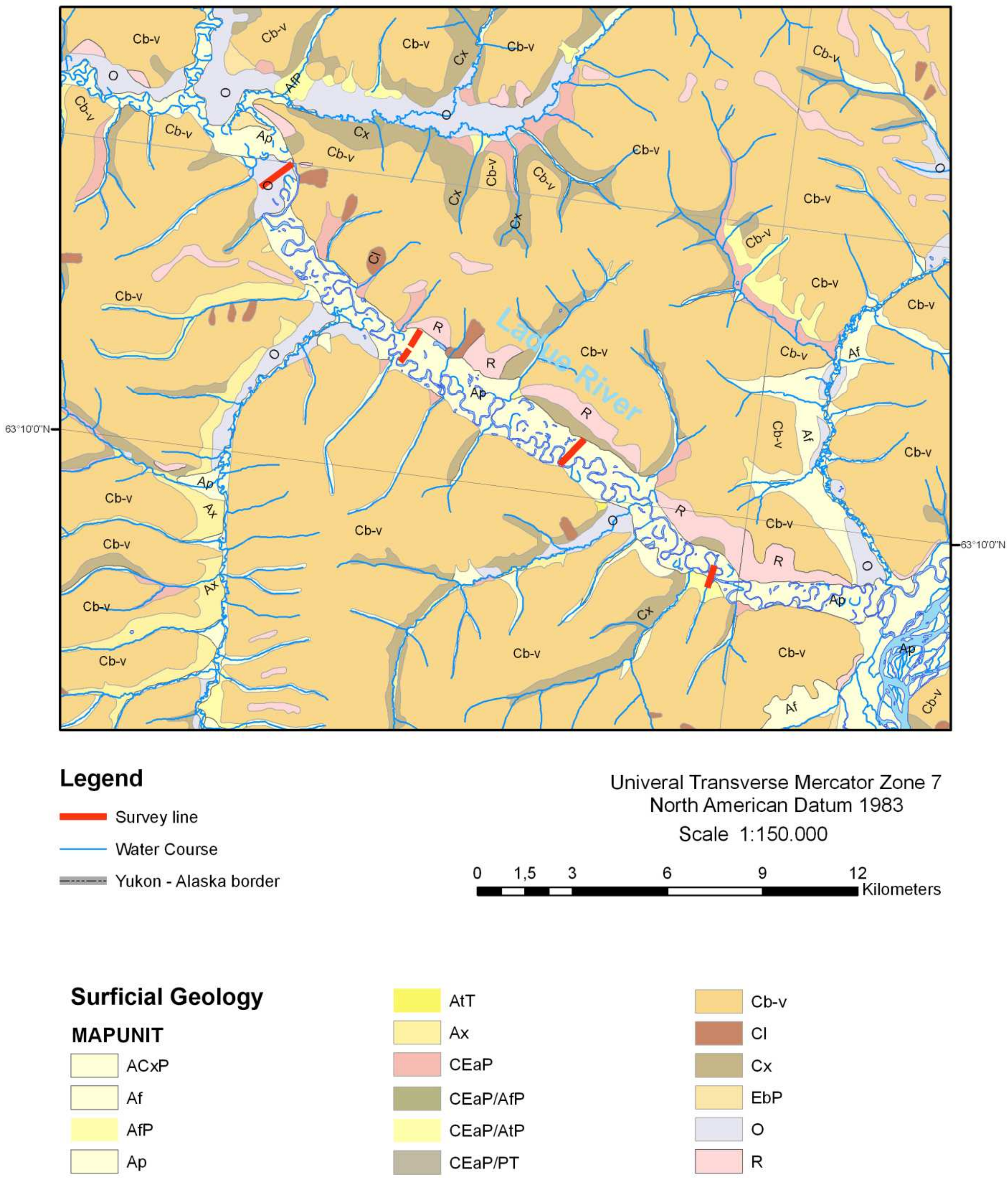
The Ladue River valley is very diverse in its vegetation. Its main formative influence is the meandering of the river itself. Close to the river there is usually spruce forest with quite large trees. The forest is interrupted by oxbow lakes which evolve into tussock fields when they are filled with wind blown silt. Places for a helicopter to land are plentiful but the use of an ATV is strongly discouraged.

10.4. Prospecting Map



10.5. Geological Maps

Surficial Map



Gordey, S.P., Williams, S.P., Cocking, R.B, and Ryan, J.J, 2006:
Digital geology, Stewart River area, Yukon; Geological Survey of Canada, Open File 5122

ACxP
CATEGORY: ALLUVIAL DEPOSITS: gravel and sand deposited by streams that were not fed by glacial meltwater; sediments may have experienced several cycles of alluviation and erosion, but are now inactive due to burial or fluvial incision; basal gravels within these sediments commonly contain placer gold
DESCRIPTION : Alluvial/Colluvial Complex Sediments: silt, sand and gravel, poorly to moderately sorted; thin to thick bedded, interstratified with colluvial diamicton; sediments underlie the floors and margins of narrow upland valleys and grade laterally up slope into colluvial blankets; sediments may represent several depositional cycles; thickness may exceed 10 m in mid-valley locations

Af
CATEGORY: ALLUVIAL DEPOSITS: gravel to silt size sediments, well stratified, deposited by streams
DESCRIPTION : Alluvial Fan Sediments: gravel, sand, silt, and diamicton, massive to well stratified; sediments form fan-shaped landforms or complexes of coalesced fan-shape landform at the confluence of tributary streams; may be subject to flooding accompanied by sudden stream migration and inundation; thickness up to 10 m

AfP
CATEGORY: ALLUVIAL DEPOSITS: gravel and sand deposited by streams that were not fed by glacial meltwater; sediments may have experienced several cycles of alluviation and erosion, but are now inactive due to burial or fluvial incision; basal gravels within these sediments commonly contain placer gold
DESCRIPTION : Alluvial Fan Sediments: single fans or aprons of coalesced fans formed of gravel and sand, poorly to moderately sorted, now isolated from water and debris floods due to fluvial incision; sediments disturbed by cryoturbation; thickness up to 10 m

Ap
CATEGORY: ALLUVIAL DEPOSITS: gravel to silt size sediments, well stratified, deposited by streams
DESCRIPTION : Floodplain Sediments: gravel, cobble to pebble; massive to well stratified, capped by sand and silt; flat lying; includes lacustrine and organic deposits in abandoned channels and backswamp areas; subject to periodic inundation and reworking by floods; thickness 1 to 5 m

AtT
CATEGORY: ALLUVIAL DEPOSITS: preglacial gravel and sand; highly dissected and deeply weathered
DESCRIPTION: High Level Terrace Sediments (includes White Channel Gravel and equivalent sediments): weathered pebble to cobble gravel > 1 m thick; surface soils may extend to 2 m depth with well developed clay skins on clasts, frequent signs of cryoturbation (ice wedge pseudomorph and sand wedges), and strong chemical weathering; terraces above the 500 m contour may be remnant features from the southward-flowing paleo-Yukon drainage system
Ax
CATEGORY: ALLUVIAL DEPOSITS: gravel to silt size sediments, well stratified, deposited by streams
DESCRIPTION : Alluvial Sediments Complex: sediments forming floodplains, fans, and terraces as above that cannot be subdivided at this map scale

CEaP
CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPTION : Colluvial/Eolian Apron (muck): primary deposits of eolian fine sand and silt resedimented and interstratified with organic silt, and detritus, alluvial fan gravel and sand and variable amounts of stony colluvial diamicton; forms aprons

along valley bottoms through resedimentation of eolian sediments from valley sides to valley floor, commonly preserved on north-facing slopes; thickness 1 to 20 m; commonly contains segregated bodies of ice and buried ice wedges

CEaP/AfP
CATEGORY: ALLUVIAL DEPOSITS: gravel and sand deposited by streams that were not fed by glacial meltwater; sediments may have experienced several cycles of alluviation and erosion, but are now inactive due to burial or fluvial incision; basal gravels within these sediments commonly contain placer gold
DESCRIPTION: Alluvial Fan Sediments: single fans or aprons of coalesced fans formed of gravel and sand, poorly to moderately sorted, now isolated from water and debris floods due to fluvial incision; sediments disturbed by cryoturbation; thickness up to 10 m

CEaP/AtP
CATEGORY: ALLUVIAL DEPOSITS: gravel and sand deposited by streams that were not fed by glacial meltwater; sediments may have experienced several cycles of alluviation and erosion, but are now inactive due to burial or fluvial incision; basal gravels within these sediments commonly contain placer gold
DESCRIPTION : Alluvial Terrace Sediments: gravel, cobble to pebble with a sandy matrix; massive to well stratified; capped by sand and silt; sediments are of flood plain origin now isolated from flooding by stream incision; thickness 1 m to 10 m

CEaP/PT
CATEGORY: ALLUVIAL DEPOSITS: preglacial gravel and sand; highly dissected and deeply weathered
DESCRIPTION : Pediment and Bajada Sediments: inclined fluvial surfaces which are found at a midslope position in unglaciated drainage systems; usually thinner than 5 m; formed as a result of limited agradation of stream gravel and significant colluviation; composed of thin, poorly sorted gravel that contains both locally derived subangular stream gravel deposits and angular bedrock fragments

Cb-v
CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPTION : Colluvial Blanket and Veneer Sediments: diamicton, stony with a sandy matrix; massive to poorly stratified; colluviated blankets generally conform to underlying bedrock and exceed 1 m in thickness; veneers are < 1 m in thickness and are commonly discontinuous over bedrock

Cl
CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPTION : Landslide Sediments: silt loam to boulders, poorly sorted to unsorted; massive; clasts are subangular to angular and are locally derived; thickness varies greatly

Cx
CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs

DESCRIPTION : Colluvial Complex Sediments: areas of intergrading colluvial and alluvial sediments which are too complex to subdivide at the scale of mapping; unit may include colluvial and alluvial fan, colluvial blanket, landslide sediments and colluviated drift within the limits of glaciation; the unit commonly occurs along the lower slopes of valley margins

EbP

CATEGORY: EOLIAN DEPOSITS: well sorted medium sand to silt initially transported and deposited by wind action during glaciations and commonly resedimented through fluvial and colluvial processes; deposits of very fine sand and coarse silt < 1 m thick are distributed discontinuously throughout low lying areas

DESCRIPTION : Eolian Blanket: fine sand and silt, well sorted; massive; may form crescent-shape and linear dunes and featureless or gently undulating inter-dune eolian plains; thickness 1 to 5 m

O

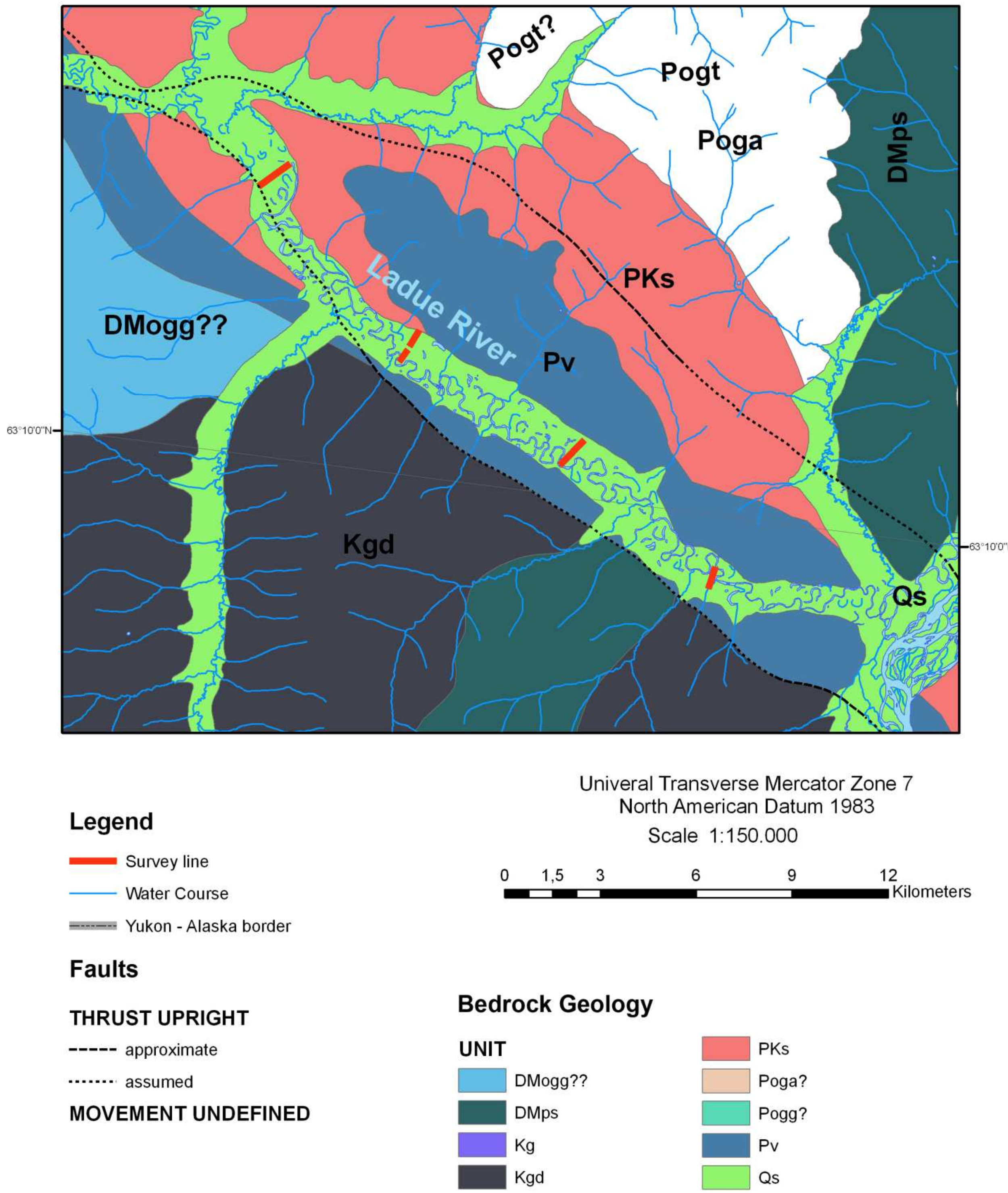
CATEGORY: ORGANIC DEPOSITS: peat and organic silt formed predominantly by the accumulation of vegetative material in bogs, fens, and swamps situated on valley bottoms; permafrost is commonly encountered within 1 m of the surface. Thermokarst collapse is common.

DESCRIPTION : Organic Blanket: undivided; thickness > 1 m to 5 m

R

DESCRIPTION : Bedrock: schist, gneiss, ultramafics, granodiorite, monzonite, marble, and basalt; includes areas of thin colluvial cover, blockfields, and sorted stone polygons in alpine areas

Bedrock Map



Gordey, S.P., Williams, S.P., Cocking, R.B, and Ryan, J.J, 2006:
Digital geology, Stewart River area, Yukon; Geological Survey of Canada, Open File 5122

DMogt??
DESCRIPTION: ORTHOGNEISS (OLDER, 363-343 Ma): **DMog**, undivided orthogneiss; **DMogg**, pink to orange K-feldspar rich, granitic orthogneiss, commonly with biotite, banded to layered, commonly includes or associated with DMoga; **DMoga**, mainly K-feldspar augen orthogneiss, commonly includes or associated with DMogg; **DMogt**, mainly tonalitic or intermediate to mafic orthogneiss, generally grey, banded to layered, commonly veined; commonly interlayered with amphibolite schist and gneiss, biotite and/or hornblende bearing; **?**-age assignment probable, **??**-age assignment assumed (alternatively could be part of Pog)

DMps
DESCRIPTION: QUARTZ-MICA SCHIST: undivided metasedimentary rocks dominated by metapsammite, semipelite and metapelite; commonly quartz-garnet-biotite-muscovite schist possibly derived from siliceous siltstone; commonly finely interlayered with garnet metapelite; commonly contains members of micaceous quartzite; rare conglomerate; grades locally to paragneiss

Kg
DESCRIPTION: GRANITE/GRANODIORITE: Kg, pink to grey, locally porphyritic syenogranite to monzogranite plutons and dykes; **Kgd**, biotite-hornblende bearing granodiorite, locally foliated

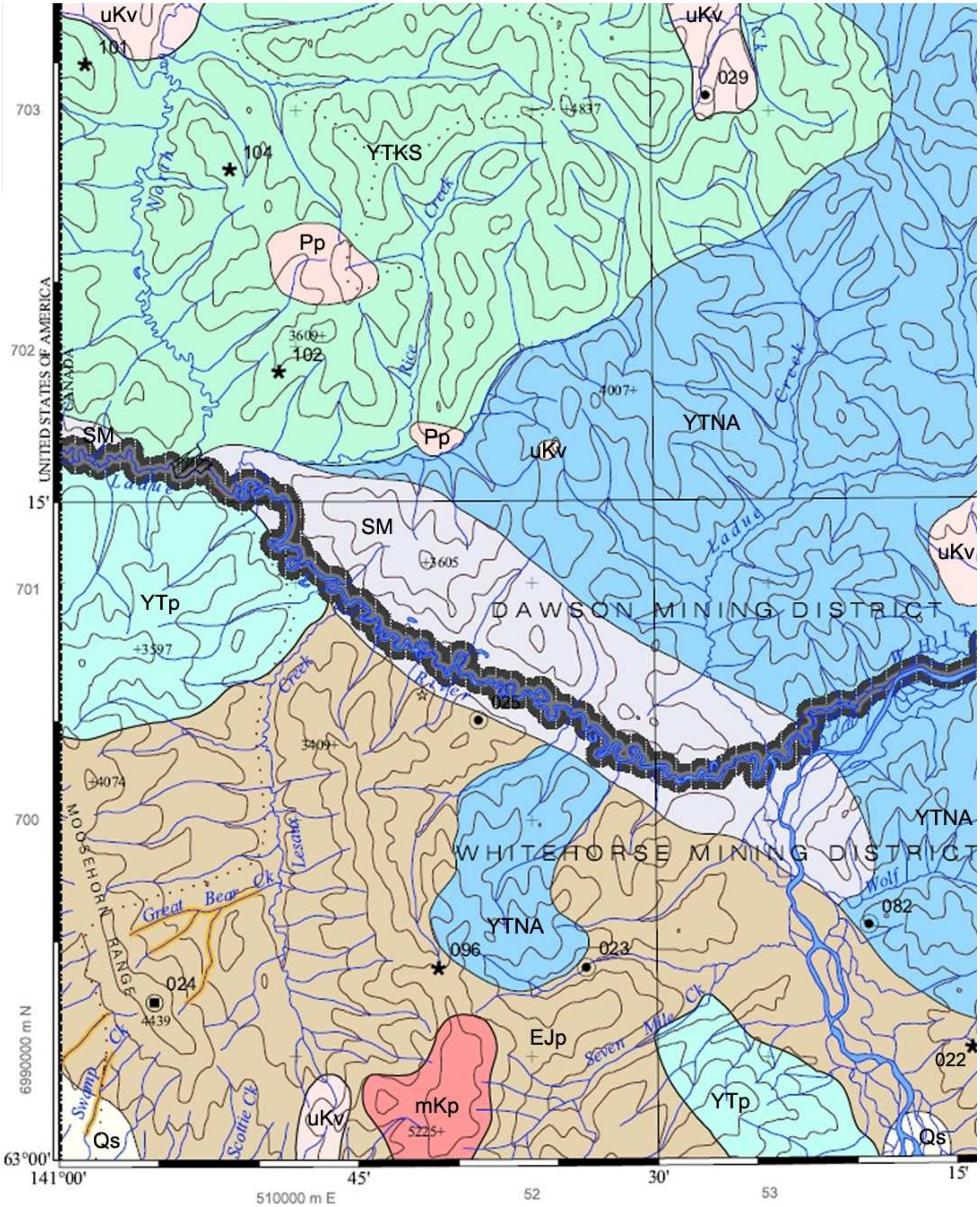
PKs
DESCRIPTION: KLONDIKE SCHIST: muscovite-chlorite-quartz-feldspar schist, chlorite schist, chlorite phyllonite; local cleaved lapilli tuff with preserved primary texture, probably derived from Pv

Poga?
DESCRIPTION: ORTHOGNEISS (YOUNGER, 264-259 Ma): **Pog**, undivided orthogneiss; Pogg, pink to orange K-feldspar rich, granitic orthogneiss, commonly includes or associated with Poga; **Poga**, mainly K-feldspar augen orthogneiss, exhibits various states of strain including porphyroclastic straight gneiss, commonly includes or associated with Pogg; **Pogt**, rare, mainly tonalitic orthogneiss; Pogq, orthogneiss derived from quartz monzonite; refers to highly strained, mafic poor, Sulphur Creek orthogneiss; **?**-age assignment probable, **??**-age assignment assumed (alternatively could be part of DMog).

PV
DESCRIPTION: FOLIATED VOLCANIC: chlorite-altered weakly foliated intermediate to mafic aphanitic volcanic flows and tuffs, locally with clastic textures preserved

Qs
DESCRIPTION: Fluvial silt, sand and gravel

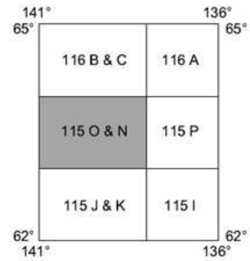
Mineral Occurrence Map

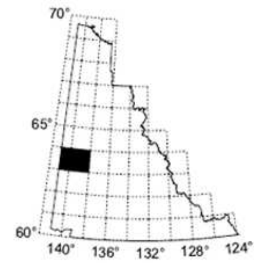


115 O & 115 N (EASTERN HALF) - STEWART RIVER

YUKON MINFILE - MINERAL OCCURRENCE MAP 1 : 250 000

5 0 5 10 Kilometres





GENERALIZED GEOLOGY:

POST-TERRANE AMALGAMATION/ACCRETION UNITS:

PLUTONIC:

Pp - Paleogene post-accretion plutons

LKp - Late Cretaceous and Early Tertiary post-accretion plutons

EJp - post-amalgamation plutons characteristic of Stikinia but also intruding Yukon-Tanana Terrane; coeval and compositionally similar plutons characteristic of Quesnellia also intruding Yukon-Tanana Terrane

SEDIMENTARY / VOLCANIC:

Qs - Quaternary cover beneath which terrane boundaries cannot be extended with confidence

uKv - Upper Cretaceous mafic and lesser felsic volcanic rocks, mostly Carmacks Group

TERRANES:

PERICRATONIC: rocks possess elements of passive margin sedimentation but differ in stratigraphic or structural characteristics from the ancestral North American margin

YTNA - NASINA SUBTERRANE: Metamorphosed early(?) to mid-Paleozoic continental margin with superposed Late Devonian and Early Mississippian arc volcanic (= Nasina assemblage) and (YTp) plutonic rocks

YTKS - KLONDIKE SCHIST SUBTERRANE: Metamorphosed upper Paleozoic arc(?) volcanic (= Klondike Schist assemblage and plutonic (YTp) rocks

YTp - Plutonic rocks superposed on Nasina and Klondike Schist Subterranes

ACCRETED, INTERMONTANE SUPERTERRANE:

SM - SLIDE MOUNTAIN: Oceanic and/or marginal basin volcanic and sedimentary rocks of Devonian to Late Triassic age including chert, argillite, sandstone, conglomerate, mafic intrusions, basalt, alpine-type ultramafic rocks, carbonate rocks and local blueschist and eclogite

MINFILE STATUS:

- Unknown
- Anomaly
- Showing
- Prospect
- Drilled Prospect
- Underground Past Producer
- Open Pit Past Producer

Placer Occurrences

Mining District Boundary

MINFILE NAME

022 Libra (unknown)
023 Orion (unknown)
024 Moosehorn (vein)
029 Pax (unknown)
082 Prospect (unknown)
096 Stadnyk (unknown)
101 Blakestad (unknown)
102 Rice (unknown)
104 Bingham (unknown)

Magnetic declination 1988 varies from 29°45' easterly at centre of west edge to 30°38' easterly at centre of east edge. Mean annual change decreasing 14.7'.

CONTOUR INTERVAL 200 METRES
Elevations in Feet above Mean Sea Level
North American Datum 1983
Transverse Mercator Projection
Ten Thousand Metre Univeral Transverse Mercator Grid
ZONE 7

YUKON GEOLOGICAL SURVEY
Energy Mines and Resources, Yukon Government
Map Version 2004-3, updated July 14, 2004

10.6. Geology

Surficial Geology

Surficial sediments are typical of the Klondike Plateau, with the valley sides lined by a frozen complex of colluvium, alluvial gravel overlain by wind-blown silt, sand and organic material. Along the valley the modern stream channel contains angular immature gravel, as well as sand and organic deposits. Pleistocene alluvial fans occur at the mouths of tributary valleys and a Tertiary alluvial terrace lies on the left limit of a right limit tributary 4 km upstream of line 01. Basal gravels within these alluvial fans and alluvial terraces are prospective for the occurrence of placer gold (Jackson, 2005).

Bedrock Geology

The main geological units mapped along Ladue River include PPsqmu and PKs (Permian Klondike Schist), Pv (Permian volcanics) and PPsn (Devonian-Mississippian quartz-mica schist). Other rock units outcrop on the ridges above Ladue River including Trgdm (mid-Cretaceous granodiorite) and PPgd (Devonian-Mississippian orthogneiss) (Gordey and Ryan, 2005).

Mineral Occurrences

Minfile # 115N/025 (unknown) is a work target staked at the contact between the granodiorite and the Permian schist (Deklerk, 2009).

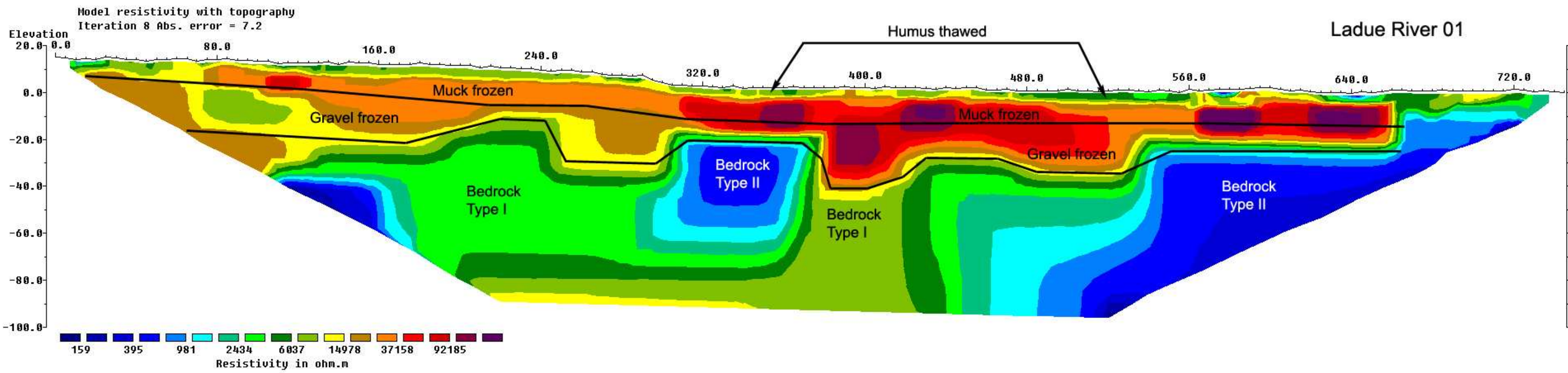
10.7. Profiles

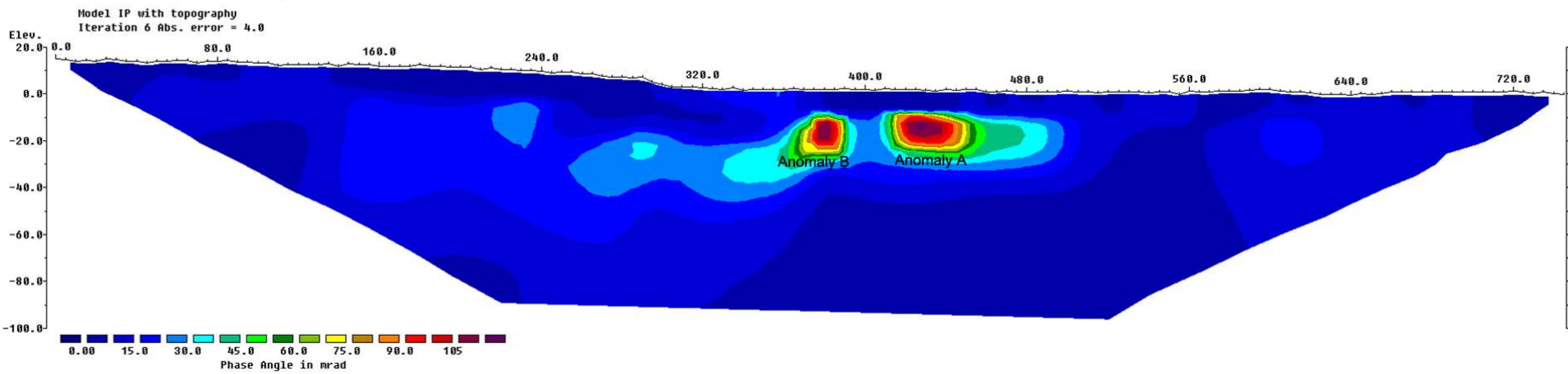
Preliminary Note!

The subsurface information of this study is an interpretation.

Ladue River 01

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, May 6th-7th, 2010 **Processing:** Philipp Moll, July 2010
View: upstream	**Vertical measure:** in [meter]	
Electrodes: 150, spacing 5m	**Iteration error:** in [%]	**Location:** 0m (N63° 09’ 09.3’’ W140° 30’ 58.1’’) (WGS 84) 745m (N63° 08’ 45.8’’ W140° 31’ 08.6’’)
Array: Schlumberger	**Vertical exaggeration in model section display:** 1.15	





Interpretation

We are looking **upstream** at this profile – like at all other profiles on Ladue River.

The **Resistivity** profile indicates 20-37m to **bedrock**. The **overburden** represents the Klondike-typical stratification of muck (7-12m) and gravel (7-32m) in approximately 80% frozen conditions.

Two different **types of bedrock** seem to have been measured: **Bedrock Type I** (green) shows high Resistivity (3000-7000 Ohm*m). This kind of bedrock might be less resistant against erosion since the paleostreams significantly cut into it. **Bedrock Type II** (blue) has low Resistivity (200-1000 Ohm*m). It seems much more resistant against erosion since the former streambeds didn't scrape off this bedrock. Both bedrock types seem to be **volcanic rocks**.[50]

The **historic drainage system** seems to have created four **paleochannels** in this section of the valley.

At 0-210m there seems to be a **channel,** 210m wide, showing bedrock at 27m, covered by 10m of muck and 17m of gravel.

At 240-310m there might be a **channel**, 70m wide, showing bedrock at 31m, filled with 12m of muck and 19m of gravel.

At 370-430m the **deepest channel** is detected, 60m wide, showing bedrock at 37m, deposited with 12m of muck and 25m of gravel.

At 470-550m a **channel** seems to be located, 80m wide, presenting bedrock at 30m, covered with 12m of muck and 18m of gravel.

[50] The Bedrock Geology Map points to 'Foliated Volcanic Rock, that is chlorite-altered and weakly foliated'

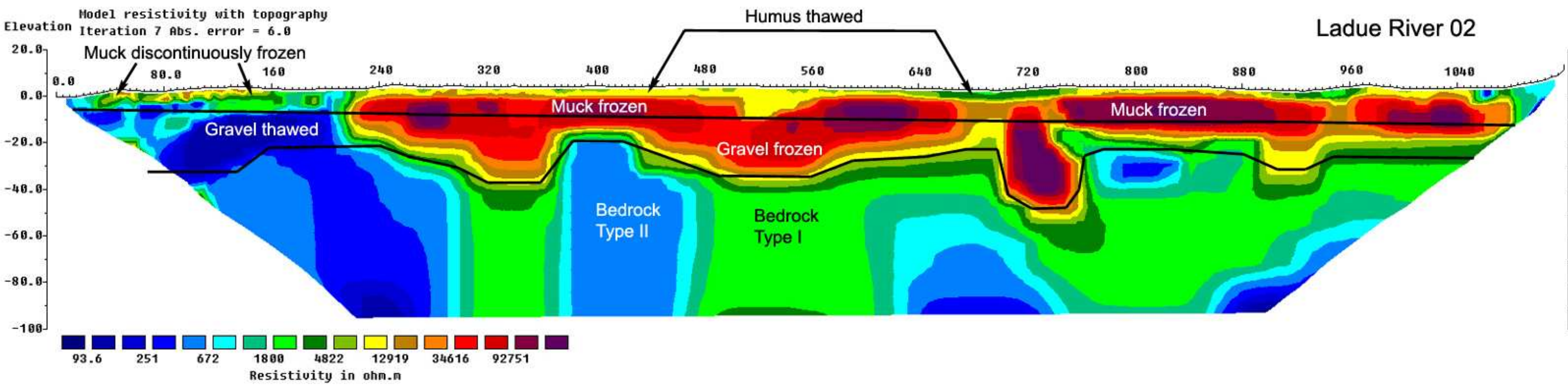
After 540m a **bedrock bench** of almost uniform depth of around 22m is indicated. It is covered with alluvial sediments.

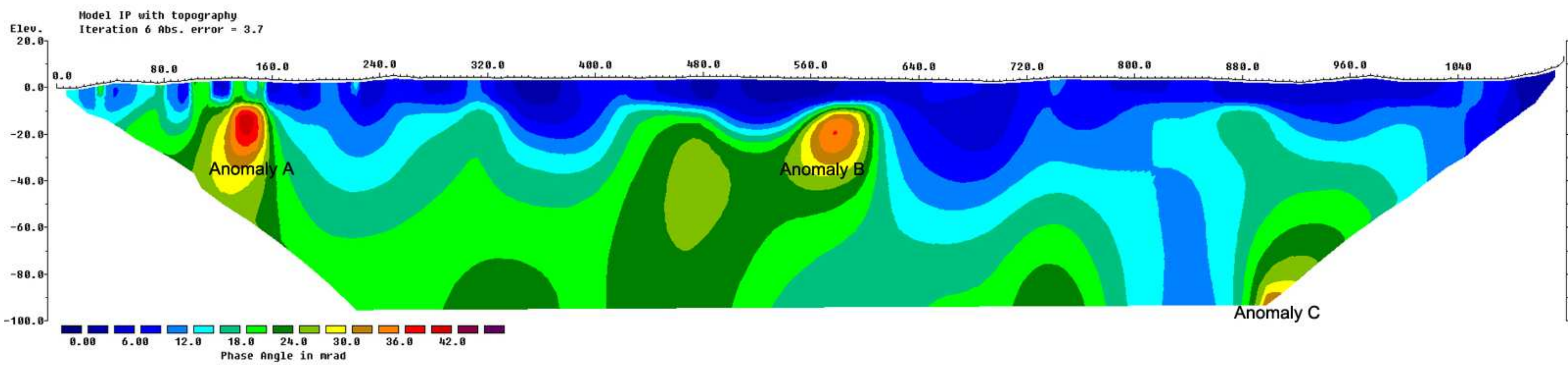
The **IP** model shows two anomalies (A and B) in the overburden containing very high chargeability around 100 Milliradian. These signals could be created by a local mineralization in the gravel matrix. But more likely these IP anomalies indicate some placer deposits consisting of IP-active minerals e.g. pyrite, chalcopyrite, chalcosite, graphite, and copper; this interpretation is supported by the fact that the Anomalies A and B approximately fit with the location of two deeper channels seen in the Resistivity profile.[51]

[51] The localization of ground features along the line is rougher in IP than in Resistivity.

Ladue River 02

Line: Cross valley	Horizontal measure: in [meter]	Data acquisition: Stefan Ostermaier, May 8th-9th, 2010 Processing: Philipp Moll, July 2010
View: upstream	Vertical measure: in [meter]	
Electrodes: 225, spacing 5m	Iteration error: in [%]	Location: 0m (N63° 10' 30.8'' W140° 37' 13.1'') (WGS 84) 1,120m (N63° 11' 00.3'' W140° 36' 25.9'')
Array: Schlumberger	Vertical exaggeration in model section display: 1.73	





Interpretation

The **Resistivity** profile suggests **bedrock** at 22-44m depth. The **overburden** might consist of 9-12m of muck as well as 11-32m of gravel in about 90% frozen conditions.

Similar to profile 01 two **alternating bedrock types** are detected presenting the same phenomenon: A softer bedrock type and a robust bedrock type are creating a pattern. This bedrock pattern **seems to control the spatial structure of the channel system!** Channels cut into the soft bedrock. And the robust bedrock hinders the formation of channels. This bedrock phenomenon is evident throughout the Ladue valley from profile 01 to 03. The locations of the cannels do correspond with the less well conducting softer bedrock type.[52]

At the lower Ladue River (profile 01-03) the Bedrock Geology Map points to foliated volcanic rock that is chlorite-altered and weakly foliated. Thus we interpret the soft bedrock type as possibly being **tuffs** and the robust bedrock type as being **flows**.

The **historic drainage system** seems to present five **paleochannels** in this section of the valley.

At 0-190m the ground is discontinuously thawed by the current stream, just starting left of the profile. Thus the layering is more difficult to interpret.

At least from 80-140m a **channel** seems to be located, 60m wide, presenting bedrock at 30m, covered with 10m of muck and 20m of gravel.

[52] The data of the bedrock seen in the profiles cannot be compared with the bedrock data of other profiles right away because when processing the profiles individual settings were used at the inversion program.

At 190-370m there seems to be a **channel,** 180m wide, showing bedrock at 36m, covered with 9m of muck and 27m of gravel.

At 430-570m, there might be a **channel**, 140m wide, with bedrock at 32m, filled with 12m of muck and 20m of gravel.

At 700-760m the **deepest channel** is detected, 60m wide, showing bedrock at 44m, deposited with 12m of muck and 32m of gravel. This channel could be homologue to the deepest channel in profile 01.

At 890-940m a **channel** seems to be located, 50m wide, presenting bedrock at 28m, covered with 12m of muck and 16m of gravel.

After 940m, some **bedrock** of almost uniform depth around 20m is indicated.

In the **IP** model the zones with higher chargeability roughly match the robust Bedrock Type II seen in the Resistivity profile. This bedrock type must have a moderately higher amount of IP-active minerals. Anomalies A and B might represent placers containing sulfide minerals as described in profile 01; this interpretation is supported by the fact that the Anomalies A and B approximately fit with the location of two deeper channels.[53]

The core of Anomaly C that shows the highest data, located right at the edge of the profile bottom (brown-yellow), doesn't seem to be realistic.

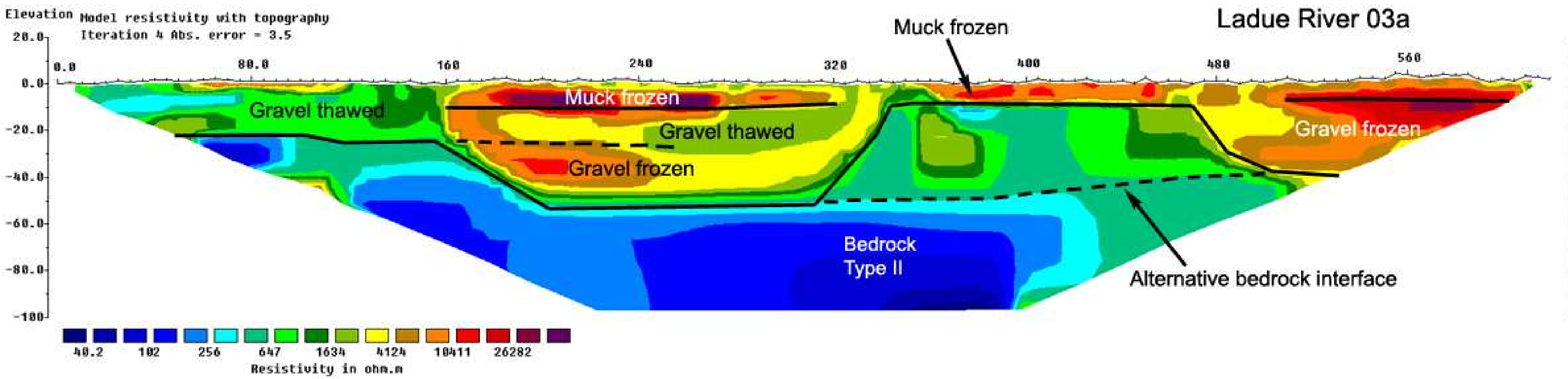
[53]The localization of ground features along the line is rougher in IP than in Resistivity.

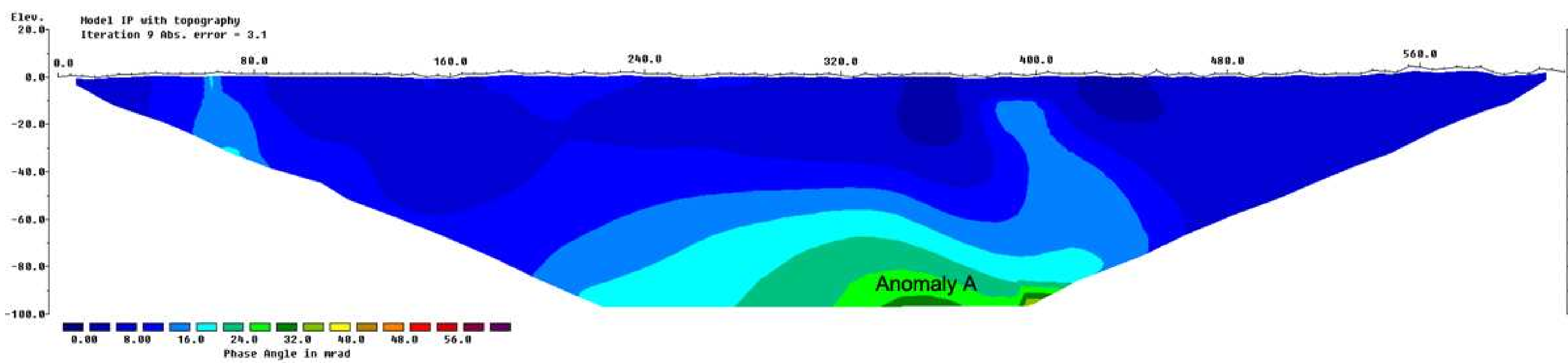
Ladue River 03

The profile 03 is divided into two sections (Part A and B). Part A starts at the current stream being left from 0m. Part B starts 30m after Part A. In-between an oxbow lake 25m wide crosses the measuring line.

Part A

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, May 10th-11th, 2010 **Processing:** Philipp Moll, July 2010
View: upstream	**Vertical measure:** in [meter]	
Electrodes: 125, spacing 5m	**Iteration error:** in [%]	**Location:** 0m (N63° 11’ 50.3’’ W140° 43’ 44.2’’) (WGS 84) 620m (N63° 12’ 07.9’’ W140° 43’ 24.6’’)
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.96	





Interpretation

The **Resistivity** profile shows **bedrock** at 35-46m depth. The **overburden** should consist of 8-10m of muck and 8-36m of gravel. Approximately 60% of the muck and 80% of the gravel might be frozen.

The robust Bedrock Type II is seen. Two channels might cut into it – possibly because the soft Bedrock Type I doesn't exist or, likely, because it has been eroded.

The **historic drainage system** seems to present two **paleochannels** in this section of the valley (Part A)

At 0-160m a **bedrock bench** about 19m deep seems to be located, covered with thawed gravel and muck.

At 160-320m the **deepest channel** is detected**,** 140m wide, showing bedrock at about 46m. In the **overburden** a potentially thawed gravel layer (green) between the permafrost layers (yellow-red) is seen.[54]

At 320-480m a **bedrock dome**, about 9m deep, might be established by alluvial abrasion from the channels on both sides. The existence of the bedrock dome is supported by the IP profile: A branch of higher data does connect the bedrock on the bottom with the dome. On an off-chance the interpreted bedrock dome could be overburden being thoroughly thawed.

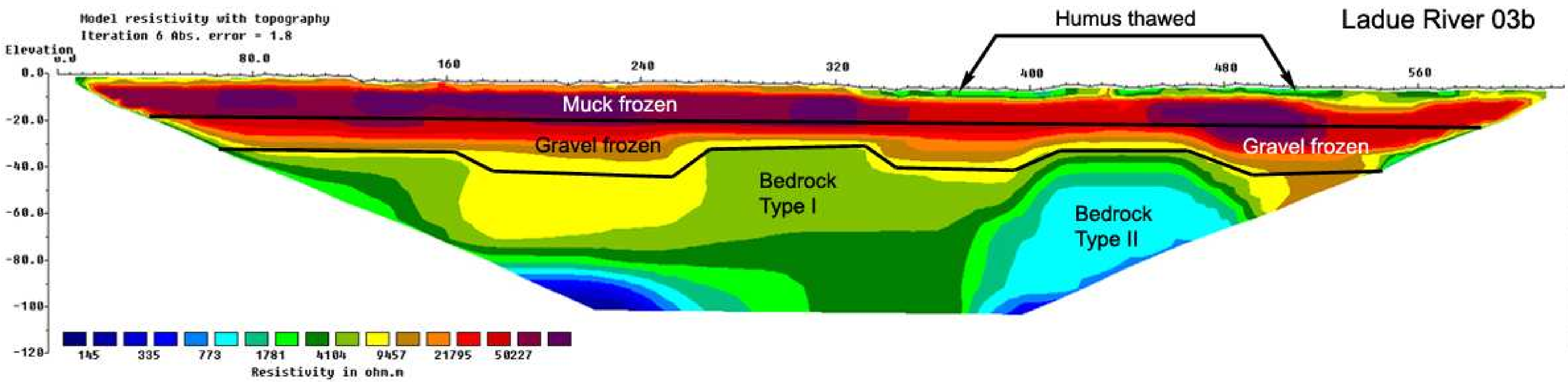
[54] The better conducting layer (green) might be thawed while the overlying muck is frozen. This structure of a thawed gravel layer between two frozen layers has sometimes been observed in Yukon/BC when verifying a Resistivity profile by trenching: The groundwater of such a layer is usually quite mobile; the water flow acts as a dynamic system of defrosting. The frozen layer on top of the groundwater-bearing layer frequently consists of different material such as mud, muck, or clay.

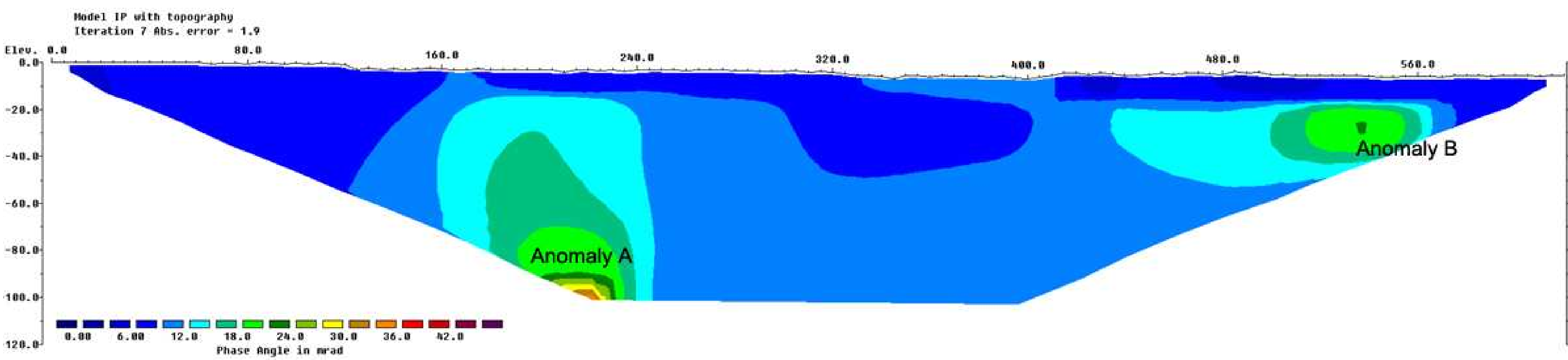
At 480m a **channel**, at least 100m wide, might start. It should show bedrock about 35m deep, filled with probably 8m of muck and 27m of gravel, both frozen.

The **IP** model again indicates the robust Bedrock Type II showing a chargeability of around 20 Milliradian at Anomaly A. This bedrock seems to bear a similar amount of sulfidic minerals as seen in the previous profiles.

Part B

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, May 11th-12th, 2010
View: upstream	**Vertical measure:** in [meter]	**Processing:** Philipp Moll, July 2010
Electrodes: 125, spacing 5m	**Iteration error:** in [%]	**Location:** 0m (N63° 12’ 10.9’’ W140° 43’ 22.9’’)
Array: Schlumberger	**Vertical exaggeration in model section display:** 0.96	(WGS 84) 620m (N63° 12’ 28.9’’ W140° 43’ 04.8’’)





Interpretation

The **Resistivity** profile points to **bedrock** at 20-34m depth. The **overburden** might consist of 12-14m of muck and 10-20m of gravel, both about 95% frozen.

Again the soft Bedrock Type I corresponds with the channels. The robust Bedrock Type II does represent the part of the profile with the least depth to bedrock as the stream could hardly cut into it.

Same as in profile 01 and 02 the heterogeneity of the bedrock, represented by the Bedrock Types I and II, can be seen both vertically and horizontally.

The **historic drainage system** seems to have formed three **paleochannels** in this section of the valley (Part B)

At 0-170m, a **bedrock bench** is located, about 25m deep.

At 170-260m a **channel** might have been detected, 90m wide, showing bedrock at 34m, covered with 14m of muck and 20m of gravel.

At 340-400m, a **channel** is shown, 60m wide, presenting bedrock at 31m, filled with 14m of muck and 17m of gravel.

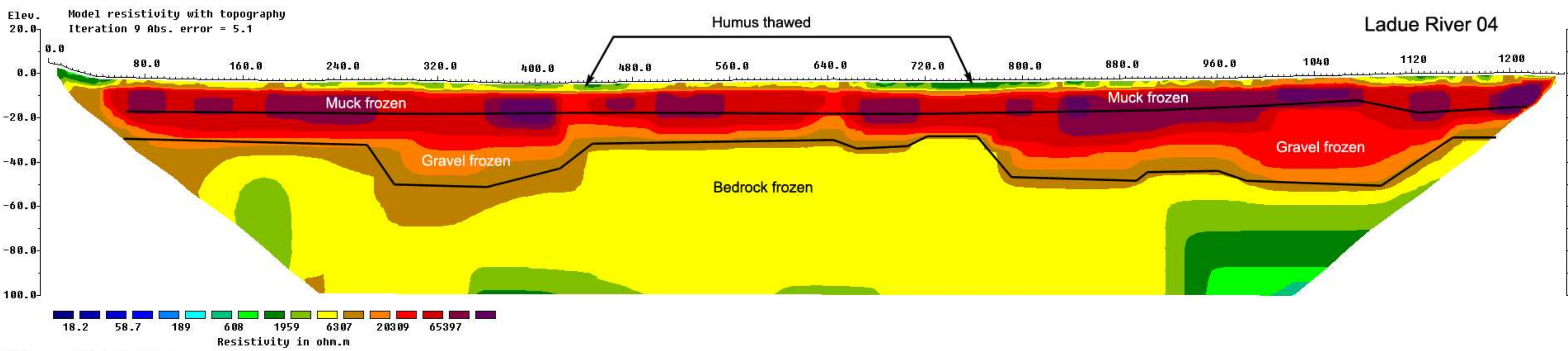
At 480-540m a **channel** seems to have been measured, 60m wide, showing bedrock at 44m, deposited with 12m of muck and 32m of gravel.

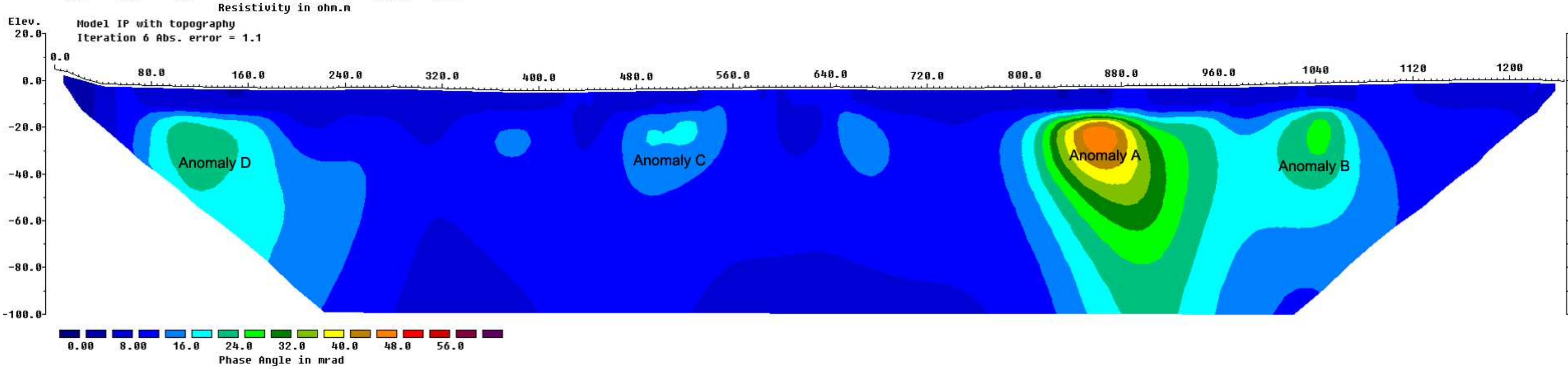
The **IP model** shows higher data at 160-240m in the profile; this indicates a slightly higher percentage of IP-active minerals in Bedrock Type I and II. The core of Anomaly A that shows the highest data, located right at the edge of the profile bottom (orange-yellow-brown-dark green), doesn’t seem to be realistic. But the appearance of higher data on the bottom, represented by the bright green zone, might be likely as the robust Bedrock Type II starts there.

Anomaly B is located in the overburden sitting right in a paleochannel. This IP signal likely represents a placer deposit that consists of material with IP-active minerals – as described in profile 01.

Ladue River 04

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, May 13th-15th, 2010 **Processing:** Philipp Moll, July 2010
View: upstream	**Vertical measure:** in [meter]	
Electrodes: 250, spacing 5m	**Iteration error:** in [%]	**Location:** 0m (N63° 14' 31.6'' W140° 49' 44.9'')
Array: Schlumberger	**Vertical exaggeration in model section display:** 1.92	(WGS 84) 1,245m (N63° 14' 59.1'' W140° 48' 40.8'')





Interpretation

In this section of the valley the **bedrock** is identified at 20-41m depth in the **Resistivity** profile. The **overburden** represents 11-13m of muck and 10-30m of gravel, both about 95% frozen.

This profile does not show the alternating bedrock seen in the profiles 01-03. The **bedrock** map points to **Klondike Schist**.[55]

The **historic drainage system** seems to present three **paleochannels** in this section of the valley.

At 260-430m there seems to be a **channel,** 170m wide, showing bedrock at 40m, covered with 12m of muck and 28m of gravel.

At 780-890m, there might be a **channel**, 110m wide, presenting bedrock at 39m, filled with 13m of muck and 26m of gravel.

At 980-1150m the **deepest channel** is found, 170m wide, showing bedrock at 41m, deposited with 11m of muck and 30m of gravel.

The **IP** model shows some anomalies.

Anomaly A and B can be interpreted as placer deposits consisting of IP-active minerals as described in profile 01; this interpretation is supported by the fact that these anomalies approximately match with the location of two deeper channels.

[55] This bedrock type fits with the data and with the Bedrock Geology Map.

Anomaly C is also located in the gravel. Based on its chargeability of 20 Milliradian it can be explained by clay deposits.[56] It could also be interpreted as a local mineralization in the gravel matrix.

Anomaly D is located in the bedrock. It indicates a moderate percentage of possible IP-active minerals in the schist.

[56] The IP signal would have been created by a local effect at the interfaces between electrolytic groundwater and the mineral particles of the sediment (membrane polarization).

10.8. Conclusion

Basics

The **Ladue River,** starting in Alaska, has about 120km of baseline. Its lower 30km are on Canadian side flowing southwards into the White River (Maps 115N/01, 02). The survey covers the lower 25.6km of the baseline.

The Ladue River exhibits the Klondike-typical **stratification** of muck-gravel-bedrock. Along the valley the overburden should be about 85% frozen on average.

In former times the Ladue River might have been a larger stream with a high alluvial transportation capacity. At the lower 25.6 km of baseline the historic streambed represents a reticulate **channel system** of 4-5 channels running parallel to each other. These channels show bedrock at 27-46m. In the past several channels might have been active at the same time as the bedrock interface is level across the valley.

In profiles 01-03 a bedrock type being less resistant against erosion alternates with another bedrock type that is more resistant. The pattern of these **bedrock types** described as being foliated volcanic[57] seems to control the spatial structure of the channel system: The channels cut into the soft bedrock type and hardly cut into the robust bedrock type. In profile 04, Klondike Schist bedrock seems to be soft enough to form channels.

Progression of Subsurface Parameters

The historic streambed of **Ladue River** shows an **increase of bedrock-depth in upstream direction**! Altogether the channels clearly show this tendency even though a homology between the channels can hardly be seen along the valley (Diagram B).

[57] See Bedrock Geology Map

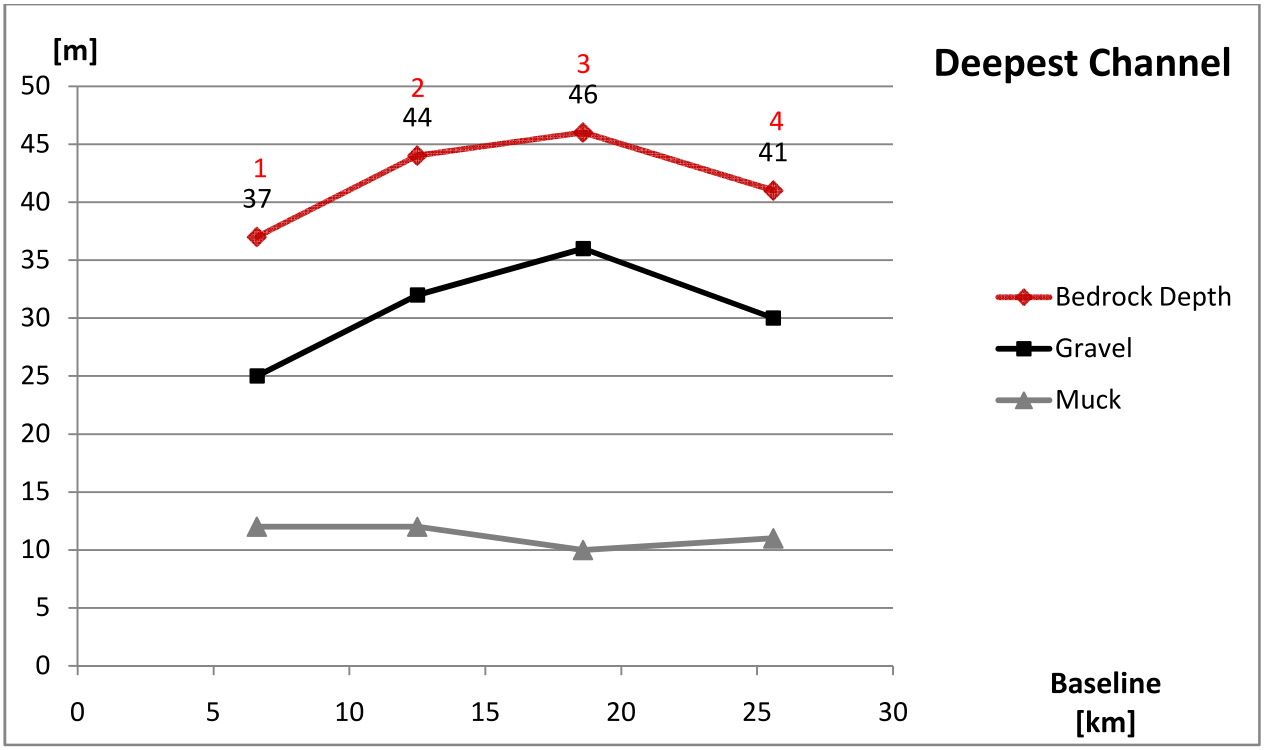


Diagram A: **Sedimentation of Main Channel**, Ladue Ricer
Profiles Resistivity 1-4: Spacing 5.9-7km of Baseline upstream
Interpretation, Arctic Geophysics Inc., Yukon 2010

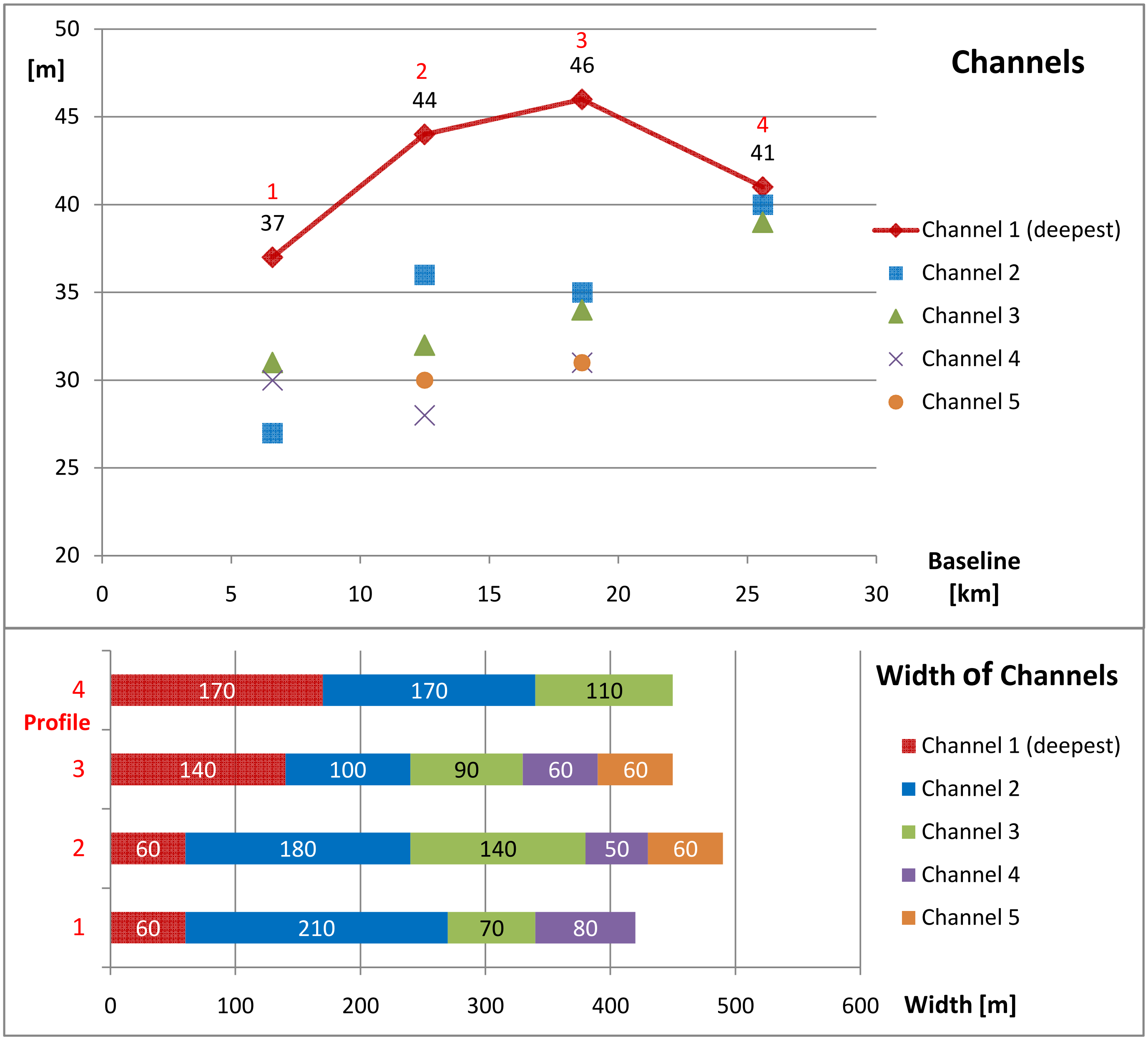


Diagram B: Above: **Bedrock Channels** [Depth in Meter], Ladue River
Below: **Width of Channels** [in Meter]
Both: Profiles Resistivity 1-4: Spacing 5.9-7km of Baseline upstream
Interpretation, Arctic Geophysics Inc., Yukon 2010

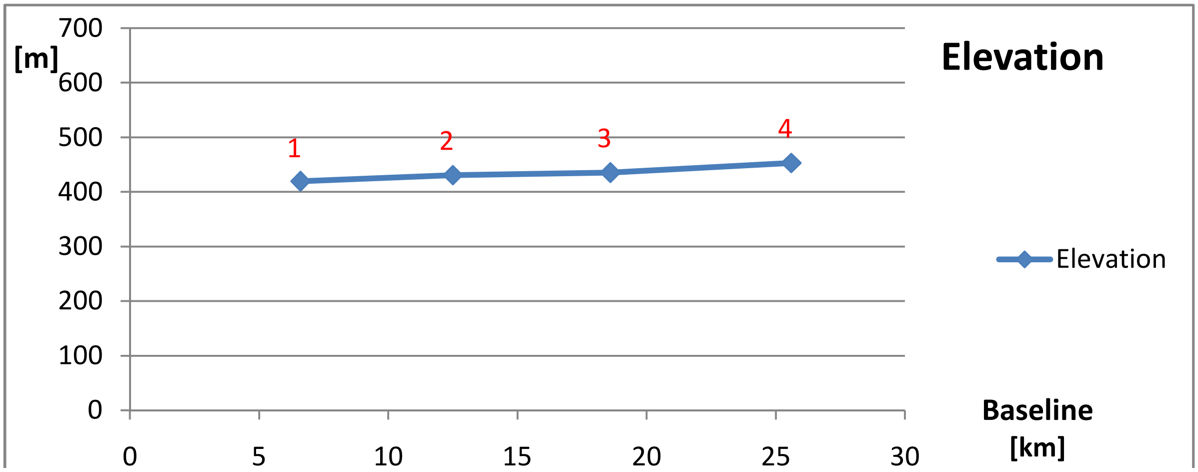


Diagram C: **Elevation Valley Bottom** [in Meter], Ladue River
Profiles Resistivity 1-4: Spacing 5.9-7km of Baseline upstream
Interpretation, Arctic Geophysics Inc., Yukon 2010

<u>Interpretation of Diagrams</u>

In the profiles **01-04** the **bedrock depth** of the channels is **untypical**. It significantly increases up the valley (Diagram B)! Only at section 04 the deepest channel doesn't conform to this principle. All other channels, however, follow the trend of deepening bedrock in an upstream direction. A reason for the increase of bedrock depth upstream could be a hypothetical inverse flow direction of the historic stream![58] This phenomenon could have been caused by a former glacier coming from the south and therefore hindering the drainage in a southern direction! The hypothesis of the inverse flow direction is supported by two more aspects: Firstly the valley is slightly widening in upstream direction; secondly the river shows a very low stream gradient (Diagram D). Together this could have produced the distinctive pattern of meanders we can see today.

Profile 04 doesn't show channels of varying depth. All channels are seen on a relatively deep level (Diagram B). This might be a result of the schist bedrock starting at profile 04. The schist enabled the channels to cut deeply into the bedrock.

[58] Lebarge, William; Placer Geologist, Yukon Geological Survey

Assessment for Placer Mining

Regarding **Ladue River** this survey permits a quantitative assessment concerning the thickness of the overburden and a qualitative assessment considering some features that might be attractive for placer mining such as paleochannels.

The lower Ladue River (25.6 km of baseline) presents 4-5 paleochannels with an overall width of more than 400m at every cross valley profile measured in this survey. However, these channels are deep. The bedrock of all channels is found at 27-35m depth; the overburden continuously seems to show 10 or more meters of muck; the rest of the overburden might be gravel. Estimation of permafrost: 85%.

The high expense factors for placer mining based on the high amount of frozen overburden plus the (still existing) lack of infrastructure could potentially be compensated by the following aspects.

Since the Ladue River presents a wide valley showing a various reticulate paleochannel system the alluvial transportation of the gravel might have been developed by channels which changed their paths and crossed each other. This way the river gravel would have been transported within several periods which eventually would have created highly concentrated placer gold deposits.

This scenario could be compared to the Indian River where rich placers were found at certain locations in the valley next to locations with little placer gold. The heterogeneous amount of placer gold found in wide valleys which show a multi channel system in the bedrock is created by the alternation of channel-locations and non-channel-locations across the valley. Some of these channels are very rich in placer gold as they have accumulated their gold by cutting into other channels moving gravel which already had placers in it.[59]

The principle of multiply transported gravel which creates rich placer deposits might even be more significant at the Ladue River because of its hypothetical reversal of the flow direction in former times. The change of the flow direction is associated with a low stream gradient causing meandering cycles. The cycles of growing and degenerating meanders seem to provide additional potential of crossing channels and thus multiple gravel transportation.

Also the low gradient causing low stream velocity would have increased the sedimentation of heavy fluvial components.

The described principle of the origin of rich placers by multi-periodic gravel deposition did also play a role at the alluvial transportation history at the Klondike: The rich placer deposits found at Bonanza Creek were created by gravel which must very likely have been moved during several transportation periods.

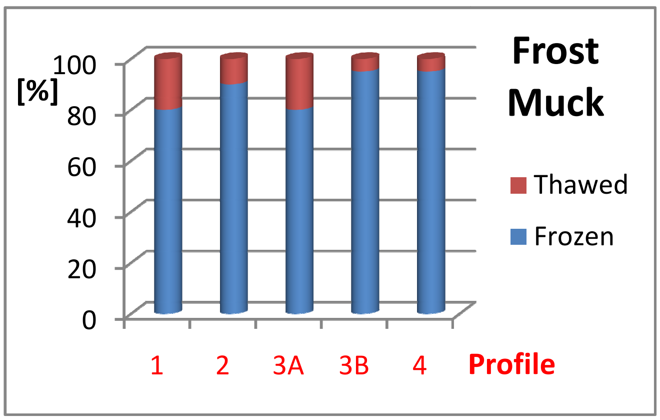
---

[59] Regarding Ladue River this theory seems to contradict the hypothesis of a local channel system controlled by bedrock alteration. The channel system we assume in the subsurface of Ladue River, however, is the product of a long-term transportation history. The accumulation of placer gold by a spatially changing stream net could have been managed by plenty of channels we can't trace anymore. This means channels which ran over bedrock which is washed out today; or channels cutting their streambed into gravel instead of bedrock. The placer gold accumulated by those channels could finally be deposited in the current paleochannels.

Of course, the amount of placer gold at Ladue River depends on the richness of primary gold deposits which could be mobilized. Quite often this key parameter has put all other economic factors into a new perspective.

About the gold at the Ladue River: Systematic pan sampling at the lower 30km of Ladue River done by Philipp Moll, Arctic Geophysics Inc., in 2006, provided the following result: 0-11 colors, size 0.1-1mm, per pan. In most cases it is difficult to interpret the correlation between current stream gold and paleoplacers. However, the pan results have a positive tendency suggesting the existence of profitable placer gold deposits at the Ladue River. Possible reasons for that are: Firstly a certain number of the gold particles found on the current surficial river gravel did not look as if they had travelled from Alaska. Consequently they must be from sources nearby. Secondly the findings of stream gold on the current gravel bars of Ladue River can be interpreted as an indicator for rich placers at some depth. One has to keep in mind, that the mobilization of paleoplacers by tributaries is decreased by thick depositions of frozen muck in this area.[60]

Despite its high amount of overburden the lower Ladue River could have some profitable ground for industrial placer mining.



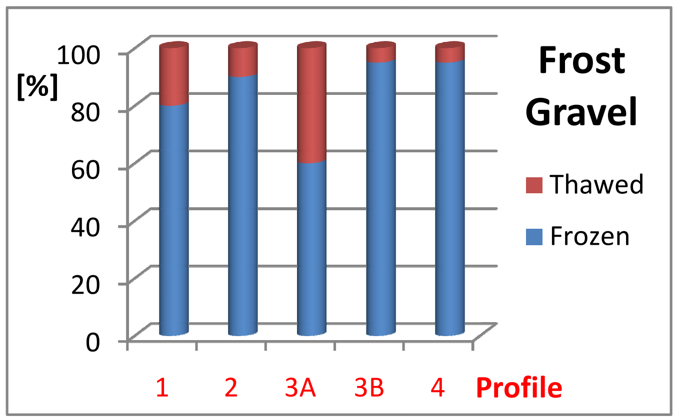


Diagram D: **Permafrost: Overburden**, Ladue River

Assessment for Quartz Mining

The IP data measured in this survey point to a lower amount of ore minerals in the bedrock of the lower **Ladue valley**.

[60] The high amount of muck might be produced by wind-blown silt from the White River and nearer areas. The silt has increased the volume of the muck and serves as fertilizer increasing the amount of organic material which is the basis of muck.

10.9. Gallery

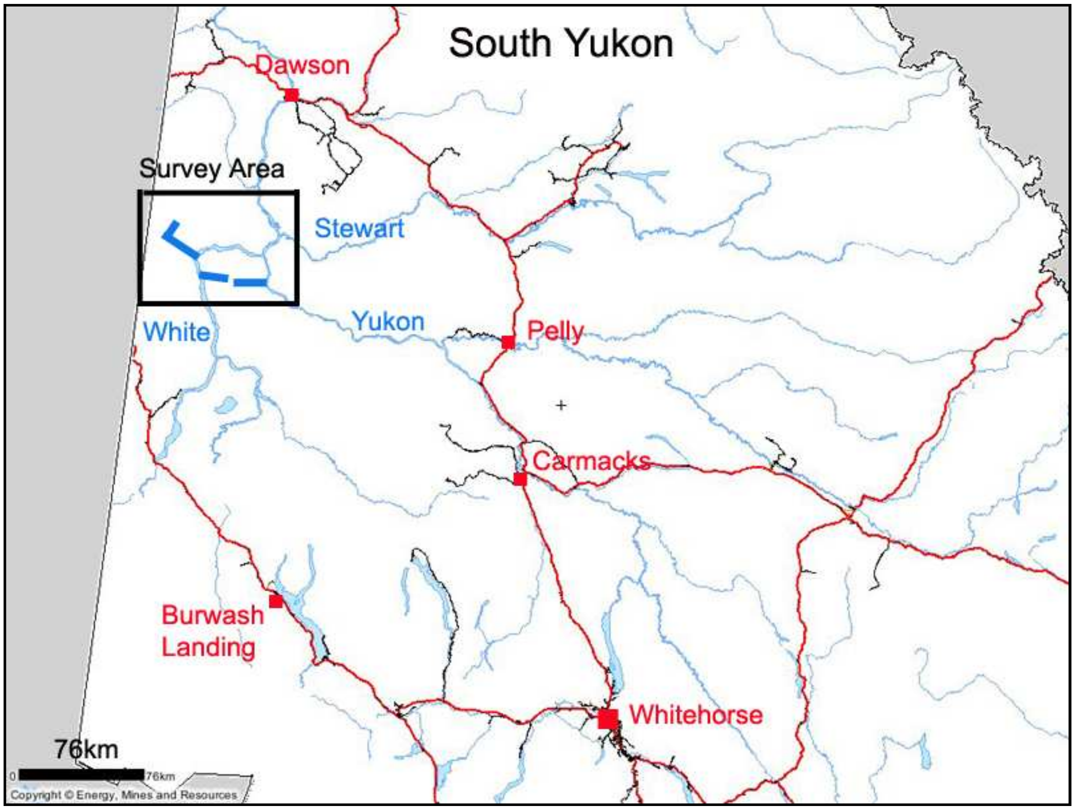
Ladue River, 6.6km upstream, view cross valley, location of profile 01

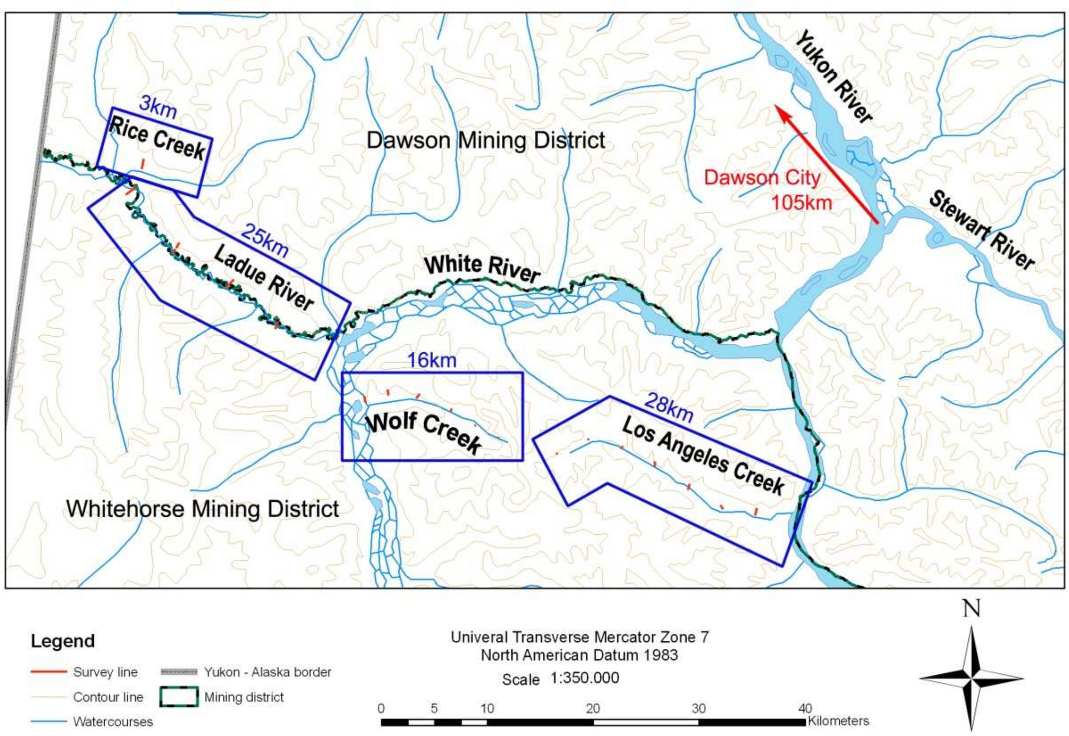
Ladue River, 6.6km upstream, view up valley


Ladue River, 26km upstream, view cross valley, location of profile 04

11. Resistivity/IP Survey at Rice Creek

11.1. Survey Area





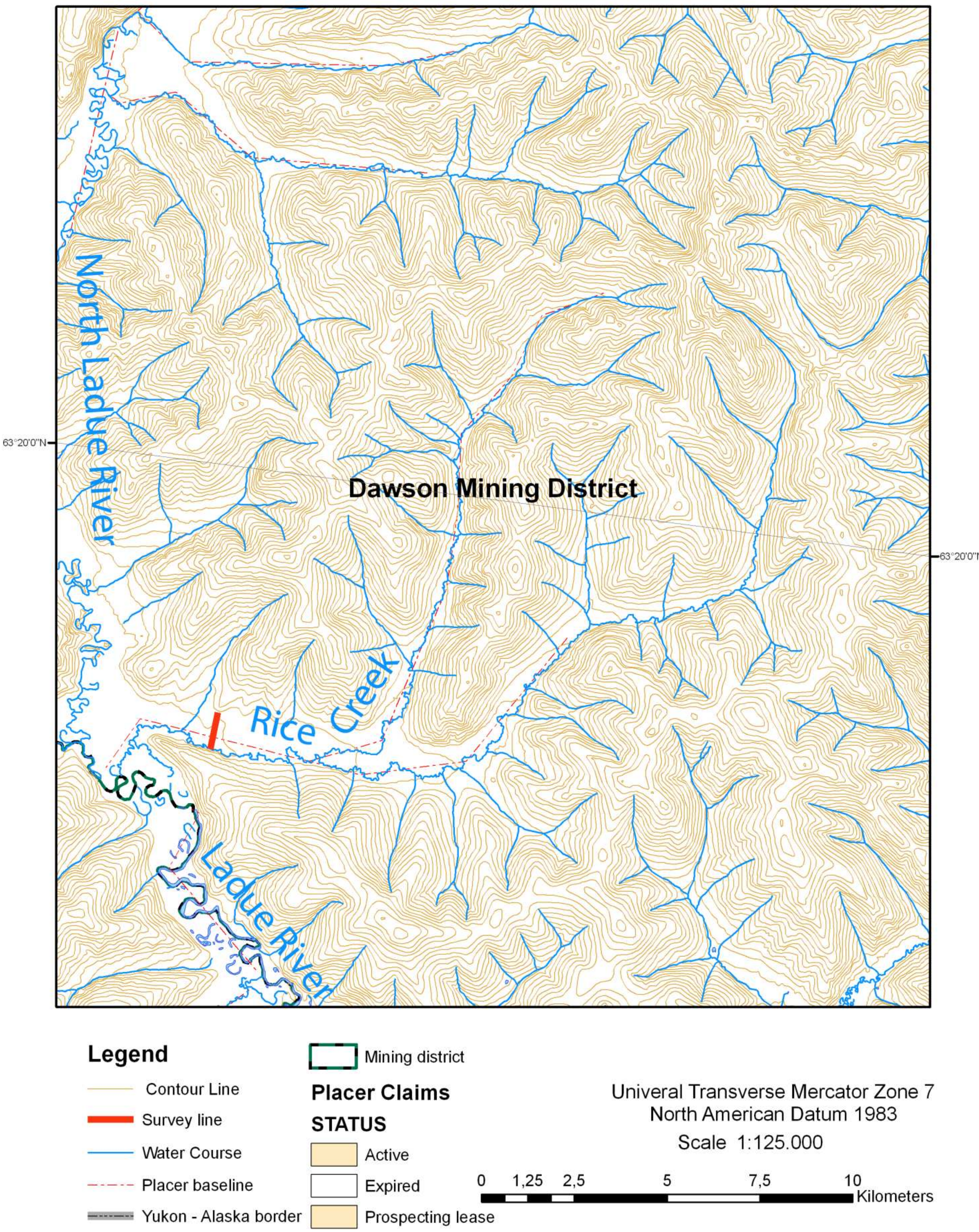
11.2. Access

The survey crew reached the confluence of Ladue River with the White River by motorboat (with propeller unit) starting from Dawson City and riding the Yukon and the White River for about 190km upstream. The trip continued with a jet unit because the water level on the Ladue River was low this season. Normally the River can be ridden with a propeller boat. The Rice Creek cannot be ridden by motorboat at all. The measuring place was reached by hiking from the Ladue River.

11.3. Vegetation

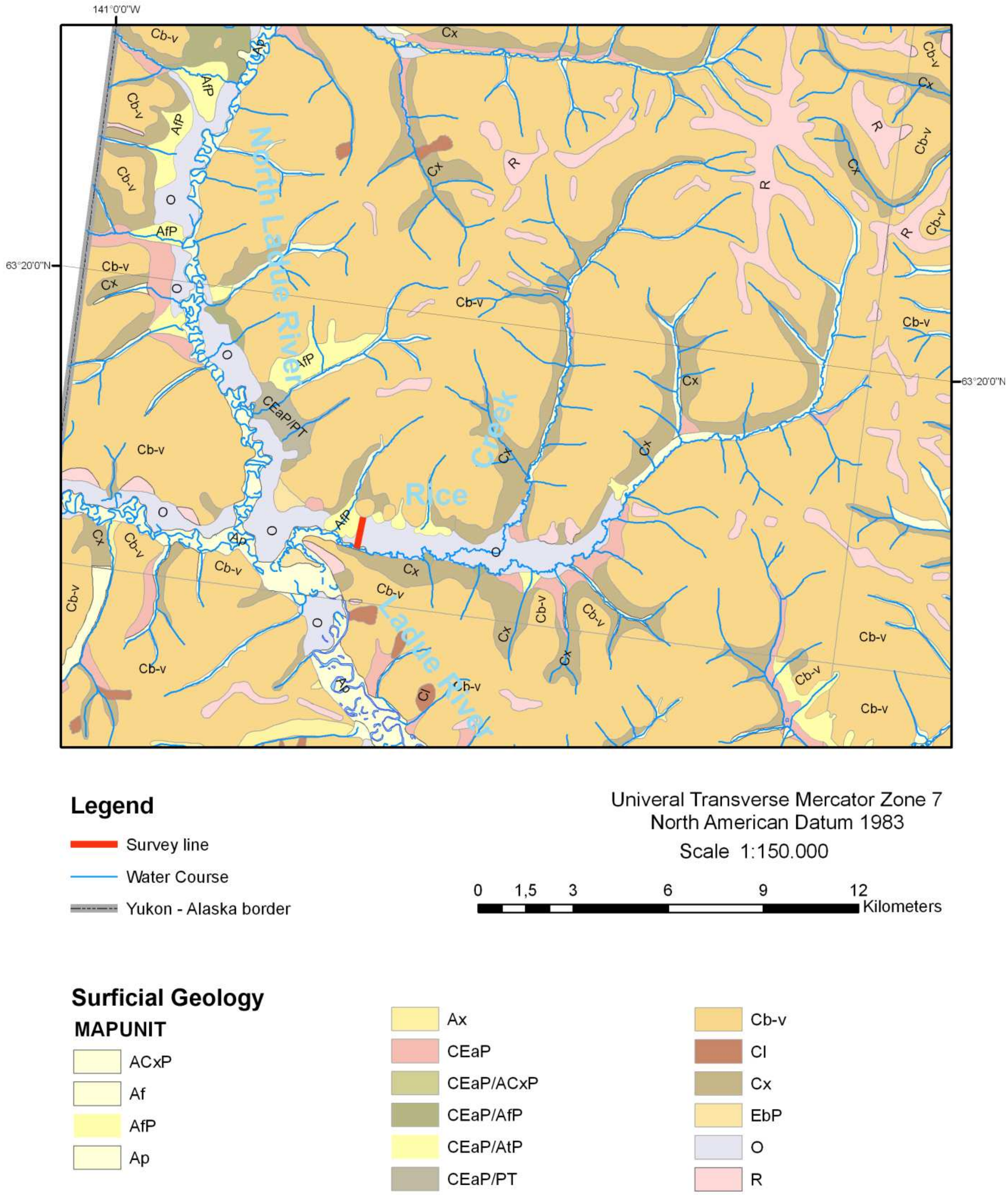
Not much can be said about the overall character of the Rice Creek valley due to the fact that only one profile was measured at Rice Creek. The lower part seems to be one large tussocks field with only a thin leavening of spruce trees and a narrow spruce forest along the creek.

11.4. Prospecting Map



11.5. Geological Maps

Surficial Geology Map



Gordey, S.P., Williams, S.P., Cocking, R.B, and Ryan, J.J, 2006:
Digital geology, Stewart River area, Yukon; Geological Survey of Canada, Open File 5122

ACxP
CATEGORY: ALLUVIAL DEPOSITS: gravel and sand deposited by streams that were not fed by glacial meltwater; sediments may have experienced several cycles of alluviation and erosion, but are now inactive due to burial or fluvial incision; basal gravels within these sediments commonly contain placer gold
DESCRIPTION: Alluvial/Colluvial Complex Sediments: silt, sand and gravel, poorly to moderately sorted; thin to thick bedded, interstratified with colluvial diamicton; sediments underlie the floors and margins of narrow upland valleys and grade laterally up slope into colluvial blankets; sediments may represent several depositional cycles; thickness may exceed 10 m in mid-valley locations

Af
CATEGORY: ALLUVIAL DEPOSITS: gravel to silt size sediments, well stratified, deposited by streams
DESCRIPTION: Alluvial Fan Sediments: gravel, sand, silt, and diamicton, massive to well stratified; sediments form fan-shaped landforms or complexes of coalesced fan-shape landform at the confluence of tributary streams; may be subject to flooding accompanied by sudden stream migration and inundation; thickness up to 10 m

AfP
CATEGORY: ALLUVIAL DEPOSITS: gravel and sand deposited by streams that were not fed by glacial meltwater; sediments may have experienced several cycles of alluviation and erosion, but are now inactive due to burial or fluvial incision; basal gravels within these sediments commonly contain placer gold
DESCRIPTION: Alluvial Fan Sediments: single fans or aprons of coalesced fans formed of gravel and sand, poorly to moderately sorted, now isolated from water and debris floods due to fluvial incision; sediments disturbed by cryoturbation; thickness up to 10 m

Ap
CATEGORY: ALLUVIAL DEPOSITS: gravel to silt size sediments, well stratified, deposited by streams
DESCRIPTION: Floodplain Sediments: gravel, cobble to pebble; massive to well stratified, capped by sand and silt; flat lying; includes lacustrine and organic deposits in abandoned channels and backswamp areas; subject to periodic inundation and reworking by floods; thickness 1 to 5 m

Ax
CATEGORY: ALLUVIAL DEPOSITS: gravel to silt size sediments, well stratified, deposited by streams
DESCRIPTION: Alluvial Sediments Complex: sediments forming floodplains, fans, and terraces as above that cannot be subdivided at this map scale

CEaP
CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPTION: Colluvial/Eolian Apron (muck): primary deposits of eolian fine sand and silt resedimented and interstratified with organic silt, and detritus, alluvial fan gravel and sand and variable amounts of stony colluvial diamicton; forms aprons along valley bottoms through resedimentation of eolian sediments from valley sides to valley floor, commonly preserved on north-facing slopes; thickness 1 to 20 m; commonly contains segregated bodies of ice and buried ice wedges

CEaP/ACxP

CATEGORY: ALLUVIAL DEPOSITS: gravel and sand deposited by streams that were not fed by glacial meltwater; sediments may have experienced several cycles of alluviation and erosion, but are now inactive due to burial or fluvial incision; basal gravels within these sediments commonly contain placer gold
DESCRIPTION: Alluvial/Colluvial Complex Sediments: silt, sand and gravel, poorly to moderately sorted; thin to thick bedded, interstratified with colluvial diamicton; sediments underlie the floors and margins of narrow upland valleys and grade laterally up slope into colluvial blankets; sediments may represent several depositional cycles; thickness may exceed 10 m in mid-valley locations

CEaP/AfP
CATEGORY: ALLUVIAL DEPOSITS: gravel and sand deposited by streams that were not fed by glacial meltwater; sediments may have experienced several cycles of alluviation and erosion, but are now inactive due to burial or fluvial incision; basal gravels within these sediments commonly contain placer gold
DESCRIPTION: Alluvial Fan Sediments: single fans or aprons of coalesced fans formed of gravel and sand, poorly to moderately sorted, now isolated from water and debris floods due to fluvial incision; sediments disturbed by cryoturbation; thickness up to 10 m

CEaP/AtP
CATEGORY: ALLUVIAL DEPOSITS: gravel and sand deposited by streams that were not fed by glacial meltwater; sediments may have experienced several cycles of alluviation and erosion, but are now inactive due to burial or fluvial incision; basal gravels within these sediments commonly contain placer gold
DESCRIPTION: Alluvial Terrace Sediments: gravel, cobble to pebble with a sandy matrix; massive to well stratified; capped by sand and silt; sediments are of flood plain origin now isolated from flooding by stream incision; thickness 1 m to 10 m

CEaP/PT
CATEGORY: ALLUVIAL DEPOSITS: preglacial gravel and sand; highly dissected and deeply weathered
DESCRIPTION: Pediment and Bajada Sediments: inclined fluvial surfaces which are found at a midslope position in unglaciated drainage systems; usually thinner than 5 m; formed as a result of limited agradation of stream gravel and significant colluviation; composed of thin, poorly sorted gravel that contains both locally derived subangular stream gravel deposits and angular bedrock fragments

Cb-v
CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPTION: Colluvial Blanket and Veneer Sediments: diamicton, stony with a sandy matrix; massive to poorly stratified; colluviated blankets generally conform to underlying bedrock and exceed 1 m in thickness; veneers are < 1 m in thickness and are commonly discontinuous over bedrock

Cl
CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPTION: Landslide Sediments: silt loam to boulders, poorly sorted to unsorted; massive; clasts are subangular to angular and are locally derived; thickness varies greatly

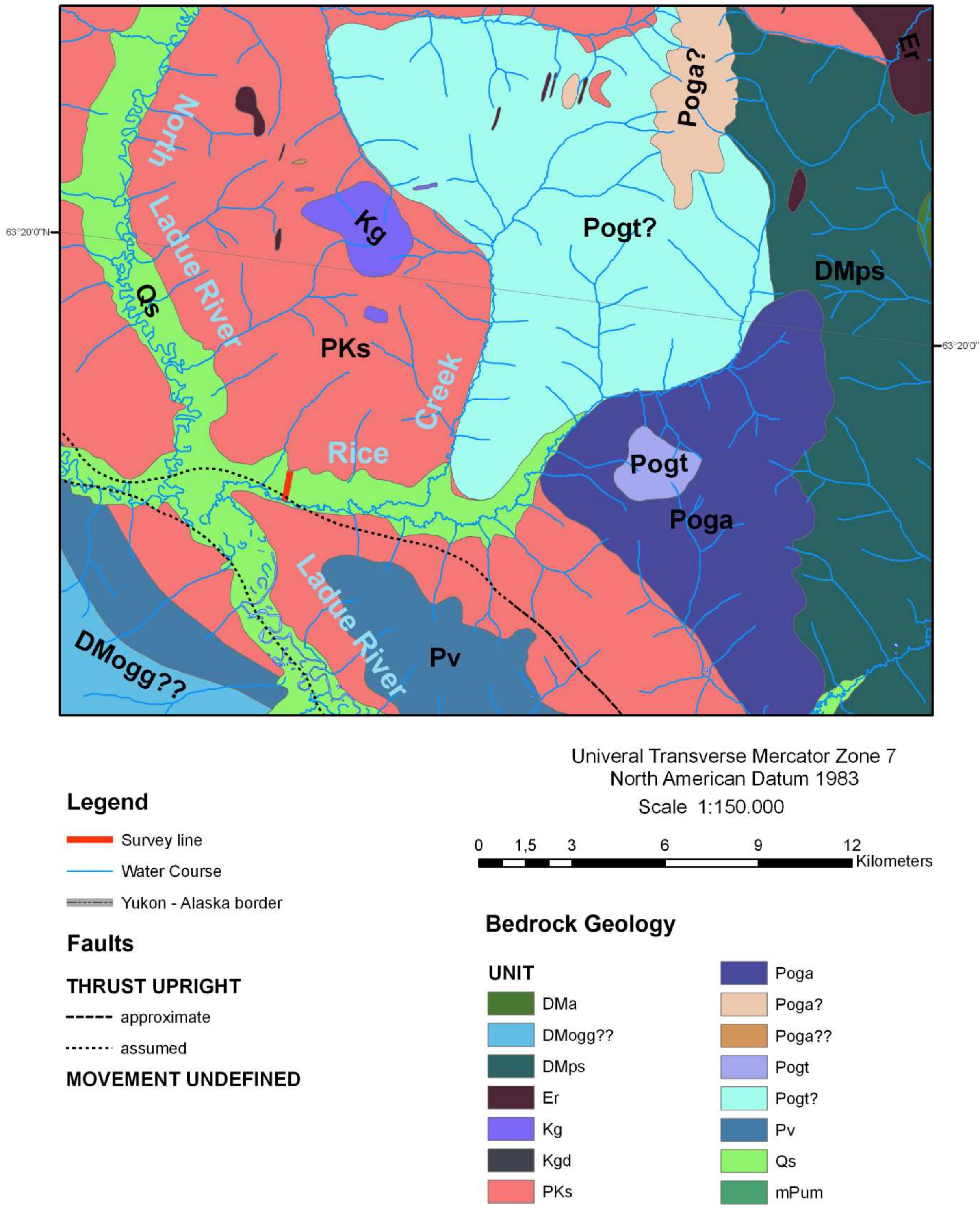
Cx
CATEGORY: COLLUVIAL DEPOSITS: stony diamicton resulting from the physical and chemical breakdown of bedrock and subsequent reworking and transportation by creep, solifluction, and landsliding; colluvial deposits may contain reworked glaciofluvial and morainal sediments within the limits of pre-Reid ice-cover and reworked eolian sediments; colluvial deposits are products of formation and reworking over a significant part of the Pleistocene and Holocene epochs
DESCRIPTION: Colluvial Complex Sediments: areas of intergrading colluvial and alluvial sediments which are too complex to subdivide at the scale of mapping; unit may include colluvial and alluvial fan, colluvial blanket, landslide sediments and colluviated drift within the limits of glaciation; the unit commonly occurs along the lower slopes of valley margins

EbP
CATEGORY: EOLIAN DEPOSITS: well sorted medium sand to silt initially transported and deposited by wind action during glaciations and commonly resedimented through fluvial and colluvial processes; deposits of very fine sand and coarse silt < 1 m thick are distributed discontinuously throughout low lying areas
DESCRIPTION: Eolian Blanket: fine sand and silt, well sorted; massive; may form crescent-shape and linear dunes and featureless or gently undulating inter-dune eolian plains; thickness 1 to 5 m

O
CATEGORY: ORGANIC DEPOSITS: peat and organic silt formed predominantly by the accumulation of vegetative material in bogs, fens, and swamps situated on valley bottoms; permafrost is commonly encountered within 1 m of the surface. Thermokarst collapse is common.
DESCRIPTION: Organic Blanket: undivided; thickness > 1 m to 5 m

R
DESCRIPTION: Bedrock: schist, gneiss, ultramafics, granodiorite, monzonite, marble, and basalt; includes areas of thin colluvial cover, blockfields, and sorted stone polygons in alpine areas

Bedrock Geology Map



Gordey, S.P., Williams, S.P., Cocking, R.B, and Ryan, J.J, 2006:
Digital geology, Stewart River area, Yukon; Geological Survey of Canada, Open File 5122

DMa
DESCRIPTION: AMPHIBOLITE: amphibolite schist and gneiss; metabasite; probably derived from mafic to intermediate volcanic or volcaniclastic rocks; locally associated with psammite or interlayered with orthogneiss

DMogt??
DESCRIPTION: ORTHOGNEISS (OLDER, 363-343 Ma): **DMog**, undivided orthogneiss; **DMogg**, pink to orange K-feldspar rich, granitic orthogneiss, commonly with biotite, banded to layered, commonly includes or associated with DMoga; **DMoga**, mainly K-feldspar augen orthogneiss, commonly includes or associated with DMogg; **DMogt**, mainly tonalitic or intermediate to mafic orthogneiss, generally grey, banded to layered, commonly veined; commonly interlayered with amphibolite schist and gneiss, biotite and/or hornblende bearing; **?**-age assignment probable, **??**-age assignment assumed (alternatively could be part of Pog)

DMps
DESCRIPTION: QUARTZ-MICA SCHIST: undivided metasedimentary rocks dominated by metapsammite, semipelite and metapelite; commonly quartz-garnet-biotite-muscovite schist possibly derived from siliceous siltstone; commonly finely interlayered with garnet metapelite; commonly contains members of micaceous quartzite; rare conglomerate; grades locally to paragneiss

Er
DESCRIPTION: PORPHYRY: Smokey quartz and K-feldspar phyric rhyolite to rhyodacite stocks and dykes, and possible rare flows

Kg
DESCRIPTION: GRANITE/GRANODIORITE: Kg, pink to grey, locally porphyritic syenogranite to monzogranite plutons and dykes; **Kgd**, biotite-hornblende bearing granodiorite, locally foliated

PKs
DESCRIPTION: KLONDIKE SCHIST: muscovite-chlorite-quartz-feldspar schist, chlorite schist, chlorite phyllonite; local cleaved lapilli tuff with preserved primary texture, probably derived from Pv

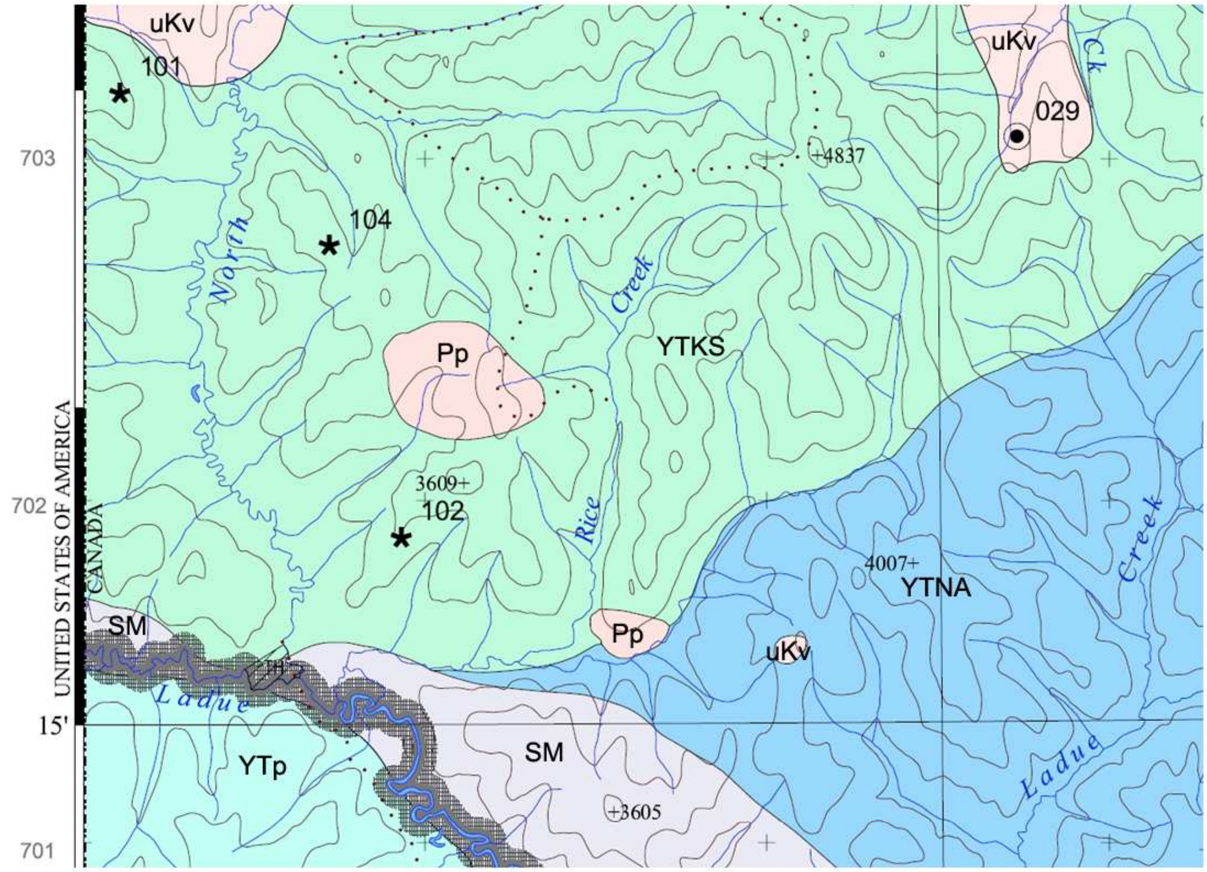
Poga?
DESCRIPTION: ORTHOGNEISS (YOUNGER, 264-259 Ma): **Pog**, undivided orthogneiss; Pogg, pink to orange K-feldspar rich, granitic orthogneiss, commonly includes or associated with Poga; **Poga**, mainly K-feldspar augen orthogneiss, exhibits various states of strain including porphyroclastic straight gneiss, commonly includes or associated with Pogg; **Pogt**, rare, mainly tonalitic orthogneiss; Pogq, orthogneiss derived from quartz monzonite; refers to highly strained, mafic poor, Sulphur Creek orthogneiss; **?**-age assignment probable, **??**-age assignment assumed (alternatively could be part of DMog).

PV
DESCRIPTION: FOLIATED VOLCANIC: chlorite-altered weakly foliated intermediate to mafic aphanitic volcanic flows and tuffs, locally with clastic textures preserved

Qs
DESCRIPTION: Fluvial silt, sand and gravel

mPum
DESCRIPTION: ULTRAMAFIC-GABBRO: foliated to unfoliated amphibolite facies metagabbro, metapyroxenite, serpentinite and talc-siderite schist; **mPums**, dominantly serpentinite

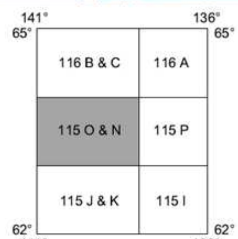
Mineral Occurrence Map

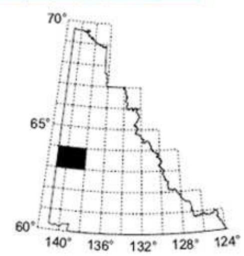


115 O & 115 N (EASTERN HALF) - STEWART RIVER

YUKON MINFILE - MINERAL OCCURRENCE MAP 1 : 250 000

5 0 5 10 Kilometres





GENERALIZED GEOLOGY:

POST-TERRANE AMALGAMATION/ACCRETION UNITS:

PLUTONIC:

Pp - Paleogene post-accretion plutons

SEDIMENTARY / VOLCANIC:

uKv - Upper Cretaceous mafic and lesser felsic volcanic rocks, mostly Carmacks Group

TERRANES:

PERICRATONIC: rocks possess elements of passive margin sedimentation but differ in stratigraphic or structural characteristics from the ancestral North American margin

YTNA - NASINA SUBTERRANE: Metamorphosed early(?) to mid-Paleozoic continental margin with superposed Late Devonian and Early Mississippian arc volcanic (= Nasina assemblage) and (YTp) plutonic rocks

YTKS - KLONDIKE SCHIST SUBTERRANE: Metamorphosed upper Paleozoic arc(?) volcanic (= Klondike Schist assemblage and plutonic (YTp) rocks

YTp - Plutonic rocks superposed on Nasina and Klondike Schist Subterranes

ACCRETED, INTERMONTANE SUPERTERRANE:

SM - SLIDE MOUNTAIN: Oceanic and/or marginal basin volcanic and sedimentary rocks of Devonian to Late Triassic age including chert, argillite, sandstone, conglomerate, mafic intrusions, basalt, alpine-type ultramafic rocks, carbonate rocks and local blueschist and eclogite

MINFILE STATUS:
- Unknown
- Anomaly
- Showing
- Prospect
- Drilled Prospect
- Underground Past Producer
- Open Pit Past Producer

Placer Occurrences

Mining District Boundary

MINEFILE NAME
- 029 Pax (unknown)
- 101 Blakestad (unknown)
- 102 Rice (unknown)
- 104 Bingham (unknown)

Magnetic declination 1988 varies from 29°45' easterly at centre of west edge to 30°38' easterly at centre of east edge. Mean annual change decreasing 14.7'.

CONTOUR INTERVAL 200 METRES
Elevations in Feet above Mean Sea Level
North American Datum 1983
Transverse Mercator Projection
Ten Thousand Metre Univeral Transverse Mercator Grid
ZONE 7

YUKON GEOLOGICAL SURVEY
Energy Mines and Resources, Yukon Government
Map Version 2004-3, updated July 14, 2004

11.6 Geology

Surficial Geology

Surficial sediments are typical of the Klondike Plateau, with the valley sides lined by a frozen complex of colluvium, alluvial gravel overlain by wind-blown silt, sand and organic material. Along the valley the modern stream channel contains angular immature gravel, as well as sand and organic deposits. Pleistocene alluvial fans occur at the mouths of tributary valleys and a Pleistocene alluvial fan lies near the mouth of the creek in the centre of the valley and on the right limit, near line 01. Basal gravels within these alluvial fans are prospective for the occurrence of placer gold (Jackson, 2005).

Bedrock Geology

Three main geological units are mapped along Rice Creek. These are PKs (Permian Klondike Schist), DMt and Pag (Permian Orthogneiss) and DMps (Devonian-Mississippian quartz-mica schist). Other rock units outcrop on the ridges above Rice Creek including Pv (Permian volcanic) and JKg (mid-Cretaceous granodiorite) (Gordey and Ryan, 2005).

Mineral Occurrences

Minfile # 115N/102 (unknown) on the lower reaches of Rice Creek is a work target staked in 1978 (Deklerk, 2009).

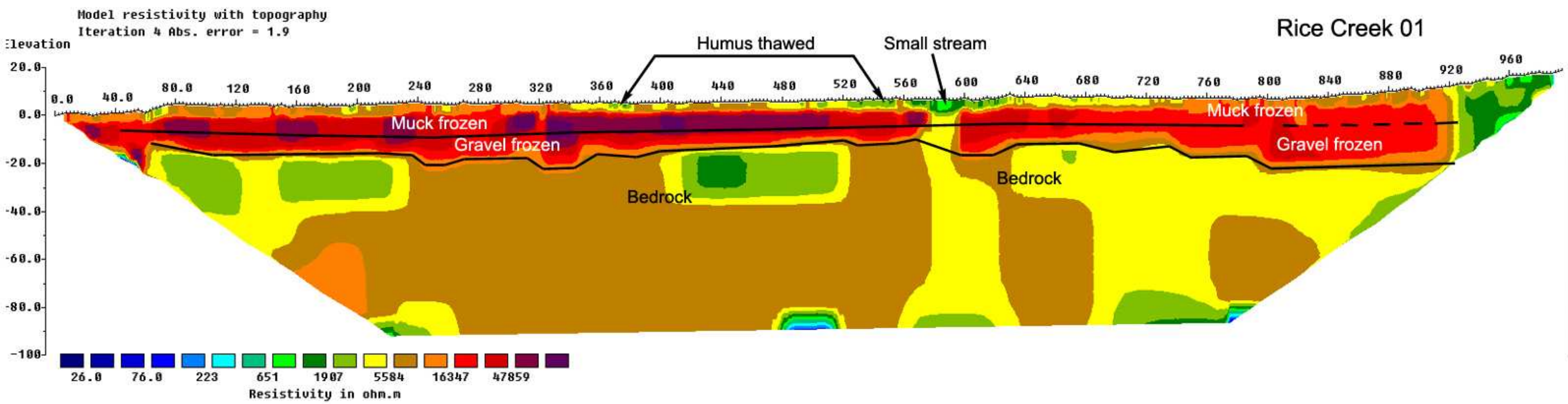
11.7. Profile

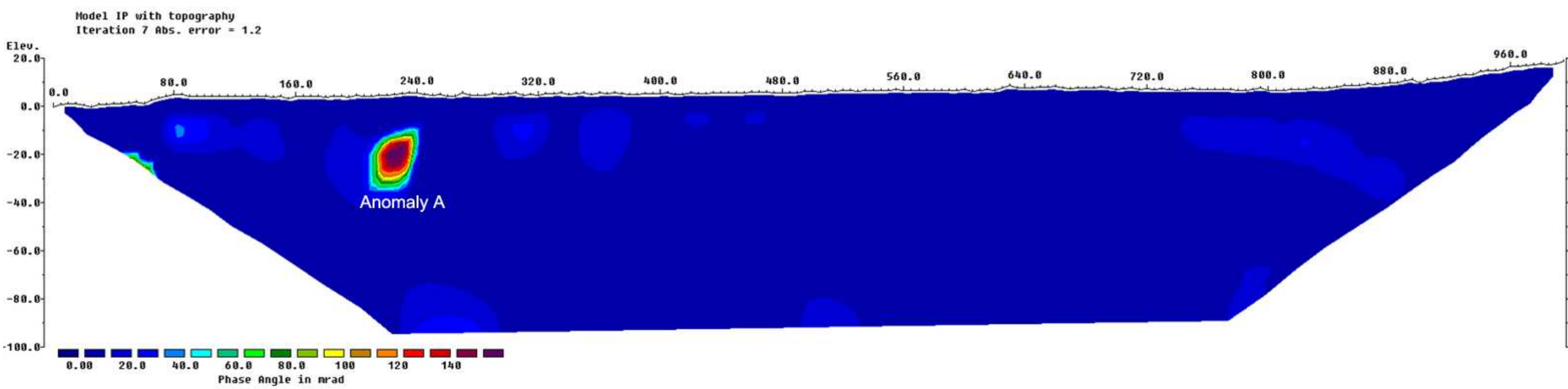
Preliminary Note!

The subsurface information of this study is an interpretation.

Rice Creek 01

Line: Cross valley	**Horizontal measure:** in [meter]	**Data acquisition:** Stefan Ostermaier, May 16th-17th, 2010 **Processing:** Philipp Moll, July 2010
View: downstream	**Vertical measure:** in [meter]	
Electrodes: 200, spacing 5m	**Iteration error:** in [%]	**Location:** 0m (N63° 15' 54.3'' W140° 48' 22.4'') (WGS 84) 995m (N63° 16' 26.3'' W140° 48' 17.7'')
Array: Schlumberger	**Vertical exaggeration in model section display:** 1.58	





Interpretation

We are looking **downstream** at this profile.

The **Resistivity** profile shows 16-25m to possibly schist[61] **bedrock**. The **overburden** represents the Klondike-typical stratification of muck (6-12m) and gravel (6-14m) in about 95% frozen conditions.

The **historic drainage system** seems to present five **paleochannels** in this section of the valley.

At 10-60m there seems to be a **channel,** 50m wide, showing bedrock at 19m, covered with 6m of muck and 13m of gravel.

At 240-270m, there might be a **channel**, 30m wide, presenting bedrock at 22m, filled with 12m of muck and 10m of gravel.

At 320-360m, there might be a **channel**, 40m wide, presenting bedrock at 23m, filled with 11m of muck and 12m of gravel.

At 570-630m a **channel** is measured, 60m wide, showing bedrock at 20m, deposited with 9m of muck and 11m of gravel.

At 790-920m the **deepest channel** is detected, 130m wide, showing bedrock at 25m, deposited with 11m of muck and 14m of gravel.

The **IP** model shows an anomaly (A) in the upper bedrock. Its data over 150 Milliradian are quite high for being an ion-affected induction which is typical for hardrock. The data zone is insular and sharply defined. This might be a false anomaly. But the existence of a possible small ore body in schist bedrock cannot be negated by 100%.

[61] This bedrock type fits with the data and with the Bedrock Geology Map. Because special computer settings were used when processing the data, the data range in the profile is about 4 times higher. Considering this, the bedrock data fit with frozen schist bearing a small amount of well conducting minerals.

11.8. Conclusion

Basics

Rice Creek is a 40km long Yukon stream flowing westwards into the Ladue River (Map 115N/07).

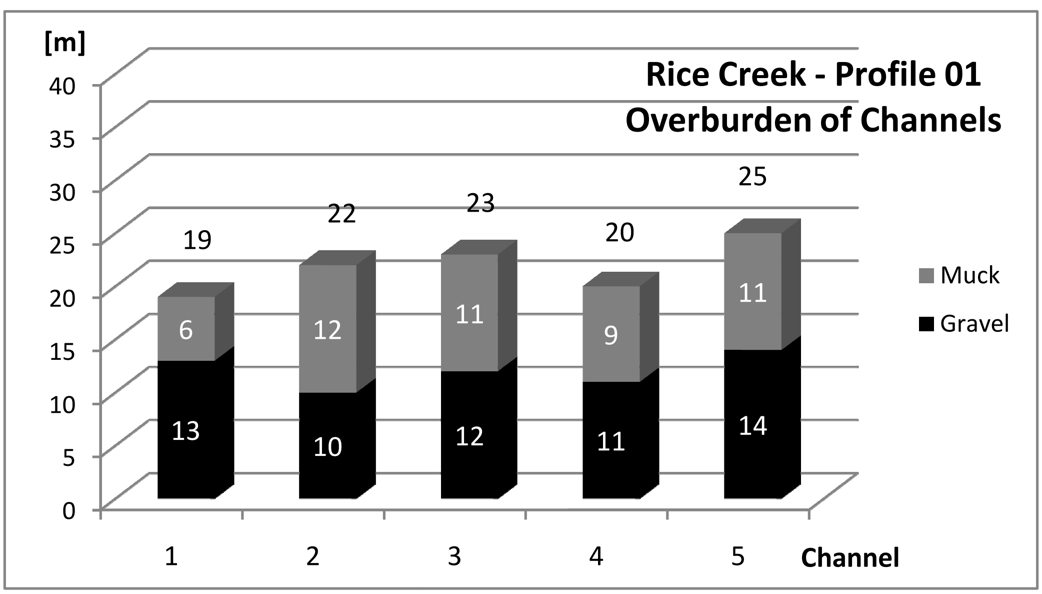
At Rice Creek just one profile was taken 3.8 km of baseline upstream. At this location the bedrock described as Klondike Schist shows up in 16-25m depth.

Rice Creek exhibits the Klondike-typical **stratification** of muck-gravel-bedrock. 3.8km up the valley the overburden should be about 95% frozen on average.

In former times the Rive Creek might have been a larger stream with a high alluvial transportation capacity.

At baseline kilometer 3.8 the historic streambed represents a reticulate **channel system** of 5 channels showing bedrock at 19-25m. In the past several channels might have been active at the same time as the bedrock interface is level across the valley.

Subsurface Parameters



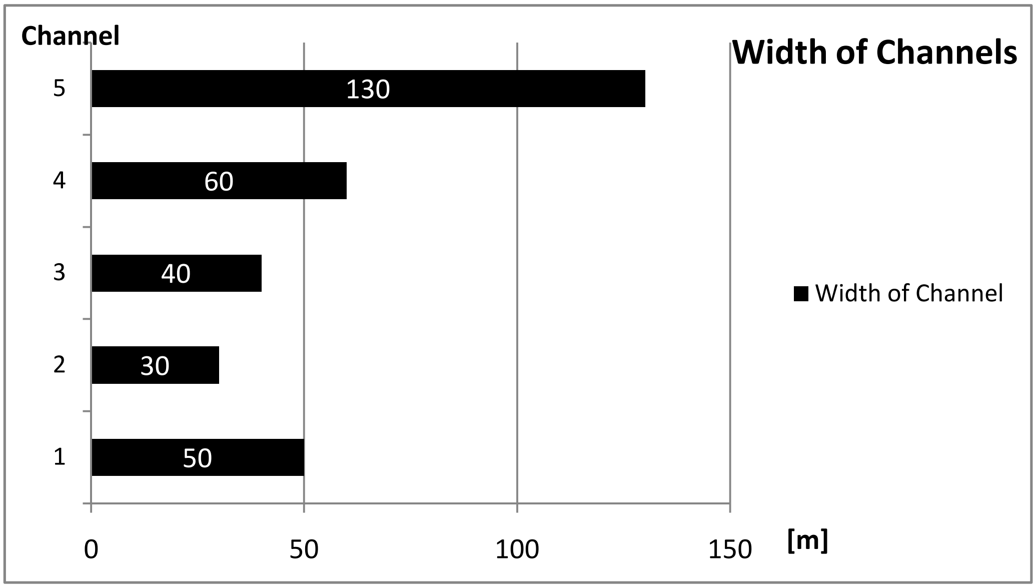


Diagram A: Above: **Overburden of Channels** [Thickness in Meter], Rice Creek
Below: **Width of Channels** [in Meter]
Both: Profile Resistivity 01: Baseline kilometer 3.8, upstream
Interpretation, Arctic Geophysics Inc., Yukon 2010

Assessment for Placer Mining

Regarding **Rice Creek** this survey allows a quantitative assessment concerning the thickness of the overburden as well as a qualitative assessment considering some features that are attractive for placer mining e.g. paleochannels.

At baseline Kilometer 3.8 the Rice Creek presents 5 paleochannels with an overall width of more than 300m. These channels are relatively shallow compared to the width of the valley (almost 1000m). The bedrock of these channels is found at 19-25m depth; the overburden continuously seems to show 10 or more meters of muck; the rest of the overburden might be gravel. Estimation of permafrost: 95%.

The lower Rice Creek presents a wide reticulate paleochannel system which could have created rich placer gold deposits by the same mechanisms as assumed at the lower Ladue River. See chapter: *10.8. Conclusion / Assessment for Placer Miming.*

Both streams, Rice Creek and Ladue River, show lots of conforming characteristics. Thus their placer forming processes could have been very similar. Both streams present a valley which is about 1 km wide and show a various reticulate paleochannel system strongly meandering with a low grade. Historically both streams have most likely shown a reverse flow direction.

All in all Rice Creek is considered to be a stream with high potential for industrial Placer Mining.

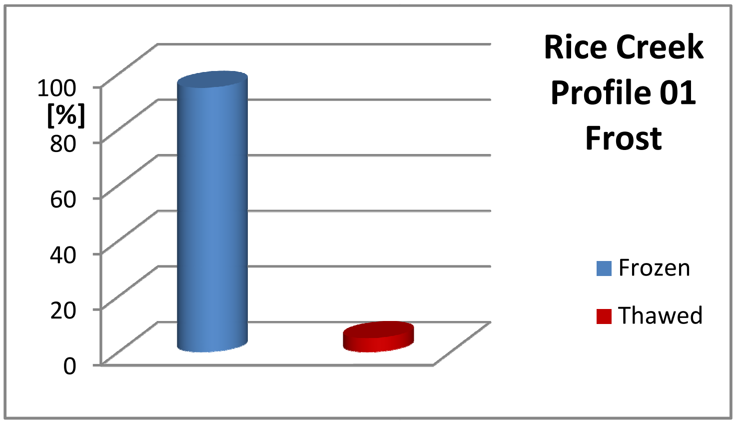


Diagram B: **Permafrost of Overburden** [in %], Rice Creek
Profile Resistivity 01: Baseline kilometer 3.8, upstream
Interpretation, Arctic Geophysics Inc., Yukon 2010

Assessment for Quartz Mining

This document does not provide an interpretation of the IP data measured at **Rice Creek**. An in-depth interpretation of the chargeability patterns would require a lot more geological background information which is not available at this time. The IP data, carefully taken at Rice Creek, refer to a hard rock anomaly seen in the profile. This might help further studies.

11.9. Gallery

Rice Creek, 3.8km upstream, view cross valley, location of profile 01

12. Addendum

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Stefan Ostermaier

Gallery

Rendezvous with the helicopter at confluence of Wolf Creek and White River

Start of the exploration, Dawson City/Yukon, Stefan Ostermaier, AG

Hiking from Los Angeles Line 07 to Wolf Line 06

Processing at Los Angeles Line 07, Stefan, AG

Data Acquisition, Wolf Creek, Line 06

Crew: Stefan Ostermaier, AG; Eloi Mayano-Vinet, Alexandre Duhamel Gingras

GPS Data

Los Angeles Creek Line01

GPS Accuracy 3m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 02 19.4
	W139 35 09.8
5	N63 02 19.6
	W139 35 10.0
10	N63 02 19.8
	W139 35 09.9
15	N63 02 19.9
	W139 35 09.9
20	N63 02 20.1
	W139 35 09.8
25	N63 02 20.2
	W139 35 09.8
30	N63 02 20.4
	W139 35 09.6
35	N63 02 20.5
	W139 35 09.5
40	N63 02 20.7
	W139 35 09.5
45	N63 02 20.9
	W139 35 09.3
50	N63 02 21.1
	W139 35 09.3
55	N63 02 21.2
	W139 35 09.4
60	N63 02 21.4
	W139 35 09.5
65	N63 02 21.5
	W139 35 09.4
70	N63 02 21.7
	W139 35 09.4
75	N63 02 21.9
	W139 35 09.5
80	N63 02 21.8
	W139 35 09.4
85	N63 02 22.0
	W139 35 09.4
90	N63 02 22.1
	W139 35 09.4
95	N63 02 22.3
	W139 35 09.4
100	N63 02 22.4
	W139 35 09.3
105	N63 02 22.5
	W139 35 09.3
110	N63 02 22.7
	W139 35 09.1
115	N63 02 22.9
	W139 35 09.1
120	N63 02 23.0
	W139 35 09.0
125	N63 02 23.2
	W139 35 09.2
130	N63 02 23.3

Profile [m]	Latitude / Longitude
	W139 35 09.1
135	N63 02 23.4
	W139 35 09.0
140	N63 02 23.6
	W139 35 08.9
145	N63 02 23.8
	W139 35 09.0
150	N63 02 23.9
	W139 35 08.8
155	N63 02 24.1
	W139 35 08.8
160	N63 02 24.3
	W139 35 08.8
165	N63 02 24.4
	W139 35 08.8
170	N63 02 24.6
	W139 35 08.7
175	N63 02 24.8
	W139 35 08.7
180	N63 02 24.9
	W139 35 08.7
185	N63 02 25.0
	W139 35 08.7
190	N63 02 25.2
	W139 35 08.6
195	N63 02 25.4
	W139 35 08.6
200	N63 02 25.5
	W139 35 08.5
205	N63 02 25.7
	W139 35 08.4
210	N63 02 25.8
	W139 35 08.4
215	N63 02 26.0
	W139 35 08.3
220	N63 02 26.1
	W139 35 08.3
225	N63 02 26.3
	W139 35 08.3
230	N63 02 26.5
	W139 35 08.2
235	N63 02 26.6
	W139 35 08.2
240	N63 02 26.8
	W139 35 08.2
245	N63 02 27.0
	W139 35 08.2
250	N63 02 27.1
	W139 35 08.3
255	N63 02 27.3
	W139 35 08.3
260	N63 02 27.4
	W139 35 08.2

Profile [m]	Latitude / Longitude
265	N63 02 27.6
	W139 35 08.3
270	N63 02 27.7
	W139 35 08.2
275	N63 02 27.9
	W139 35 08.3
280	N63 02 28.1
	W139 35 08.2
285	N63 02 28.3
	W139 35 08.1
290	N63 02 28.4
	W139 35 08.1
295	N63 02 28.6
	W139 35 08.1
300	N63 02 28.7
	W139 35 08.0
305	N63 02 28.9
	W139 35 08.0
310	N63 02 29.1
	W139 35 08.0
315	N63 02 29.2
	W139 35 07.9
320	N63 02 29.4
	W139 35 07.8
325	N63 02 29.7
	W139 35 07.7
330	N63 02 29.7
	W139 35 07.7
335	N63 02 29.9
	W139 35 07.7
340	N63 02 30.0
	W139 35 07.7
345	N63 02 30.2
	W139 35 07.7
350	N63 02 30.3
	W139 35 07.6
355	N63 02 30.5
	W139 35 07.5
360	N63 02 30.7
	W139 35 07.6
365	N63 02 30.8
	W139 35 07.4
370	N63 02 31.0
	W139 35 07.4
375	N63 02 31.3
	W139 35 07.3
380	N63 02 31.4
	W139 35 07.2
385	N63 02 31.6
	W139 35 07.1
390	N63 02 31.8
	W139 35 07.2
395	N63 02 32.0

Profile [m]	Latitude / Longitude
	W139 35 07.2
400	N63 02 32.1
	W139 35 07.1
405	N63 02 32.3
	W139 35 07.1
410	N63 02 32.4
	W139 35 07.0
415	N63 02 32.6
	W139 35 06.9
420	N63 02 32.8
	W139 35 06.9
425	N63 02 32.9
	W139 35 06.9
430	N63 02 33.1
	W139 35 06.8
435	N63 02 33.2
	W139 35 06.7
440	N63 02 33.4
	W139 35 06.6
445	N63 02 33.5
	W139 35 06.6
450	N63 02 33.7
	W139 35 06.6
455	N63 02 33.9
	W139 35 06.5
460	N63 02 33.9
	W139 35 06.6
465	N63 02 34.1
	W139 35 06.5
470	N63 02 34.3
	W139 35 06.3
475	N63 02 34.5
	W139 35 06.2
480	N63 02 34.6
	W139 35 06.3
485	N63 02 34.8
	W139 35 06.2
490	N63 02 35.0
	W139 35 06.2
495	N63 02 35.0
	W139 35 06.3
500	N63 02 35.2
	W139 35 06.2
505	N63 02 35.4
	W139 35 06.2
510	N63 02 35.5
	W139 35 06.1
515	N63 02 35.6
	W139 35 05.9
520	N63 02 35.8
	W139 35 05.9
525	N63 02 36.0
	W139 35 05.9

Profile [m]	Latitude / Longitude
530	N63 02 36.3
	W139 35 05.8
535	N63 02 36.2
	W139 35 05.8
540	N63 02 36.4
	W139 35 05.6
545	N63 02 36.6
	W139 35 05.6
550	N63 02 36.8
	W139 35 05.6
555	N63 02 37.0
	W139 35 05.6
560	N63 02 37.2
	W139 35 05.5
565	N63 02 37.3
	W139 35 05.5
570	N63 02 37.4
	W139 35 05.4
575	N63 02 37.6
	W139 35 05.2
580	N63 02 37.7
	W139 35 05.2
585	N63 02 37.9
	W139 35 05.2
590	N63 02 38.0
	W139 35 05.2
595	N63 02 38.2
	W139 35 05.0
600	N63 02 38.3
	W139 35 04.9
605	N63 02 38.4
	W139 35 04.7
610	N63 02 38.6
	W139 35 04.6
615	N63 02 38.8
	W139 35 04.6
620	N63 02 38.9
	W139 35 04.4
625	N63 02 39.1
	W139 35 04.8
630	N63 02 39.2
	W139 35 04.5
635	N63 02 39.4
	W139 35 04.4
640	N63 02 39.5
	W139 35 04.3
645	N63 02 39.7
	W139 35 04.1
650	N63 02 39.8
	W139 35 04.1
655	N63 02 39.9
	W139 35 03.8
660	N63 02 40.0

Profile [m]	Latitude / Longitude
	W139 35 03.6
665	N63 02 40.1 W139 35 03.4
670	N63 02 40.3 W139 35 03.3
675	N63 02 40.4 W139 35 03.1
680	N63 02 40.5 W139 35 02.9
685	N63 02 40.7 W139 35 02.9
690	N63 02 40.9 W139 35 02.7
695	N63 02 41.0 W139 35 02.7
700	N63 02 41.2 W139 35 02.5
705	N63 02 41.3 W139 35 02.6
710	N63 02 41.5 W139 35 02.5
715	N63 02 41.7 W139 35 02.5
720	N63 02 41.8 W139 35 02.5
725	N63 02 42.0 W139 35 02.4
730	N63 02 42.1 W139 35 02.5
735	N63 02 42.3 W139 35 02.2
740	N63 02 42.4 W139 35 02.3
745	N63 02 42.6 W139 35 02.3

Los Angeles Creek Line02

GPS Accuracy 3m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 02 27.2 W139 38 49.9
5	N63 02 26.8 W139 38 50.3
10	N63 02 26.8 W139 38 50.5
15	N63 02 27.0 W139 38 50.6
20	N63 02 27.0 W139 38 51.0
25	N63 02 27.1 W139 38 51.3
30	N63 02 27.2 W139 38 51.5
35	N63 02 27.5 W139 38 51.5
40	N63 02 27.6 W139 38 51.6
45	N63 02 27.8 W139 38 51.8
50	N63 02 27.9 W139 38 51.9
55	N63 02 28.0 W139 38 52.1
60	N63 02 28.2 W139 38 52.2
65	N63 02 28.3 W139 38 52.4
70	N63 02 28.4 W139 38 52.7
75	N63 02 28.5 W139 38 52.7
80	N63 02 28.7 W139 38 52.9
85	N63 02 28.8 W139 38 53.0
90	N63 02 28.9 W139 38 53.3
95	N63 02 29.1 W139 38 53.5
100	N63 02 29.2 W139 38 53.6
105	N63 02 29.3 W139 38 53.8
110	N63 02 29.5 W139 38 54.0
115	N63 02 29.6 W139 38 54.3
120	N63 02 29.7 W139 38 54.5
125	N63 02 29.9 W139 38 54.7
130	N63 02 30.0 W139 38 54.8
135	N63 02 30.2 W139 38 55.0
140	N63 02 30.3 W139 38 55.2
145	N63 02 30.4 W139 38 55.4
150	N63 02 30.5 W139 38 55.5
155	N63 02 30.7 W139 38 55.8
160	N63 02 30.9 W139 38 56.0
165	N63 02 31.0 W139 38 56.2
170	N63 02 31.1 W139 38 56.3
175	N63 02 31.2 W139 38 56.5
180	N63 02 31.4 W139 38 56.7
185	N63 02 31.5 W139 38 57.0
190	N63 02 31.6 W139 38 57.1
195	N63 02 31.7 W139 38 57.4
200	N63 02 31.9 W139 38 57.4
205	N63 02 32.0 W139 38 57.6
210	N63 02 32.2 W139 38 58.0
215	N63 02 32.3 W139 38 58.1
220	N63 02 32.5 W139 38 58.1
225	N63 02 32.5 W139 38 58.5
230	N63 02 32.7 W139 38 58.8
235	N63 02 32.9 W139 38 58.9
240	N63 02 33.0 W139 38 59.1
245	N63 02 33.1 W139 38 59.3
250	N63 02 33.2 W139 38 59.6
255	N63 02 33.4 W139 38 59.6
260	N63 02 33.5 W139 38 59.9
265	N63 02 33.6 W139 39 00.2
270	N63 02 33.7 W139 39 00.5
275	N63 02 33.9 W139 39 00.6
280	N63 02 34.1 W139 39 00.6
285	N63 02 34.1 W139 39 00.9
290	N63 02 34.3 W139 39 01.1
295	N63 02 34.4 W139 39 01.5
300	N63 02 34.6 W139 39 01.4
305	N63 02 34.7 W139 39 01.8
310	N63 02 34.8 W139 39 02.1
315	N63 02 35.0 W139 39 02.2
320	N63 02 35.1 W139 39 02.3
325	N63 02 35.2 W139 39 02.5
330	N63 02 35.4 W139 39 02.8
335	N63 02 35.5 W139 39 02.9
340	N63 02 35.6 W139 39 03.2
345	N63 02 35.8 W139 39 03.3
350	N63 02 35.9 W139 39 03.5
355	N63 02 36.0 W139 39 03.7
360	N63 02 36.2 W139 39 03.9
365	N63 02 36.3 W139 39 04.1
370	N63 02 36.4 W139 39 04.3
375	N63 02 36.5 W139 39 04.7
380	N63 02 36.6 W139 39 04.9
385	N63 02 36.8 W139 39 05.2
390	N63 02 36.9 W139 39 05.3
395	N63 02 37.0 W139 39 05.6
400	N63 02 37.2 W139 39 05.9
405	N63 02 37.2 W139 39 06.3
410	N63 02 37.4 W139 39 06.3
415	N63 02 37.5 W139 39 06.5
420	N63 02 37.6 W139 39 06.7
425	N63 02 37.7 W139 39 07.2
430	N63 02 37.8 W139 39 07.2
435	N63 02 38.0 W139 39 07.5
440	N63 02 38.1 W139 39 07.6
445	N63 02 38.2 W139 39 07.9
450	N63 02 38.3 W139 39 07.9
455	N63 02 38.5 W139 39 08.2
460	N63 02 38.6 W139 39 08.5
465	N63 02 38.7 W139 39 08.8
470	N63 02 38.9 W139 39 09.1
475	N63 02 39.0 W139 39 09.1
480	N63 02 39.1 W139 39 09.3
485	N63 02 39.2 W139 39 09.5
490	N63 02 39.3 W139 39 09.8
495	N63 02 39.4 W139 39 09.9

Los Angeles Creek Line03

GPS Accuracy 3m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 03 12.9 W139 43 00.2
5	N63 03 13.1 W139 43 00.1
10	N63 03 13.2 W139 43 00.1
15	N63 03 13.4 W139 43 00.1
20	N63 03 13.5 W139 42 59.9
25	N63 03 13.7 W139 42 59.9
30	N63 03 13.8 W139 42 59.8
35	N63 03 14.0 W139 42 59.8
40	N63 03 14.2 W139 42 59.6
45	N63 03 14.3 W139 42 59.5
50	N63 03 14.5 W139 42 59.4
55	N63 03 14.6 W139 42 59.4
60	N63 03 14.8 W139 42 59.3
65	N63 03 14.9 W139 42 59.2
70	N63 03 15.1 W139 42 59.0
75	N63 03 15.2 W139 42 58.9
80	N63 03 15.4 W139 42 59.0
85	N63 03 15.5 W139 42 58.9
90	N63 03 15.7 W139 42 58.8
95	N63 03 15.8 W139 42 58.6
100	N63 03 16.0 W139 42 58.6
105	N63 03 16.2 W139 42 58.6
110	N63 03 16.3 W139 42 58.4
115	N63 03 16.5 W139 42 58.4
120	N63 03 16.6 W139 42 58.3
125	N63 03 16.8 W139 42 58.2

Profile [m]	Latitude / Longitude
130	N63 03 16.9 W139 42 58.1
135	N63 03 17.1 W139 42 58.1
140	N63 03 17.2 W139 42 57.9
145	N63 03 17.4 W139 42 58.0
150	N63 03 17.6 W139 42 57.9
155	N63 03 17.7 W139 42 57.7
160	N63 03 17.9 W139 42 57.5
165	N63 03 17.9 W139 42 57.4
170	N63 03 18.0 W139 42 57.5
175	N63 03 18.3 W139 42 57.5
180	N63 03 18.4 W139 42 57.4
185	N63 03 18.6 W139 42 57.3
190	N63 03 18.7 W139 42 57.2
195	N63 03 18.9 W139 42 57.1
200	N63 03 19.1 W139 42 57.0
205	N63 03 19.3 W139 42 57.0
210	N63 03 19.4 W139 42 56.8
215	N63 03 19.5 W139 42 56.7
220	N63 03 19.8 W139 42 56.7
225	N63 03 20.0 W139 42 56.7
230	N63 03 20.1 W139 42 56.6
235	N63 03 20.2 W139 42 56.5
240	N63 03 20.4 W139 42 56.4
245	N63 03 20.5 W139 42 56.3
250	N63 03 20.7 W139 42 56.3
255	N63 03 20.9 W139 42 56.2

Profile [m]	Latitude / Longitude
260	N63 03 21.0 W139 42 56.1
265	N63 03 21.2 W139 42 56.1
270	N63 03 21.3 W139 42 55.9
275	N63 03 21.6 W139 42 55.9
280	N63 03 21.7 W139 42 55.9
285	N63 03 21.8 W139 42 55.8
290	N63 03 22.0 W139 42 55.7
295	N63 03 22.1 W139 42 55.4
300	N63 03 22.3 W139 42 55.5
305	N63 03 22.5 W139 42 55.4
310	N63 03 22.6 W139 42 55.2
315	N63 03 22.8 W139 42 55.2
320	N63 03 22.9 W139 42 55.0
325	N63 03 23.1 W139 42 55.1
330	N63 03 23.2 W139 42 55.0
335	N63 03 23.4 W139 42 54.8
340	N63 03 23.5 W139 42 54.9
345	N63 03 23.6 W139 42 54.7
350	N63 03 23.8 W139 42 54.6
355	N63 03 23.9 W139 42 54.6
360	N63 03 24.1 W139 42 54.5
365	N63 03 24.3 W139 42 54.3
370	N63 03 24.4 W139 42 54.2
375	N63 03 24.6 W139 42 54.2
380	N63 03 24.8 W139 42 54.3
385	N63 03 24.8 W139 42 54.1

Profile [m]	Latitude / Longitude
390	N63 03 25.1 W139 42 54.1
395	N63 03 25.2 W139 42 53.8
400	N63 03 25.3 W139 42 53.7
405	N63 03 25.5 W139 42 53.6
410	N63 03 25.6 W139 42 53.5
415	N63 03 25.7 W139 42 53.4
420	N63 03 25.8 W139 42 53.2
425	N63 03 25.9 W139 42 53.0
430	N63 03 26.1 W139 42 52.8
435	N63 03 26.2 W139 42 52.9
440	N63 03 26.4 W139 42 52.7
445	N63 03 26.6 W139 42 52.8
450	N63 03 26.7 W139 42 52.8
455	N63 03 26.9 W139 42 52.6
460	N63 03 27.1 W139 42 52.6
465	N63 03 27.1 W139 42 52.5
470	N63 03 27.4 W139 42 52.4
475	N63 03 27.6 W139 42 52.2
480	N63 03 27.8 W139 42 52.3
485	N63 03 27.9 W139 42 52.2
490	N63 03 28.0 W139 42 52.1
495	N63 03 28.1 W139 42 52.0
500	N63 03 28.3 W139 42 52.0
505	N63 03 28.3 W139 42 51.7
510	N63 03 28.3 W139 42 51.7
515	N63 03 28.7 W139 42 51.4

Profile [m]	Latitude / Longitude
520	N63 03 28.8 W139 42 51.5
525	N63 03 29.0 W139 42 51.2
530	N63 03 29.2 W139 42 51.2
535	N63 03 29.3 W139 42 51.1
540	N63 03 29.4 W139 42 51.1
545	N63 03 29.7 W139 42 51.1
550	N63 03 29.8 W139 42 50.9
555	N63 03 29.9 W139 42 51.0
560	N63 03 30.1 W139 42 50.9
565	N63 03 30.2 W139 42 50.8
570	N63 03 30.3 W139 42 50.7
575	N63 03 30.5 W139 42 50.5
580	N63 03 30.7 W139 42 50.4
585	N63 03 30.9 W139 42 50.4
590	N63 03 31.0 W139 42 50.3
595	N63 03 31.2 W139 42 50.2
600	N63 03 31.4 W139 42 50.1
605	N63 03 31.5 W139 42 50.1
610	N63 03 31.7 W139 42 50.1
615	N63 03 31.9 W139 42 49.9
620	N63 03 32.1 W139 42 49.9

Los Angeles Creek Line04

GPS Accuracy 3 m

(DD° MM‘ SS‘‘ WGS84

Profile [m]	Latitude / Longitude
0	N63 04 12.9
	W139 46 58.7
5	N63 04 13.0
	W139 46 58.7
10	N63 04 13.2
	W139 46 58.8
15	N63 04 13.3
	W139 46 58.8
20	N63 04 13.5
	W139 46 58.9
25	N63 04 13.6
	W139 46 58.9
30	N63 04 13.8
	W139 46 58.9
35	N63 04 14.0
	W139 46 59.1
40	N63 04 14.1
	W139 46 59.2
45	N63 04 14.3
	W139 46 59.3
50	N63 04 14.4
	W139 46 59.3
55	N63 04 14.5
	W139 46 59.3
60	N63 04 14.7
	W139 46 59.3
65	N63 04 14.7
	W139 46 59.5
70	N63 04 14.8
	W139 46 59.5
75	N63 04 15.1
	W139 46 59.6
80	N63 04 15.4
	W139 46 59.6
85	N63 04 15.4
	W139 46 59.5
90	N63 04 15.6
	W139 46 59.6
95	N63 04 15.7
	W139 46 59.7
100	N63 04 15.9
	W139 46 59.6
105	N63 04 16.1
	W139 46 59.7
110	N63 04 16.2
	W139 46 59.7
115	N63 04 16.4
	W139 46 59.9
120	N63 04 16.5
	W139 46 59.9
125	N63 04 16.7
	W139 46 59.9
130	N63 04 16.9
	W139 46 59.8
135	N63 04 17.0
	W139 46 59.9
140	N63 04 17.2
	W139 47 00.0
145	N63 04 17.3
	W139 47 00.1
150	N63 04 17.5
	W139 47 00.1
155	N63 04 17.6
	W139 47 00.1
160	N63 04 17.8
	W139 47 00.3
165	N63 04 18.0
	W139 47 00.1
170	N63 04 18.2
	W139 47 00.2
175	N63 04 18.2
	W139 47 00.3
180	N63 04 18.4
	W139 47 00.4
185	N63 04 18.6
	W139 47 00.5
190	N63 04 18.7
	W139 47 00.5
195	N63 04 18.9
	W139 47 00.6
200	N63 04 19.0
	W139 47 00.5
205	N63 04 19.2
	W139 47 00.6
210	N63 04 19.4
	W139 47 00.7
215	N63 04 19.6
	W139 47 00.6
220	N63 04 19.7
	W139 47 00.9
225	N63 04 19.9
	W139 47 01.0
230	N63 04 20.0
	W139 47 01.0
235	N63 04 20.2
	W139 47 01.0
240	N63 04 20.3
	W139 47 01.1
245	N63 04 20.4
	W139 47 01.2
250	N63 04 20.7
	W139 47 01.2
255	N63 04 20.8
	W139 47 01.3
260	N63 04 21.0
	W139 47 01.4
265	N63 04 21.1
	W139 47 01.3
270	N63 04 21.3
	W139 47 01.4
275	N63 04 21.4
	W139 47 01.4
280	N63 04 21.6
	W139 47 01.5
285	N63 04 21.7
	W139 47 01.4
290	N63 04 21.9
	W139 47 01.3
295	N63 04 22.1
	W139 47 01.7
300	N63 04 22.2
	W139 47 01.6
305	N63 04 22.1
	W139 47 01.5
310	N63 04 22.3
	W139 47 01.5
315	N63 04 22.5
	W139 47 01.5
320	N63 04 22.7
	W139 47 01.5
325	N63 04 22.8
	W139 47 01.6
330	N63 04 23.0
	W139 47 01.6
335	N63 04 23.2
	W139 47 01.4
340	N63 04 23.3
	W139 47 01.5
345	N63 04 23.6
	W139 47 01.5
350	N63 04 23.6
	W139 47 01.6
355	N63 04 23.9
	W139 47 01.7
360	N63 04 24.0
	W139 47 01.8
365	N63 04 24.2
	W139 47 01.8
370	N63 04 24.3
	W139 47 01.7
375	N63 04 24.4
	W139 47 01.9
380	N63 04 24.6
	W139 47 01.7
385	N63 04 24.7
	W139 47 01.7
390	N63 04 24.8
	W139 47 01.8
395	N63 04 25.0
	W139 47 01.8
400	N63 04 25.2
	W139 47 01.7
405	N63 04 25.4
	W139 47 01.8
410	N63 04 25.5
	W139 47 01.9
415	N63 04 25.7
	W139 47 01.9
420	N63 04 25.9
	W139 47 02.0
425	N63 04 26.0
	W139 47 02.1
430	N63 04 26.2
	W139 47 02.1
435	N63 04 26.4
	W139 47 02.0
440	N63 04 26.6
	W139 47 02.0
445	N63 04 26.7
	W139 47 02.2
450	N63 04 26.8
	W139 47 02.3
455	N63 04 27.0
	W139 47 02.3
460	N63 04 27.1
	W139 47 02.4
465	N63 04 27.3
	W139 47 02.5
470	N63 04 27.4
	W139 47 02.7
475	N63 04 27.5
	W139 47 02.6
480	N63 04 27.6
	W139 47 02.7
485	N63 04 27.9
	W139 47 02.8
490	N63 04 28.1
	W139 47 02.8
495	N63 04 28.2
	W139 47 02.8

Los Angeles Creek Line05

GPS Accuracy 3-4m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 04 52.9
	W139 50 52.7
3	N63 04 53.0
	W139 50 52.7
6	N63 04 53.2
	W139 50 52.5
9	N63 04 53.3
	W139 50 52.6
12	N63 04 53.4
	W139 50 52.5
15	N63 04 53.4
	W139 50 52.5
18	N63 04 53.5
	W139 50 52.4
21	N63 04 53.6
	W139 50 52.3
24	N63 04 53.7
	W139 50 52.3
27	N63 04 53.8
	W139 50 52.2
30	N63 04 53.9
	W139 50 52.3
33	N63 04 54.0
	W139 50 52.3
36	N63 04 54.1
	W139 50 52.3
39	N63 04 54.2
	W139 50 52.3
42	N63 04 54.3
	W139 50 52.3

Profile [m]	Latitude / Longitude
45	N63 04 54.4 W139 50 52.3
48	N63 04 54.5 W139 50 52.2
51	N63 04 54.6 W139 50 52.3
54	N63 04 54.7 W139 50 52.3
57	N63 04 54.8 W139 50 52.2
60	N63 04 54.9 W139 50 52.1
63	N63 04 55.0 W139 50 52.1
66	N63 04 55.1 W139 50 52.1
69	N63 04 55.2 W139 50 52.2
72	N63 04 55.3 W139 50 52.2
75	N63 04 55.4 W139 50 52.2
78	N63 04 55.5 W139 50 52.2
81	N63 04 55.6 W139 50 52.1
84	N63 04 55.7 W139 50 52.1
87	N63 04 55.8 W139 50 52.1
90	N63 04 55.9 W139 50 51.9
93	N63 04 55.9 W139 50 52.1
96	N63 04 56.1 W139 50 52.0
99	N63 04 56.2 W139 50 52.1
102	N63 04 56.3 W139 50 52.1
105	N63 04 56.4 W139 50 52.0
108	N63 04 56.4 W139 50 52.0
111	N63 04 56.6 W139 50 51.9
114	N63 04 56.7 W139 50 52.1
117	N63 04 56.7 W139 50 52.0
120	N63 04 56.8 W139 50 52.1
123	N63 04 57.0 W139 50 52.0
126	N63 04 57.0 W139 50 52.0
129	N63 04 57.1 W139 50 52.0
132	N63 04 57.3 W139 50 51.9
135	N63 04 57.4 W139 50 51.9
138	N63 04 57.5 W139 50 51.9
141	N63 04 57.6 W139 50 52.0
144	N63 04 57.6 W139 50 51.9
147	N63 04 57.8 W139 50 51.9
150	N63 04 57.9 W139 50 51.9
153	N63 04 57.9 W139 50 51.9
156	N63 04 58.0 W139 50 51.9
159	N63 04 58.1 W139 50 52.0
162	N63 04 58.2 W139 50 51.9
165	N63 04 58.3 W139 50 51.9
168	N63 04 58.4 W139 50 51.9
171	N63 04 58.5 W139 50 51.9
174	N63 04 58.6 W139 50 51.7
177	N63 04 58.7 W139 50 51.7
180	N63 04 58.8 W139 50 51.8
183	N63 04 58.9 W139 50 51.8
186	N63 04 58.9 W139 50 51.6
189	N63 04 59.0 W139 50 51.8
192	N63 04 59.1 W139 50 51.7
195	N63 04 59.1 W139 50 51.7
198	N63 04 59.2 W139 50 51.6
201	N63 04 59.4 W139 50 51.5
204	N63 04 59.4 W139 50 51.6
207	N63 04 59.5 W139 50 51.7
210	N63 04 59.6 W139 50 51.6
213	N63 04 59.7 W139 50 51.6
216	N63 04 59.8 W139 50 51.6
219	N63 05 00.0 W139 50 51.7
222	N63 05 00.0 W139 50 51.7
225	N63 05 00.2 W139 50 51.6
228	N63 05 00.4 W139 50 51.5
231	N63 05 00.5 W139 50 51.6
234	N63 05 00.5 W139 50 51.7
237	N63 05 00.5 W139 50 51.5
240	N63 05 00.7 W139 50 51.3
243	N63 05 00.7 W139 50 51.3
246	N63 05 00.8 W139 50 51.4
249	N63 05 00.9 W139 50 51.5
252	N63 05 01.0 W139 50 51.6
255	N63 05 01.1 W139 50 51.6
258	N63 05 01.2 W139 50 51.6
261	N63 05 01.2 W139 50 51.6
264	N63 05 01.3 W139 50 51.4
267	N63 05 01.4 W139 50 51.5
270	N63 05 01.5 W139 50 51.5
273	N63 05 01.6 W139 50 51.4
276	N63 05 01.7 W139 50 51.4
279	N63 05 01.8 W139 50 51.5
282	N63 05 01.9 W139 50 51.7
285	N63 05 02.0 W139 50 51.7
288	N63 05 02.0 W139 50 51.6
291	N63 05 02.2 W139 50 51.5
294	N63 05 02.3 W139 50 51.5
297	N63 05 02.4 W139 50 51.6

Los Angeles Creek Line06

GPS Accuracy 3m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 05 08.4 W139 54 39.8
4	N63 05 08.5 W139 54 39.8
8	N63 05 08.6 W139 54 40.0
12	N63 05 08.8 W139 54 40.1
16	N63 05 08.9 W139 54 40.2
20	N63 05 09.0 W139 54 40.3
24	N63 05 09.2 W139 54 40.5
28	N63 05 09.2 W139 54 40.6
32	N63 05 09.4 W139 54 40.7
36	N63 05 09.5 W139 54 40.9
40	N63 05 09.7 W139 54 40.9
44	N63 05 09.7 W139 54 41.1
48	N63 05 09.9 W139 54 41.3
52	N63 05 10.0 W139 54 41.3
56	N63 05 10.1 W139 54 41.5
60	N63 05 10.1 W139 54 41.5
64	N63 05 10.2 W139 54 41.7
68	N63 05 10.3 W139 54 41.8
72	N63 05 10.4 W139 54 41.9
76	N63 05 10.5 W139 54 42.1
80	N63 05 10.6 W139 54 42.1
84	N63 05 10.8 W139 54 42.3
88	N63 05 10.9 W139 54 42.2
92	N63 05 11.0 W139 54 42.3
96	N63 05 11.2 W139 54 42.4
100	N63 05 11.3 W139 54 42.6
104	N63 05 11.4 W139 54 42.7
108	N63 05 11.5 W139 54 42.8
112	N63 05 11.7 W139 54 42.8
116	N63 05 11.8 W139 54 43.0
120	N63 05 11.9 W139 54 43.1
124	N63 05 12.0 W139 54 43.2
128	N63 05 12.1 W139 54 43.4
132	N63 05 12.3 W139 54 43.5
136	N63 05 12.3 W139 54 43.6
140	N63 05 12.4 W139 54 43.8
144	N63 05 12.5 W139 54 44.0
148	N63 05 12.6 W139 54 44.0
152	N63 05 12.8 W139 54 44.1
156	N63 05 12.9 W139 54 44.2

Profile [m]	Latitude / Longitude
160	N63 05 12.9 W139 54 44.3
164	N63 05 13.0 W139 54 44.4
168	N63 05 13.1 W139 54 44.4
172	N63 05 13.2 W139 54 44.5
176	N63 05 13.4 W139 54 44.5
180	N63 05 13.4 W139 54 44.6
184	N63 05 13.4 W139 54 44.8
188	N63 05 13.6 W139 54 45.1
192	N63 05 13.8 W139 54 45.1
198	N63 05 13.9 W139 54 45.2

Los Angeles Creek Line07

GPS Accuracy 3m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 04 13.8 W139 58 03.5
4	N63 04 13.9 W139 58 03.5
8	N63 04 14.1 W139 58 03.5
12	N63 04 14.2 W139 58 03.5
16	N63 04 14.3 W139 58 03.4
20	N63 04 14.5 W139 58 03.4
24	N63 04 14.6 W139 58 03.5
28	N63 04 14.7 W139 58 03.4
32	N63 04 14.8 W139 58 03.2
36	N63 04 14.9 W139 58 03.2
40	N63 04 15.0 W139 58 03.2
44	N63 04 15.1 W139 58 03.2
48	N63 04 15.3 W139 58 03.1
52	N63 04 15.4 W139 58 03.1
56	N63 04 15.5 W139 58 03.2
60	N63 04 15.7 W139 58 03.3
64	N63 04 15.8 W139 58 03.2
68	N63 04 15.9 W139 58 03.2
72	N63 04 16.0 W139 58 03.1
76	N63 04 16.1 W139 58 03.2
80	N63 04 16.3 W139 58 03.2
84	N63 04 16.4 W139 58 03.3
88	N63 04 16.5 W139 58 03.3
92	N63 04 16.6 W139 58 03.1
96	N63 04 16.7 W139 58 03.0
100	N63 04 16.9 W139 58 03.0
104	N63 04 17.0 W139 58 02.9
108	N63 04 17.1 W139 58 03.0
112	N63 04 17.2 W139 58 02.9
116	N63 04 17.4 W139 58 03.0
120	N63 04 17.5 W139 58 02.9
124	N63 04 17.6 W139 58 02.7
128	N63 04 17.7 W139 58 02.7
132	N63 04 17.9 W139 58 02.8
136	N63 04 18.0 W139 58 02.7
140	N63 04 18.1 W139 58 02.6
144	N63 04 18.3 W139 58 02.4
148	N63 04 18.4 W139 58 02.5
152	N63 04 18.5 W139 58 02.4
156	N63 04 18.6 W139 58 02.3
160	N63 04 18.7 W139 58 02.3
164	N63 04 18.8 W139 58 02.3
168	N63 04 19.0 W139 58 02.3
172	N63 04 19.0 W139 58 02.2
176	N63 04 19.1 W139 58 02.0
180	N63 04 19.2 W139 58 02.2
184	N63 04 19.4 W139 58 02.1
188	N63 04 19.5 W139 58 02.0
192	N63 04 19.6 W139 58 02.0
196	N63 04 19.8 W139 58 01.8
198	N63 04 19.8 W139 58 01.6

Wolf Creek Line01

GPS Accuracy 3-5m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 05 39.0 W140 20 03.4
5	N63 05 39.1 W140 20 03.4
10	N63 05 39.5 W140 20 03.9
15	N63 05 39.7 W140 20 03.9
20	N63 05 39.8 W140 20 04.1
25	N63 05 39.9 W140 20 04.2
30	N63 05 40.0 W140 20 04.4
35	N63 05 40.1 W140 20 04.4
40	N63 05 40.2 W140 20 04.6
45	N63 05 40.4 W140 20 04.8
50	N63 05 40.6 W140 20 04.8
55	N63 05 40.9 W140 20 04.8
60	N63 05 41.0 W140 20 04.8
65	N63 05 41.2 W140 20 05.0
70	N63 05 41.2 W140 20 05.3
75	N63 05 41.4 W140 20 05.4
80	N63 05 41.5 W140 20 05.2
85	N63 05 41.7 W140 20 05.4
90	N63 05 41.8 W140 20 05.5
95	N63 05 41.9 W140 20 05.5
100	N63 05 42.1 W140 20 05.7
105	N63 05 42.3 W140 20 05.8
110	N63 05 42.4 W140 20 05.9
115	N63 05 42.6 W140 20 06.0
120	N63 05 42.8 W140 20 06.1
125	N63 05 42.9 W140 20 06.4
130	N63 05 43.0 W140 20 06.4
135	N63 05 43.2 W140 20 06.6
140	N63 05 43.3 W140 20 06.6
145	N63 05 43.5 W140 20 06.7
150	N63 05 43.6 W140 20 06.9
155	N63 05 43.8 W140 20 06.9
160	N63 05 44.0 W140 20 07.2
165	N63 05 44.1 W140 20 07.3
170	N63 05 44.2 W140 20 07.4
175	N63 05 44.3 W140 20 07.5
180	N63 05 44.5 W140 20 07.7
185	N63 05 44.6

Profile [m]	Latitude / Longitude
	W140 20 07.7
190	N63 05 44.8
	W140 20 07.8
195	N63 05 44.9
	W140 20 07.9
200	N63 05 45.1
	W140 20 08.0
205	N63 05 45.3
	W140 20 08.1
210	N63 05 45.4
	W140 20 08.2
215	N63 05 45.6
	W140 20 08.5
220	N63 05 45.7
	W140 20 08.6
225	N63 05 45.9
	W140 20 08.6
230	N63 05 46.0
	W140 20 08.8
235	N63 05 46.1
	W140 20 09.0
240	N63 05 46.3
	W140 20 09.1
245	N63 05 46.5
	W140 20 09.0
250	N63 05 46.7
	W140 20 09.0
255	N63 05 46.9
	W140 20 09.1
260	N63 05 47.0
	W140 20 09.3
265	N63 05 47.2
	W140 20 09.3
270	N63 05 47.3
	W140 20 09.6
275	N63 05 47.4

Profile [m]	Latitude / Longitude
	W140 20 09.6
280	N63 05 47.6
	W140 20 09.7
285	N63 05 47.7
	W140 20 09.8
290	N63 05 47.8
	W140 20 10.1
295	N63 05 48.0
	W140 20 10.2
300	N63 05 48.1
	W140 20 10.3
305	N63 05 48.3
	W140 20 10.4
310	N63 05 48.5
	W140 20 10.5
315	N63 05 48.6
	W140 20 10.6
320	N63 05 48.8
	W140 20 10.7
325	N63 05 48.9
	W140 20 10.8
330	N63 05 49.0
	W140 20 10.9
335	N63 05 49.2
	W140 20 11.1
340	N63 05 49.3
	W140 20 11.1
345	N63 05 49.6
	W140 20 11.3
350	N63 05 49.7
	W140 20 11.3
355	N63 05 49.8
	W140 20 11.5
360	N63 05 50.0
	W140 20 11.5
365	N63 05 50.1

Profile [m]	Latitude / Longitude
	W140 20 11.6
370	N63 05 50.3
	W140 20 11.7
375	N63 05 50.4
	W140 20 12.0
380	N63 05 50.5
	W140 20 12.0
385	N63 05 50.7
	W140 20 11.9
390	N63 05 50.9
	W140 20 11.9
395	N63 05 51.0
	W140 20 12.0
400	N63 05 51.2
	W140 20 12.3
405	N63 05 51.3
	W140 20 12.5
410	N63 05 51.4
	W140 20 12.6
415	N63 05 51.6
	W140 20 12.7
420	N63 05 51.7
	W140 20 12.7
425	N63 05 51.9
	W140 20 12.8
430	N63 05 52.0
	W140 20 13.1
435	N63 05 52.3
	W140 20 13.0
440	N63 05 52.3
	W140 20 13.4
445	N63 05 52.5
	W140 20 13.5
450	N63 05 52.6
	W140 20 13.4
455	N63 05 52.8

Profile [m]	Latitude / Longitude
	W140 20 13.6
460	N63 05 52.9
	W140 20 13.5
465	N63 05 53.1
	W140 20 13.8
470	N63 05 53.2
	W140 20 13.9
475	N63 05 53.4
	W140 20 14.0
480	N63 05 53.6
	W140 20 14.1
485	N63 05 53.8
	W140 20 14.1
490	N63 05 53.9
	W140 20 14.4
495	N63 05 54.0
	W140 20 14.4
500	N63 05 54.0
	W140 20 14.2
505	N63 05 54.1
	W140 20 14.3
510	N63 05 54.3
	W140 20 14.8
515	N63 05 54.3
	W140 20 14.9
520	N63 05 54.6
	W140 20 14.7
525	N63 05 54.7
	W140 20 14.9
530	N63 05 54.9
	W140 20 15.1
535	N63 05 55.2
	W140 20 15.1
540	N63 05 55.4
	W140 20 15.3
545	N63 05 55.4

Profile [m]	Latitude / Longitude
	W140 20 15.5
550	N63 05 55.6
	W140 20 15.6
555	N63 05 55.8
	W140 20 15.7
560	N63 05 56.0
	W140 20 15.6
565	N63 05 56.1
	W140 20 15.7
570	N63 05 56.1
	W140 20 15.9
575	N63 05 56.3
	W140 20 16.2
580	N63 05 56.5
	W140 20 16.1
585	N63 05 56.5
	W140 20 16.2
590	N63 05 56.6
	W140 20 16.3
595	N63 05 56.7
	W140 20 16.4
600	N63 05 56.8
	W140 20 16.3
605	N63 05 57.0
	W140 20 16.4
610	N63 05 57.2
	W140 20 16.7
615	N63 05 57.4
	W140 20 16.6
620	N63 05 57.6
	W140 20 17.2

Wolf Creek Line02

GPS Accuracy 3m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 06 08.3
	W140 17 36.5
5	N63 06 08.4
	W140 17 36.6
10	N63 06 08.7
	W140 17 36.7
15	N63 06 08.7
	W140 17 36.9
20	N63 06 08.8
	W140 17 36.9
25	N63 06 09.0
	W140 17 36.9
30	N63 06 09.1
	W140 17 37.0
35	N63 06 09.3
	W140 17 37.1
40	N63 06 09.5

Profile [m]	Latitude / Longitude
	W140 17 37.0
45	N63 06 09.5
	W140 17 37.3
50	N63 06 09.7
	W140 17 37.3
55	N63 06 09.8
	W140 17 37.3
60	N63 06 10.2
	W140 17 37.4
65	N63 06 10.2
	W140 17 37.5
70	N63 06 10.5
	W140 17 37.5
75	N63 06 10.6
	W140 17 37.7
80	N63 06 10.8
	W140 17 37.8

Profile [m]	Latitude / Longitude
85	N63 06 10.9
	W140 17 37.9
90	N63 06 11.1
	W140 17 37.9
95	N63 06 11.2
	W140 17 37.9
100	N63 06 11.3
	W140 17 37.9
105	N63 06 11.5
	W140 17 37.9
110	N63 06 11.6
	W140 17 38.2
115	N63 06 11.9
	W140 17 38.3
120	N63 06 12.0
	W140 17 38.4
125	N63 06 12.1

Profile [m]	Latitude / Longitude
	W140 17 38.4
130	N63 06 12.3
	W140 17 38.5
135	N63 06 12.4
	W140 17 38.5
140	N63 06 12.6
	W140 17 38.6
145	N63 06 12.7
	W140 17 38.7
150	N63 06 12.9
	W140 17 38.8
155	N63 06 13.1
	W140 17 38.9
160	N63 06 13.2
	W140 17 38.9
165	N63 06 13.4
	W140 17 38.9

Profile [m]	Latitude / Longitude
170	N63 06 13.6
	W140 17 39.0
175	N63 06 13.7
	W140 17 39.3
180	N63 06 13.8
	W140 17 39.4
185	N63 06 13.9
	W140 17 39.4
190	N63 06 14.1
	W140 17 39.4
195	N63 06 14.2
	W140 17 39.5
200	N63 06 14.4
	W140 17 39.6
205	N63 06 14.5
	W140 17 39.7
210	N63 06 14.7

Profile [m]	Latitude / Longitude
	W140 17 39.8
215	N63 06 14.9
	W140 17 39.9
220	N63 06 15.0
	W140 17 39.9
225	N63 06 15.2
	W140 17 40.0
230	N63 06 15.3
	W140 17 40.1
235	N63 06 15.5
	W140 17 40.1
240	N63 06 15.7
	W140 17 40.1
245	N63 06 15.8
	W140 17 40.2
250	N63 06 16.0
	W140 17 40.2
255	N63 06 16.2
	W140 17 40.2
260	N63 06 16.3
	W140 17 40.3
265	N63 06 16.5
	W140 17 40.4
270	N63 06 16.6
	W140 17 40.5
275	N63 06 16.8
	W140 17 40.6
280	N63 06 16.9
	W140 17 40.7
285	N63 06 17.0
	W140 17 40.7
290	N63 06 17.2
	W140 17 40.8
295	N63 06 17.4
	W140 17 40.8
300	N63 06 17.5

Profile [m]	Latitude / Longitude
	W140 17 40.8
305	N63 06 17.7
	W140 17 41.1
310	N63 06 17.8
	W140 17 41.1
315	N63 06 18.0
	W140 17 41.2
320	N63 06 18.1
	W140 17 41.2
325	N63 06 18.4
	W140 17 41.3
330	N63 06 18.4
	W140 17 41.2
335	N63 06 18.6
	W140 17 41.3
340	N63 06 18.7
	W140 17 41.4
345	N63 06 18.9
	W140 17 41.5
350	N63 06 19.1
	W140 17 41.5
355	N63 06 19.2
	W140 17 41.6
360	N63 06 19.4
	W140 17 41.8
365	N63 06 19.6
	W140 17 42.0
370	N63 06 19.7
	W140 17 42.0
375	N63 06 19.9
	W140 17 42.2
380	N63 06 20.0
	W140 17 42.1
385	N63 06 20.2
	W140 17 42.1
390	N63 06 20.3

Profile [m]	Latitude / Longitude
	W140 17 42.2
395	N63 06 20.5
	W140 17 42.3
400	N63 06 20.7
	W140 17 42.3
405	N63 06 20.8
	W140 17 42.5
410	N63 06 21.0
	W140 17 42.5
415	N63 06 21.1
	W140 17 42.5
420	N63 06 21.3
	W140 17 42.7
425	N63 06 21.4
	W140 17 42.7
430	N63 06 21.6
	W140 17 42.8
435	N63 06 21.7
	W140 17 43.0
440	N63 06 21.9
	W140 17 43.0
445	N63 06 22.1
	W140 17 43.1
450	N63 06 22.2
	W140 17 43.2
455	N63 06 22.4
	W140 17 43.4
460	N63 06 22.5
	W140 17 43.3
465	N63 06 22.7
	W140 17 43.3
470	N63 06 22.9
	W140 17 43.5
475	N63 06 23.0
	W140 17 43.6
480	N63 06 23.2

Profile [m]	Latitude / Longitude
	W140 17 43.7
485	N63 06 23.3
	W140 17 43.7
490	N63 06 23.4
	W140 17 43.7
495	N63 06 23.5
	W140 17 43.8
500	N63 06 23.7
	W140 17 43.9
505	N63 06 23.8
	W140 17 44.0
510	N63 06 24.2
	W140 17 44.1
515	N63 06 24.2
	W140 17 44.2
520	N63 06 24.4
	W140 17 44.4
525	N63 06 24.4
	W140 17 44.4
530	N63 06 24.6
	W140 17 44.5
535	N63 06 24.8
	W140 17 44.5
540	N63 06 24.9
	W140 17 44.6
545	N63 06 25.2
	W140 17 44.7
550	N63 06 25.2
	W140 17 44.8
555	N63 06 25.4
	W140 17 44.7
560	N63 06 25.5
	W140 17 44.7
565	N63 06 25.7
	W140 17 44.9
570	N63 06 25.9

Profile [m]	Latitude / Longitude
	W140 17 45.0
575	N63 06 26.0
	W140 17 45.0
580	N63 06 26.1
	W140 17 45.0
585	N63 06 26.3
	W140 17 45.1
590	N63 06 26.4
	W140 17 45.1
595	N63 06 26.6
	W140 17 45.2
600	N63 06 26.8
	W140 17 45.3
605	N63 06 27.0
	W140 17 45.4
610	N63 06 27.1
	W140 17 45.5
615	N63 06 27.1
	W140 17 45.5
620	N63 06 27.3
	W140 17 45.5

Wolf Creek Line03

GPS Accuracy 3m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 06 11.1
	W140 14 29.0
5	N63 06 11.1
	W140 14 28.9
10	N63 06 10.5
	W140 14 28.8
15	N63 06 10.4
	W140 14 28.7
20	N63 06 10.4
	W140 14 28.6
25	N63 06 10.6
	W140 14 28.3
30	N63 06 10.7
	W140 14 28.3
35	N63 06 10.9
	W140 14 28.1
40	N63 06 11.0

Profile [m]	Latitude / Longitude
	W140 14 28.1
45	N63 06 11.2
	W140 14 27.8
50	N63 06 11.3
	W140 14 27.6
55	N63 06 11.4
	W140 14 27.4
60	N63 06 11.5
	W140 14 27.3
65	N63 06 11.7
	W140 14 27.1
70	N63 06 11.8
	W140 14 26.9
75	N63 06 12.0
	W140 14 26.7
80	N63 06 12.1
	W140 14 26.6

Profile [m]	Latitude / Longitude
85	N63 06 12.2
	W140 14 26.3
90	N63 06 12.3
	W140 14 26.1
95	N63 06 12.5
	W140 14 25.9
100	N63 06 12.6
	W140 14 25.7
105	N63 06 12.7
	W140 14 25.5
110	N63 06 12.9
	W140 14 25.3
115	N63 06 13.0
	W140 14 25.1
120	N63 06 13.2
	W140 14 25.0
125	N63 06 13.3

Profile [m]	Latitude / Longitude
	W140 14 24.7
130	N63 06 13.4
	W140 14 24.5
135	N63 06 13.5
	W140 14 24.3
140	N63 06 13.7
	W140 14 24.2
145	N63 06 13.8
	W140 14 24.1
150	N63 06 14.0
	W140 14 23.9
155	N63 06 14.1
	W140 14 23.5
160	N63 06 14.2
	W140 14 23.4
165	N63 06 14.4
	W140 14 23.3

Profile [m]	Latitude / Longitude
170	N63 06 14.5
	W140 14 23.1
175	N63 06 14.6
	W140 14 22.9
180	N63 06 14.7
	W140 14 22.7
185	N63 06 14.9
	W140 14 22.4
190	N63 06 15.0
	W140 14 22.3
195	N63 06 15.2
	W140 14 22.2
200	N63 06 15.3
	W140 14 22.1
205	N63 06 15.4
	W140 14 21.9
210	N63 06 15.6

Profile [m]	Latitude / Longitude
	W140 14 21.6
215	N63 06 15.7
	W140 14 21.4
220	N63 06 15.8
	W140 14 21.2
225	N63 06 15.9
	W140 14 21.0
230	N63 06 16.1
	W140 14 20.8
235	N63 06 16.2
	W140 14 20.6
240	N63 06 16.3
	W140 14 20.5
245	N63 06 16.4
	W140 14 20.3
250	N63 06 16.6
	W140 14 20.1
255	N63 06 16.7
	W140 14 19.9
260	N63 06 16.9
	W140 14 19.7
265	N63 06 17.1
	W140 14 19.5
270	N63 06 17.2
	W140 14 19.4
275	N63 06 17.3
	W140 14 19.2
280	N63 06 17.4
	W140 14 19.1
285	N63 06 17.5
	W140 14 18.8
290	N63 06 17.7
	W140 14 18.5
295	N63 06 17.8
	W140 14 18.5
300	N63 06 17.9

Profile [m]	Latitude / Longitude
	W140 14 18.3
305	N63 06 18.0
	W140 14 18.1
310	N63 06 18.1
	W140 14 17.8
315	N63 06 18.3
	W140 14 17.6
320	N63 06 18.4
	W140 14 17.5
325	N63 06 18.6
	W140 14 17.2
330	N63 06 18.7
	W140 14 17.1
335	N63 06 18.9
	W140 14 16.9
340	N63 06 19.0
	W140 14 16.7
345	N63 06 19.1
	W140 14 16.5
350	N63 06 19.3
	W140 14 16.3
355	N63 06 19.4
	W140 14 16.2
360	N63 06 19.6
	W140 14 15.8
365	N63 06 19.6
	W140 14 15.7
370	N63 06 19.7
	W140 14 15.6
375	N63 06 19.9
	W140 14 15.4
380	N63 06 20.0
	W140 14 15.2
385	N63 06 20.3
	W140 14 15.0
390	N63 06 20.3

Profile [m]	Latitude / Longitude
	W140 14 14.9
395	N63 06 20.4
	W140 14 14.7
400	N63 06 20.6
	W140 14 14.6
405	N63 06 20.7
	W140 14 14.4
410	N63 06 20.9
	W140 14 14.2
415	N63 06 21.1
	W140 14 14.0
420	N63 06 21.1
	W140 14 13.7
425	N63 06 21.2
	W140 14 13.5
430	N63 06 21.3
	W140 14 13.4
435	N63 06 21.4
	W140 14 13.1
440	N63 06 21.7
	W140 14 13.0
445	N63 06 21.9
	W140 14 12.8
450	N63 06 21.9
	W140 14 12.5
455	N63 06 22.0
	W140 14 12.4
460	N63 06 22.2
	W140 14 12.4
465	N63 06 22.3
	W140 14 12.2
470	N63 06 22.6
	W140 14 11.9
475	N63 06 22.7
	W140 14 11.7
480	N63 06 22.8

Profile [m]	Latitude / Longitude
	W140 14 11.6
485	N63 06 22.9
	W140 14 11.3
490	N63 06 23.0
	W140 14 11.1
495	N63 06 23.1
	W140 14 10.9
500	N63 06 23.0
	W140 14 10.7
505	N63 06 23.2
	W140 14 10.7
510	N63 06 23.3
	W140 14 10.4
515	N63 06 23.4
	W140 14 10.2
520	N63 06 23.6
	W140 14 10.2
525	N63 06 23.6
	W140 14 09.9
530	N63 06 23.9
	W140 14 09.6
535	N63 06 24.0
	W140 14 09.5
540	N63 06 24.2
	W140 14 09.1
545	N63 06 24.2
	W140 14 09.0
550	N63 06 24.5
	W140 14 08.9
555	N63 06 24.6
	W140 14 09.0
560	N63 06 24.7
	W140 14 08.7
565	N63 06 24.9
	W140 14 08.4
570	N63 06 25.1

Profile [m]	Latitude / Longitude
	W140 14 08.3
575	N63 06 25.1
	W140 14 08.0
580	N63 06 25.2
	W140 14 08.0
585	N63 06 25.3
	W140 14 07.7
590	N63 06 25.7
	W140 14 07.5
595	N63 06 25.8
	W140 14 07.2
600	N63 06 25.9
	W140 14 07.2
605	N63 06 25.8
	W140 14 06.9
610	N63 06 25.8
	W140 14 06.8
615	N63 06 26.1
	W140 14 06.8
620	N63 06 26.3
	W140 14 06.5

Wolf Creek Line04

GPS Accuracy 3m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0,0	N63 05 43.0
	W140 10 24.6
3,5	N63 05 43.0
	W140 10 24.6
7,0	N63 05 43.2
	W140 10 24.8
10,5	N63 05 43.3
	W140 10 24.7
14,0	N63 05 43.4
	W140 10 24.7
17,5	N63 05 43.5
	W140 10 24.6
21,0	N63 05 43.7
	W140 10 24.6
24,5	N63 05 43.7
	W140 10 24.7
28,0	N63 05 43.7

Profile [m]	Latitude / Longitude
	W140 10 24.7
31,5	N63 05 43.9
	W140 10 24.6
35,0	N63 05 44.0
	W140 10 24.6
38,5	N63 05 44.2
	W140 10 24.6
42,0	N63 05 44.3
	W140 10 24.6
45,5	N63 05 44.4
	W140 10 24.6
49,0	N63 05 44.6
	W140 10 24.6
52,5	N63 05 44.6
	W140 10 24.6
56,0	N63 05 44.8
	W140 10 24.6

Profile [m]	Latitude / Longitude
59,5	N63 05 44.9
	W140 10 24.7
63,0	N63 05 45.0
	W140 10 24.8
66,5	N63 05 45.1
	W140 10 24.7
70,0	N63 05 45.2
	W140 10 24.7
73,5	N63 05 45.3
	W140 10 24.7
77,0	N63 05 45.4
	W140 10 24.7
80,5	N63 05 45.5
	W140 10 24.7
84,0	N63 05 45.7
	W140 10 24.8
87,5	N63 05 45.8

Profile [m]	Latitude / Longitude
	W140 10 24.7
91,0	N63 05 45.9
	W140 10 24.7
94,5	N63 05 46.0
	W140 10 24.8
98,0	N63 05 46.1
	W140 10 24.8
101,5	N63 05 46.2
	W140 10 24.8
105,0	N63 05 46.3
	W140 10 24.7
108,5	N63 05 46.4
	W140 10 24.7
112,0	N63 05 46.5
	W140 10 24.7
115,5	N63 05 46.6
	W140 10 24.7

Profile [m]	Latitude / Longitude
119,0	N63 05 46.7
	W140 10 24.7
122,5	N63 05 46.9
	W140 10 24.8
126,0	N63 05 46.9
	W140 10 24.9
129,5	N63 05 47.1
	W140 10 24.9
133,0	N63 05 47.2
	W140 10 24.8
136,5	N63 05 47.3
	W140 10 24.8
140,0	N63 05 47.4
	W140 10 24.8
143,5	N63 05 47.5
	W140 10 24.9
147,0	N63 05 47.7

Profile [m]	Latitude / Longitude
	W140 10 24.8
150,5	N63 05 47.8 W140 10 24.7
154,0	N63 05 47.9 W140 10 24.7
157,5	N63 05 48.0 W140 10 24.8
161,0	N63 05 48.1 W140 10 24.8
164,5	N63 05 48.2 W140 10 24.8
168,0	N63 05 48.3 W140 10 24.8
171,5	N63 05 48.5 W140 10 24.8
175,0	N63 05 48.5 W140 10 24.9
178,5	N63 05 48.6 W140 10 24.9
182,0	N63 05 48.8 W140 10 24.9
185,5	N63 05 48.9 W140 10 24.9
189,0	N63 05 49.0

Profile [m]	Latitude / Longitude
	W140 10 24.9
192,5	N63 05 49.1 W140 10 24.8
196,0	N63 05 49.2 W140 10 24.8
199,5	N63 05 49.3 W140 10 24.9
203,0	N63 05 49.4 W140 10 24.9
206,5	N63 05 49.5 W140 10 24.9
210,0	N63 05 49.6 W140 10 24.9
213,5	N63 05 49.7 W140 10 24.9
217,0	N63 05 49.8 W140 10 24.9
220,5	N63 05 50.0 W140 10 24.8
224,0	N63 05 50.1 W140 10 24.8
227,5	N63 05 50.2 W140 10 24.9
231,0	N63 05 50.3

Profile [m]	Latitude / Longitude
	W140 10 24.9
234,5	N63 05 50.4 W140 10 25.0
238,0	N63 05 50.5 W140 10 25.0
241,5	N63 05 50.6 W140 10 24.9
245,0	N63 05 50.8 W140 10 24.8
248,5	N63 05 50.9 W140 10 24.8
252,0	N63 05 50.9 W140 10 25.0
255,5	N63 05 51.1 W140 10 25.0
259,0	N63 05 51.1 W140 10 25.0
262,5	N63 05 51.2 W140 10 24.9
266,0	N63 05 51.4 W140 10 24.8
269,5	N63 05 51.6 W140 10 24.8
273,0	N63 05 51.7

Profile [m]	Latitude / Longitude
	W140 10 24.9
276,5	N63 05 51.8 W140 10 24.9
280,0	N63 05 51.8 W140 10 25.0
283,5	N63 05 52.0 W140 10 25.0
287,0	N63 05 52.1 W140 10 24.9
290,5	N63 05 52.2 W140 10 24.9
294,0	N63 05 52.3 W140 10 25.0
297,5	N63 05 52.4 W140 10 25.0
301,0	N63 05 52.5 W140 10 24.9
304,5	N63 05 52.6 W140 10 25.0
308,0	N63 05 52.7 W140 10 25.0
311,5	N63 05 52.8 W140 10 25.0
315,0	N63 05 53.0

Profile [m]	Latitude / Longitude
	W140 10 25.1
318,5	N63 05 53.1 W140 10 24.9
322,0	N63 05 53.2 W140 10 24.9
325,5	N63 05 53.3 W140 10 24.9
329,0	N63 05 53.4 W140 10 24.9
332,5	N63 05 53.5 W140 10 25.0
336,0	N63 05 53.7 W140 10 25.0
339,5	N63 05 53.8 W140 10 24.9
343,0	N63 05 53.9 W140 10 24.9
346,5	N63 05 53.9 W140 10 24.8

Wolf Creek Line05

GPS Accuracy 3m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0,0	N63 05 08.9 W140 07 36.7
4,0	N63 05 09.0 W140 07 36.5
8,0	N63 05 09.1 W140 07 36.2
12,0	N63 05 09.1 W140 07 36.1
16,0	N63 05 09.2 W140 07 35.9
20,0	N63 05 09.3 W140 07 35.8
24,0	N63 05 09.4 W140 07 35.6
28,0	N63 05 09.5 W140 07 35.3
32,0	N63 05 09.6 W140 07 35.2
36,0	N63 05 09.7 W140 07 35.1
40,0	N63 05 09.8

Profile [m]	Latitude / Longitude
	W140 07 34.9
44,0	N63 05 09.8 W140 07 34.6
48,0	N63 05 09.9 W140 07 34.6
52,0	N63 05 10.0 W140 07 34.3
56,0	N63 05 10.1 W140 07 34.1
60,0	N63 05 10.3 W140 07 34.0
64,0	N63 05 10.3 W140 07 33.7
68,0	N63 05 10.3 W140 07 33.5
72,0	N63 05 10.4 W140 07 33.3
76,0	N63 05 10.5 W140 07 33.2
80,0	N63 05 10.6 W140 07 32.8

Profile [m]	Latitude / Longitude
84,0	N63 05 10.7 W140 07 32.7
88,0	N63 05 10.9 W140 07 32.5
92,0	N63 05 10.9 W140 07 32.4
96,0	N63 05 11.0 W140 07 32.1
100,0	N63 05 11.1 W140 07 32.0
104,0	N63 05 11.2 W140 07 31.8
108,0	N63 05 11.3 W140 07 31.5
112,0	N63 05 11.4 W140 07 31.4
116,0	N63 05 11.5 W140 07 31.1
120,0	N63 05 11.5 W140 07 31.0
124,0	N63 05 11.6

Profile [m]	Latitude / Longitude
	W140 07 30.7
128,0	N63 05 11.8 W140 07 30.6
132,0	N63 05 11.9 W140 07 30.5
136,0	N63 05 12.0 W140 07 30.4
140,0	N63 05 12.0 W140 07 30.1
144,0	N63 05 12.1 W140 07 29.8
148,0	N63 05 12.2 W140 07 29.7
152,0	N63 05 12.3 W140 07 29.6
156,0	N63 05 12.4 W140 07 29.2
160,0	N63 05 12.6 W140 07 29.1
164,0	N63 05 12.6 W140 07 29.0

Profile [m]	Latitude / Longitude
168,0	N63 05 12.8 W140 07 28.9
172,0	N63 05 12.8 W140 07 28.5
176,0	N63 05 12.9 W140 07 28.2
180,0	N63 05 12.9 W140 07 28.1
184,0	N63 05 13.1 W140 07 28.1
188,0	N63 05 13.1 W140 07 27.8
192,0	N63 05 13.2 W140 07 27.6
196,0	N63 05 13.4 W140 07 27.5
198,0	N63 05 13.4 W140 07 27.3

Wolf Creek Line06

GPS Accuracy 3m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 04 43.7 W140 04 48.3
4	N63 04 43.8 W140 04 48.5
9	N63 04 44.0 W140 04 48.3
14	N63 04 44.2 W140 04 48.2
19	N63 04 44.4 W140 04 48.1
24	N63 04 44.6 W140 04 48.2
29	N63 04 44.8 W140 04 48.1
34	N63 04 44.9 W140 04 48.0
39	N63 04 45.1 W140 04 48.0
44	N63 04 45.1 W140 04 48.1
49	N63 04 45.2 W140 04 48.1
54	N63 04 45.4 W140 04 48.0
59	N63 04 45.5 W140 04 48.2
64	N63 04 45.6 W140 04 48.2
69	N63 04 45.8 W140 04 48.1
74	N63 04 45.9 W140 04 47.9
79	N63 04 46.1 W140 04 47.8
84	N63 04 46.3 W140 04 47.7
89	N63 04 46.5 W140 04 47.6
94	N63 04 46.6 W140 04 47.5
99	N63 04 46.7 W140 04 47.5

Ladue River Line01

GPS Accuracy 3-4m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 08 45.8 W140 31 08.6
5	N63 08 46.1 W140 31 08.6
10	N63 08 46.2 W140 31 08.6
15	N63 08 46.4 W140 31 08.4
20	N63 08 46.7 W140 31 08.3
25	N63 08 46.9 W140 31 08.5
30	N63 08 47.0 W140 31 08.4
35	N63 08 47.1 W140 31 08.3
40	N63 08 47.2 W140 31 08.3
45	N63 08 47.4 W140 31 08.3
50	N63 08 47.6 W140 31 08.3
55	N63 08 47.7 W140 31 08.4
60	N63 08 47.9 W140 31 08.3
65	N63 08 48.0 W140 31 08.2
70	N63 08 48.2 W140 31 08.1
75	N63 08 48.4 W140 31 08.1
80	N63 08 48.5 W140 31 08.1
85	N63 08 48.7 W140 31 08.1
90	N63 08 48.9 W140 31 07.9
95	N63 08 49.1 W140 31 07.8
100	N63 08 49.1 W140 31 07.7
105	N63 08 49.2 W140 31 07.6
110	N63 08 49.5 W140 31 07.5
115	N63 08 49.6 W140 31 07.4
120	N63 08 49.8 W140 31 07.4
125	N63 08 49.9 W140 31 07.0
130	N63 08 50.0 W140 31 07.0
135	N63 08 50.2 W140 31 06.8
140	N63 08 50.3 W140 31 06.7
145	N63 08 50.4 W140 31 06.5
150	N63 08 50.6 W140 31 06.4
155	N63 08 50.8 W140 31 06.4
160	N63 08 50.9 W140 31 06.3
165	N63 08 51.1 W140 31 06.5
170	N63 08 51.3 W140 31 06.6
175	N63 08 51.4 W140 31 06.5
180	N63 08 51.6 W140 31 06.5
185	N63 08 51.7 W140 31 06.5
190	N63 08 51.9 W140 31 06.4
195	N63 08 52.0 W140 31 06.2
200	N63 08 52.2 W140 31 06.1
205	N63 08 52.3 W140 31 06.1
210	N63 08 52.5 W140 31 06.0
215	N63 08 52.8 W140 31 05.8
220	N63 08 52.9 W140 31 05.7
225	N63 08 52.9 W140 31 05.5
230	N63 08 53.1 W140 31 05.4
235	N63 08 53.3 W140 31 05.3
240	N63 08 53.5 W140 31 05.1
245	N63 08 53.5 W140 31 04.8
250	N63 08 53.7 W140 31 04.9
255	N63 08 53.9 W140 31 04.9
260	N63 08 54.1 W140 31 04.9
265	N63 08 54.2 W140 31 05.0
270	N63 08 54.4 W140 31 04.8
275	N63 08 54.6 W140 31 04.8
280	N63 08 54.7 W140 31 04.7
285	N63 08 54.9 W140 31 04.7
290	N63 08 55.0 W140 31 04.5
295	N63 08 55.2 W140 31 04.6
300	N63 08 55.3 W140 31 04.7
305	N63 08 55.5 W140 31 04.4
310	N63 08 55.6 W140 31 04.3
315	N63 08 55.8 W140 31 04.4
320	N63 08 55.9 W140 31 04.2
325	N63 08 56.1 W140 31 04.2
330	N63 08 56.2 W140 31 04.1
335	N63 08 56.4 W140 31 04.0
340	N63 08 56.6 W140 31 03.9
345	N63 08 56.7 W140 31 03.9
350	N63 08 56.9 W140 31 03.8
355	N63 08 57.1 W140 31 03.8
360	N63 08 57.2 W140 31 03.9
365	N63 08 57.3 W140 31 03.7
370	N63 08 57.5 W140 31 03.7
375	N63 08 57.7 W140 31 03.7
380	N63 08 57.8 W140 31 03.7
385	N63 08 58.0 W140 31 03.6
390	N63 08 58.2 W140 31 03.6
395	N63 08 58.3 W140 31 03.4
400	N63 08 58.4 W140 31 03.4
405	N63 08 58.6 W140 31 03.3
410	N63 08 58.8 W140 31 03.3
415	N63 08 58.9 W140 31 03.2
420	N63 08 59.0 W140 31 03.2
425	N63 08 59.3 W140 31 03.1
430	N63 08 59.4 W140 31 03.2
435	N63 08 59.5 W140 31 03.3
440	N63 08 59.7 W140 31 03.1
445	N63 08 59.9 W140 31 03.2
450	N63 09 00.0 W140 31 03.1
455	N63 09 00.2 W140 31 02.9
460	N63 09 00.4 W140 31 02.9
465	N63 09 00.5 W140 31 02.8
470	N63 09 00.7 W140 31 02.5

(Ladue River Line01, continued)

Profile [m]	Latitude / Longitude
475	N63 09 00.8
	W140 31 02.4
480	N63 09 01.0
	W140 31 02.5
485	N63 09 01.2
	W140 31 02.3
490	N63 09 01.3
	W140 31 02.2
495	N63 09 01.5
	W140 31 02.0
500	N63 09 01.6
	W140 31 02.1
505	N63 09 01.7
	W140 31 01.9
510	N63 09 01.9
	W140 31 01.6
515	N63 09 02.1
	W140 31 01.5
520	N63 09 02.2
	W140 31 01.4
525	N63 09 02.4
	W140 31 01.4
530	N63 09 02.5

Profile [m]	Latitude / Longitude
	W140 31 01.2
535	N63 09 02.6
	W140 31 01.2
540	N63 09 02.8
	W140 31 01.1
545	N63 09 03.0
	W140 31 01.1
550	N63 09 03.1
	W140 31 01.1
555	N63 09 03.2
	W140 31 01.0
560	N63 09 03.5
	W140 31 00.8
565	N63 09 03.8
	W140 31 00.9
570	N63 09 04.0
	W140 31 00.6
575	N63 09 04.1
	W140 31 00.5
580	N63 09 04.7
	W140 31 00.1
585	N63 09 04.3
	W140 31 00.6

Profile [m]	Latitude / Longitude
590	N63 09 04.4
	W140 31 00.5
595	N63 09 04.6
	W140 31 00.5
600	N63 09 04.7
	W140 31 00.3
605	N63 09 04.9
	W140 31 00.2
610	N63 09 05.0
	W140 31 00.1
615	N63 09 05.2
	W140 31 00.0
620	N63 09 05.3
	W140 31 00.0
625	N63 09 05.5
	W140 31 00.1
630	N63 09 05.6
	W140 31 00.0
635	N63 09 05.8
	W140 30 59.9
640	N63 09 05.9
	W140 30 59.8
645	N63 09 06.1

Profile [m]	Latitude / Longitude
	W140 30 59.9
650	N63 09 06.3
	W140 30 59.9
655	N63 09 06.4
	W140 30 59.7
660	N63 09 06.6
	W140 30 59.8
665	N63 09 06.8
	W140 30 59.9
670	N63 09 06.9
	W140 30 59.8
675	N63 09 07.0
	W140 30 59.7
680	N63 09 07.3
	W140 30 59.6
685	N63 09 07.4
	W140 30 59.4
690	N63 09 07.5
	W140 30 59.2
695	N63 09 07.7
	W140 30 59.3
700	N63 09 07.9
	W140 30 59.2

Profile [m]	Latitude / Longitude
705	N63 09 08.0
	W140 30 59.1
710	N63 09 08.2
	W140 30 58.8
715	N63 09 08.4
	W140 30 58.7
720	N63 09 08.5
	W140 30 58.6
725	N63 09 08.6
	W140 30 58.5
730	N63 09 08.8
	W140 30 58.4
735	N63 09 09.0
	W140 30 58.5
740	N63 09 09.1
	W140 30 58.3
745	N63 09 09.3
	W140 30 58.1

Ladue River Line02

GPS Accuracy 3m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 10 30.8
	W140 37 13.1
5	N63 10 30.8
	W140 37 13.1
10	N63 10 30.8
	W140 37 13.1
15	N63 10 31.2
	W140 37 12.6
20	N63 10 31.3
	W140 37 12.5
25	N63 10 31.5
	W140 37 11.9
30	N63 10 31.7
	W140 37 11.9
35	N63 10 31.7
	W140 37 11.7
40	N63 10 31.9
	W140 37 11.5
45	N63 10 32.0
	W140 37 11.3
50	N63 10 32.1
	W140 37 11.1
55	N63 10 32.3
	W140 37 10.9
60	N63 10 32.4
	W140 37 10.6
65	N63 10 32.6
	W140 37 10.5
70	N63 10 32.7
	W140 37 10.3

Profile [m]	Latitude / Longitude
75	N63 10 32.8
	W140 37 10.0
80	N63 10 33.0
	W140 37 09.9
85	N63 10 33.1
	W140 37 09.8
90	N63 10 33.2
	W140 37 09.5
95	N63 10 33.3
	W140 37 09.3
100	N63 10 33.4
	W140 37 09.0
105	N63 10 33.5
	W140 37 08.7
110	N63 10 33.6
	W140 37 08.6
115	N63 10 33.8
	W140 37 08.4
120	N63 10 33.9
	W140 37 08.1
125	N63 10 34.0
	W140 37 07.9
130	N63 10 34.1
	W140 37 07.7
135	N63 10 34.2
	W140 37 07.6
140	N63 10 34.3
	W140 37 07.4
145	N63 10 34.5
	W140 37 07.2

Profile [m]	Latitude / Longitude
150	N63 10 34.6
	W140 37 07.0
155	N63 10 34.8
	W140 37 06.8
160	N63 10 34.9
	W140 37 06.5
165	N63 10 35.1
	W140 37 06.3
170	N63 10 35.2
	W140 37 06.1
175	N63 10 35.4
	W140 37 05.9
180	N63 10 35.5
	W140 37 05.7
185	N63 10 35.7
	W140 37 05.4
190	N63 10 35.8
	W140 37 05.2
195	N63 10 36.0
	W140 37 05.0
200	N63 10 36.1
	W140 37 04.9
205	N63 10 36.2
	W140 37 04.6
210	N63 10 36.3
	W140 37 04.4
215	N63 10 36.4
	W140 37 04.2
220	N63 10 36.6
	W140 37 03.9

Profile [m]	Latitude / Longitude
225	N63 10 36.7
	W140 37 03.8
230	N63 10 36.9
	W140 37 03.6
235	N63 10 37.0
	W140 37 03.2
240	N63 10 37.3
	W140 37 03.0
245	N63 10 37.4
	W140 37 02.8
250	N63 10 37.5
	W140 37 02.5
255	N63 10 37.7
	W140 37 02.3
260	N63 10 37.8
	W140 37 02.0
265	N63 10 37.9
	W140 37 01.9
270	N63 10 38.1
	W140 37 01.5
275	N63 10 38.2
	W140 37 01.2
280	N63 10 38.3
	W140 37 01.2
285	N63 10 38.5
	W140 37 01.1
290	N63 10 38.6
	W140 37 00.9
295	N63 10 38.7
	W140 37 00.5

Profile [m]	Latitude / Longitude
300	N63 10 38.8
	W140 37 00.4
305	N63 10 38.9
	W140 37 00.1
310	N63 10 39.1
	W140 37 00.0
315	N63 10 39.3
	W140 36 59.7
320	N63 10 39.3
	W140 36 59.6
325	N63 10 39.5
	W140 36 59.3
330	N63 10 39.6
	W140 36 59.1
335	N63 10 39.7
	W140 36 58.8
340	N63 10 39.8
	W140 36 58.7
345	N63 10 39.9
	W140 36 58.4
350	N63 10 40.1
	W140 36 58.2
355	N63 10 40.3
	W140 36 57.9
360	N63 10 40.4
	W140 36 57.8
365	N63 10 40.5
	W140 36 57.6
370	N63 10 40.7
	W140 36 57.4

Profile [m]	Latitude / Longitude
375	N63 10 40.8 W140 36 57.1
380	N63 10 40.9 W140 36 57.0
385	N63 10 41.0 W140 36 56.6
390	N63 10 41.2 W140 36 56.4
395	N63 10 41.4 W140 36 56.3
400	N63 10 41.4 W140 36 56.0
405	N63 10 41.5 W140 36 55.7
410	N63 10 41.7 W140 36 55.6
415	N63 10 41.8 W140 36 55.4
420	N63 10 42.0 W140 36 55.2
425	N63 10 42.1 W140 36 55.1
430	N63 10 42.2 W140 36 54.9
435	N63 10 42.3 W140 36 54.7
440	N63 10 42.5 W140 36 54.5
445	N63 10 42.6 W140 36 54.2
450	N63 10 42.7 W140 36 54.0
455	N63 10 42.8 W140 36 53.8
460	N63 10 42.9 W140 36 53.5
465	N63 10 43.0 W140 36 53.4
470	N63 10 43.1 W140 36 53.2
475	N63 10 43.4 W140 36 52.9
480	N63 10 43.5 W140 36 52.7
485	N63 10 43.6 W140 36 52.6
490	N63 10 43.8 W140 36 52.4
495	N63 10 43.9 W140 36 52.1
500	N63 10 31.3 W140 37 12.2
505	N63 10 31.3 W140 37 12.2
510	N63 10 31.3 W140 37 12.2
515	N63 10 44.8 W140 36 51.1
520	N63 10 44.6 W140 36 51.0
525	N63 10 44.8 W140 36 50.8
530	N63 10 44.8 W140 36 50.5
535	N63 10 45.0 W140 36 50.3
540	N63 10 45.0 W140 36 50.0
545	N63 10 45.2 W140 36 49.8
550	N63 10 45.3 W140 36 49.6
555	N63 10 45.5 W140 36 49.4
560	N63 10 45.6 W140 36 49.3
565	N63 10 45.7 W140 36 49.1
570	N63 10 45.9 W140 36 48.9
575	N63 10 46.0 W140 36 48.7
580	N63 10 46.1 W140 36 48.4
585	N63 10 46.3 W140 36 48.2
590	N63 10 46.3 W140 36 48.0
595	N63 10 46.5 W140 36 47.8
600	N63 10 46.6 W140 36 47.6
605	N63 10 46.8 W140 36 47.6
610	N63 10 46.9 W140 36 47.2
615	N63 10 47.1 W140 36 47.2
620	N63 10 47.2 W140 36 47.0
625	N63 10 47.3 W140 36 46.6
630	N63 10 47.4 W140 36 46.3
635	N63 10 47.6 W140 36 46.1
640	N63 10 47.7 W140 36 45.9
645	N63 10 47.8 W140 36 45.8
650	N63 10 48.0 W140 36 45.5
655	N63 10 48.1 W140 36 45.3
660	N63 10 48.2 W140 36 45.1
665	N63 10 48.4 W140 36 44.9
670	N63 10 48.5 W140 36 44.7
675	N63 10 48.7 W140 36 44.6
680	N63 10 48.8 W140 36 44.3
685	N63 10 49.0 W140 36 44.1
690	N63 10 49.0 W140 36 44.0
695	N63 10 49.1 W140 36 43.8
700	N63 10 49.3 W140 36 43.5
705	N63 10 49.4 W140 36 43.2
710	N63 10 49.6 W140 36 43.1
715	N63 10 49.7 W140 36 42.9
720	N63 10 49.8 W140 36 42.7
725	N63 10 49.9 W140 36 42.4
730	N63 10 50.0 W140 36 42.3
735	N63 10 50.2 W140 36 42.0
740	N63 10 50.2 W140 36 41.7
745	N63 10 50.4 W140 36 41.6
750	N63 10 50.5 W140 36 40.9
755	N63 10 50.5 W140 36 40.9
760	N63 10 50.4 W140 36 40.9
765	N63 10 50.6 W140 36 40.5
770	N63 10 50.8 W140 36 40.5
775	N63 10 51.0 W140 36 40.1
780	N63 10 51.3 W140 36 39.7
785	N63 10 51.4 W140 36 39.8
790	N63 10 51.5 W140 36 39.8
795	N63 10 51.6 W140 36 39.8
800	N63 10 51.8 W140 36 39.1
805	N63 10 52.1 W140 36 38.8
810	N63 10 52.1 W140 36 38.7
815	N63 10 52.2 W140 36 38.7
820	N63 10 52.3 W140 36 38.3
825	N63 10 52.5 W140 36 38.1
830	N63 10 52.7 W140 36 38.1
835	N63 10 52.9 W140 36 37.9
840	N63 10 53.0 W140 36 37.6
845	N63 10 53.1 W140 36 37.5
850	N63 10 53.2 W140 36 37.3
855	N63 10 53.3 W140 36 37.1
860	N63 10 53.4 W140 36 36.8
865	N63 10 53.6 W140 36 36.5
870	N63 10 53.7 W140 36 36.3
875	N63 10 53.9 W140 36 36.4
880	N63 10 54.0 W140 36 36.1
885	N63 10 54.1 W140 36 36.0
890	N63 10 54.2 W140 36 35.8
895	N63 10 54.4 W140 36 35.5
900	N63 10 54.5 W140 36 35.4
905	N63 10 54.6 W140 36 35.2
910	N63 10 54.7 W140 36 35.0
915	N63 10 54.8 W140 36 34.7
920	N63 10 55.0 W140 36 34.6
925	N63 10 55.1 W140 36 34.4
930	N63 10 55.2 W140 36 34.1
935	N63 10 55.4 W140 36 33.9
940	N63 10 55.5 W140 36 33.6
945	N63 10 55.6 W140 36 33.4
950	N63 10 55.8 W140 36 33.1
955	N63 10 55.9 W140 36 32.9
960	N63 10 56.1 W140 36 32.7
965	N63 10 56.1 W140 36 32.6
970	N63 10 56.2 W140 36 32.4
975	N63 10 56.4 W140 36 32.2
980	N63 10 56.5 W140 36 32.0
985	N63 10 56.6 W140 36 31.7
990	N63 10 56.7 W140 36 31.5
995	N63 10 57.0 W140 36 31.1
1000	N63 10 56.5 W140 36 32.2
1005	N63 10 57.1 W140 36 31.0
1010	N63 10 57.2 W140 36 30.8
1015	N63 10 57.4 W140 36 30.5
1020	N63 10 57.4 W140 36 30.2
1025	N63 10 57.6 W140 36 30.1
1030	N63 10 57.7 W140 36 29.8
1035	N63 10 57.8 W140 36 29.8
1040	N63 10 58.0 W140 36 29.5
1045	N63 10 58.1 W140 36 29.4
1050	N63 10 58.2 W140 36 29.2
1055	N63 10 58.4 W140 36 28.8
1060	N63 10 58.5 W140 36 28.6
1065	N63 10 58.7 W140 36 28.4
1070	N63 10 58.8 W140 36 28.3
1075	N63 10 58.9 W140 36 28.2
1080	N63 10 59.0 W140 36 27.8
1085	N63 10 59.1 W140 36 27.7
1090	N63 10 59.2 W140 36 27.5
1095	N63 10 59.3 W140 36 27.2
1100	N63 10 59.4 W140 36 26.9
1105	N63 10 59.4 W140 36 26.9
1110	N63 10 59.5 W140 36 26.6
1115	N63 10 59.7 W140 36 26.4
1120	N63 10 59.7 W140 36 26.1

Ladue River Line3a

GPS Accuracy 3-5m
(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 11 50.3 W140 43 44.2
5	N63 11 50.3 W140 43 44.3
10	N63 11 50.5 W140 43 44.0
15	N63 11 50.7 W140 43 44.0
20	N63 11 50.9 W140 43 43.9
25	N63 11 51.0 W140 43 43.6
30	N63 11 51.2 W140 43 43.3
35	N63 11 51.3 W140 43 43.2
40	N63 11 51.5 W140 43 43.0
45	N63 11 51.6 W140 43 42.8
50	N63 11 51.7 W140 43 42.7
55	N63 11 51.8 W140 43 42.6
60	N63 11 52.0 W140 43 42.1
65	N63 11 52.1 W140 43 42.2
70	N63 11 52.3 W140 43 42.1
75	N63 11 52.5 W140 43 42.0
80	N63 11 52.6 W140 43 41.6
85	N63 11 52.7 W140 43 41.8
90	N63 11 52.8 W140 43 41.5
95	N63 11 53.0 W140 43 41.4
100	N63 11 53.1 W140 43 41.3
105	N63 11 53.3 W140 43 41.2
110	N63 11 53.4 W140 43 41.1
115	N63 11 53.6 W140 43 40.8
120	N63 11 53.7 W140 43 40.7
125	N63 11 54.0 W140 43 40.6

Profile [m]	Latitude / Longitude
130	N63 11 54.1 W140 43 40.4
135	N63 11 54.3 W140 43 40.2
140	N63 11 54.5 W140 43 40.2
145	N63 11 54.7 W140 43 39.9
150	N63 11 54.8 W140 43 39.5
155	N63 11 54.9 W140 43 39.4
160	N63 11 55.1 W140 43 39.3
165	N63 11 55.3 W140 43 39.2
170	N63 11 55.4 W140 43 38.8
175	N63 11 55.4 W140 43 38.5
180	N63 11 55.6 W140 43 38.7
185	N63 11 55.7 W140 43 38.4
190	N63 11 55.8 W140 43 38.3
195	N63 11 55.9 W140 43 38.0
200	N63 11 56.1 W140 43 38.0
205	N63 11 56.2 W140 43 37.5
210	N63 11 56.3 W140 43 37.2
215	N63 11 56.5 W140 43 37.1
220	N63 11 56.6 W140 43 37.0
225	N63 11 56.7 W140 43 37.0
230	N63 11 56.9 W140 43 36.9
235	N63 11 57.0 W140 43 36.8
240	N63 11 57.1 W140 43 36.4
245	N63 11 57.2 W140 43 36.3
250	N63 11 57.3 W140 43 36.1
255	N63 11 57.4 W140 43 35.9

Profile [m]	Latitude / Longitude
260	N63 11 57.6 W140 43 35.5
265	N63 11 57.8 W140 43 35.4
270	N63 11 57.9 W140 43 35.3
275	N63 11 58.0 W140 43 35.1
280	N63 11 58.1 W140 43 34.9
285	N63 11 58.3 W140 43 34.9
290	N63 11 58.4 W140 43 34.8
295	N63 11 58.6 W140 43 34.7
300	N63 11 58.8 W140 43 34.5
305	N63 11 58.9 W140 43 34.0
310	N63 11 59.2 W140 43 34.0
315	N63 11 59.2 W140 43 33.9
320	N63 11 59.4 W140 43 33.8
325	N63 11 59.5 W140 43 33.6
330	N63 11 59.6 W140 43 33.5
335	N63 11 59.8 W140 43 33.5
340	N63 11 59.9 W140 43 33.1
345	N63 12 00.0 W140 43 32.9
350	N63 12 00.3 W140 43 32.9
355	N63 12 00.4 W140 43 32.6
360	N63 12 00.6 W140 43 32.5
365	N63 12 00.8 W140 43 32.5
370	N63 12 00.9 W140 43 32.6
375	N63 12 01.0 W140 43 32.6
380	N63 12 01.1 W140 43 32.0
385	N63 12 01.2 W140 43 31.8

Profile [m]	Latitude / Longitude
390	N63 12 01.5 W140 43 31.7
395	N63 12 01.6 W140 43 31.6
400	N63 12 01.8 W140 43 31.7
405	N63 12 01.9 W140 43 31.5
410	N63 12 01.9 W140 43 31.1
415	N63 12 02.1 W140 43 31.0
420	N63 12 02.3 W140 43 30.7
425	N63 12 02.5 W140 43 30.7
430	N63 12 02.6 W140 43 30.6
435	N63 12 02.8 W140 43 30.6
440	N63 12 02.9 W140 43 30.6
445	N63 12 03.0 W140 43 30.4
450	N63 12 03.2 W140 43 30.0
455	N63 12 03.4 W140 43 30.1
460	N63 12 03.3 W140 43 29.8
465	N63 12 03.5 W140 43 29.5
470	N63 12 03.7 W140 43 29.3
475	N63 12 03.8 W140 43 29.1
480	N63 12 04.0 W140 43 29.1
485	N63 12 04.2 W140 43 28.6
490	N63 12 04.4 W140 43 28.7
495	N63 12 04.5 W140 43 28.7
500	N63 12 04.7 W140 43 28.5
505	N63 12 04.9 W140 43 28.5
510	N63 12 05.0 W140 43 28.2
515	N63 12 05.1 W140 43 28.1

Profile [m]	Latitude / Longitude
520	N63 12 05.3 W140 43 28.1
525	N63 12 05.5 W140 43 27.5
530	N63 12 05.6 W140 43 27.6
535	N63 12 05.8 W140 43 27.5
540	N63 12 05.9 W140 43 27.3
545	N63 12 06.0 W140 43 27.1
550	N63 12 06.1 W140 43 26.9
555	N63 12 06.3 W140 43 26.8
560	N63 12 06.4 W140 43 26.5
565	N63 12 06.5 W140 43 26.3
570	N63 12 06.8 W140 43 26.3
575	N63 12 06.9 W140 43 26.1
580	N63 12 07.0 W140 43 26.1
585	N63 12 07.1 W140 43 25.9
590	N63 12 07.4 W140 43 25.6
595	N63 12 07.4 W140 43 25.5
600	N63 12 07.5 W140 43 25.5
605	N63 12 07.7 W140 43 25.1
610	N63 12 07.8 W140 43 24.9
615	N63 12 07.8 W140 43 24.8
620	N63 12 07.9 W140 43 24.6

Ladue River Line03b

GPS Accuracy 3-4m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 12 10.9 W140 43 22.9
5	N63 12 11.0 W140 43 22.7
10	N63 12 11.1 W140 43 22.4
15	N63 12 11.2 W140 43 22.2
20	N63 12 11.3 W140 43 22.1
25	N63 12 11.5 W140 43 22.0
30	N63 12 11.6 W140 43 21.8
35	N63 12 11.8 W140 43 21.5
40	N63 12 11.9 W140 43 21.6
45	N63 12 12.0 W140 43 21.4
50	N63 12 12.2 W140 43 21.2
55	N63 12 12.3 W140 43 21.0
60	N63 12 12.4 W140 43 20.8
65	N63 12 12.7 W140 43 20.7
70	N63 12 12.7 W140 43 20.5
75	N63 12 12.9 W140 43 20.5
80	N63 12 13.0 W140 43 20.4
85	N63 12 13.1 W140 43 20.3
90	N63 12 13.3 W140 43 20.0
95	N63 12 13.4 W140 43 19.8
100	N63 12 13.6 W140 43 19.8
105	N63 12 13.7 W140 43 19.7
110	N63 12 13.9 W140 43 19.4
115	N63 12 14.0 W140 43 19.3
120	N63 12 14.1 W140 43 19.1
125	N63 12 14.0 W140 43 18.7
130	N63 12 14.5 W140 43 18.6
135	N63 12 14.6 W140 43 18.7
140	N63 12 14.8 W140 43 18.3
145	N63 12 14.9 W140 43 18.0
150	N63 12 15.1 W140 43 18.0
155	N63 12 15.3 W140 43 17.8
160	N63 12 15.3 W140 43 17.7
165	N63 12 15.5 W140 43 17.5
170	N63 12 15.6 W140 43 17.5
175	N63 12 15.8 W140 43 17.2
180	N63 12 16.0 W140 43 17.1
185	N63 12 16.1 W140 43 17.0
190	N63 12 16.2 W140 43 16.9
195	N63 12 16.3 W140 43 16.6
200	N63 12 16.5 W140 43 16.5
205	N63 12 16.7 W140 43 16.3
210	N63 12 16.7 W140 43 16.2
215	N63 12 17.0 W140 43 16.4
220	N63 12 17.1 W140 43 16.1
225	N63 12 17.3 W140 43 15.9
230	N63 12 17.4 W140 43 15.7
235	N63 12 17.5 W140 43 15.4
240	N63 12 17.6 W140 43 15.3
245	N63 12 17.9 W140 43 15.3
250	N63 12 18.0 W140 43 15.1
255	N63 12 18.1 W140 43 14.8
260	N63 12 18.2 W140 43 14.6
265	N63 12 18.4 W140 43 14.5
270	N63 12 18.6 W140 43 14.5
275	N63 12 18.7 W140 43 14.3
280	N63 12 18.9 W140 43 14.1
285	N63 12 19.0 W140 43 14.1
290	N63 12 19.2 W140 43 13.8
295	N63 12 19.3 W140 43 13.6
300	N63 12 19.5 W140 43 13.5
305	N63 12 19.7 W140 43 13.3
310	N63 12 19.8 W140 43 13.3
315	N63 12 19.9 W140 43 13.0
320	N63 12 20.0 W140 43 13.0
325	N63 12 20.2 W140 43 12.9
330	N63 12 20.4 W140 43 12.9
335	N63 12 20.5 W140 43 12.6
340	N63 12 20.7 W140 43 12.6
345	N63 12 20.8 W140 43 12.5
350	N63 12 21.0 W140 43 12.3
355	N63 12 21.1 W140 43 12.2
360	N63 12 21.2 W140 43 12.1
365	N63 12 21.4 W140 43 11.9
370	N63 12 21.5 W140 43 11.7
375	N63 12 21.7 W140 43 11.6
380	N63 12 21.9 W140 43 11.4
385	N63 12 22.0 W140 43 11.2
390	N63 12 22.1 W140 43 11.1
395	N63 12 22.3 W140 43 10.9
400	N63 12 22.4 W140 43 10.9
405	N63 12 22.5 W140 43 10.8
410	N63 12 22.7 W140 43 10.6
415	N63 12 22.8 W140 43 10.4
420	N63 12 23.0 W140 43 10.4
425	N63 12 23.2 W140 43 10.1
430	N63 12 23.4 W140 43 09.9
435	N63 12 23.5 W140 43 09.9
440	N63 12 23.6 W140 43 09.7
445	N63 12 23.7 W140 43 09.7
450	N63 12 23.9 W140 43 09.5
455	N63 12 24.0 W140 43 09.3
460	N63 12 24.1 W140 43 09.1
465	N63 12 24.3 W140 43 09.1
470	N63 12 24.4 W140 43 08.8
475	N63 12 24.6 W140 43 08.8
480	N63 12 24.7 W140 43 08.6
485	N63 12 24.8 W140 43 08.4
490	N63 12 24.9 W140 43 08.4
495	N63 12 25.0 W140 43 08.2
500	N63 12 25.2 W140 43 07.9
505	N63 12 25.5 W140 43 07.9
510	N63 12 25.5 W140 43 07.8
515	N63 12 25.7 W140 43 07.7
520	N63 12 25.7 W140 43 07.3
525	N63 12 25.9 W140 43 07.3
530	N63 12 26.1 W140 43 07.1
535	N63 12 26.2 W140 43 07.2
540	N63 12 26.5 W140 43 07.1
545	N63 12 26.6 W140 43 06.9
550	N63 12 26.7 W140 43 06.7
555	N63 12 26.8 W140 43 06.6
560	N63 12 26.9 W140 43 06.4
565	N63 12 27.2 W140 43 06.4
570	N63 12 27.2 W140 43 06.1
575	N63 12 27.3 W140 43 06.1
580	N63 12 27.6 W140 43 05.6
585	N63 12 27.8 W140 43 05.5
590	N63 12 27.9 W140 43 05.7
595	N63 12 28.2 W140 43 05.6
600	N63 12 28.3 W140 43 05.4
605	N63 12 28.4 W140 43 05.3
610	N63 12 28.6 W140 43 05.1
615	N63 12 28.8 W140 43 05.1
620	N63 12 28.9 W140 43 04.8

Ladue River Line04

GPS Accuracy 3m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 14 31.6 W140 49 44.9
5	N63 14 31.8 W140 49 44.6
10	N63 14 31.9 W140 49 44.5
15	N63 14 32.0 W140 49 44.1
20	N63 14 31.9 W140 49 43.9
25	N63 14 32.1 W140 49 43.5
30	N63 14 32.1 W140 49 43.2
35	N63 14 32.3 W140 49 42.6
40	N63 14 32.4 W140 49 42.6
45	N63 14 32.5 W140 49 42.2
50	N63 14 32.5 W140 49 42.1
55	N63 14 32.6 W140 49 41.8
60	N63 14 32.8 W140 49 41.5
65	N63 14 32.8 W140 49 41.3
70	N63 14 32.9 W140 49 41.1
75	N63 14 33.0 W140 49 40.6
80	N63 14 33.2 W140 49 40.5
85	N63 14 33.3 W140 49 40.4
90	N63 14 33.3 W140 49 40.1
95	N63 14 33.4 W140 49 39.8
100	N63 14 33.5 W140 49 39.6
105	N63 14 33.6 W140 49 39.5
110	N63 14 33.7 W140 49 39.2
115	N63 14 33.7 W140 49 38.9
120	N63 14 33.7 W140 49 38.7
125	N63 14 34.2 W140 49 38.2
130	N63 14 34.3 W140 49 37.9
135	N63 14 34.5 W140 49 37.7
140	N63 14 34.6 W140 49 37.4
145	N63 14 34.7 W140 49 37.2
150	N63 14 34.8 W140 49 36.9
155	N63 14 34.9 W140 49 36.7
160	N63 14 35.0 W140 49 36.5
165	N63 14 35.2 W140 49 36.3
170	N63 14 35.3 W140 49 36.0
175	N63 14 35.4 W140 49 35.8
180	N63 14 35.5 W140 49 35.5
185	N63 14 35.7 W140 49 35.3
190	N63 14 35.8 W140 49 35.0
195	N63 14 35.9 W140 49 34.9
200	N63 14 36.0 W140 49 34.6
205	N63 14 36.1 W140 49 34.3
210	N63 14 36.2 W140 49 34.0
215	N63 14 36.3 W140 49 33.8
220	N63 14 36.5 W140 49 33.6
225	N63 14 36.5 W140 49 33.5
230	N63 14 36.7 W140 49 33.2
235	N63 14 36.8 W140 49 33.0
240	N63 14 37.0 W140 49 32.7
245	N63 14 37.1 W140 49 32.4
250	N63 14 37.1 W140 49 32.3
255	N63 14 37.2 W140 49 32.1
260	N63 14 37.5 W140 49 31.9
265	N63 14 37.6 W140 49 31.7
270	N63 14 37.7 W140 49 31.5
275	N63 14 37.8 W140 49 31.3
280	N63 14 37.8 W140 49 31.2
285	N63 14 37.9 W140 49 30.9
290	N63 14 38.1 W140 49 30.6
295	N63 14 38.3 W140 49 30.5
300	N63 14 38.3 W140 49 29.9
305	N63 14 38.5 W140 49 29.8
310	N63 14 38.5 W140 49 29.8
315	N63 14 38.6 W140 49 29.6
320	N63 14 38.8 W140 49 29.4
325	N63 14 38.9 W140 49 29.2
330	N63 14 39.1 W140 49 28.9
335	N63 14 39.1 W140 49 28.7
340	N63 14 39.3 W140 49 28.5
345	N63 14 39.4 W140 49 28.2
350	N63 14 39.6 W140 49 27.9
355	N63 14 39.6 W140 49 27.6
360	N63 14 39.8 W140 49 27.3
365	N63 14 39.8 W140 49 27.3
370	N63 14 39.8 W140 49 27.1
375	N63 14 40.1 W140 49 26.7
380	N63 14 40.3 W140 49 26.5
385	N63 14 40.4 W140 49 26.1
390	N63 14 40.5 W140 49 25.9
395	N63 14 40.6 W140 49 25.6
400	N63 14 40.7 W140 49 25.3
405	N63 14 40.8 W140 49 25.2
410	N63 14 41.0 W140 49 24.9
415	N63 14 41.1 W140 49 24.7
420	N63 14 41.2 W140 49 24.4
425	N63 14 41.4 W140 49 24.1
430	N63 14 41.5 W140 49 23.8
435	N63 14 41.6 W140 49 23.6
440	N63 14 41.7 W140 49 23.4
445	N63 14 41.8 W140 49 23.0
450	N63 14 42.0 W140 49 22.7
455	N63 14 42.0 W140 49 22.6
460	N63 14 42.1 W140 49 22.5
465	N63 14 42.3 W140 49 22.2
470	N63 14 42.4 W140 49 21.9
475	N63 14 42.5 W140 49 21.4
480	N63 14 42.6 W140 49 21.3
485	N63 14 42.8 W140 49 21.2
490	N63 14 42.9 W140 49 21.1
495	N63 14 43.0 W140 49 20.8
500	N63 14 43.1 W140 49 20.0
505	N63 14 43.3 W140 49 19.9
510	N63 14 43.4 W140 49 19.6
515	N63 14 43.5 W140 49 19.5
520	N63 14 43.6 W140 49 19.2
525	N63 14 43.7 W140 49 18.9
530	N63 14 43.8 W140 49 18.7
535	N63 14 43.9 W140 49 18.5
540	N63 14 44.0 W140 49 18.0
545	N63 14 44.2 W140 49 17.8
550	N63 14 44.3 W140 49 17.7
555	N63 14 44.3 W140 49 17.5
560	N63 14 44.4 W140 49 17.1
565	N63 14 44.5 W140 49 16.7
570	N63 14 44.6 W140 49 16.5
575	N63 14 44.8 W140 49 16.2
580	N63 14 44.9 W140 49 15.9
585	N63 14 44.9 W140 49 15.7
590	N63 14 45.1 W140 49 15.5
595	N63 14 45.1 W140 49 15.3
600	N63 14 45.3 W140 49 14.9
605	N63 14 45.4 W140 49 14.8
610	N63 14 45.6 W140 49 14.3
615	N63 14 45.6 W140 49 14.2
620	N63 14 45.7 W140 49 14.1
625	N63 14 45.8 W140 49 14.0
630	N63 14 45.9 W140 49 13.8
635	N63 14 46.1 W140 49 13.4
640	N63 14 46.2 W140 49 13.2
645	N63 14 46.3 W140 49 12.9
650	N63 14 46.4 W140 49 12.5
655	N63 14 46.4 W140 49 12.4
660	N63 14 46.6 W140 49 12.2
665	N63 14 46.7 W140 49 12.1
670	N63 14 46.9 W140 49 11.7
675	N63 14 47.0 W140 49 11.4
680	N63 14 47.0 W140 49 11.1
685	N63 14 47.1 W140 49 10.8
690	N63 14 47.2 W140 49 10.5
695	N63 14 47.4 W140 49 10.4
700	N63 14 47.5 W140 49 10.0
705	N63 14 47.6 W140 49 09.8
710	N63 14 47.7 W140 49 09.5
715	N63 14 47.8 W140 49 09.2
720	N63 14 47.9 W140 49 08.8

Profile [m]	Latitude / Longitude
725	N63 14 48.1
	W140 49 08.6
730	N63 14 48.2
	W140 49 08.5
735	N63 14 48.2
	W140 49 08.4
740	N63 14 48.4
	W140 49 08.0
745	N63 14 48.5
	W140 49 07.8
750	N63 14 48.7
	W140 49 07.5
755	N63 14 48.8
	W140 49 07.2
760	N63 14 48.9
	W140 49 06.9
765	N63 14 49.0
	W140 49 06.7
770	N63 14 49.1
	W140 49 06.5
775	N63 14 49.2
	W140 49 06.2
780	N63 14 49.2
	W140 49 05.9
785	N63 14 49.3
	W140 49 05.5
790	N63 14 49.4
	W140 49 05.3
795	N63 14 49.5
	W140 49 05.1
800	N63 14 49.6
	W140 49 04.8
805	N63 14 49.8
	W140 49 04.6
810	N63 14 49.9
	W140 49 04.3
815	N63 14 50.0
	W140 49 04.2
820	N63 14 50.2
	W140 49 03.9
825	N63 14 50.2
	W140 49 03.7
830	N63 14 50.4

Profile [m]	Latitude / Longitude
	W140 49 03.6
835	N63 14 50.5
	W140 49 03.2
840	N63 14 50.6
	W140 49 03.0
845	N63 14 50.8
	W140 49 02.8
850	N63 14 50.9
	W140 49 02.5
855	N63 14 51.1
	W140 49 02.3
860	N63 14 51.1
	W140 49 01.9
865	N63 14 51.3
	W140 49 01.7
870	N63 14 51.4
	W140 49 01.4
875	N63 14 51.5
	W140 49 01.4
880	N63 14 51.6
	W140 49 01.1
885	N63 14 51.7
	W140 49 00.8
890	N63 14 51.8
	W140 49 00.5
895	N63 14 51.9
	W140 49 00.3
900	N63 14 52.0
	W140 49 00.1
905	N63 14 52.2
	W140 48 59.9
910	N63 14 52.2
	W140 48 59.6
915	N63 14 52.3
	W140 48 59.3
920	N63 14 52.4
	W140 48 59.1
925	N63 14 52.6
	W140 48 58.8
930	N63 14 52.6
	W140 48 58.5
935	N63 14 52.7
	W140 48 58.3

Profile [m]	Latitude / Longitude
940	N63 14 52.8
	W140 48 57.9
945	N63 14 52.9
	W140 48 57.6
950	N63 14 53.0
	W140 48 57.3
955	N63 14 53.1
	W140 48 57.1
960	N63 14 53.2
	W140 48 56.8
965	N63 14 53.4
	W140 48 56.5
970	N63 14 53.5
	W140 48 56.2
975	N63 14 53.6
	W140 48 55.9
980	N63 14 53.7
	W140 48 55.7
985	N63 14 53.8
	W140 48 55.3
990	N63 14 53.9
	W140 48 55.0
995	N63 14 54.0
	W140 48 54.8
1000	N63 14 54.1
	W140 48 54.5
1005	N63 14 54.2
	W140 48 54.3
1010	N63 14 54.4
	W140 48 53.9
1015	N63 14 54.5
	W140 48 53.7
1020	N63 14 54.5
	W140 48 53.6
1025	N63 14 54.7
	W140 48 53.2
1030	N63 14 54.8
	W140 48 53.0
1035	N63 14 54.9
	W140 48 52.7
1040	N63 14 55.0
	W140 48 52.4
1045	N63 14 55.1

Profile [m]	Latitude / Longitude
	W140 48 52.2
1050	N63 14 55.1
	W140 48 51.9
1055	N63 14 55.2
	W140 48 51.7
1060	N63 14 55.3
	W140 48 51.4
1065	N63 14 55.5
	W140 48 51.1
1070	N63 14 55.6
	W140 48 50.9
1075	N63 14 55.8
	W140 48 50.6
1080	N63 14 55.8
	W140 48 50.4
1085	N63 14 55.9
	W140 48 50.1
1090	N63 14 56.0
	W140 48 49.8
1095	N63 14 56.0
	W140 48 49.6
1100	N63 14 56.2
	W140 48 49.3
1105	N63 14 56.3
	W140 48 49.0
1110	N63 14 56.4
	W140 48 48.8
1115	N63 14 56.4
	W140 48 48.7
1120	N63 14 56.5
	W140 48 48.5
1125	N63 14 56.6
	W140 48 48.1
1130	N63 14 56.7
	W140 48 47.9
1135	N63 14 56.9
	W140 48 47.6
1140	N63 14 56.9
	W140 48 47.3
1145	N63 14 57.0
	W140 48 47.1
1150	N63 14 57.0
	W140 48 46.8

Profile [m]	Latitude / Longitude
1155	N63 14 57.2
	W140 48 46.5
1160	N63 14 57.3
	W140 48 46.1
1165	N63 14 57.5
	W140 48 45.9
1170	N63 14 57.5
	W140 48 45.7
1175	N63 14 57.6
	W140 48 45.3
1180	N63 14 57.8
	W140 48 44.8
1185	N63 14 57.9
	W140 48 44.6
1190	N63 14 57.9
	W140 48 44.2
1195	N63 14 58.0
	W140 48 43.8
1200	N63 14 58.1
	W140 48 43.6
1205	N63 14 58.1
	W140 48 43.3
1210	N63 14 58.2
	W140 48 42.9
1215	N63 14 58.4
	W140 48 42.7
1220	N63 14 58.6
	W140 48 42.4
1225	N63 14 58.6
	W140 48 42.1
1230	N63 14 58.7
	W140 48 41.9
1235	N63 14 58.8
	W140 48 41.6
1240	N63 14 59.0
	W140 48 41.1
1245	N63 14 59.1
	W140 48 40.8

Rice Creek Line01

GPS Accuracy 3-5m

(DD° MM‘ SS‘‘ WGS84)

Profile [m]	Latitude / Longitude
0	N63 15 54.3 W140 48 22.4
5	N63 15 54.4 W140 48 22.4
10	N63 15 54.6 W140 48 22.4
15	N63 15 54.7 W140 48 22.0
20	N63 15 54.8 W140 48 21.8

Profile [m]	Latitude / Longitude
25	N63 15 55.0 W140 48 21.8
30	N63 15 55.2 W140 48 21.9
35	N63 15 55.3 W140 48 21.8
40	N63 15 55.5 W140 48 21.7
45	N63 15 55.7 W140 48 21.7

Profile [m]	Latitude / Longitude
50	N63 15 55.9 W140 48 21.7
55	N63 15 56.0 W140 48 21.6
60	N63 15 56.1 W140 48 21.6
65	N63 15 56.3 W140 48 21.5
70	N63 15 56.4 W140 48 21.5

Profile [m]	Latitude / Longitude
75	N63 15 56.6 W140 48 21.5
80	N63 15 56.8 W140 48 21.4
85	N63 15 57.0 W140 48 21.4
90	N63 15 57.2 W140 48 21.4
95	N63 15 57.2 W140 48 21.3

Profile [m]	Latitude / Longitude
100	N63 15 57.4 W140 48 21.4
105	N63 15 57.5 W140 48 21.3
110	N63 15 57.7 W140 48 21.3
115	N63 15 57.9 W140 48 21.2
120	N63 15 58.1 W140 48 21.2

Profile [m]	Latitude / Longitude
125	N63 15 58.2 W140 48 21.0
130	N63 15 58.4 W140 48 21.0
135	N63 15 58.6 W140 48 20.9
140	N63 15 58.7 W140 48 21.0
145	N63 15 58.9 W140 48 20.9
150	N63 15 59.1 W140 48 20.8
155	N63 15 59.2 W140 48 21.0
160	N63 15 59.3 W140 48 21.1
165	N63 15 59.5 W140 48 20.9
170	N63 15 59.7 W140 48 20.9
175	N63 15 59.8 W140 48 20.9
180	N63 16 00.0 W140 48 20.9
185	N63 16 00.1 W140 48 20.8
190	N63 16 00.3 W140 48 20.8
195	N63 16 00.6 W140 48 20.8
200	N63 16 00.6 W140 48 20.8
205	N63 16 00.7 W140 48 20.7
210	N63 16 00.9 W140 48 20.7
215	N63 16 01.0 W140 48 20.6
220	N63 16 01.2 W140 48 20.5
225	N63 16 01.5 W140 48 20.6
230	N63 16 01.6 W140 48 20.7
235	N63 16 01.7 W140 48 20.6
240	N63 16 01.9 W140 48 20.5
245	N63 16 02.1 W140 48 20.3
250	N63 16 02.3 W140 48 20.4
255	N63 16 02.4 W140 48 20.4
260	N63 16 02.5 W140 48 20.3
265	N63 16 02.7 W140 48 20.3
270	N63 16 02.8 W140 48 20.2
275	N63 16 03.0 W140 48 20.3
280	N63 16 03.1 W140 48 20.2

Profile [m]	Latitude / Longitude
285	N63 16 03.3 W140 48 20.1
290	N63 16 03.5 W140 48 20.1
295	N63 16 03.6 W140 48 20.1
300	N63 16 03.8 W140 48 20.4
305	N63 16 04.0 W140 48 20.2
310	N63 16 04.2 W140 48 20.2
315	N63 16 04.4 W140 48 20.2
320	N63 16 04.5 W140 48 20.1
325	N63 16 04.7 W140 48 20.1
330	N63 16 04.8 W140 48 20.1
335	N63 16 04.9 W140 48 20.0
340	N63 16 05.1 W140 48 20.0
345	N63 16 05.3 W140 48 20.0
350	N63 16 05.4 W140 48 19.9
355	N63 16 05.6 W140 48 20.0
360	N63 16 05.7 W140 48 19.9
365	N63 16 05.9 W140 48 19.9
370	N63 16 06.1 W140 48 19.9
375	N63 16 06.2 W140 48 19.8
380	N63 16 06.4 W140 48 19.8
385	N63 16 06.5 W140 48 19.7
390	N63 16 06.7 W140 48 19.7
395	N63 16 06.9 W140 48 19.7
400	N63 16 07.0 W140 48 19.7
405	N63 16 07.2 W140 48 19.7
410	N63 16 07.3 W140 48 19.7
415	N63 16 07.5 W140 48 19.7
420	N63 16 07.6 W140 48 19.6
425	N63 16 07.8 W140 48 19.5
430	N63 16 08.0 W140 48 19.5
435	N63 16 08.1 W140 48 19.6
440	N63 16 08.3 W140 48 19.5

Profile [m]	Latitude / Longitude
445	N63 16 08.5 W140 48 19.5
450	N63 16 08.6 W140 48 19.4
455	N63 16 08.8 W140 48 19.5
460	N63 16 09.0 W140 48 19.5
465	N63 16 09.2 W140 48 19.5
470	N63 16 09.3 W140 48 19.4
475	N63 16 09.4 W140 48 19.5
480	N63 16 09.6 W140 48 19.4
485	N63 16 09.8 W140 48 19.4
490	N63 16 09.9 W140 48 19.3
495	N63 16 10.1 W140 48 19.3
500	N63 16 10.2 W140 48 19.4
505	N63 16 10.3 W140 48 19.4
510	N63 16 10.4 W140 48 19.3
515	N63 16 10.7 W140 48 19.2
520	N63 16 10.9 W140 48 19.3
525	N63 16 11.0 W140 48 19.2
530	N63 16 11.2 W140 48 19.2
535	N63 16 11.3 W140 48 19.1
540	N63 16 11.4 W140 48 19.0
545	N63 16 11.6 W140 48 19.0
550	N63 16 11.7 W140 48 19.0
555	N63 16 12.0 W140 48 18.9
560	N63 16 12.1 W140 48 19.1
565	N63 16 12.2 W140 48 19.0
570	N63 16 12.3 W140 48 18.9
575	N63 16 12.6 W140 48 18.9
580	N63 16 12.7 W140 48 18.8
585	N63 16 12.9 W140 48 18.7
590	N63 16 13.1 W140 48 18.8
595	N63 16 13.1 W140 48 18.9
600	N63 16 13.4 W140 48 18.7

Profile [m]	Latitude / Longitude
605	N63 16 13.5 W140 48 18.7
610	N63 16 13.7 W140 48 18.7
615	N63 16 13.8 W140 48 18.7
620	N63 16 14.0 W140 48 18.6
625	N63 16 14.3 W140 48 18.5
630	N63 16 14.4 W140 48 18.5
635	N63 16 14.7 W140 48 18.5
640	N63 16 14.7 W140 48 18.5
645	N63 16 14.9 W140 48 18.4
650	N63 16 15.1 W140 48 18.4
655	N63 16 15.3 W140 48 18.5
660	N63 16 15.5 W140 48 18.4
665	N63 16 15.7 W140 48 18.4
670	N63 16 15.7 W140 48 18.4
675	N63 16 15.8 W140 48 18.3
680	N63 16 16.0 W140 48 18.3
685	N63 16 16.1 W140 48 18.2
690	N63 16 16.2 W140 48 18.2
695	N63 16 16.5 W140 48 18.2
700	N63 16 16.6 W140 48 18.2
705	N63 16 16.8 W140 48 18.1
710	N63 16 16.9 W140 48 18.1
715	N63 16 17.0 W140 48 18.1
720	N63 16 17.2 W140 48 18.1
725	N63 16 17.4 W140 48 18.1
730	N63 16 17.6 W140 48 18.0
735	N63 16 17.7 W140 48 17.9
740	N63 16 17.9 W140 48 17.9
745	N63 16 18.1 W140 48 18.0
750	N63 16 18.1 W140 48 18.0
755	N63 16 18.4 W140 48 18.0
760	N63 16 18.6 W140 48 18.0

Profile [m]	Latitude / Longitude
765	N63 16 18.7 W140 48 17.9
770	N63 16 18.8 W140 48 17.9
775	N63 16 18.9 W140 48 18.0
780	N63 16 19.0 W140 48 17.9
785	N63 16 19.3 W140 48 17.9
790	N63 16 19.5 W140 48 18.0
795	N63 16 19.6 W140 48 17.9
800	N63 16 19.8 W140 48 17.8
805	N63 16 19.9 W140 48 17.8
810	N63 16 20.1 W140 48 17.9
815	N63 16 20.3 W140 48 17.8
820	N63 16 20.3 W140 48 17.8
825	N63 16 20.6 W140 48 17.8
830	N63 16 20.7 W140 48 17.8
835	N63 16 20.8 W140 48 17.7
840	N63 16 21.0 W140 48 17.8
845	N63 16 21.1 W140 48 17.8
850	N63 16 21.4 W140 48 17.6
855	N63 16 21.7 W140 48 17.8
860	N63 16 21.8 W140 48 17.8
865	N63 16 22.0 W140 48 17.7
870	N63 16 22.0 W140 48 17.7
875	N63 16 22.1 W140 48 18.0
880	N63 16 22.3 W140 48 17.8
885	N63 16 22.6 W140 48 17.8
890	N63 16 22.7 W140 48 17.8
895	N63 16 22.8 W140 48 17.7
900	N63 16 22.9 W140 48 17.7
905	N63 16 23.1 W140 48 17.7
910	N63 16 23.2 W140 48 17.7
915	N63 16 23.4 W140 48 17.8
920	N63 16 23.7 W140 48 17.9

Profile [m]	Latitude / Longitude
925	N63 16 23.8 W140 48 17.9
930	N63 16 23.8 W140 48 17.8
935	N63 16 24.0 W140 48 17.8
940	N63 16 24.3 W140 48 17.6

Profile [m]	Latitude / Longitude
945	N63 16 24.4 W140 48 17.8
950	N63 16 24.6 W140 48 17.7
955	N63 16 24.7 W140 48 17.8
960	N63 16 25.0 W140 48 17.5

Profile [m]	Latitude / Longitude
965	N63 16 25.1 W140 48 17.6
970	N63 16 25.2 W140 48 17.6
975	N63 16 25.3 W140 48 17.7
980	N63 16 25.5 W140 48 17.6

Profile [m]	Latitude / Longitude
985	N63 16 25.7 W140 48 17.7
990	N63 16 26.0 W140 48 17.7
995	N63 16 26.3 W140 48 17.7