YEIP
2010
-107

1

YMIP No. 10-107
Target Evaluation Program

Name of Project – Gladstone Creek

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<u>Index for Final Submission</u>

1. Target Evaluation for Left Limit Gladstone Creek
   Owners Report

2. YMIP Final Submission Form

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3. YMIP Expense Claim

4. Photos

5. Artic Geophysics Inc. Report
   Geophysical Survey with 2D Resistivity/IP
   Gladstone Creek, Cyr Creek – Yukon

4

Submitted by Alan Dendys
Phone 867-668-2824
Fax 667-7576
e-mail ticltd@klondiker.com

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YMIP No. 10-107 January 21, 2011

Target Evaluation Program for Left Limit Gladstone Creek

Tic Exploration Ltd. applied under the target evaluation program for funding to test the left limit of Gladstone Creek. The initial objective was to drill the left limit to check for depths and values to bedrock. This area was considered to be a possible main contributor for the placer reserve found in the Gladstone Creek valley that Tic Exploration has been mining since 1990.

Unfortunately, the 6 inch reverse circulation drill was not available in time to use Kluane Lake ice for the mobilization of the equipment. After discussions with Danielle Heon and Bill Lebarge, I learned of an alternate way to meet our objective to find out what could be in the left limit of Gladstone Creek at areas proposed in the WMIP application.

Arctic Geophysics Inc, a Yukon Geophysical survey firm is able to do 2D resistivity testing for placer prospecting. Their profiles detect the stratification of muck-gravel-bedrock targets for placers such as paleochannels, reefs, crevices, and terraces in bedrock, permafrost and groundwater table. This data acquisition is carried out by the automatic activation of 4-point-electrodes and several thousand measurements.

Arctic Geophysics has prepared a geophysical survey with 2D resistivity report (see attached report) for locations and layer depths on the left limit. By running the resistivity lines I was able to cover a much larger area for future reserves then would have been possible with drilling the same area. We located two paleochannels that were previously unknown.

A 330 DL Cat Excavator was used to dig the left limit area to check on the accuracy of the layer depths that the resistivity lines indicated. See attached photos. By doing so it informed me that the depth and layer lines were in fact accurate.

A test trench was cut at a 45 degree angle to left limit bank to collect runoff water. See attached photos. The water was used to help thaw the trench so we could dig down 2 meters. At this depth gravel and large rock (some were ultramafic) began to appear. We took several pans and found colours and a large quantity of magnetite to gravel.

The resistivity lines showed layers going parallel to the hill side. These layers were deposited by water so it showed that the bank has pushed up from being level. This also changed the over burden factor from what we had previously thought was there. The overburden was thought to be the height of the bank on the south side of Gladstone. This was discovered not to be the case. By digging on top bank area it indicated that the deposit had intermittent perma frost. In

2

YMIP FINAL SUBMISSION FORM

	Date submitted: January 21 2011
submit by January 31st to: *(winter placer projects may submit at pre-approved date)*	YMIP- EMR/ YTG Street address: 102-300 Main Street YMIP@gov.yk.ca Mailing address: Box 2703, K-102 phone: 867-456-3828 Whitehorse, Yt, Y1A 2C6 fax: 867-667-3198

CONTACT INFO		***PROJECT INFO***	
Name:	Alan Dendys	YMIP no:	10-107
Address:	Box 31450	Project name:	Target Evaluation Gladstone
	Whitehorse YT Y1A 6K8	Project type:	Target Evaluation
email	ticltd@klondiker.com	Project module:	
Phone:	867-668-2824		

Is the final report enclosed? ✓ yes   ✓ hard copy
____ no   ____ pdf copy
____ digital spreadsheet of station location data

Comment:

PROJECT SUMMARY

Total project expenditures: 40,344.55

Number of new claims since March 31st: 41

Has an option resulted since March 31? ____ yes ✓ no ____ in negotiation

Number of calendar field days: 21

Number of person-days of employment: 46 paid ____ days of unpaid work

Total no. of samples: ____ rocks silts soils ____ other

Total length/volume of trenching/ shafting: 100 meters

Total number of line-km of geophysics: See geophysical report

Total meters drilled ____ diamond drill ____ RC drill ____ auger/percussion drill

Other products (provide details):

FINANCIAL SUMMARY *This is not an expense claim form. To request reimbursement of expenses, please submit a separate detailed expense claim form.*

Total daily field allowance	5,800.-	Total contractor costs	8820.55
Total field air transportation costs (helicopter/plane)	0	Total excavating/ heavy equipment costs	10,750.-
Total truck/ mileage costs	100.-	Total assay/analyses costs	0
Total wages paid	12,654.00	Total reclamation costs	0
Total light equipment rental costs	1,020.00	Total report writing cost	1,200.-
Other (please specify)		Total staking costs	
Other (please specify)			

Your feedback on any aspect of the program:

I would like to commend the Yukon Government for providing the YMIP. It is very beneficial in assisting small operators more reserves. The staff, especially Danielle Heon has been very informative in implementing the program. I would like to thank her and her department.

The Department of Energy, Mines and Resources may verify all statements related to and made on this form, in any previously submitted reports, interim claims and in the Summary or Technical Report which accompanies it.

I certify that;

1. I am the person, or the representative of the company or partnership, named in the Application for Funding and in the Contribution Agreement under the Yukon Mining Incentives Program.

2. I am a person who is nineteen years of age or older, and I have complied with all the requirements of the said program.

3. I hereby apply for the final payment of a contribution under the Yukon Mining Incentives Program (YMIP) and declare the information contained within the Summary or Technical Report and this form to be true and accurate.

Date: January 21 2011

Signature of Applicant: [signature]

Name (print): Alan Dendys

 (see reverse)

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YMIP Expense Claim - Client copy

YMIP no: 10-107	project name: Target Evaluation Placer Gladstone Creek		Expense Claim no: 1
Alan Dendys Applicant name		module:	grassroots, focused regional, target evaluation ✓
		type:	Hard rock/ Placer: Placer
Tic Exploration Ltd. Box 31450 Whitehorse, Y.T. Y1A 6K8 address		phone: email:	867-668-2824 ticltd@klondiker.com
		date submitted:	January 21 2011
Start/ end dates of fieldwork for this claim:	April 30/10 start	Nov 30/10 end	no of field days/ this claim: 21

eligible expenses *Please refer to rate guidelines. Provide photocopy of receipts. Amounts to exclude GST*

item		unit/days	rate	total
daily field expenses	Artic Geophysics 2 x 8 days Alan Dendys, Donna 2x19 Shirley Dendys 4 days	16 days 38 days 4 days	100.- 100- $100/day	1,600.- 3,800- 400-
Personnel	*Name (supply statement of qualifications)*			
	Alan Dendys 30 yrs mining	21 days	400/day	8,400.-
	Donna Peter cook labourer	19 days	150./day	2,850.-
	Shirley Dendys technician	6 days	234./day	1404.-

equipment (rental)	private or commercial	unit/days	rate	total
Cat 330 DL Excavator	Private	43 hours	250.- /hr	10,750.-
Chain Saw	Private	7 days	10./day	70.-
ATV	Private	19 days	40./day	760.-
ATV tub trailer	Private	19 days	10./day	190.-
Truck within Yukon	Private	2 days	50./day	100.-

other	*please provide details*			
Artic Geophysics Inc	2D Resistivity Testing			8,820.55
Artic Geophysics Inc	Report			750.00
Assemby, Write & Supplies	Report			450.-
			Grand total this claim:	40,344.55

Cost

Arctic Geophysics Inc.

Geophysical Surveys • Prospecting • Consulting

Alan R. Dendys
Box 31450
Whitehorse, YT
Canada, Y1A6K8
Phone #:8676682824
Fax #:8676677576

Arctic Geophysics Inc.
Box 747
Dawson City, Yukon
Y0B-1G0, Canada
Phone: 867-993-3671 (Cell)
info@arctic-geophysics.com
www.arctic-geophysics.com

Invoice # 201008161

Date: August 16th 2010

Services provided:

Quantity	Description	Amount $CAN
Transportation		
9 days	Truck 4x4 @ $CAN 40.-- / day	360.--
879 Km	Km @ $CAN 0.45	395.55
2 day	Driving (one for each operator) @ 250.-- / day	500.--
Geophysical Survey		
8 days	Geoelectrical 2D-Resistivity Survey run by two operators @ $ CAN 900.00 / day	7 200.--
8 days	Solar System @ 30.-- / day	240.--
0.5 days	Computer work (0.25 days for each operator) @ 250.-- / day	125.--
	NET Amount	**$ 8 820.55**
GST Number 846363216RT0001	**G.S.T. (5%)**	**$ 441.02**
Total Due		**$ 9 261.57**

Arctic Geophysics Inc.

Geophysical Surveys • Prospecting • Consulting

Alan R. Dendys
Box 31450
Whitehorse, YT
Canada, Y1A6K8
Phone #:8676682824
Fax #:8676677576

Arctic Geophysics Inc.
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Dawson City, Yukon
Y0B-1G0, Canada
Phone: 867-993-3671 (Cell)
info@arctic-geophysics.com
www.arctic-geophysics.com

Invoice # 201101101

Date: January 10th 2011

Services provided:

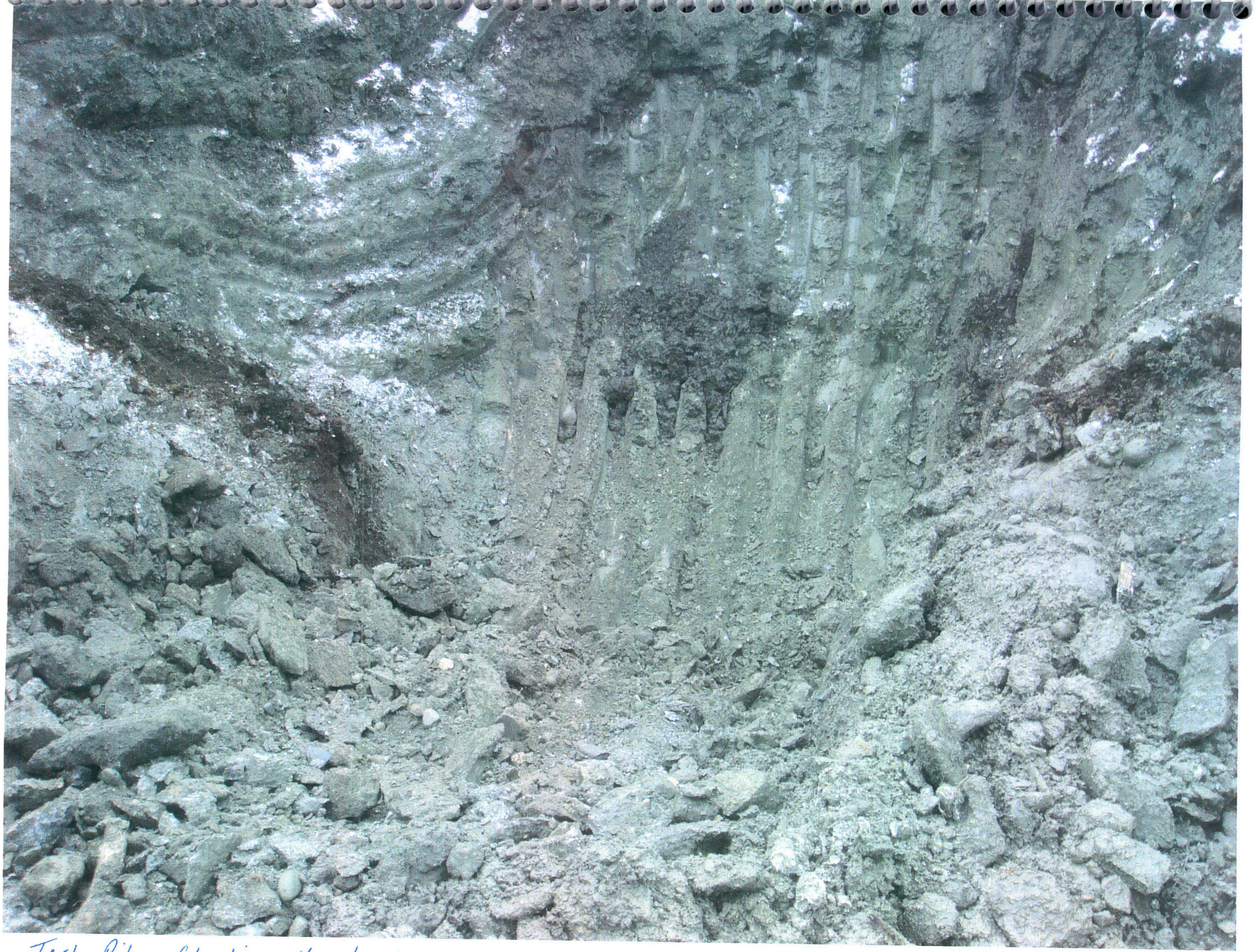
Quantity	Description	Amount $CAN
Documentation		
1	Report (fixed price, includes: report writing, printing, binding, postage)	750.--
	NET Amount	**$ 750.00**
GST Number 846363216RT0001	**G.S.T. (5%)**	**$ 37.50**
Total Due		**$ 787.50**

4

Test Pit to check for accuracy of the layer depths that the resistivity lines indicated.

5 4 3 2 1

Test Pit to check for accuracy of the layer depths that the resistivity lines indicated.



Test Pit - Checking the layers

5 4 3 2 1

Test Trench

Test Trench

Test Trench

5

Arctic Geophysics Inc.

Geophysical Surveys • Prospecting • Consulting

www.arctic-geophysics.com
Box 747, Dawson City, Yukon Territory, Y0B 1G0, Canada
Phone: 867-993-3671 (Cell), info@arctic-geophysics.com

Geophysical Survey with 2D Resistivity/IP Gladstone Creek, Cyr Creek – Yukon

N61° 18′ 47.6″

W138° 34′ 53.5″

FOR

TIC Exploration Ltd.
Box 31450
Whitehorse, YT
Y1A 6K8

AUTHORS
Philipp Moll
Stefan Ostermaier

WORK PERFORMED
August 9th-16th 2010

DATE OF REPORT
January 12th 2010

Index

1. Introduction

This geophysical investigation was done for TIC Exploration Ltd..

The survey, using 2D Resistivity /IP, was conducted to prospect the ground for placer interests.

The ground was tested with 8 measuring lines, maximum depth 110m.

2. List of Claims / Prospecting Leases

Grant Number	Claim Name	Owner	Resistivity/IP Line
P 33273	RUBY 6	Alan R. Dendys	Line06
P 33274	RUBY 7	Alan R. Dendys	Line06
P 32273	GORBY CO-DISC.	Alan R. Dendys	Line05
P 32564	SAM27	Alan R. Dendys	Line03
P 32563	SAM26	Alan R. Dendys	Line01
P 32561	SAM 24	Alan R. Dendys	Line02
P 32539	SAM 2	Alan R. Dendys	Line04
P 33259	ELIAS 3	Alan R. Dendys	Line07
P 47538	1ST TYRE 21	Alan R. Dendys	Line08
P 47503	2ND TYRE 17	Alan R. Dendys	Line08

3. Location

Gladstone Creek flows southwest from Gladstone Lakes into the east side of Kluane Lake.

Resistivity lines 01-06 are located along Gladstone Creek 1.2-8.5 km upstream of Kluane Lake.

Resistivity line 08 starts 30m from the shore of Kluane Lake just south of the Gladstone Creek estuary.

Resistivity line 07 is located at Cyr Creek 1.3km upstream of the confluence with Gladstone Creek.

4. Access

The mining camp was accessed by a mining road that runs along the eastern shore of Kluane Lake. The individual locations for the measuring lines were accessed by local mining roads.

5. Goal

The survey was focussed on measuring and interpreting following **subsurface characteristics**:

Placer Prospecting

1. Depth and topography of bedrock
   - Paleochannels
2. Sedimentary stratification
3. Permafrost conditions
4. Groundwater table
5. Mining/prospecting history

6. Methods

The **Resistivity profile** is the foundation for the interpretation of the subsurface conditions for the **placer** prospection. It usually allows for good interpretation of bedrock and overburden for finding secondary deposits.

The **IP model** supports the interpretation of the Resistivity profile.

Resistivity

In this **placer** 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. The depth penetration is much higher than with ground penetrating radar. Resistivity data taken in discontinuously frozen ground usually 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.

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.

7. Use of Geophysical Methods

7.1. 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.

7.2. 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.

7.3. Processing

The measured Resistivity/IP data were processed with the **RES2DINV** inversion program[5].

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[1] Constructed and produced by LGM (Germany)
[2] Ditto
[3] Constructed and produced by GEOANALYSIS.COM (Germany)
[4] Ditto

7.4. Interpretation

The Interpretation of the measured data is supported by:

Experience	- Measuring practice with Resistivity/IP in Yukon/BC since 2005
Discussion	- Alan R. Dendys[6]
	- William Lebarge et al.[7]
	- Daniele Heon [8]
Excavation	- Trenching during the survey[9]
Observation	- Surficial conditions in the field
Comparison	- Between geophysical and technological information found in other surveys
Literature	- Bedrock Geology Map[10]

7.5. 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.

[5] Produced by GEOTOMO SOFTWARE (Malaysia)
[6] Dendys, Alan R., TIC EXPLORATION LTD., customer
[7] Lebarge, William; Placer Geologist, Yukon Geological Survey
[8] Heon, Daniele, Placer Geologist, Yukon Geological Survey
[9] Dendys, Alan R., TIC EXPLORATION LTD., customer
[10] Gordey, S.P. and Makepeace, A.J. (comp.) 1999: Yukon bedrock geology in Yukon digital geology, S.P. Gordey and A.J. Makepeace (comp.); Geological Survey of Canada Open File D3826 and Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, Open File 1999-1(D)

1

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4

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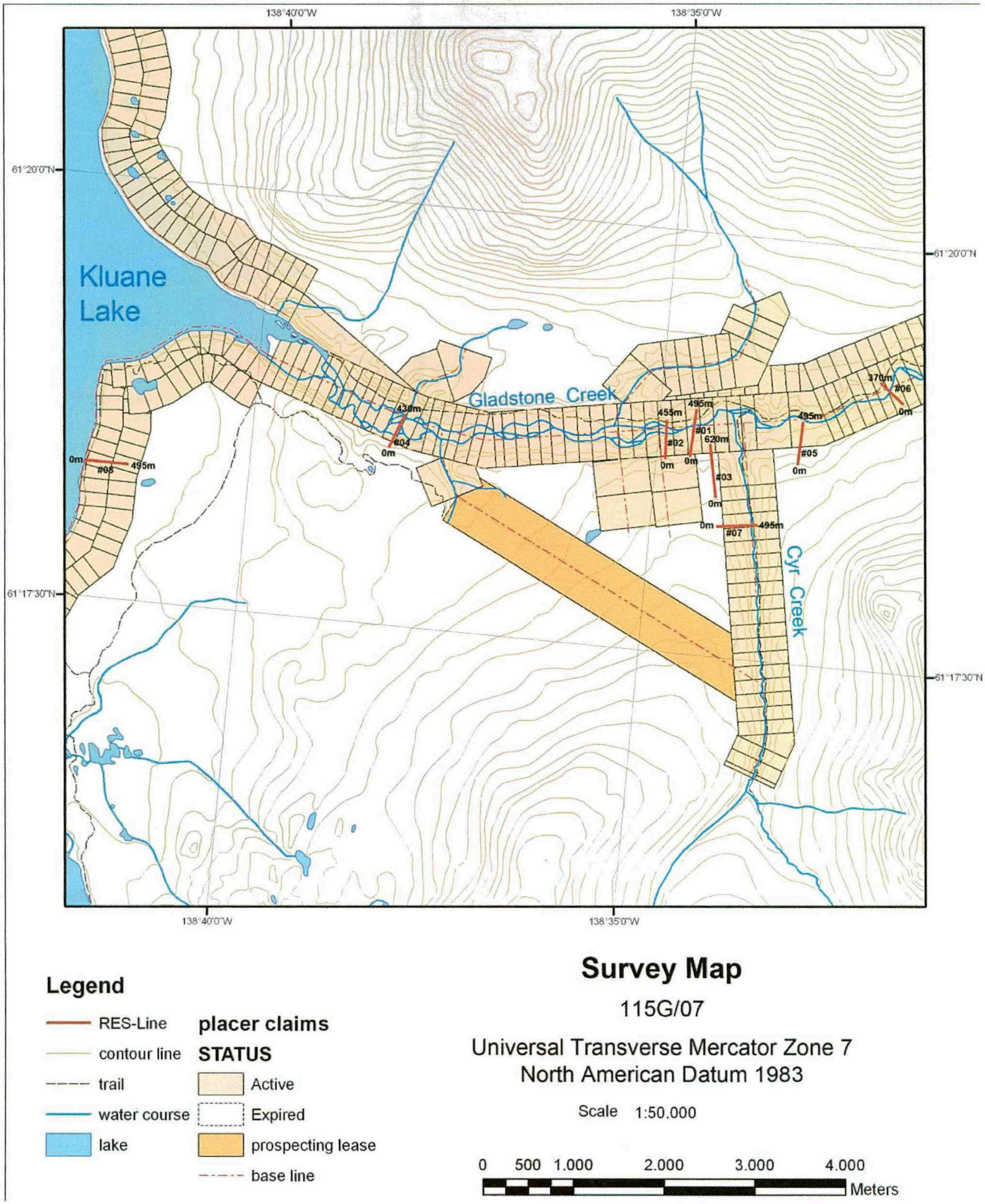
8. Line Arrangement

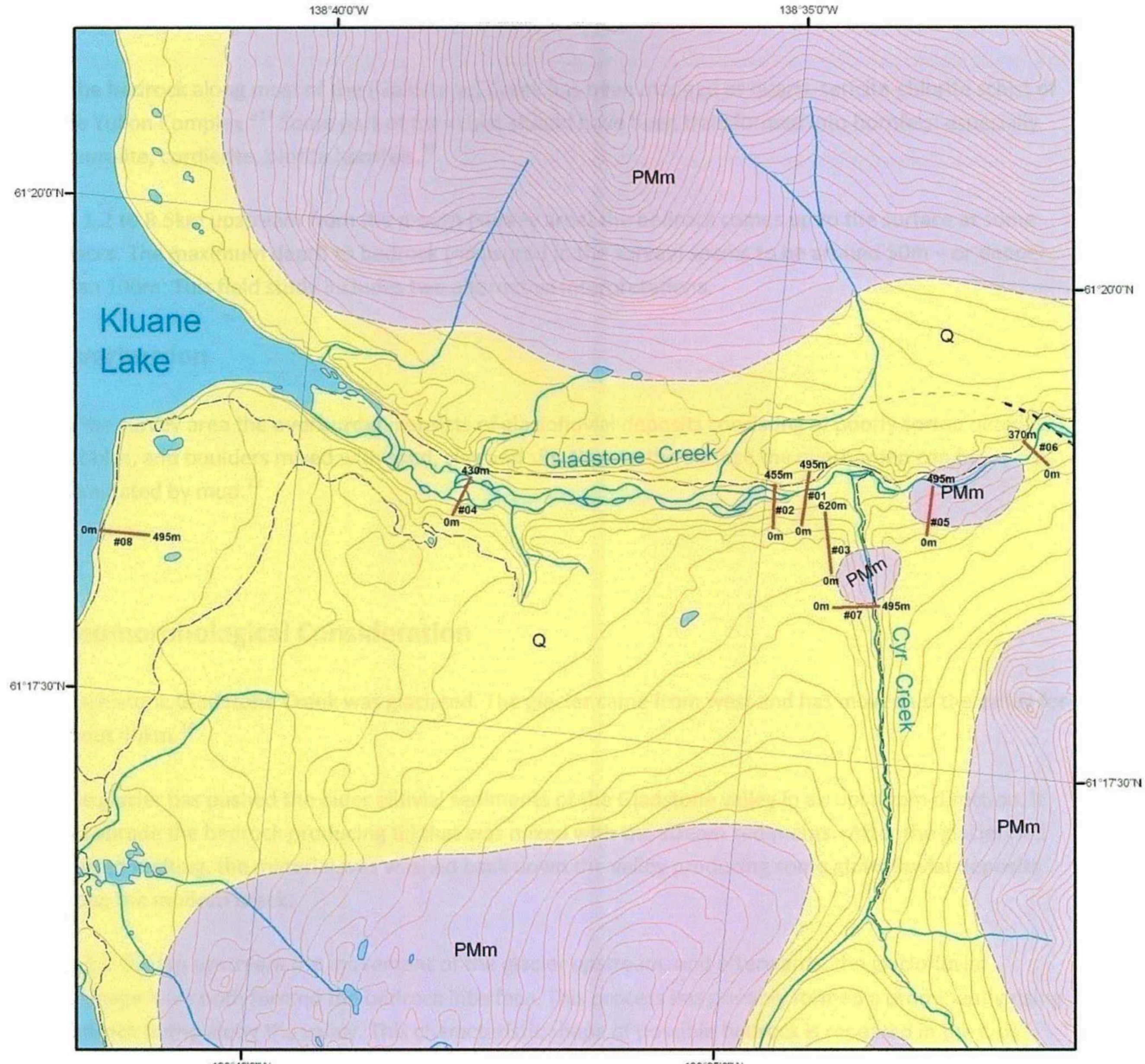
The **locations of the cross valley profiles** do stay away from tributaries since they could falsify the recording of systematic parameters of the subsurface along the valley, for example bedrock depth and thickness of gravel. The discharge of side creeks could also interfere with the identification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

9. Maps

Survey Map 115G/07



Bedrock Geology Map 115G/07



Legend

RES-Line
contour line
trail
water course
lake

Faults

MOVEMENT UNDEFINED

extrapolated

Contacts

STRATIGRAPHIC

extrapolated

SURFICIAL

approximate

Regional Units

Quarternary

Q: unconsolidated glacial, glaciofluvial and glazio-lacustrine deposits

Proterozoic to Mesozoic

PMm: undivided metamorphics

Bedrock Geology Map

115G/07

Universal Transverse Mercator Zone 7
North American Datum 1983

Scale 1:50.000

0 500 1.000 2.000 3.000 4.000 Meters

10. Geology

Bedrock

"The **bedrock** along most of the [Galdstone] Creek has been mapped as quartz-sericite-chlorite schist of the Yukon Complex."[11] Some part of the schist should have been transformed into hornfels: especially staurolite, cordierite, biotite hornfels.[12]

At 1.2 to 8.5km upstream from the mouth (survey area) the bedrock comes up to the surface at some places. The maximum depth to bedrock (measured in the survey) seems to be around 50m – or deeper than 100m: This field study includes two alternative interpretations.

Overburden

In the survey area the **overburden** consists of glaciofluvial deposits consisting of poorly sorted pebbles, cobbles, and boulders mixed with sand, clay and silt. Near to the surface the overburden can be dominated by mud.[13]

Geomorphological Consideration

The historic **Gladstone Creek** was glaciated. The **glacier** came from west and has moved up the valley for about 40km.[14]

The glacier has pushed the older alluvial sediments of the Gladstone valley in an upstream direction. It did abrade the bedrock producing till that was mixed with the stream sediments. After the glacier had started melting, the material was washed back down the valley producing some **glaciofluvial deposits** along the modern creek.

At 1.2-8.5 km upstream the movement of the glacier upstream, and afterwards, the glaciofluvial drainage have both formed the bedrock interface. This process has possibly formed a prominently rising **bedrock hump** along the valley. This characteristic shape of possible bedrock is repeated in the cross valley profiles along the creek. Alternatively the interpreted hump-shaped structure could be part of the glaciofluvial deposits. Both interpretations coexist in this study.

Some preliminary aspects about the hump theory will now be formulated before interpreting the profiles.

---

[11] Yukon Placer Database, Update: 26.02.2007 16:08:26
[12] Eric A. Ostensoe, Geologist: "Report on the Gladstone Creek, Placer Gold Property, Kluane Area" (Feb 1984), for: CATEAR RESOURCES LTD.
[13] This kind of overburden was seen on the surface as the result of intensive mining activity.
[14] Bedrock Geology Map

How could this shape of bedrock have developed?

Before the glaciation the historic bedrock could have shown some different qualities of rock with different physical erosion resistance. The different resistance could be explained by different amounts of fracturing and weathering as well as possibly the different hardness of the rocks. A fault line running along the valley could have supported the development of different qualities of rock.[15] In this scenario the glacier would have eroded the lower resistant material; the higher resistant rocks would have remained.


Bedrock, Gladstone Creek, view upstream, end point of Line 05 (495m) running up hill to the right

This hypothetic scenario is now focused on.

The interpretation concerning the possible existence of some historic **bedrock** showing significantly changing erosion resistance is supported by taking the current bedrock on the surface[16] into

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[15]A fault line running parallel to the valley is approximately marked in the Bedrock Geology Map. Its location isn't precisely known yet. Same information by: Alan R. Dendys: TIC Exploration LTD.

[16] Two bedrock outcrops have been observed during the survey. One was located about 200m downstream of the confluence with Cyr Creek. The other one on was inspected about 600m upstream of this confluence right at the end of measuring Line 05.

consideration. At both bedrock outcrops seen in the survey area some unusually hard schist attesting to very high metamorphic influence has been observed.[17] This type of schist in a solid constitution could have shown relatively **high abrasion resistance** against the glacier. – Besides this, the existence of some **low abrasion resistant** bedrock in the history could have been created by the above mentioned fault line. Some fractured and weathered rocks along a fracture line could provide some low resistant bedrock.

These two qualities of bedrock, some weathered fault gouge in the neighborhood of some hard solid bedrock both continuing along the valley could be a pre-condition for the development of, hypothetically, some **prominent bedrock elevations** as well as some **deep bedrock depressions** filled with glaciofluvial deposits in a glaciated area.

The hard schist seen on the surface **breaks sharply in rectangular directions** (horizontally and vertically), see picture. This could be a reason the glacier could have produced the vertical bedrock interfaces interpreted in the geophysical profiles.

This aspect could have played an additional role when creating vertical bedrock interfaces: The neighboring rock masses of a fault line could have been **vertically displaced** creating a bedrock step in the subsurface.

As seen on the picture the schist bedrock has been **tilted by tectonic processes**, about 20 degrees in a northerly direction. This angle is seen in the interpreted in bedrock interfaces in some profiles.

Last-mentioned, the local tectonic could have influenced the **metamorphic processes** creating some bands of different rock qualities along the valley.

11. Measurements

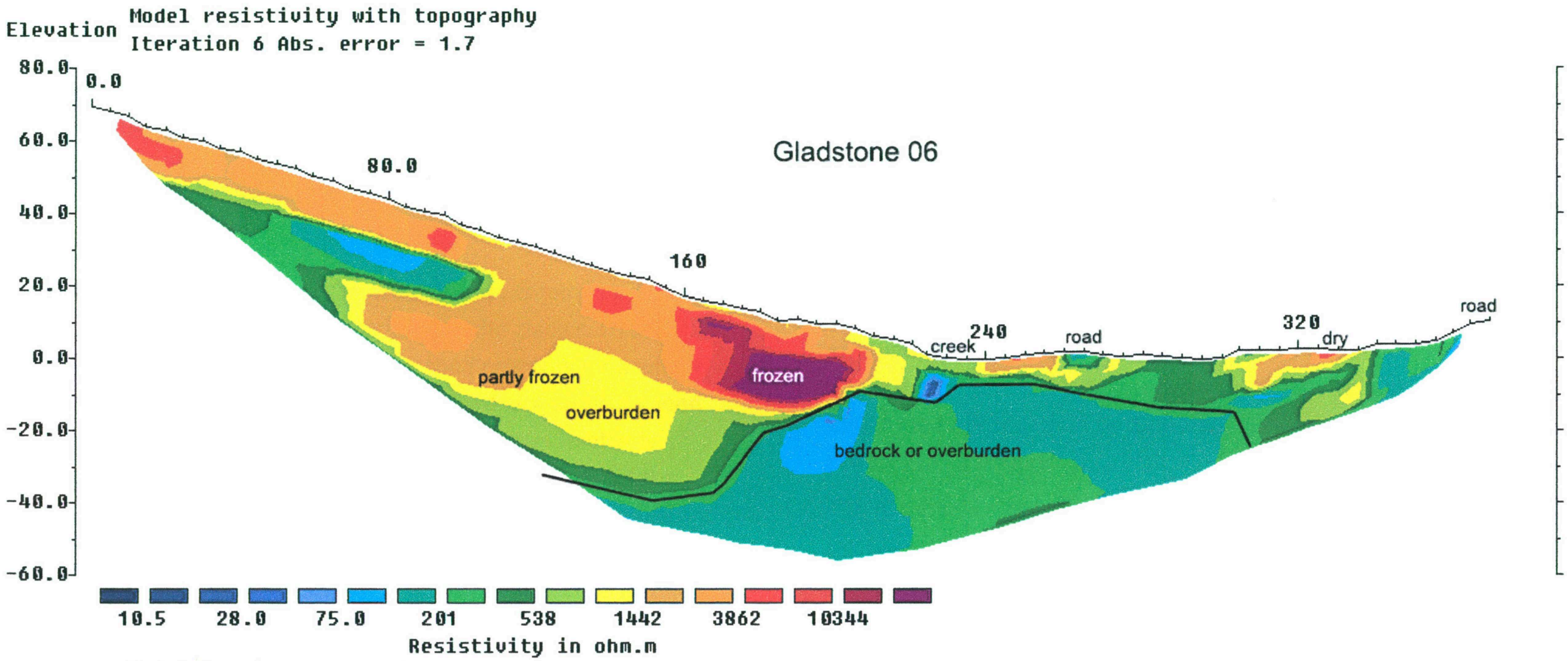
Preliminary Note!

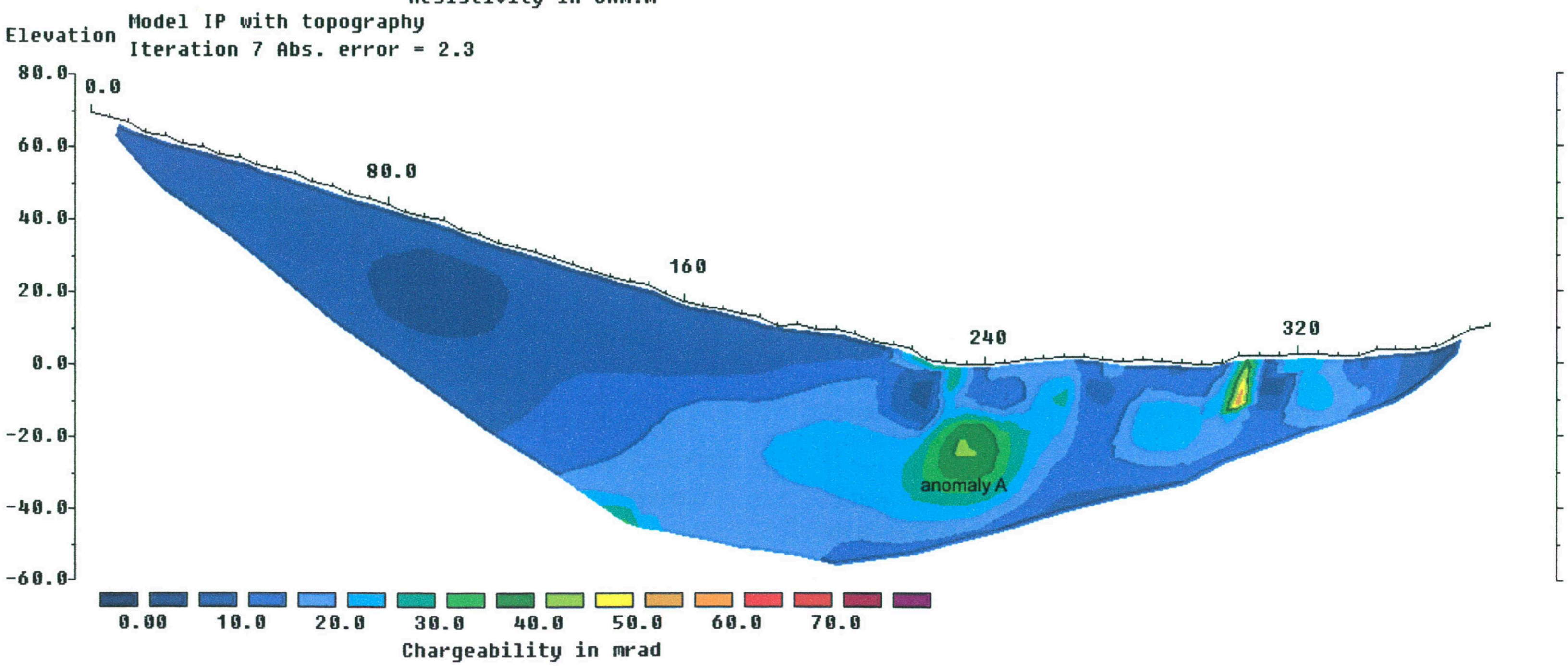
The subsurface information of this study is an **interpretation**.

The following interpretation examines the Resistivity/IP profiles in the downstream direction. The numbers of the profiles are discontinuous since they describe the sequence the profiles were made during the survey.

[17] The schist around Gladstone Creek might have got some larger metamorphic influence by the intrusion of the Ruby Range, dominated by granodiorite, in the Triasic periode. (Eric A. Ostensoe, Geologist: "Report on the Gladstone Creek, Placer Gold Property, Kluane Area" (Feb 1984), for: CATEAR RESOURCES LTD.)

1 2 3 4 5


Elevation
Model resistivity with topography
Iteration 6 Abs. error = 1.7
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
0.0
80.0
160
240
320
Gladstone 06
creek
road
dry
road
partly frozen
overburden
frozen
bedrock or overburden
10.5
28.0
75.0
201
538
1442
3862
10344
Resistivity in ohm.m


Elevation
Model IP with topography
Iteration 7 Abs. error = 2.3
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
0.0
80.0
160
240
320
anomaly A
0.00
10.0
20.0
30.0
40.0
50.0
60.0
70.0
Chargeability in mrad

1 2 3 4 5

Gladstone 06

Line: Cross valley, **View:** Downstream
Electrodes: 75, spacing 5m, **Measure:** in [meter]
Vertical exaggeration: 0.92, **Iteration error:** in [%]

Interpretation

On the valley bottom a hypothetic **bedrock hump,** coming up to 7m below the surface, could have been formed by the glacier. This assumption is supported by the pattern of the Resistivity data which presents a sharp interface, as well as the two bedrock outcrops seen downstream. In case the hump exists this bedrock was relatively resistant against the abrasion of the glacier. On the left side of the hump some less resistant bedrock might have been located in historic times, which was pushed away by the glacier forming a channel being filled with glaciofluvial deposits today. The possible development of some less resistant bedrock is described in the Geology chapter.

However, the bedrock elevation could be inexistent. In this case the hump material would just be some **glaciofluvial sediments,** the same material as seen around the hump. The data interface would just indicate some permafrost rapidly diminishing to the right side. This alternative interpretation is supported by the following aspects: On the valley bottom the ground was stripped which takes away the thermal insulation, also the influence of the sun increases to the right side – both causes a thawing of permafrost.

It doesn't matter which interpretation is true, the hump-shaped interface is **strongly repeated** in the profiles downstream.

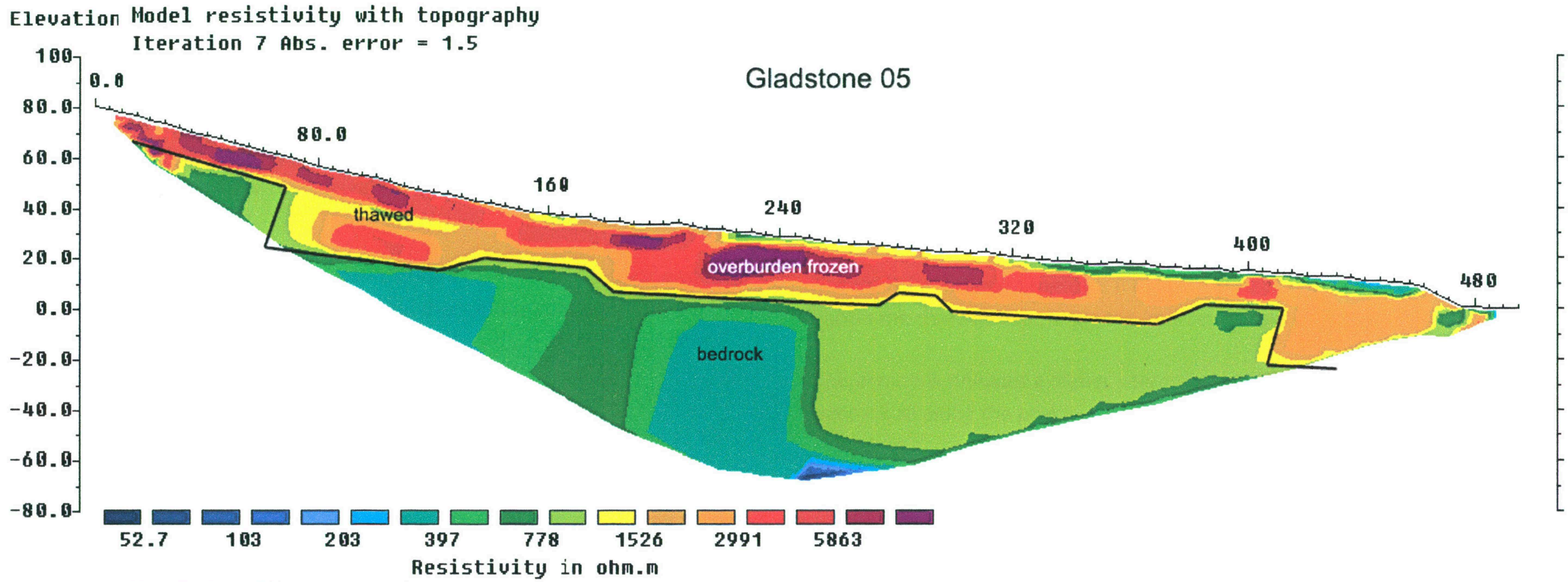
On the left slope some **glaciofluvial deposits**, at least 50m-thick, are measured at 160m.[18] They are discontinuously frozen. Higher Resistivity indicates more **permafrost**. These glaciofluvial deposits look layered.

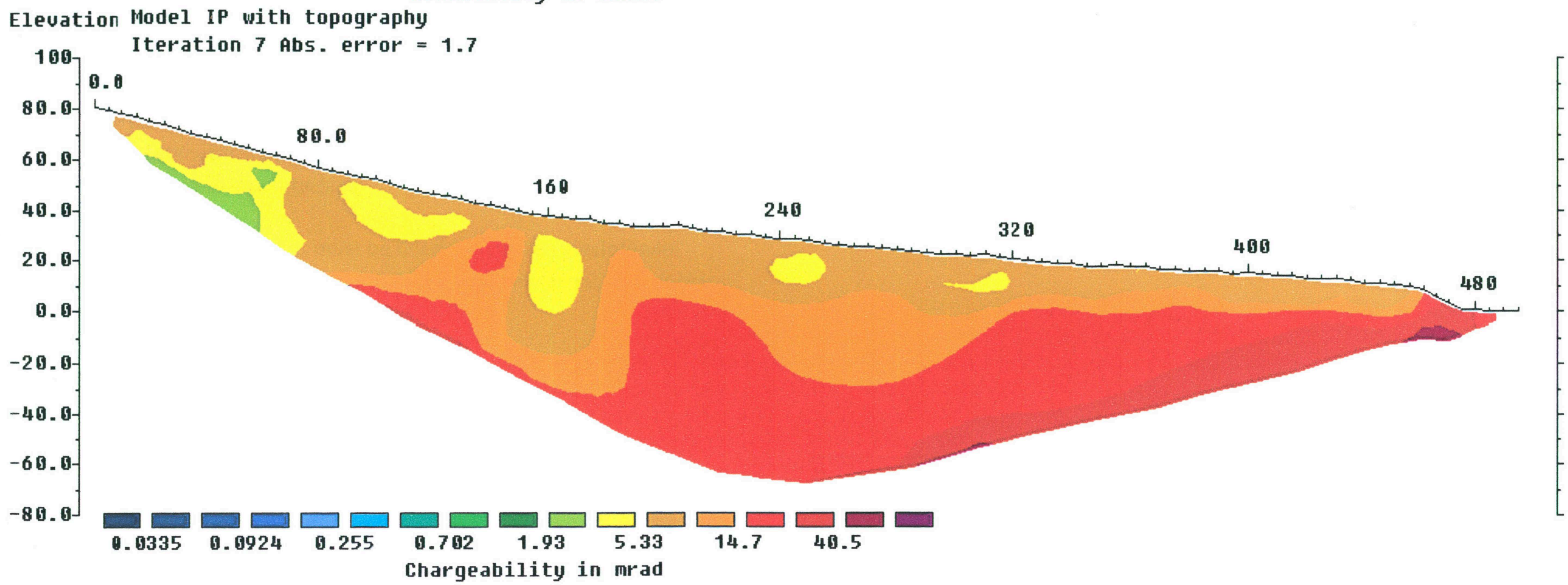
[18] The bedrock depth is measured rectangular to the surface.

The upper 5m-portion of the deposit might be dominated by **mud**.[19] Intermixture of unsorted **pebbles, cobbles and boulders** should increase with depth.[20] At 160m the overburden might be at least 48m thick. The glaciofluvial sediments on top of the bowl-shaped interface (yellow, green) must contain more **groundwater** than in the upper zones. The turquoise layer around 80m must be a thawed layer between two frozen layers.[21] The overburden beyond 240m was stripped. It looks thawed. High resistivity data indicate dry ground; lower data point to water saturation in the glaciofluvial sediments. At 290m the bedrock could be 12m deep. Or all materials seen in the profile are sediments.

The **IP** model refers to a concentration of IP-active minerals in the possible bedrock.[22] These signals could be caused by a concentration of pyrite in possible schist.[23] In case of the existence of glaciofluvial deposits (instead of bedrock) the chargeability could be explained by clay-/silt-rich deposits.[24] However, the chargeability looks quite high for being a sedimentary effect.

[19] Mud has been observed in all trenches in virgin ground downstream
[20] Alan R. Dendys, TIC EXPLORATION LTD.
[21] This scenario of a thawed gravel layer between two frozen layers has been observed when verifying Resistivity profile 02 by trenching downstream. 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 below the ground-water-bearing layer might again consist of clay. The clay seals the two layers.
[22] IP signals in solid rock are mostly produced by sulfide accessory minerals, graphite, and copper all indicating a large range of possible ore types. For an in-depth interpretation of IP-data more geological background information would be required.
[23] Daniele Heon, Yukon Geological Survey
[24] They would be created by a local effect at the interfaces between electrolytic groundwater and the mineral particles of the sediment (membrane polarization).


Elevation
Model resistivity with topography
Iteration 7 Abs. error = 1.5
Gladstone 05
100
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
0.0
80.0
160
240
320
400
480
thawed
overburden frozen
bedrock
52.7
103
203
397
778
1526
2991
5863
Resistivity in ohm.m


Elevation
Model IP with topography
Iteration 7 Abs. error = 1.7
100
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
0.0
80.0
160
240
320
400
480
0.0335
0.0924
0.255
0.702
1.93
5.33
14.7
40.5
Chargeability in mrad

Gladstone 05

Line: Cross valley, **View:** Downstream
Electrodes: 100, spacing 5m, **Measure:** in [meter]
Vertical exaggeration: 0.86, **Iteration error:** in [%]

Interpretation

Cross line 05 is located 1.0km downstream from line 06. Here the valley is very narrow. The bedrock is seen on the surface 25m upstream from the end of profile 05. It presents some sharp-edged blocks rising about 2m (see picture above).

In this Resistivity profile the depth to **bedrock** is clearly indicated at 10-30m depth. The typical hump-shaped structure disappeared likely because just some erosion resistant bedrock is located on this slope. The resistivity profile confirms this.

The profile shows four angular **depressions** in the **bedrock.** At the two depressions up the slope the bedrock seems to be fractured presenting the same angular pattern as the rocks do show on the surface: They are vertically broken, presenting a plateau; and they are tilted to the same side! The geometrical pattern of the fracture lines might have controlled the bedrock interface.

These bedrock depressions must be filled with frozen **glaciofluvial deposits** likely containing a majority of former alluvial pebbles, cobbles, and boulders.[25]

The **overburden** might be almost 100% frozen.

In the first bedrock depression (left), some sediments about 29m thick are deposited.[26] Again some groundwater seems to run between two frozen layers (yellow).

The second/third depression measures 23m/20m of overburden.

The fourth depression (right) is filled with 30m of sediments; again it shows the characteristic angle the bedrock breaks in.

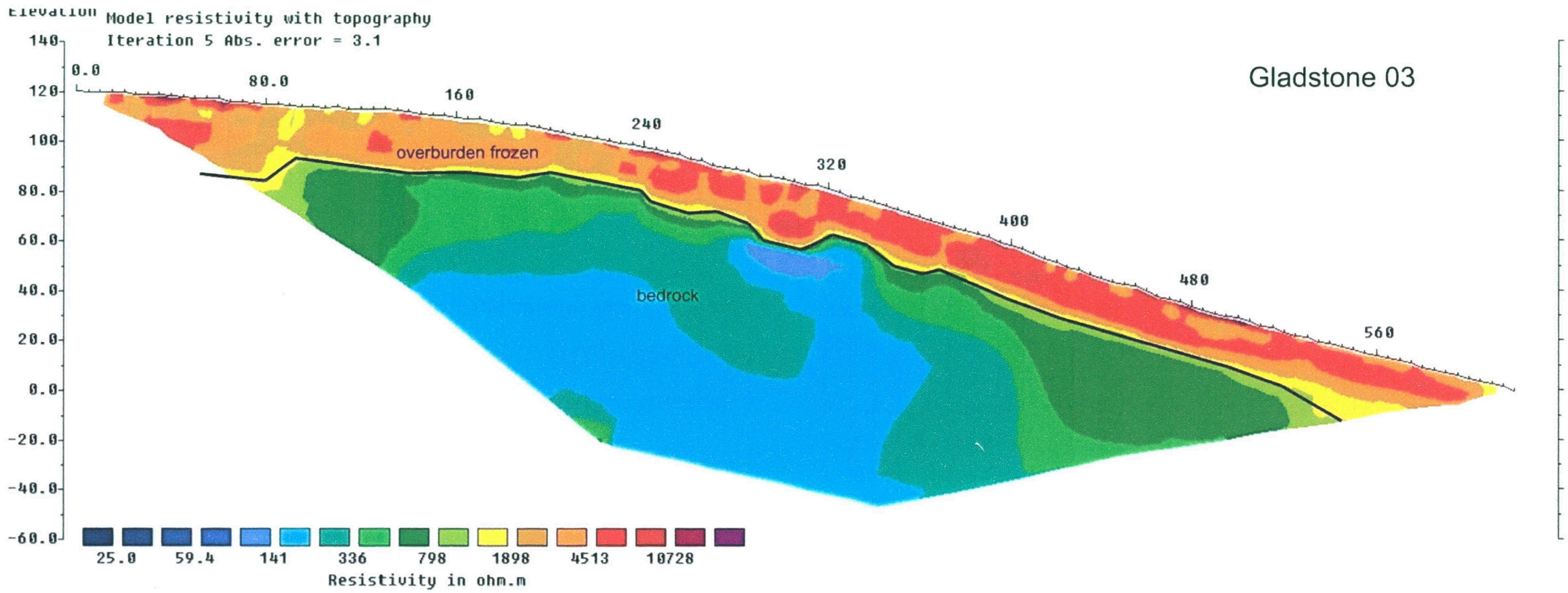
The **IP** model indicates a higher percentage of IP-active minerals in the bedrock all along the profile. These data could be caused by pyrite in the schist.[27]

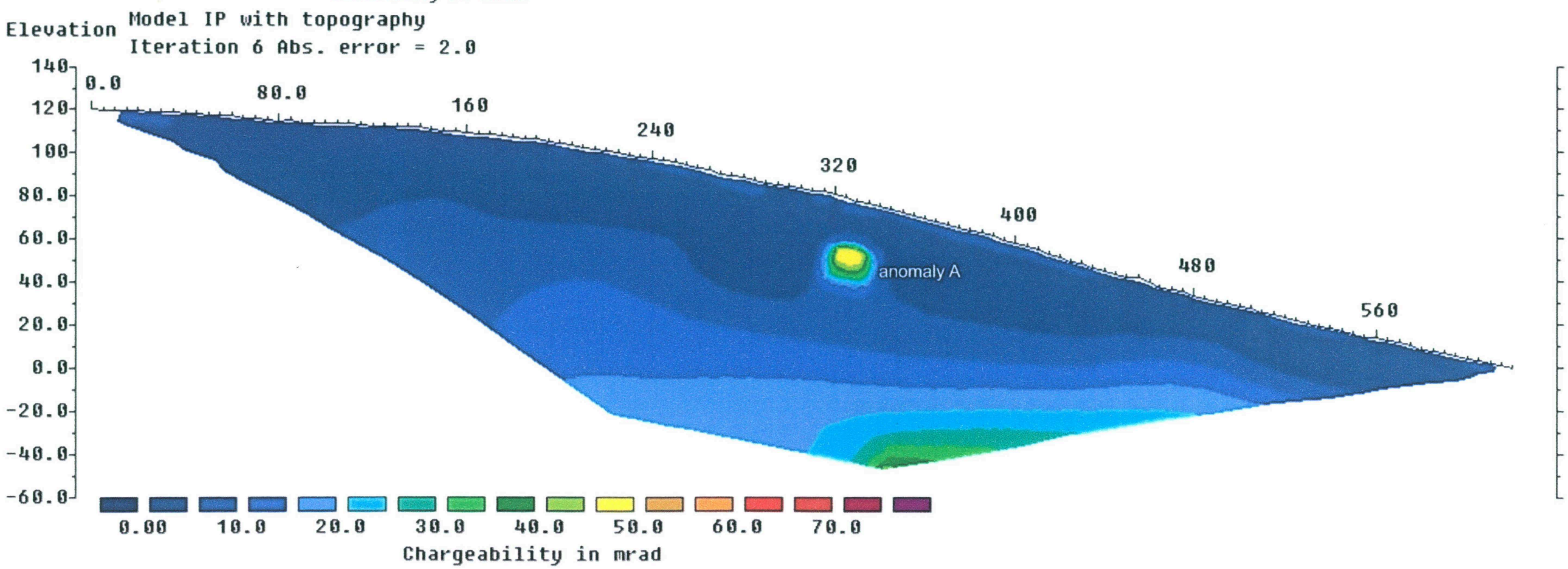
The IP model roughly matches the horizontally alternating pattern in the bedrock seen also in the Resistivity profile as well as seen at the surficial bedrock – all representing the vertical fracture lines.

[25] A large majority of well rounded technogenic gravel is seen everywhere along the survey area.

[26] The bedrock depth is measured rectangular to the surface.

[27] Daniele Heon, Yukon Geological Survey


Elevation
Model resistivity with topography
Iteration 5 Abs. error = 3.1
Gladstone 03
overburden frozen
bedrock
0.0
80.0
160
240
320
400
480
560
140
120
100
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
25.0
59.4
141
336
798
1898
4513
10728
Resistivity in ohm.m


Elevation
Model IP with topography
Iteration 6 Abs. error = 2.0
anomaly A
0.0
80.0
160
240
320
400
480
560
140
120
100
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
0.00
10.0
20.0
30.0
40.0
50.0
60.0
70.0
Chargeability in mrad

Gladstone 03

Line: Cross valley, **View:** Downstream
Electrodes: 125, spacing 5m, **Measure:** in [meter]
Vertical exaggeration: 0.92, **Iteration error:** in [%]

Interpretation

Profile 03 is located 900m downstream of profile 05. It overlaps with the profiles 01 and 02 located 200m and 500m downstream. Profile 03 is the continuation of profile 01 up the hill.

The valley has widened to about 350m in this section. This dimension will approximately stay all the way down to profile 04.

In the Resistivity profile the **bedrock** interface is sharply depicted at 14-25m depth.

The **overburden** shows some vesicular texture of high resistivity which refers to frozen **glaciofluvial deposits** of the valley-typical composition.

At 0-80m the overburden is thickening, likely because a terrace starts there, see Resistivity profile.

In the middle of the profile three **glaciofluvial channels** are suggested by the Resistivity profile. They could be created just by fluvial processes as they are small.

At the right edge of the profile the **overburden** starts thickening. This fits with the overlapping profiles 01 and 02 downstream.

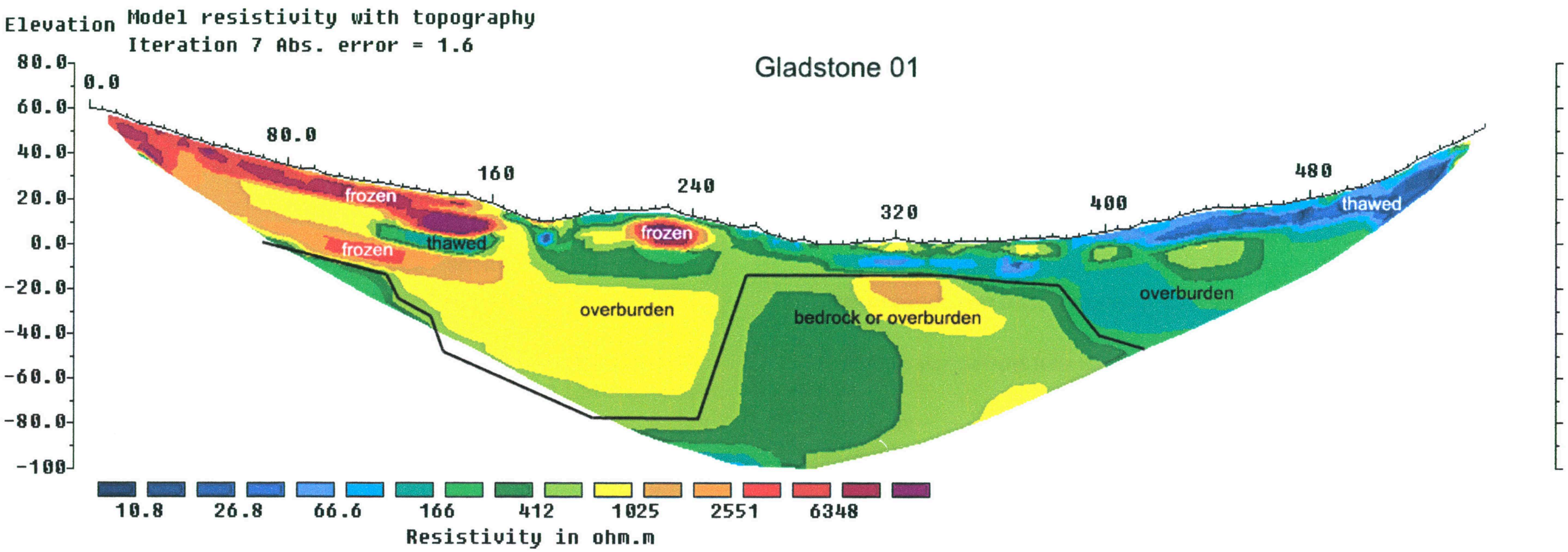
The **depth to bedrock** we interpret as follows.[28]

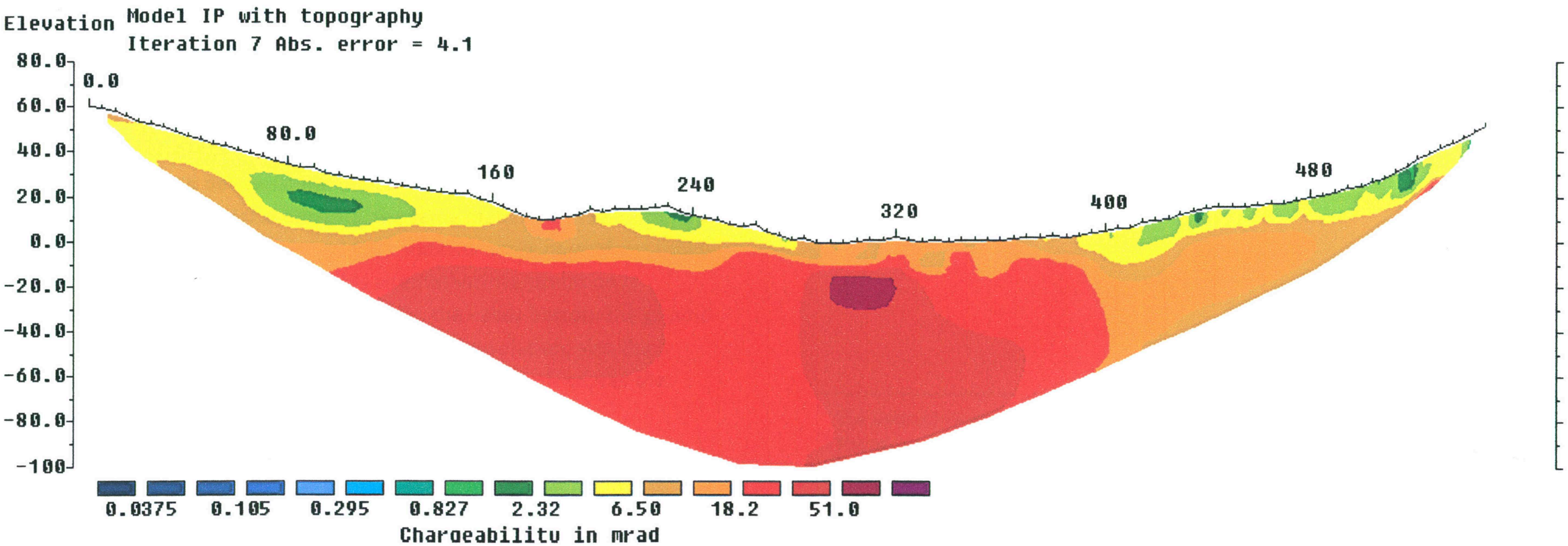
60m in the profile:	26m to bedrock.	
145m	20m	
220m	14m	(channel)
305m	22m	(channel)
400m	17m	(channel)
480m	16m	
560m	25m	

The **IP** model shows some slightly increased chargeability in the lower bedrock. A moderately higher percentage of IP-active minerals can be assumed. These data could be caused by pyrite in the schist.[29] The core that shows the highest data, located right at the edge of the profile bottom (green), doesn't seem to be realistic.

The **IP** model presents an anomaly (A) located at the channel at 310m.[30] Its data are almost 50 Milliradian. This signal could indicate some **placer deposits** in the channel consisting of heavy and stable IP-active minerals e.g. magnetite, copper, and galena.

[28] The bedrock depth is measured rectangular to the surface.
[29] Daniele Heon, Yukon Geological Survey
[30] Basically features are rougher localized in the IP model than in the Resistivity profile.


Elevation
Model resistivity with topography
Iteration 7 Abs. error = 1.6
Gladstone 01
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
-100
0.0
80.0
160
240
320
400
480
frozen
frozen
thawed
frozen
thawed
overburden
bedrock or overburden
overburden
10.8
26.8
66.6
166
412
1025
2551
6348
Resistivity in ohm.m


Elevation
Model IP with topography
Iteration 7 Abs. error = 4.1
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
-100
0.0
80.0
160
240
320
400
480
0.0375
0.105
0.295
0.827
2.32
6.50
18.2
51.0
Chargeability in mrad

Gladstone 01

Line: Cross valley, **View:** Downstream
Electrodes: 112, spacing 5m, **Measure:** in [meter]
Vertical exaggeration: 0.86, **Iteration error:** in [%]

Interpretation

Profile 01 is located 200m downstream from the hill-profile 03 and does show the continuation in the down-slope direction.

In the Resistivity profile the typical **hump-shaped structure** appears again. We have seen the same structure at profile 06 1.9km upstream. In the two profiles in between (05 and 03) this structure disappeared. Reasons for that are: At profile 05 the valley has narrowed and some erosion resistant bedrock seems to have been measured; profile 03 is too far uphill to show this structure. The structure will now stay in the profiles in the downstream direction.

Again a **bedrock hump** can be interpreted at this location. It would be covered with about 13m of thawed glaciofluvial deposits (measured at 320m). On the left side the bedrock hump shows the typical angle which the bedrock breaks in. – As mentioned above, the bedrock elevation could be inexistent. In this case the hump material would just be more **glaciofluvial sediments,** the same material as seen around the hump. The data interface would just indicate some permafrost rapidly diminishing to the right side. This alternative interpretation is supported by the following aspects: On the valley bottom the ground was stripped which takes away the thermal insulation, also the influence of the sun increases to the right side – both causes the thawing of permafrost.

Also the **glaciofluvial cannel** can be interpreted at this section. Its existence is bound to the existence of the bedrock hump. The channel would show its bedrock at around 78m depth, measured at 220m. It would be filled with partly frozen glacicofluvial deposits.

Up the hill the glaciofluvial deposits are thinning out. At 110m they should be32m thick.[31] At this section we see again a thawed sediment layer between two frozen sediment layers.[32]

At 230m a **permafrost lens** has been left.

At 160-400m the material on the surface has been disturbed by **mining** machines.

After 400m **virgin** glaciofluvial deposits might start.

The **IP** model indicates a concentration of possible IP-active minerals. These data could be caused by pyrite in bedrock (schist).[33] In sediments they would be produced by membrane polarization (compare profile 06).

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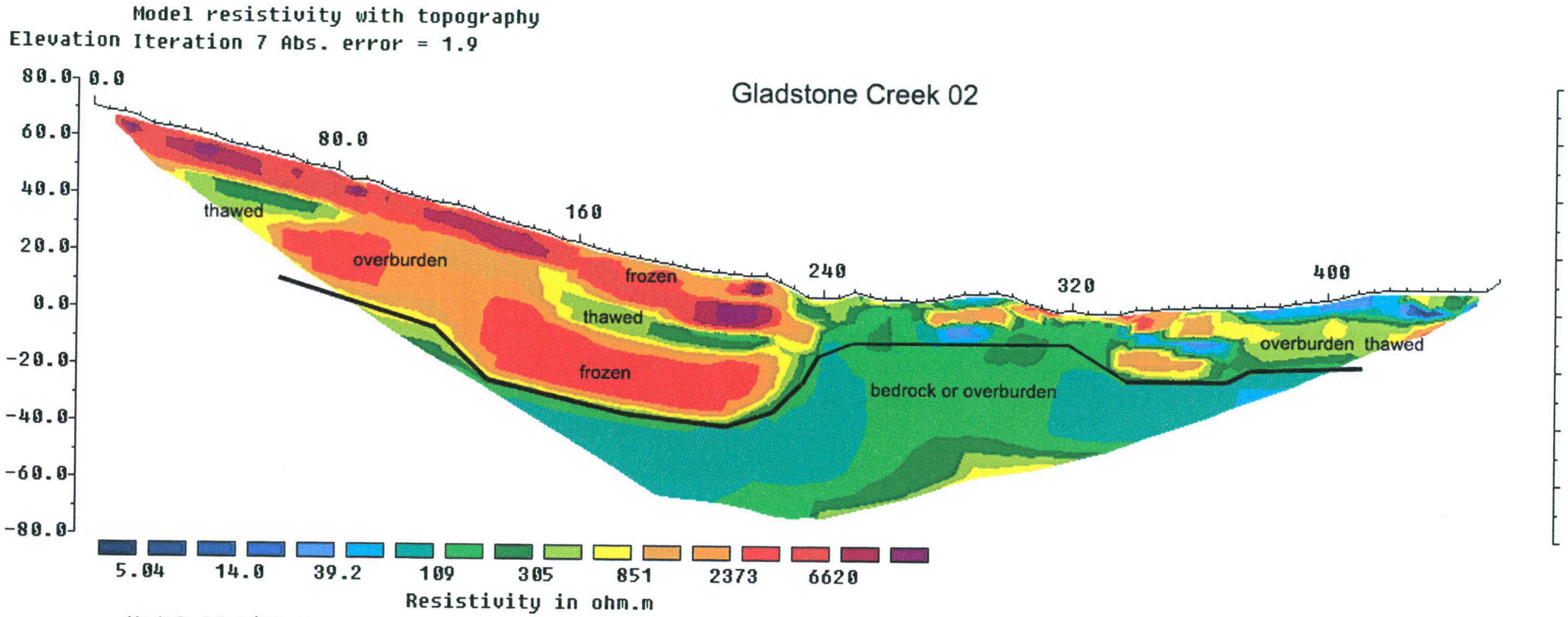
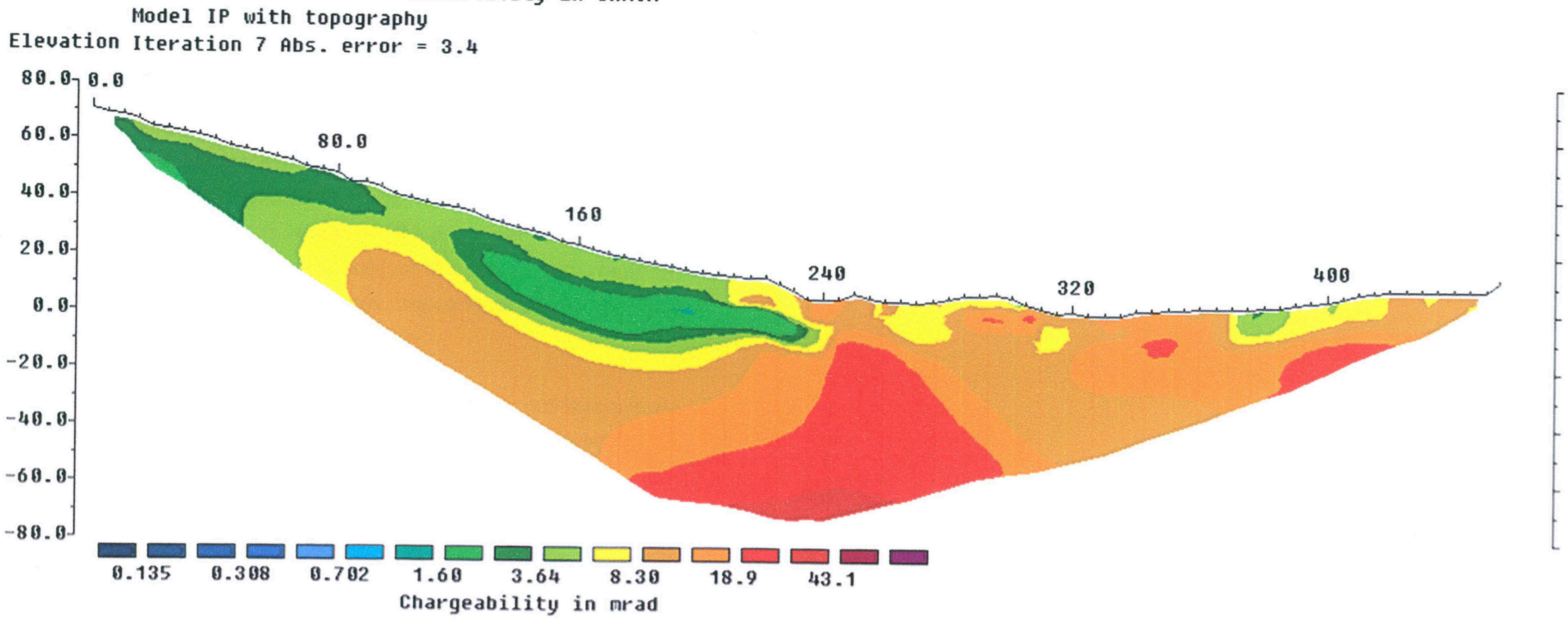
[31] The bedrock depth is measured at right angles to the surface.
[32] These conditions have been verified by excavating at 160m, Alan R. Dendys, TIC EXLORATION LTD.
[33] Daniele Heon, Yukon Geological Survey



Model resistivity with topography
Elevation Iteration 7 Abs. error = 1.9
Gladstone Creek 02
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
0.0
80.0
160
240
320
400
thawed
overburden
frozen
thawed
frozen
bedrock or overburden
overburden thawed
5.04
14.0
39.2
109
305
851
2373
6620
Resistivity in ohm.m



Model IP with topography
Elevation Iteration 7 Abs. error = 3.4
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
0.0
80.0
160
240
320
400
0.135
0.308
0.702
1.60
3.64
8.30
18.9
43.1
Chargeability in mrad

Gladstone 02

Line: Cross valley, **View:** Downstream
Electrodes: 92, spacing 5m, **Measure:** in [meter]
Vertical exaggeration: 0.89, **Iteration error:** in [%]

Interpretation

Profile 02 is located 300m downstream from profile 01.

The Resistivity profile 02 shows the same structure as profile 01: the hypothetic **bedrock hump** neighboring a deep **glaciofluvial channel**. At 280m the bedrock hump can be interpreted at 15m depth. The overlaying glaciofluvial sediments are thawed and disturbed by mining activities. As mentioned above, the bedrock elevation could be inexistent for the same reasons as discussed in profile 01.

At 210m the **glaciofluvial channel** might show bedrock at 46m.[34] This is 32m shallower than in profile 01 just 300m upstream. Such a rapid change in the depth would be an argument against the theory about the existence of the bedrock hump besides the channel. In contrast the permafrost would easily have the flexibility to change its depth so abruptly. So the alternative interpretation of the existence of just some different kinds of glaciofluvial deposits measured in the profiles is strengthened at this point. However (!) a prominent undoubted bedrock outcrop has been observed just about 500m upstream on the left side of the valley bottom! – Thus, the concept of two coexisting interpretations must persist in this study.

Around 200m, the green layer in between the two red layers must again be a thawed sediment layer between two frozen layers.

Further up the hill, at 110m, the bedrock might be reached at 36m depth.[35]

At the left edge, the green layer again indicates a thawed sediment layer surrounded by frozen sediments.

Beyond 320m the ground looks pretty well worked by mining. That's why the Resistivity profile shows a mosaic of data representing different kinds of technogenic material containing different water saturation.

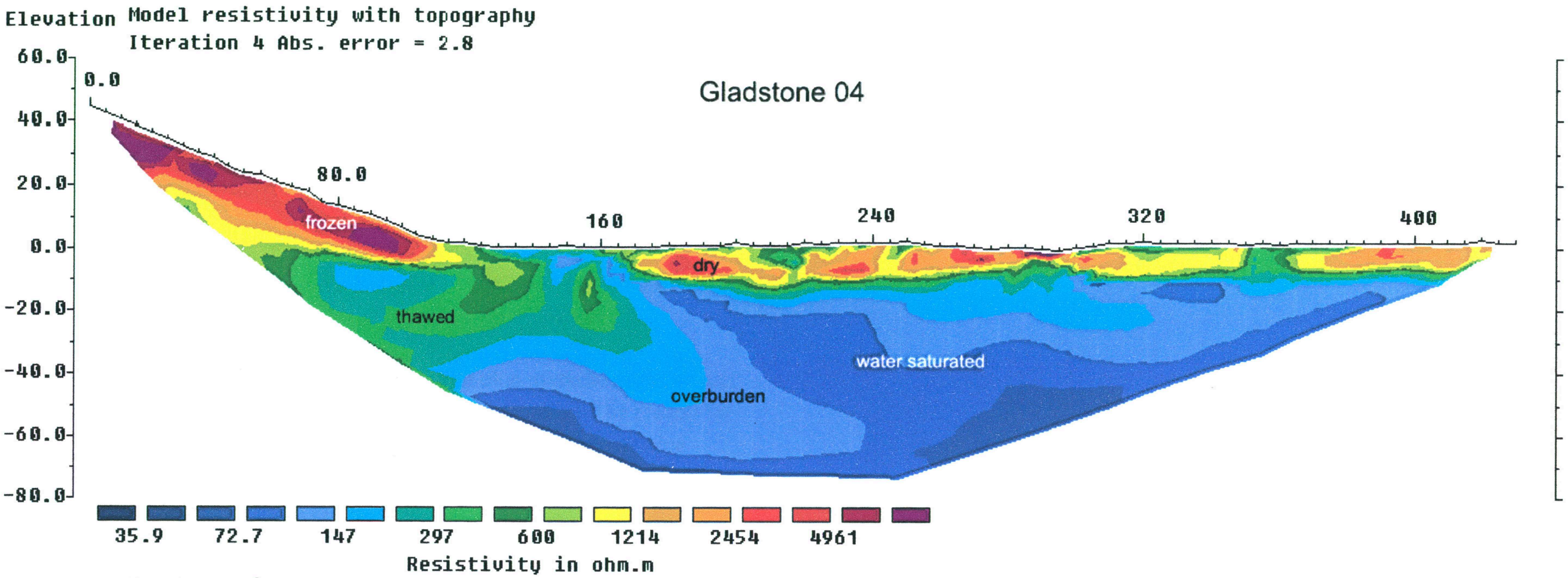
At 350m/400m the bedrock is suggested at 22/21m depth. Or the material below is just a glaciofluvial deposit.

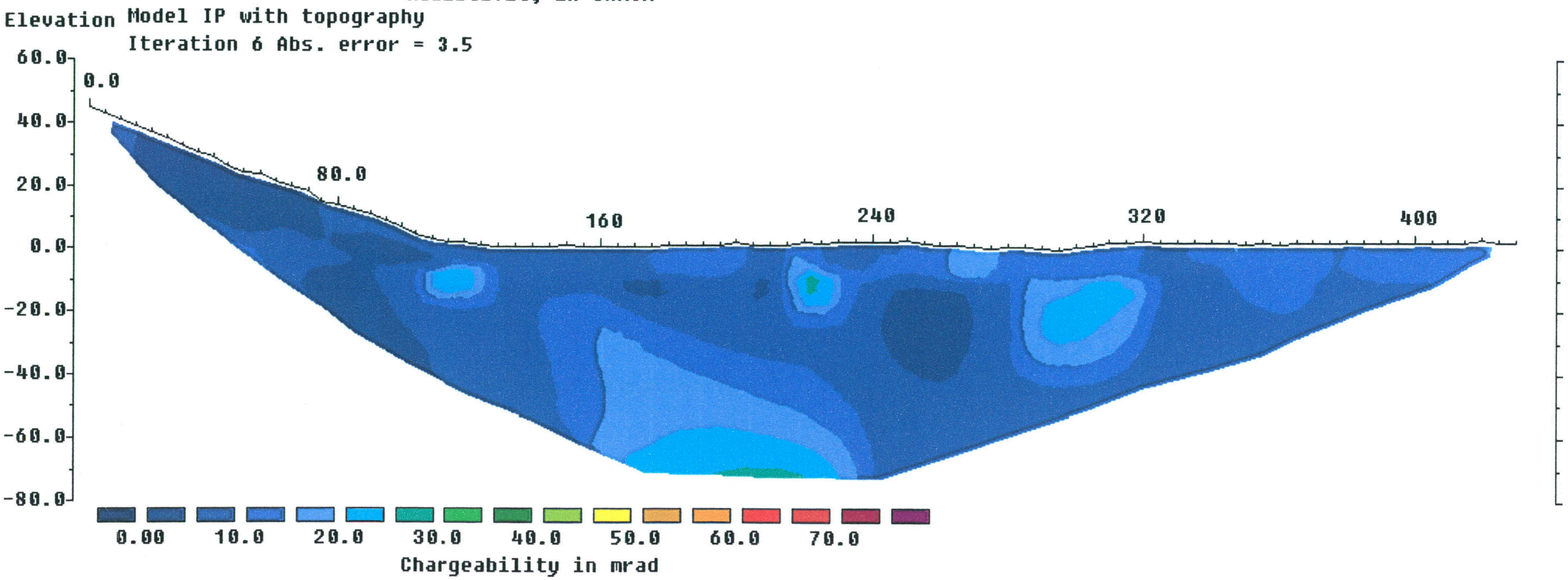
The **IP** model indicates a concentration of possible IP-active minerals. These data could be caused by pyrite in bedrock (schist).[36] In sediments they would be produced by membrane polarization (compare profile 06).

[34] The bedrock depth is measured at right angles to the surface.

[35] Ditto

[36] Daniele Heon, Yukon Geological Survey


Elevation
Model resistivity with topography
Iteration 4 Abs. error = 2.8
Gladstone 04
frozen
dry
thawed
water saturated
overburden
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
0.0
80.0
160
240
320
400
35.9
72.7
147
297
600
1214
2454
4961
Resistivity in ohm.m


Elevation
Model IP with topography
Iteration 6 Abs. error = 3.5
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
0.0
80.0
160
240
320
400
0.00
10.0
20.0
30.0
40.0
50.0
60.0
70.0
Chargeability in mrad

Gladstone 04

Line: Cross valley, **View:** Downstream
Electrodes: 87, spacing 5m, **Measure:** in [meter]
Vertical exaggeration: 0.93, **Iteration error:** in [%]

Interpretation

Profile 04 is located 4.0km downstream of profile 02 (1.2km upstream of Kluane Lake).

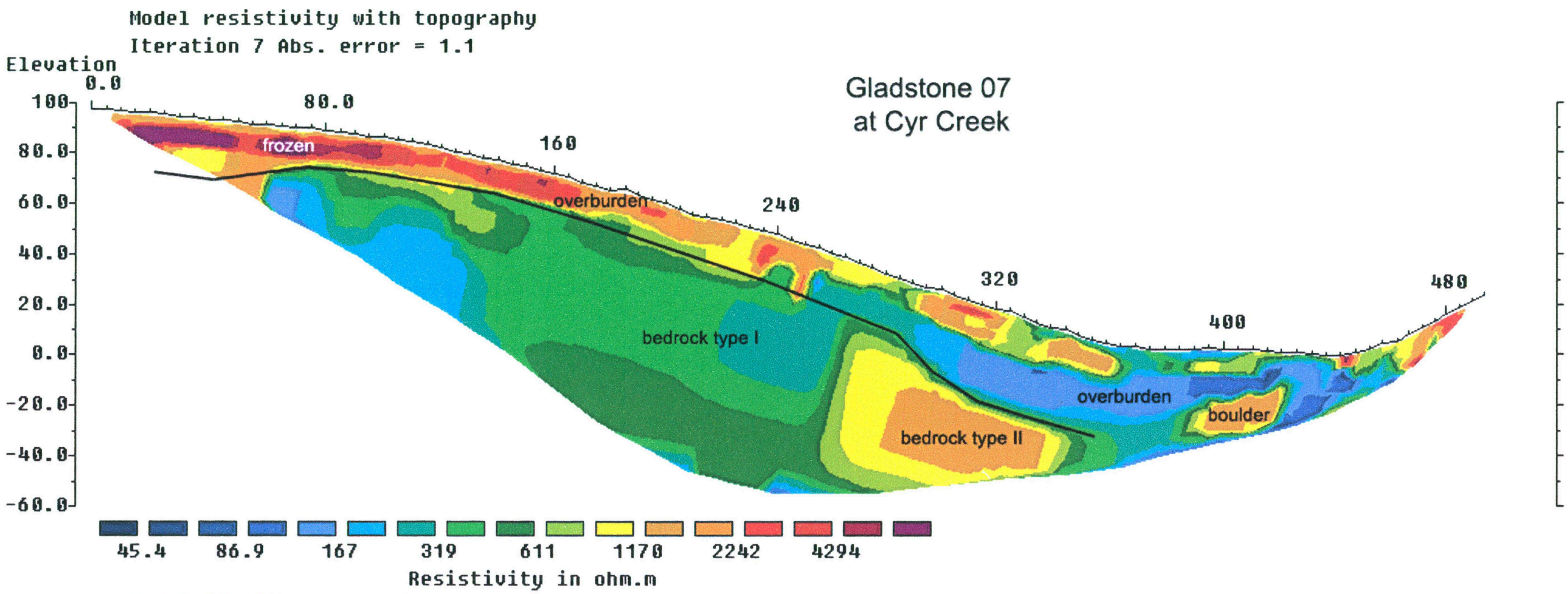
In profile 04 the bedrock hump is gone. The blue material might be just **glaciofluvial deposits** which are highly water saturated. The reason for that is the proximity of the Kluane Lake. It is very unlikely the blue matrix would be bedrock because the data are too low and the changes of the data are structured in a layer-like manner.

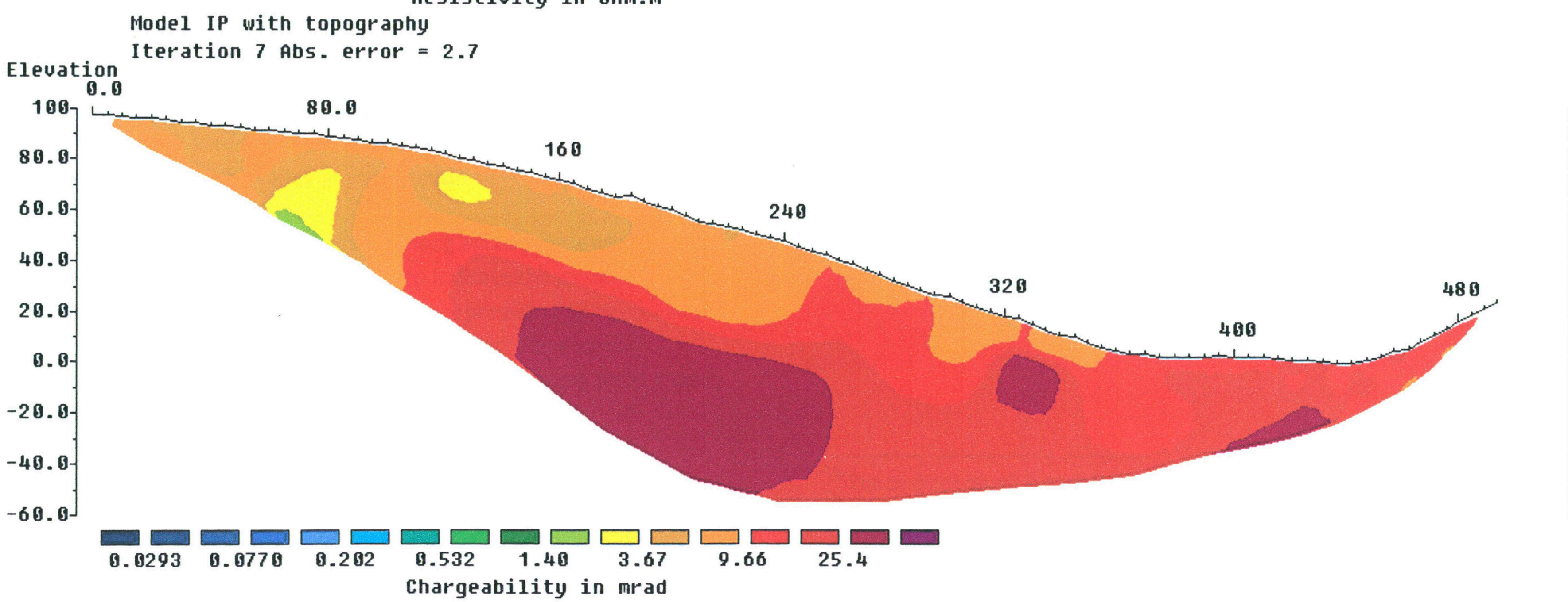
Left of 160m the glaciofluvial sediments (green) should have less groundwater. The hypothetic glaciofluvial channel seen in the profiles before could run at this location cutting into sediment, not into possible bedrock.

Up the slope those deposits are frozen.

After 170m, the flat valley floor presents some disturbed material below the surface. This is mined material seen on the surface. The higher resistivity is caused by a lack of finer sediments in between the pebbles, cobbles, and boulders; so less water can be held.

In the **IP** model, the zones of higher chargeability could be explained by clay deposits in the glaciofluvial sediments.


Model resistivity with topography
Iteration 7 Abs. error = 1.1
Elevation
Gladstone 07
at Cyr Creek
0.0
80.0
160
240
320
400
480
100
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
frozen
overburden
bedrock type I
bedrock type II
overburden
boulder
45.4
86.9
167
319
611
1170
2242
4294
Resistivity in ohm.m


Model IP with topography
Iteration 7 Abs. error = 2.7
Elevation
0.0
80.0
160
240
320
400
480
100
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
0.0293
0.0770
0.202
0.532
1.40
3.67
9.66
25.4
Chargeability in mrad

Gladstone 07

Line: Cross valley, **View:** Downstream
Electrodes: 100, spacing 5m, **Measure:** in [meter]
Vertical exaggeration: 0.86, **Iteration error:** in [%]

Interpretation

Profile 07 is located 1.3km upstream on Cyr Creek.

On the hill, profile 07 comes within 200m of profile 03. Up the hill, in both Resistivity profiles the layering and data do match perfectly. This indicates some schist bedrock of the same quality overlaid by the same overburden: frozen glaciofluvial deposits of 12-14m thickness. And in both profiles the overburden starts thickening towards the upper edge. Therefore, the flatter area starting beyond the profiles (terrace) might have some thicker overburden.

Down the hill, at 280m in profile 07, a **bedrock alteration** seems to have been measured. The well conducting schist on the hill (bedrock type I) changes into another bedrock showing 3-4 times higher Resistivity data (bedrock type II). It looks pretty much like a fault line is just running along the valley at this location.

Bedrock type II, by the data possibly being another type of schist, must be fractured. The huge bolder seems to indicate the continuity of bedrock type II. Weathering seems to have produced so much porosity that the ground became highly water saturated. The original glaciofluvial sediment and the weathered bedrock seem to be mixed, represented by the blue matrix.[37]

At 340m, bedrock type II seems to be 30m deep.[38]

At 400m, the possible bolder might be 17m deep.[39]

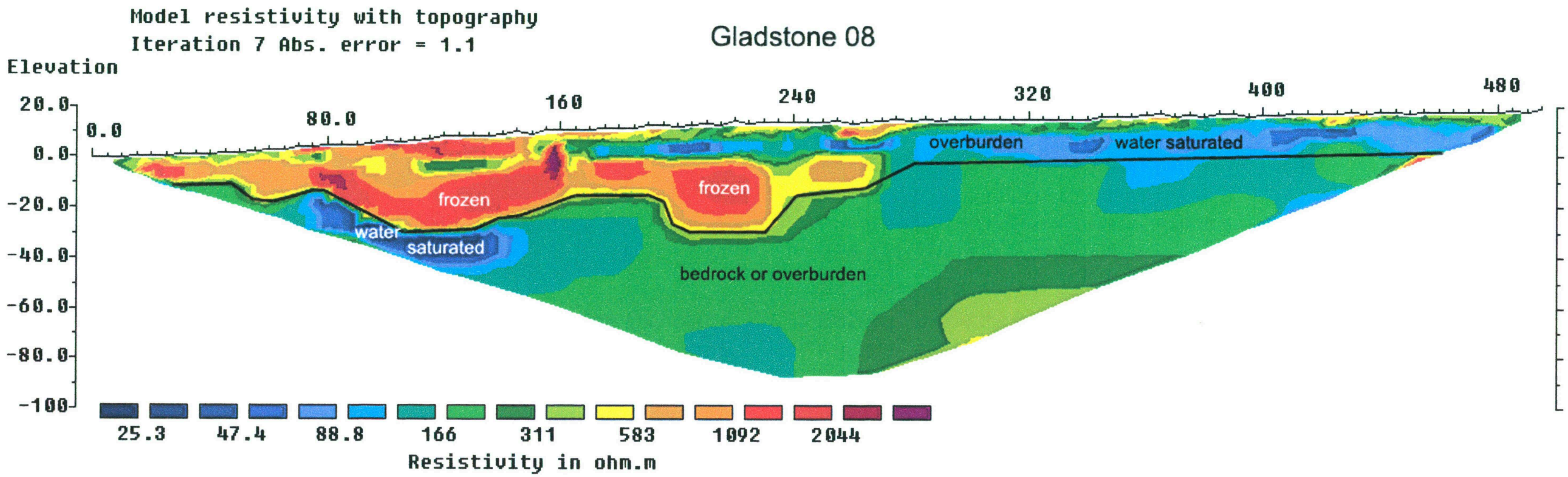
The **IP** model refers to a higher amount of IP-active minerals in both bedrock types. These data could be caused by pyrite in the possible schist.[40]

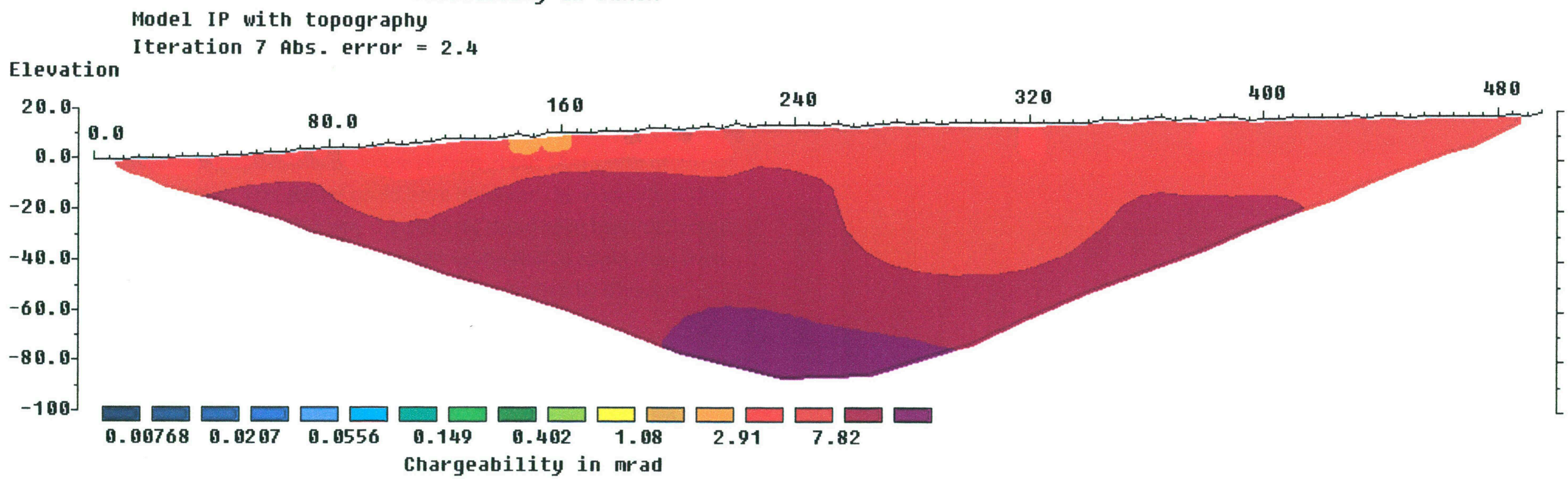
[37] This hypothetic fracture line could be a model for the development of a deep cut in glaciofluvial channel as discussed at the Gladstone Creek.

[38] The bedrock depth is measured rectangular to the surface.

[39] Ditto

[40] Daniele Heon, Yukon Geological Survey


Model resistivity with topography
Iteration 7 Abs. error = 1.1
Gladstone 08
Elevation
20.0
0.0
-20.0
-40.0
-60.0
-80.0
-100
0.0
80.0
160
240
320
400
480
overburden
water saturated
frozen
frozen
water
saturated
bedrock or overburden
25.3
47.4
88.8
166
311
583
1092
2044
Resistivity in ohm.m


Model IP with topography
Iteration 7 Abs. error = 2.4
Elevation
20.0
0.0
-20.0
-40.0
-60.0
-80.0
-100
0.0
80.0
160
240
320
400
480
0.00768
0.0207
0.0556
0.149
0.402
1.08
2.91
7.82
Chargeability in mrad

Gladstone 08

Line: Cross valley, **View:** Downstream
Electrodes: 100, spacing 5m, **Measure:** in [meter]
Vertical exaggeration: 0.86, **Iteration error:** in [%]

Interpretation

Profile 08 starts at the mining road about 30m from the shore of Kluane Lake. From there it runs inland to the east.

The profile assumes **bedrock** at 14-35m depth. In this case the bright green matrix would represent the bedrock. At 80-150m the hypothetic bedrock would be porous and highly water saturated, likely by groundwater pressure from Kluane Lake.

The **overburden** most likely consists of glaciofluvial deposits.

Surprisingly two **channels** could be detected in the assumed bedrock running parallel to the current beach. Considering the current topography of the area, these two **channels** look as if they could belong to the historic glaciofluvial drainage system about 5km south of Gladstone Creek. The glacier could have hindered the washout of the till back into the lake. This way the streams could have been deflected to the north. The two possible channels in the profile could then even map two different periods of the washout controlled by different stages of the receding glacier.

This theory is just an attempt to find a plausible explanation for the development of these channels. There are no more signs for this assumption, just the single geophysical profile and some geological background information.

The left **channel** might show 31m to bedrock, measured at 120m.

The right **channel** suggests bedrock at 35m depth, measured at 215m.

At 320m the **bedrock** seems to be found at 14m depth.

The low Resistivity data necessarily lead to the alternative interpretation that **no bedrock** was measured in the profile. In this case the channels would have cut into sediments. This interpretation would be supported by the following aspects: First, the channels are possibly too deep that they could have been produced on bedrock by just a glaciofluvial stream acting in a short time period. Second, the **IP** data seem to be quite low to indicate the schist bedrock in this region.

12. Recommendations

Gladstone Creek

Profiles 06, 01, and 02

In profiles the 06, 01, and 02 a deep **glaciofluvial channel** in the neighborhood of a bedrock hump was interpreted. This structure seems to be homologous in all three profiles. This channel would show bedrock at 48m, 78m, and 46m. However, the existence of this channel is still ambiguous.

If this deep channel exists it will likely be a rich source for placer gold. However, one has to keep in mind, that the placer gold in the lower Gladstone Creek is also collected by false bedrock layers (clay). Thus the gold on top of the true bedrock could be sparse. The clay layers might be produced by the largely varying water levels of the Kluane Lake which periodically produced some backwater,[41] so farther upstream the clay layers and thus their trapping effect could decrease.

There are some further reasons for the high **industrial potential** for placer gold in the hypothetic glaciofluvial channel.

First, fluvial deposits of the lower Gladstone Creek basically represent a rich source of placer gold as placer mining is even commercially profitable using simple methods: Digging shallow gravels under water on top of just clay... Thus, some very rich gold placers can be imagined in a first-class trapping feature such as a channel. A glaciofluvial channel would be a spot where the placer gold, largely being outspread by the glacier, could be re-concentrated.

Second, the glaciofluvial material at the lower Gladstone Creek contains a majority of former alluvial pebbles, cobbles, and boulders.[42] This material must have been moved at least three times: first travelling downstream by alluvial flow; second moving upstream by the glacier; and third flowing downstream as a part of the glaciofluvial material. This multiply transported and deposited gravel might have increased the concentration of placer gold in greater depth as well as in trapping features. This idea fits with the fact that predominantly the fine gold was harvested on the false bedrock. The fundamental sources of bigger sized gold [43] might be much deeper in the ground, never touched.

The first step would be the **verification** of the **glaciofluvial channel**. Since the channel is depending on the existence of bedrock hump, this feature should be checked. A recommended spot to check the bedrock hump by digging would be at profile 01: at 320m possible bedrock would be expected at 13m depth. In the area further upstream the bedrock hump could be checked at profile 06: at 240m possible bedrock is interpreted at 7m depth.

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[41] Eric A. Ostensoe, Geologist: "Report on the Gladstone Creek, Placer Gold Property, Kluane Area" (Feb 1984), for: CATEAR RESOURCES LTD.

[42] A large domination of well rounded technogenic gravel is seen everywhere along the survey area.

[43] The existence of higher amounts of Gladstone course gold is likely from the point of view that the valley is too short to likely produce a majority of fine gold.

If the deep glaciofluvial channel were true, still lots of influence by groundwater would be expected which might significantly increase the costs when mining it. However, before investing in **sonic drilling**[44] to get some sample for a calculation, it might be reasonable to check first how much placer gold was collected by bedrock channels at Gladstone Creek. A most promising target for that would be the channels at profile 05 upstream (see below).

For a **long term perspective** the customer might probably be well advised to prospect for channels which would show less groundwater influence. Those targets should be located further upstream. They might effectively be found with Resistivity starting the lines at a bedrock outcrop and from there systematically following the bedrock. This prospecting strategy would be reasonable at Gladstone as the subsurface has proved to be quite ambiguous in the profiles.

Profile 05

A target for immediate prospecting with technological methods would be the channels in profile 05. These channels in bedrock are almost a 100% true. So the investment for digging seems to be reasonable. Lots of permafrost in the overburden must be handled. A good sample with an auger drill would be expected from this perspective. However the bedrock could be too hard to be cleaned well by an auger drill. The channel to the left up the hill might be the most promising for placer gold (depth 29m). However, the other channels are easier to investigate as they are just 23m and 20m deep. These channels would give some first information about placer gold on true bedrock deposited by glaciofluvial transportation! The positive effect of multiple transportation of the sedimentary material could of course also influence smaller bedrock depressions.

In this context we do not want to forget to mention that even old alluvial channels could have "survived" the glacial influences carrying placer gold. A reason for that is the possible existence of some bedrock which was resistant against the abrasion of the glacier. The glacier could have deepened older channels, again bearing placer gold today. The Yukon Placer Database declares: "Small, rich pockets of gold occur in remnants of old bench channels at scattered localities for several kilometers above Cyr Creek."[45]

Profile 03

Profile 03 offers a high channel at 305m showing 22m to bedrock. A lot of permafrost in the overburden would have to be handled. A good sample with an auger drill would be expected from this perspective. The bedrock seems to be soft enough to be cleaned well by an auger drill. This target is attractive as the strong IP signal could indicate some mineral placers indicating some gold placers. This channel could also give some first information about the amount of placer gold which was deposited in glaciofluvial channels. However, the channels in profile 05 might be a more promising target as these channels are almost 100% true. At profile 03 there is still a low chance this hill could just be a huge deposit of glacial till which has been plowed to the side by the glacier.

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[44] Auger drilling is not the right method because of following aspects: The bedrock would be quite deep; an increase of boulders is expected to the depth; samples might easily get unusable because of the groundwater.

[45] Yukon Placer Database, Update: 26.02.2007 16:08:26

Profile 04

The ground at profile 04 has been pretty well mined. Just the left hill could have some targets which would be outside of the profile. Checking this would not be reasonable until successful indications of placer gold will have been found at other targets on that hill.

Profile 07 (Cyr Creek)

At this profile a hypothetic fault line producing a fracture line was interpreted. The bedrock doesn't show up on the valley bottom. Doing placer mining there seems to be difficult because of a large amount of ground water and not much room to deflect it.

Profile 08

Profile 08 presents two possible channels, 31m and 35m deep, running parallel to the Kluane Lake shore. Lots of permafrost in the overburden would have to be handled. A good sample with an auger drill would be expected from this perspective. The bedrock seems to be soft enough to be cleaned well by an auger drill.

13. References

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14. Qualification

Philipp Moll

- Study of geology, University of Freiburg, Germany
- Visit of geophysical field courses, University of Karlsruhe and University of Stuttgart, Germany
- Geological Prospecting for precious metals and minerals in the Yukon, NWTs, and Alaska since 1989
- Geophysical surveying for Mining Exploration in the Yukon since 2005
- Study of biology and German language and literature, University of Freiburg, Germany
- Apprenticeship of precision mechanic, Tools Factory Hermann Bilz, Zell, Germany

Ph. Moll

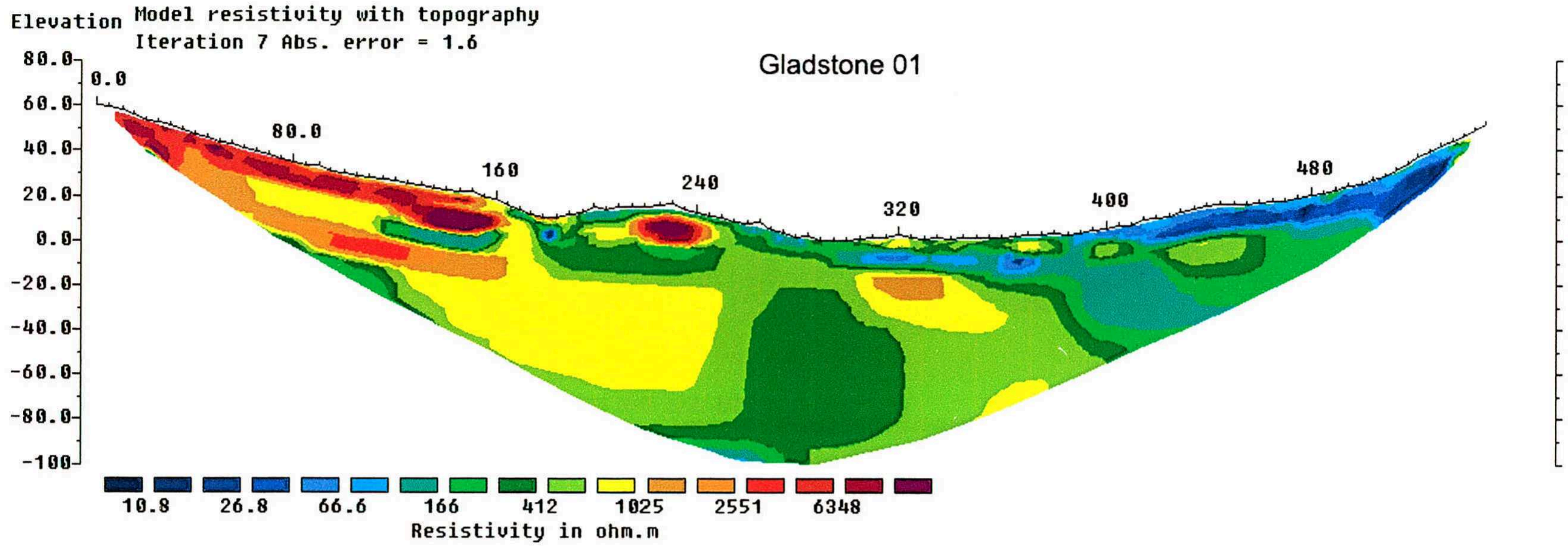
Philipp Moll

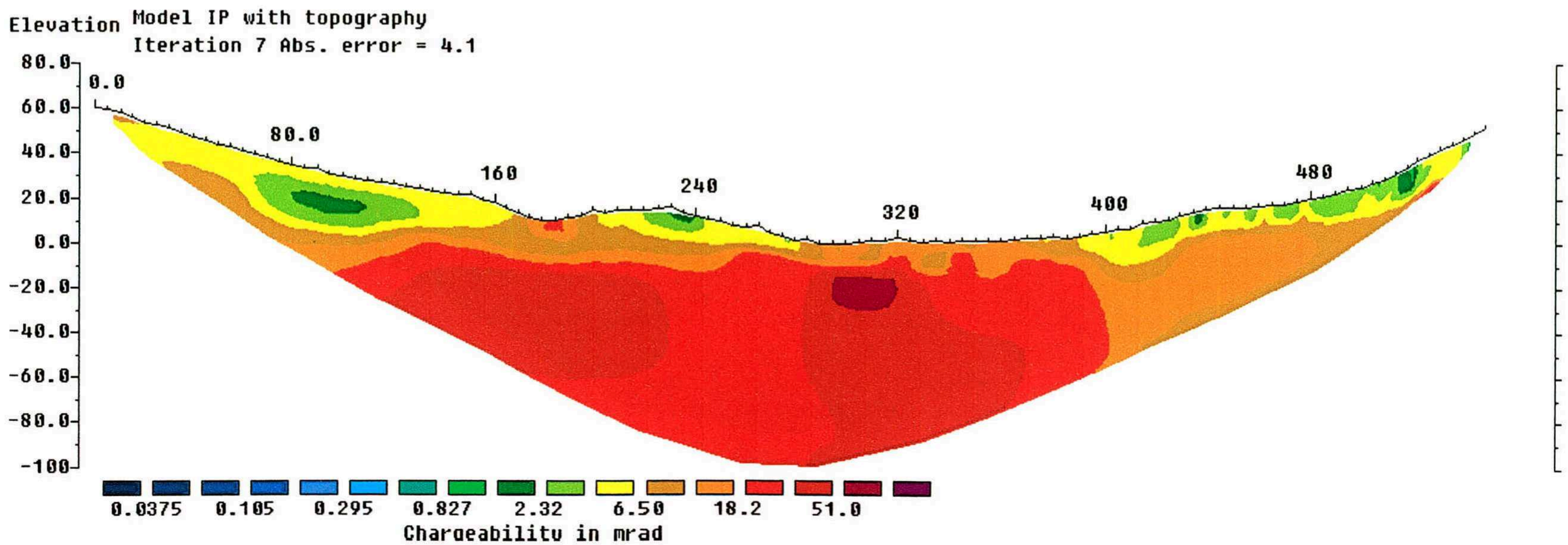
Stefan Ostermaier

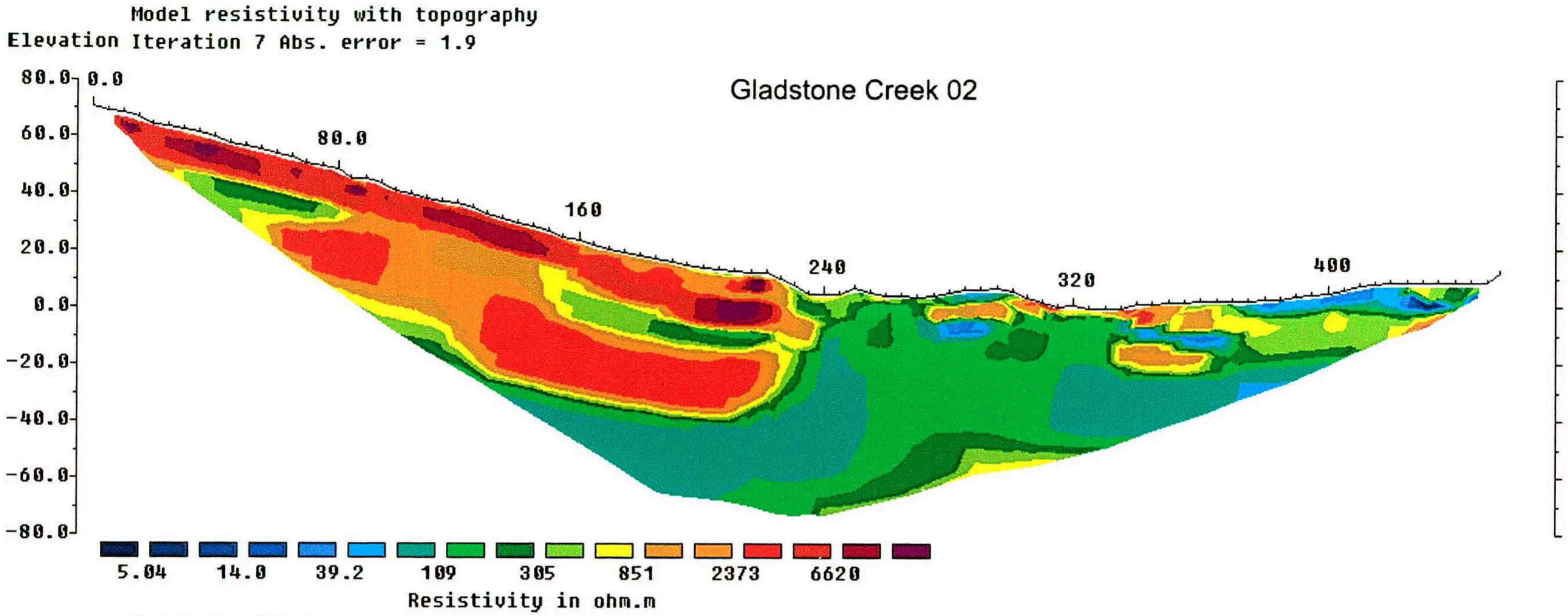
- Study of geology, University of Tübingen, Germany
- Visit of geophysical field courses, University of Karlsruhe and University of Stuttgart, Germany
- Geological prospecting for precious metals and minerals in the Yukon and Alaska since 2001
- Geophysical Surveying for Mining Exploration in the Yukon since 2005
- Study of computer science, University of Stuttgart, Germany

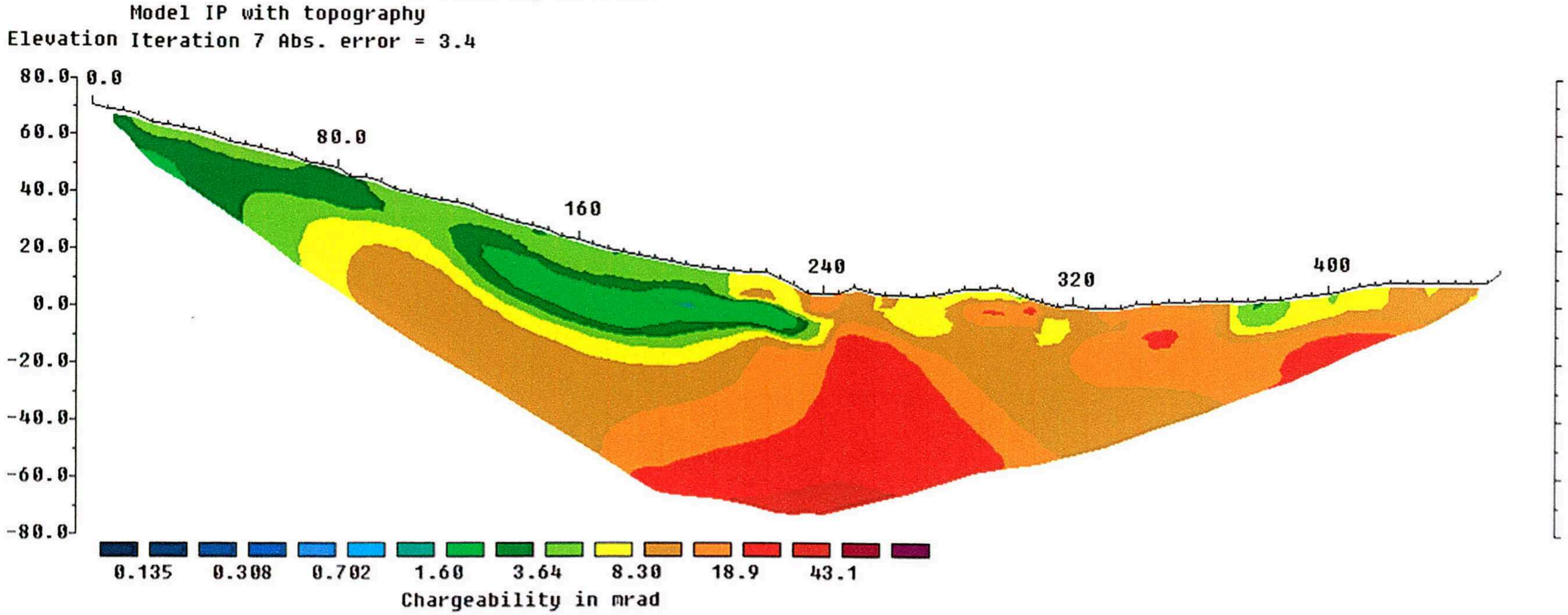
Stefan Ostermaier

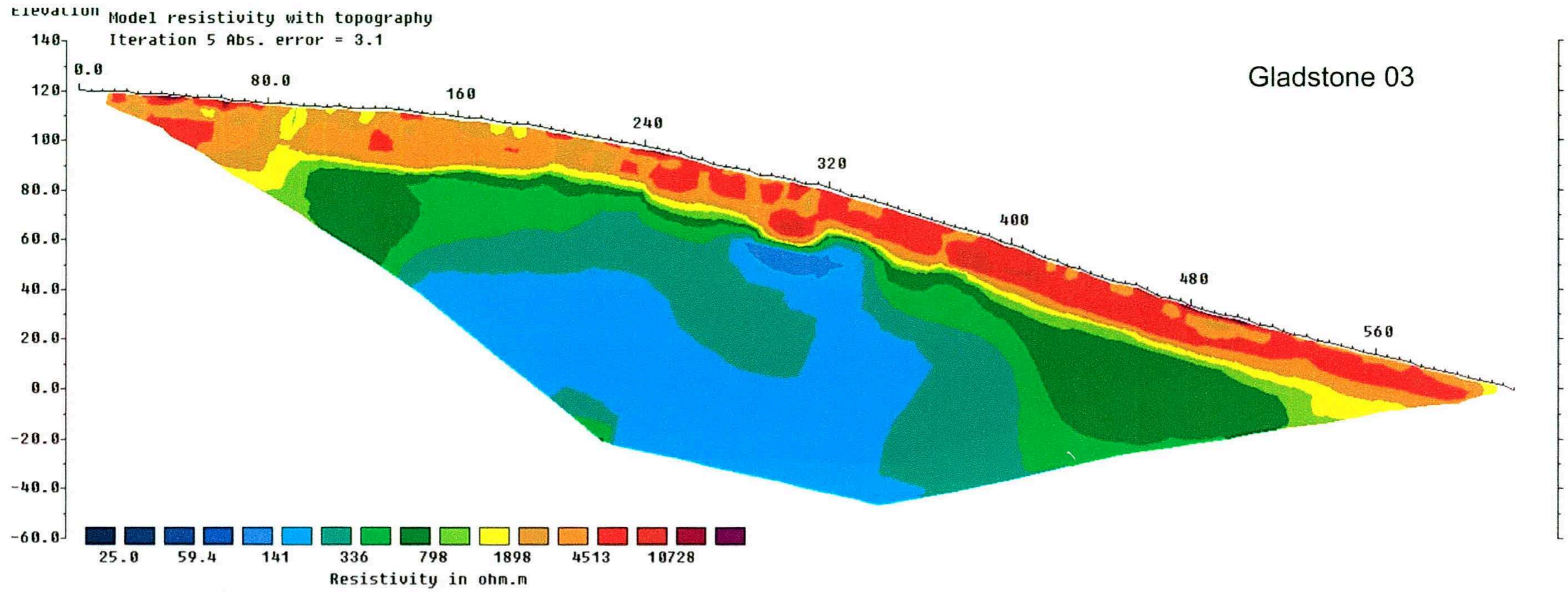
15. Addendum
Profiles raw



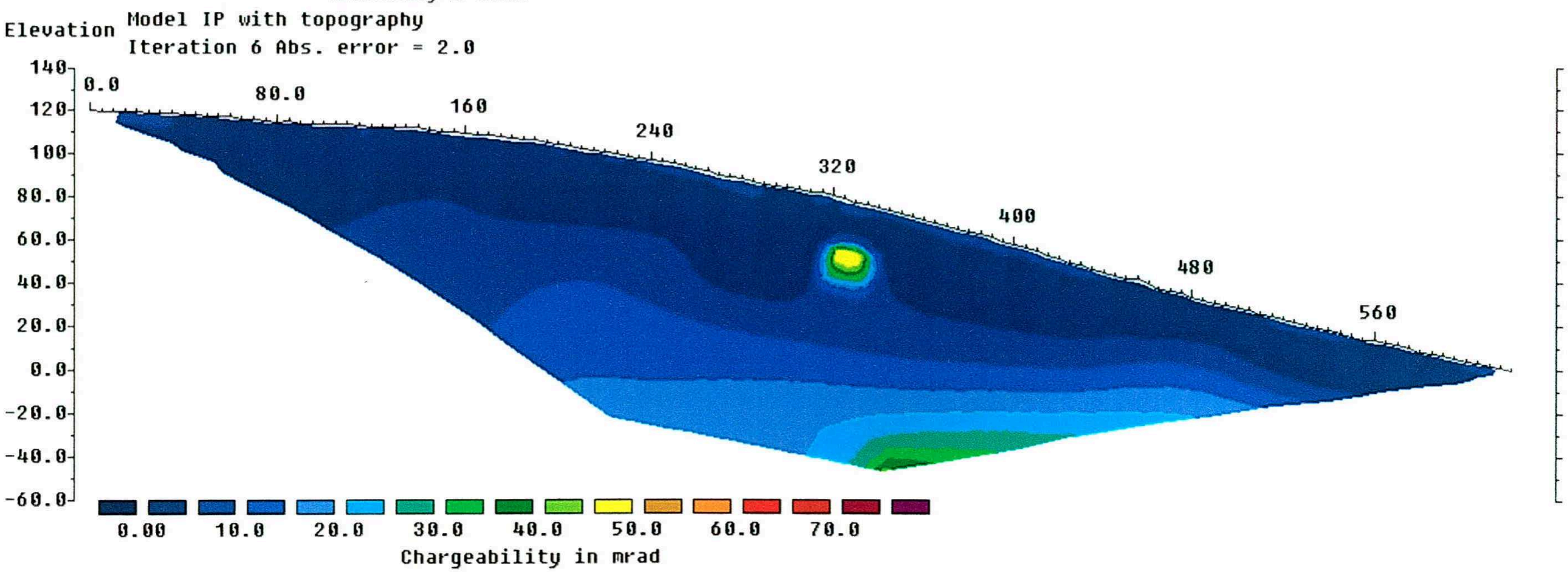



Model resistivity with topography
Elevation Iteration 7 Abs. error = 1.9
Gladstone Creek 02
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
0.0
80.0
160
240
320
400
5.04
14.0
39.2
109
305
851
2373
6620
Resistivity in ohm.m

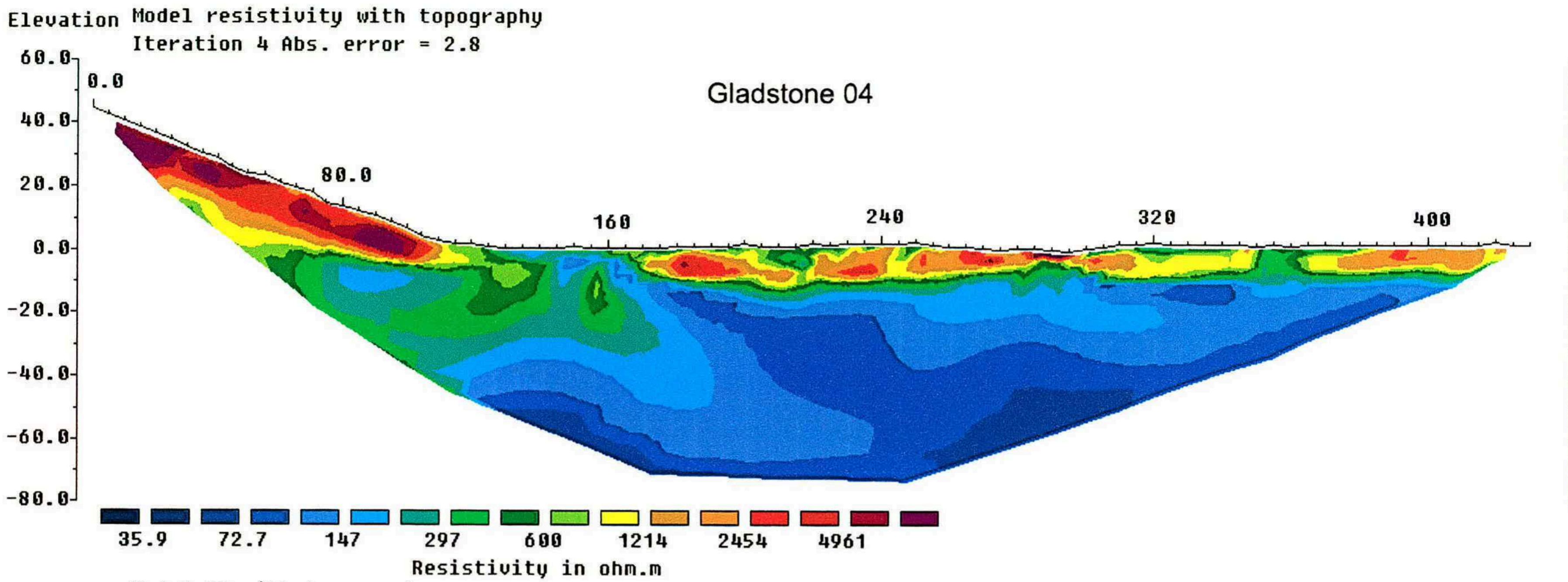

Model IP with topography
Elevation Iteration 7 Abs. error = 3.4
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
0.0
80.0
160
240
320
400
0.135
0.308
0.702
1.60
3.64
8.30
18.9
43.1
Chargeability in mrad

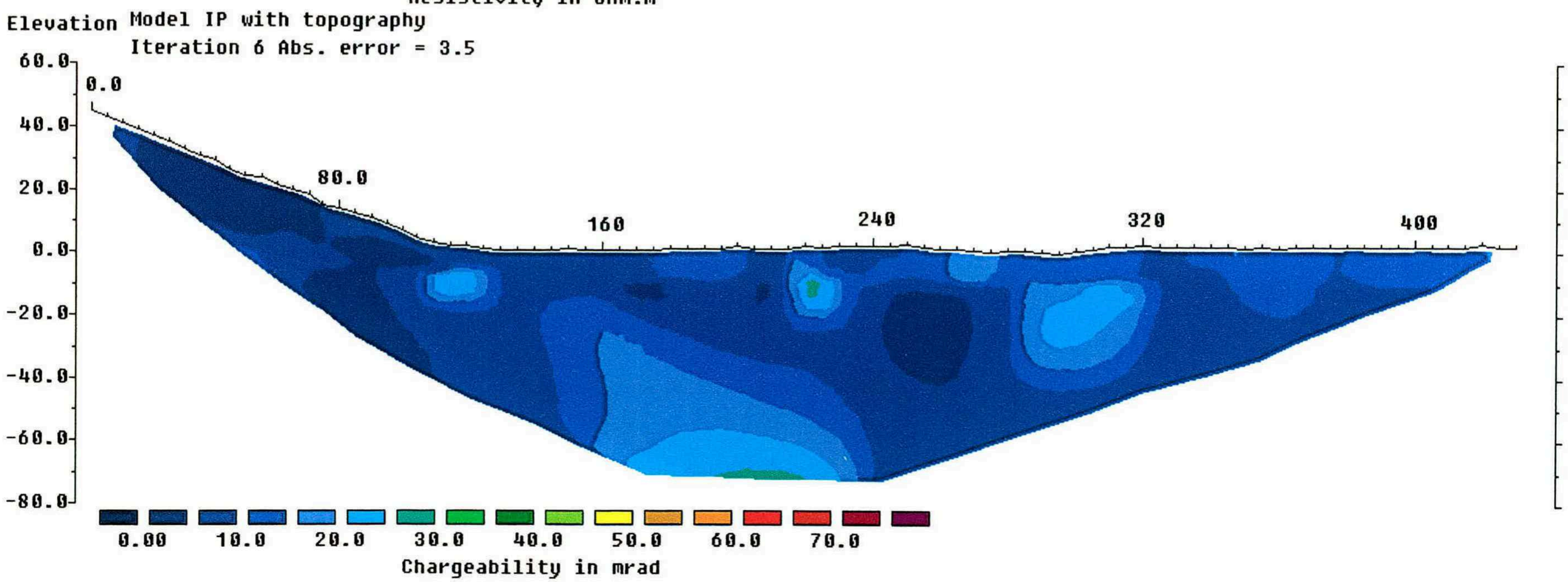


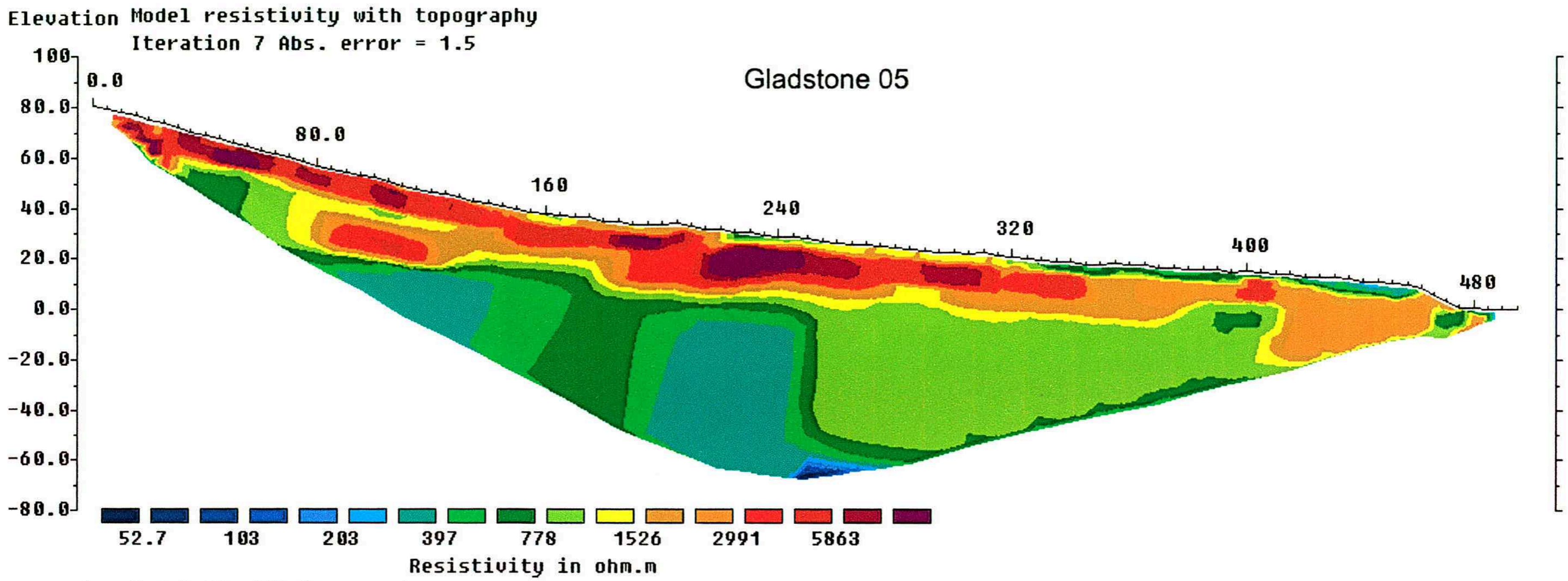
Elevation
Model resistivity with topography
Iteration 5 Abs. error = 3.1
Gladstone 03
140
120
100
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
0.0
80.0
160
240
320
400
480
560
25.0
59.4
141
336
798
1898
4513
10728
Resistivity in ohm.m

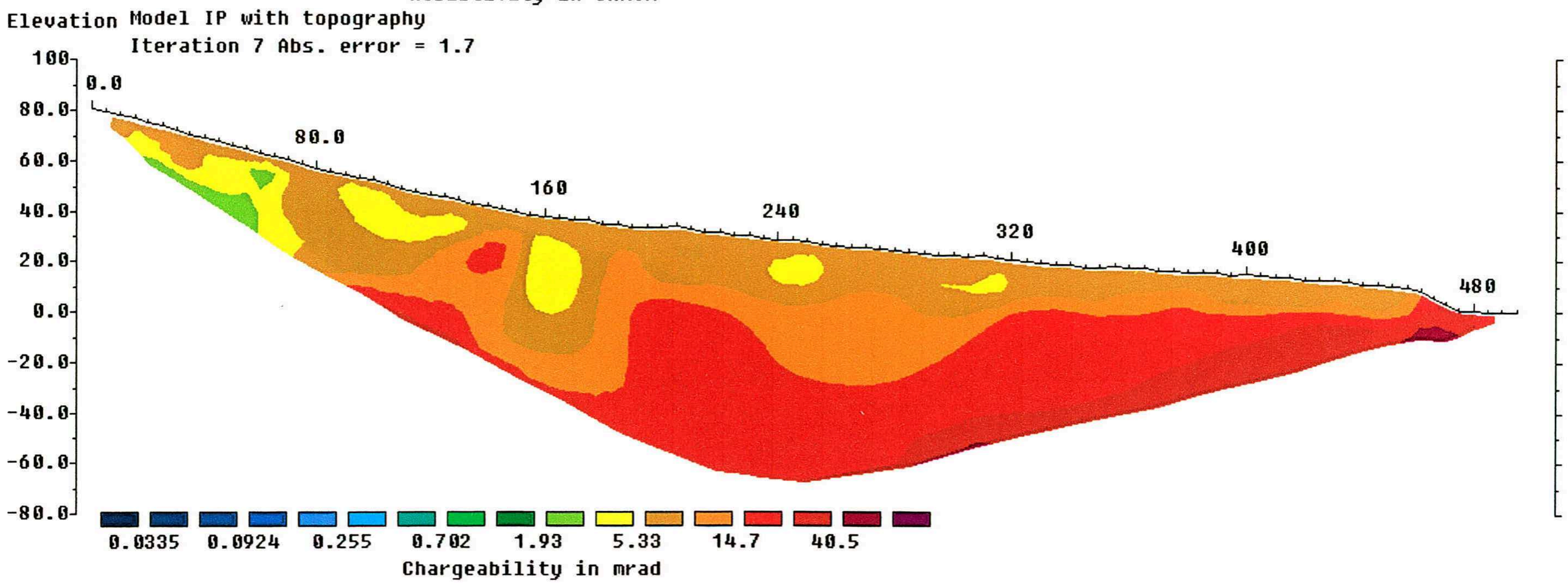


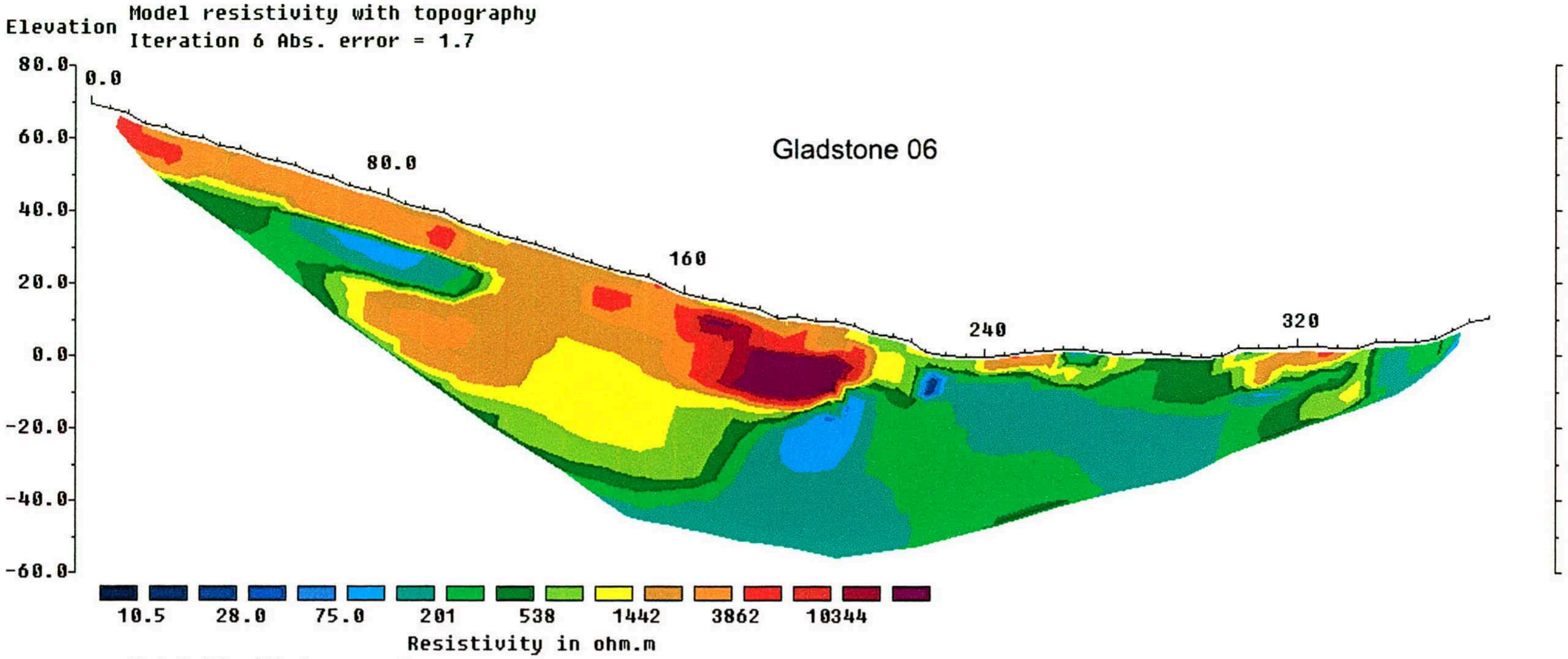
Elevation
Model IP with topography
Iteration 6 Abs. error = 2.0
140
120
100
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
0.0
80.0
160
240
320
400
480
560
0.00
10.0
20.0
30.0
40.0
50.0
60.0
70.0
Chargeability in mrad

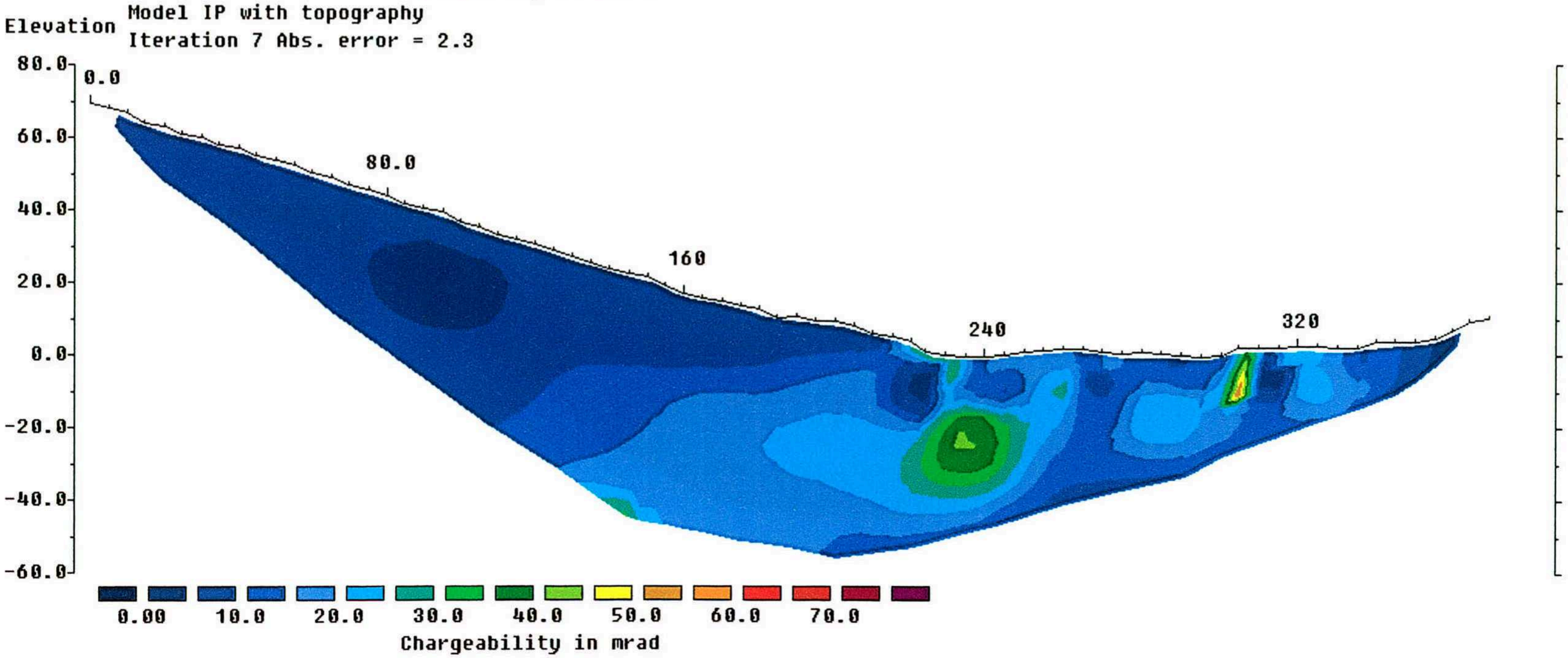

Elevation
Model resistivity with topography
Iteration 4 Abs. error = 2.8
Gladstone 04
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
0.0
80.0
160
240
320
400
35.9
72.7
147
297
600
1214
2454
4961
Resistivity in ohm.m

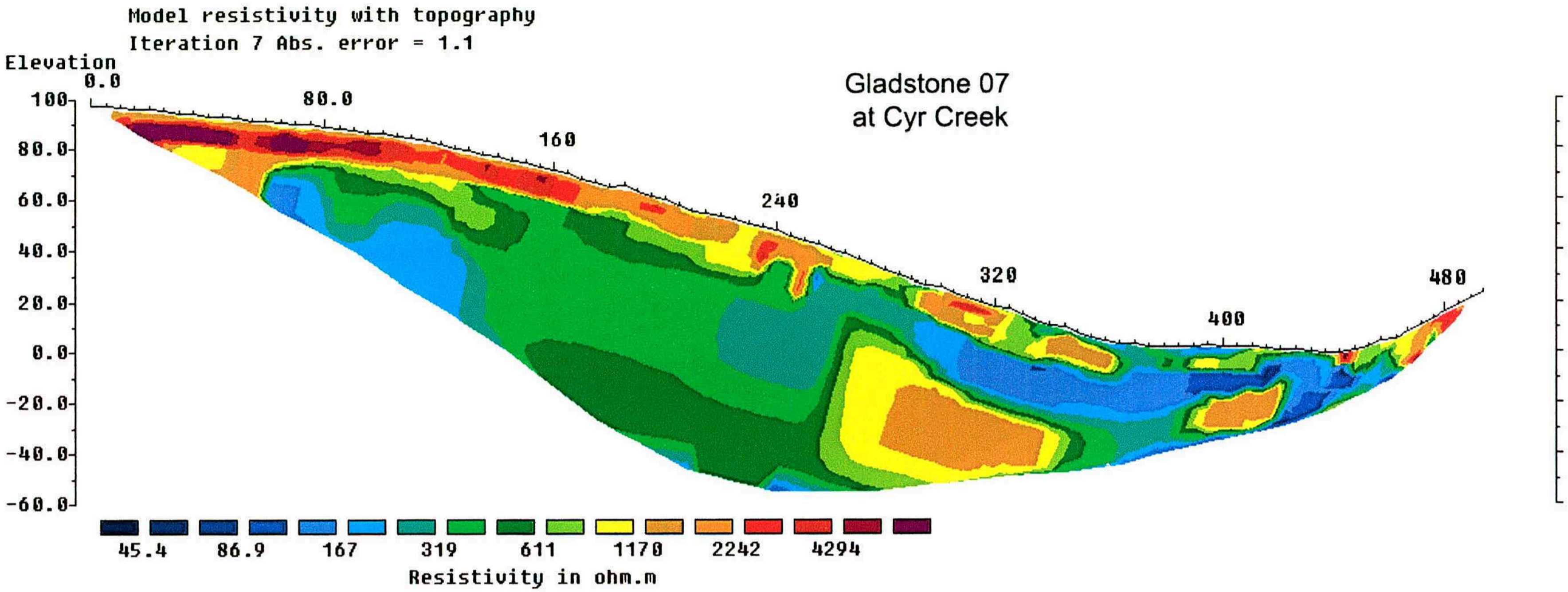

Elevation
Model IP with topography
Iteration 6 Abs. error = 3.5
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
0.0
80.0
160
240
320
400
0.00
10.0
20.0
30.0
40.0
50.0
60.0
70.0
Chargeability in mrad

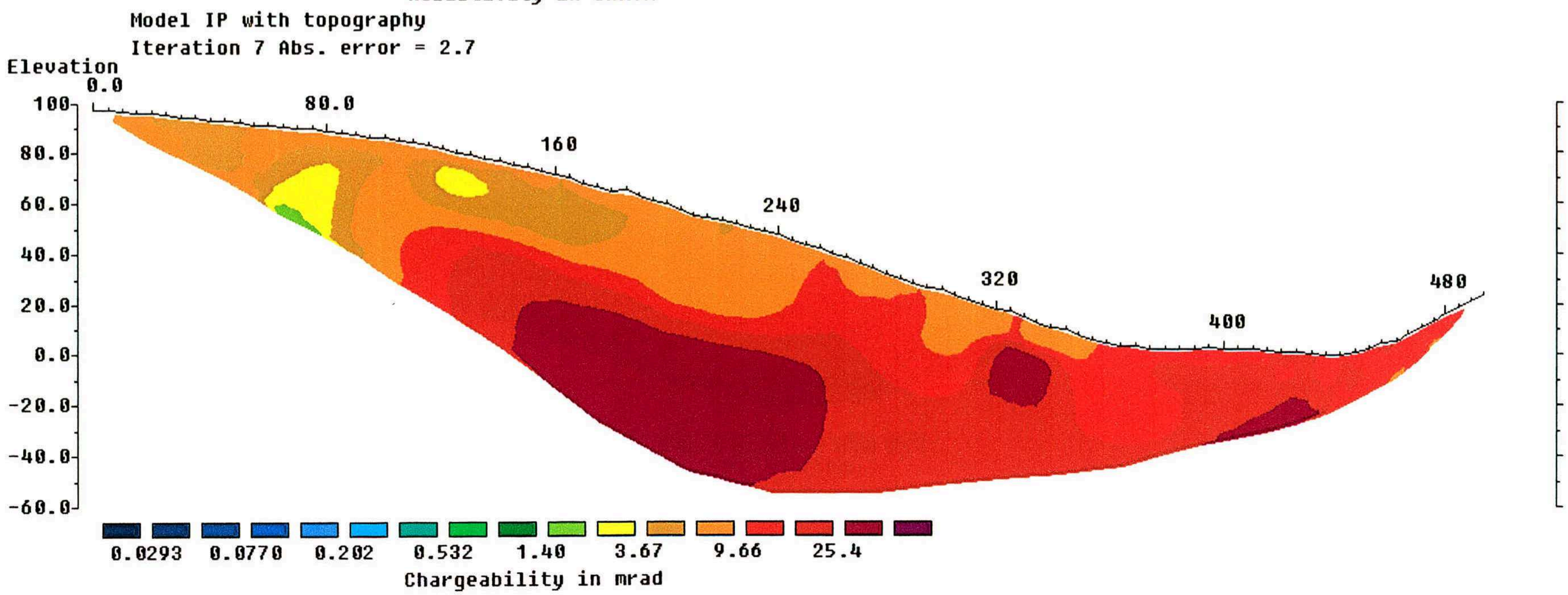

Elevation
Model resistivity with topography
Iteration 7 Abs. error = 1.5
Gladstone 05
0.0
80.0
160
240
320
400
480
100
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
52.7
103
203
397
778
1526
2991
5863
Resistivity in ohm.m


Elevation
Model IP with topography
Iteration 7 Abs. error = 1.7
0.0
80.0
160
240
320
400
480
100
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
0.0335
0.0924
0.255
0.702
1.93
5.33
14.7
40.5
Chargeability in mrad

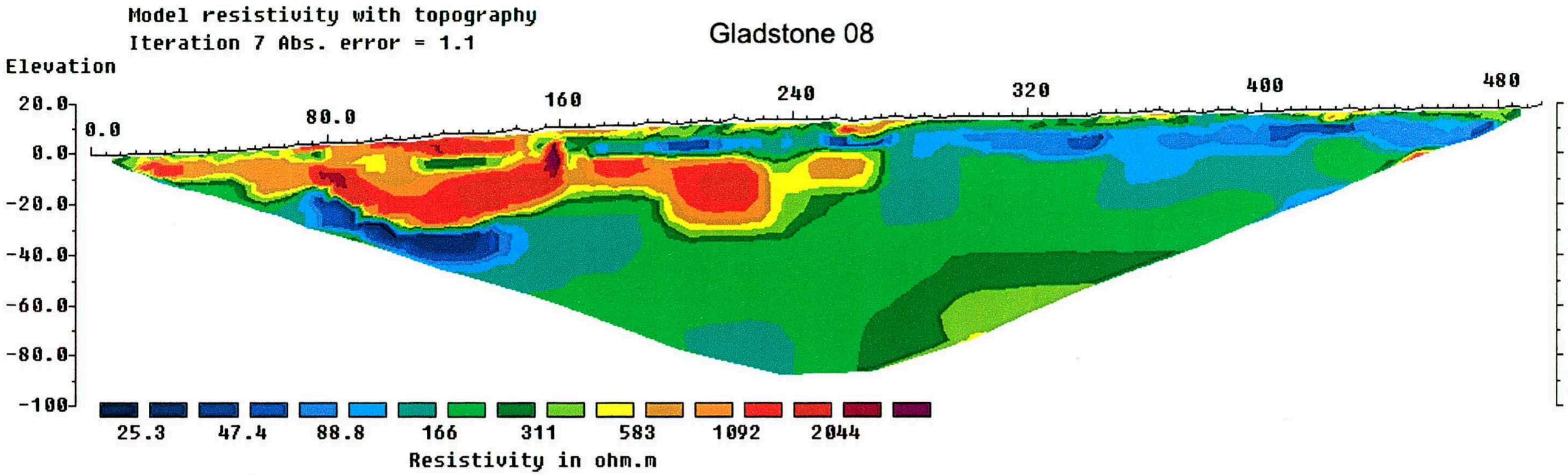

Elevation
Model resistivity with topography
Iteration 6 Abs. error = 1.7
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
0.0
80.0
160
240
320
Gladstone 06
10.5
28.0
75.0
201
538
1442
3862
10344
Resistivity in ohm.m

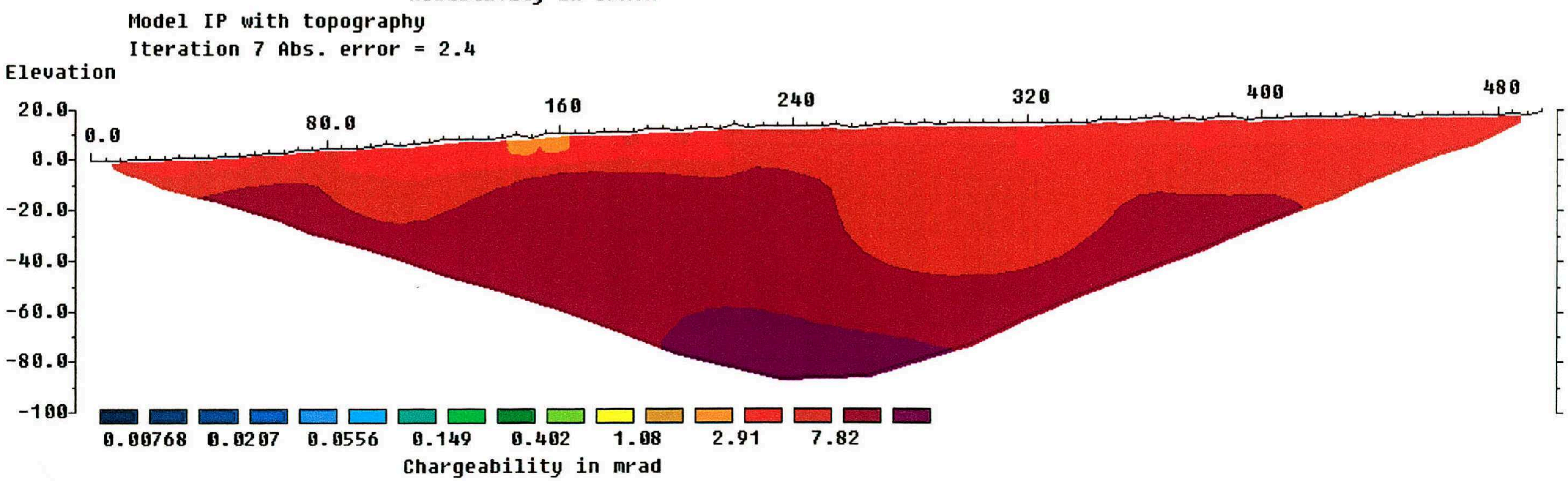

Elevation
Model IP with topography
Iteration 7 Abs. error = 2.3
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
0.0
80.0
160
240
320
0.00
10.0
20.0
30.0
40.0
50.0
60.0
70.0
Chargeability in mrad


Model resistivity with topography
Iteration 7 Abs. error = 1.1
Elevation
Gladstone 07
at Cyr Creek
0.0
80.0
160
240
320
400
480
100
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
45.4
86.9
167
319
611
1170
2242
4294
Resistivity in ohm.m


Model IP with topography
Iteration 7 Abs. error = 2.7
Elevation
0.0
80.0
160
240
320
400
480
100
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
0.0293
0.0770
0.202
0.532
1.40
3.67
9.66
25.4
Chargeability in mrad

Gladstone 08





GPS-Data

Gladstone Creek Line 01

Accuracy 3-4m

Profile [m]	Latitude / Longitude
0	N61 18 40.1 W138 34 35.0
5	N61 18 40.3 W138 34 35.0
10	N61 18 40.4 W138 34 35.0
15	N61 18 40.5 W138 34 35.0
20	N61 18 40.7 W138 34 34.9
25	N61 18 40.9 W138 34 34.9
30	N61 18 41.0 W138 34 35.0
35	N61 18 41.2 W138 34 35.0
40	N61 18 41.3 W138 34 34.9
45	N61 18 41.5 W138 34 35.0
50	N61 18 41.7 W138 34 34.9
55	N61 18 41.8 W138 34 34.9
60	N61 18 41.9 W138 34 34.7
65	N61 18 42.1 W138 34 34.8
70	N61 18 42.2 W138 34 34.8
75	N61 18 42.4 W138 34 34.8
80	N61 18 42.6 W138 34 34.8
85	N61 18 42.8 W138 34 34.8
90	N61 18 42.9 W138 34 34.8
95	N61 18 43.0 W138 34 34.8
100	N61 18 43.1 W138 34 34.8
105	N61 18 43.3 W138 34 34.8
110	N61 18 43.4 W138 34 34.7
115	N61 18 43.6 W138 34 34.7
120	N61 18 43.8 W138 34 34.7
125	N61 18 43.9 W138 34 34.8
130	N61 18 44.1 W138 34 34.7
135	N61 18 44.3 W138 34 34.7
140	N61 18 44.4 W138 34 34.3
145	N61 18 44.6 W138 34 34.7
150	N61 18 44.7 W138 34 34.8
155	N61 18 44.9 W138 34 34.7
160	N61 18 45.1 W138 34 34.7
165	N61 18 45.2 W138 34 34.7
170	N61 18 45.3 W138 34 34.6
175	N61 18 45.5 W138 34 34.7
180	N61 18 45.7 W138 34 34.7
185	N61 18 45.9 W138 34 34.7
190	N61 18 46.0 W138 34 34.7
195	N61 18 46.1 W138 34 34.7
200	N61 18 46.3 W138 34 34.7
205	N61 18 46.4 W138 34 34.6
210	N61 18 46.5 W138 34 34.5
215	N61 18 46.7 W138 34 34.5
220	N61 18 46.9 W138 34 34.5
225	N61 18 47.0 W138 34 34.5
230	N61 18 47.2 W138 34 34.4
235	N61 18 47.3 W138 34 34.4
240	N61 18 47.5 W138 34 34.4
245	N61 18 47.6 W138 34 34.3
250	N61 18 47.7 W138 34 34.3
255	N61 18 47.9 W138 34 34.3
260	N61 18 48.1 W138 34 34.3
265	N61 18 48.3 W138 34 34.2
270	N61 18 48.4 W138 34 34.2
275	N61 18 48.6 W138 34 34.2
280	N61 18 48.8 W138 34 34.2
285	N61 18 48.9 W138 34 34.1
290	N61 18 49.1 W138 34 34.0
295	N61 18 49.2 W138 34 34.0
300	N61 18 49.4 W138 34 33.9
305	N61 18 49.5 W138 34 33.9
310	N61 18 49.7 W138 34 33.7
315	N61 18 49.9 W138 34 33.8
320	N61 18 50.0 W138 34 33.7
325	N61 18 50.2 W138 34 33.5
330	N61 18 50.3 W138 34 33.6
335	N61 18 50.5 W138 34 33.7
340	N61 18 50.6 W138 34 33.5
345	N61 18 50.8 W138 34 33.6
350	N61 18 50.9 W138 34 33.5
355	N61 18 51.1 W138 34 33.5
360	N61 18 51.3 W138 34 33.5
365	N61 18 51.4 W138 34 33.5
370	N61 18 51.6 W138 34 33.5
375	N61 18 51.6 W138 34 33.6
380	N61 18 51.8 W138 34 33.6
385	N61 18 52.0 W138 34 33.4
390	N61 18 52.2 W138 34 33.3
395	N61 18 52.3 W138 34 33.4
400	N61 18 52.5 W138 34 33.4
405	N61 18 52.7 W138 34 33.4
410	N61 18 52.8 W138 34 33.3
415	N61 18 53.0 W138 34 33.4
420	N61 18 53.1 W138 34 33.3
425	N61 18 53.3 W138 34 33.3
430	N61 18 53.4 W138 34 33.3
435	N61 18 53.6 W138 34 33.2
440	N61 18 53.7 W138 34 33.2
445	N61 18 53.9 W138 34 33.3
450	N61 18 54.0 W138 34 33.3
455	N61 18 54.2 W138 34 33.3
460	N61 18 54.3 W138 34 33.4
465	N61 18 54.5 W138 34 33.3
470	N61 18 54.7 W138 34 33.2
475	N61 18 54.8 W138 34 33.1
480	N61 18 54.9 W138 34 33.2
485	N61 18 55.0 W138 34 33.1
490	N61 18 55.1 W138 34 33.1
495	N61 18 55.4 W138 34 33.3
500	N61 18 55.3 W138 34 33.9
505	N61 18 55.7 W138 34 33.3
510	N61 18 55.8 W138 34 33.3
515	N61 18 56.0 W138 34 33.4
520	N61 18 56.2 W138 34 33.3
525	N61 18 56.4 W138 34 33.3
530	N61 18 56.4 W138 34 33.3
535	N61 18 56.6 W138 34 33.2
540	N61 18 56.8 W138 34 33.4
545	N61 18 56.9 W138 34 33.3
550	N61 18 57.0 W138 34 33.5
555	N61 18 57.2 W138 34 33.4

Gladstone Creek Line 02

Accuracy 3-7m

Profile [m]	Latitude / Longitude
0	N61 18 38.4 W138 34 52.9
5	N61 18 38.5 W138 34 52.9
10	N61 18 38.6 W138 34 52.8
15	N61 18 38.8 W138 34 52.8
20	N61 18 38.9 W138 34 52.8
25	N61 18 39.0 W138 34 52.9
30	N61 18 39.2 W138 34 52.9
35	N61 18 39.4 W138 34 52.9
40	N61 18 39.5 W138 34 52.9
45	N61 18 39.7 W138 34 52.9
50	N61 18 39.8 W138 34 52.9
55	N61 18 40.0 W138 34 53.0
60	N61 18 40.1 W138 34 53.0
65	N61 18 40.3 W138 34 52.9
70	N61 18 40.5 W138 34 53.0
75	N61 18 40.6 W138 34 52.9
80	N61 18 40.7 W138 34 53.0
85	N61 18 40.9 W138 34 52.9
90	N61 18 41.0 W138 34 52.9
95	N61 18 41.2 W138 34 52.9
100	N61 18 41.4 W138 34 52.9
105	N61 18 41.5 W138 34 52.9
110	N61 18 41.7 W138 34 52.9
115	N61 18 41.8 W138 34 53.0
120	N61 18 42.0 W138 34 53.0
125	N61 18 42.1 W138 34 53.0
130	N61 18 42.3 W138 34 53.0
135	N61 18 42.4 W138 34 53.1
140	N61 18 42.6 W138 34 53.1
145	N61 18 42.8 W138 34 53.1

Profile [m]	Latitude / Longitude
150	N61 18 42.9 W138 34 53.0
155	N61 18 43.1 W138 34 53.1
160	N61 18 43.2 W138 34 53.1
165	N61 18 43.4 W138 34 53.2
170	N61 18 43.6 W138 34 53.2
175	N61 18 43.7 W138 34 53.2
180	N61 18 43.8 W138 34 53.2
185	N61 18 44.0 W138 34 53.2
190	N61 18 44.2 W138 34 53.2
195	N61 18 44.3 W138 34 53.3
200	N61 18 44.5 W138 34 53.3
205	N61 18 44.6 W138 34 53.4
210	N61 18 44.8 W138 34 53.4

Profile [m]	Latitude / Longitude
215	N61 18 44.9 W138 34 53.4
220	N61 18 45.1 W138 34 53.3
225	N61 18 45.3 W138 34 53.3
230	N61 18 45.5 W138 34 53.4
235	N61 18 45.5 W138 34 53.4
240	N61 18 45.6 W138 34 53.4
245	N61 18 45.8 W138 34 53.4
250	N61 18 45.9 W138 34 53.4
255	N61 18 46.1 W138 34 53.4
260	N61 18 46.3 W138 34 53.4
265	N61 18 46.4 W138 34 53.4
270	N61 18 46.6 W138 34 53.4
275	N61 18 46.8 W138 34 53.4

Profile [m]	Latitude / Longitude
280	N61 18 46.9 W138 34 53.4
285	N61 18 47.1 W138 34 53.4
290	N61 18 47.3 W138 34 53.4
295	N61 18 47.4 W138 34 53.4
300	N61 18 47.6 W138 34 53.5
305	N61 18 47.7 W138 34 53.5
310	N61 18 47.9 W138 34 53.6
315	N61 18 48.0 W138 34 53.6
320	N61 18 48.2 W138 34 53.6
325	N61 18 48.3 W138 34 53.6
330	N61 18 48.5 W138 34 53.7
335	N61 18 48.7 W138 34 53.7
340	N61 18 48.8 W138 34 53.7

Profile [m]	Latitude / Longitude
345	N61 18 49.0 W138 34 53.7
350	N61 18 49.1 W138 34 53.7
355	N61 18 49.3 W138 34 53.8
360	N61 18 49.4 W138 34 53.8
365	N61 18 49.6 W138 34 53.8
370	N61 18 49.8 W138 34 53.8
375	N61 18 49.9 W138 34 53.9
380	N61 18 50.1 W138 34 53.9
385	N61 18 50.3 W138 34 54.0
390	N61 18 50.4 W138 34 54.0
395	N61 18 50.6 W138 34 54.1
400	N61 18 50.7 W138 34 54.1
405	N61 18 50.9 W138 34 54.1

Profile [m]	Latitude / Longitude
410	N61 18 51.1 W138 34 54.2
415	N61 18 51.2 W138 34 54.2
420	N61 18 51.4 W138 34 54.2
425	N61 18 51.6 W138 34 54.3
430	N61 18 51.7 W138 34 54.4
435	N61 18 51.9 W138 34 54.4
440	N61 18 52.0 W138 34 54.5
445	N61 18 52.2 W138 34 54.5
450	N61 18 52.3 W138 34 54.6
455	N61 18 52.3 W138 34 54.7

Gladstone Creek Line 03

Accuracy 3-4m

Profile [m]	Latitude / Longitude
0	N61 18 26.3 W138 34 13.3
5	N61 18 26.5 W138 34 13.4
10	N61 18 26.6 W138 34 13.5
15	N61 18 26.8 W138 34 13.6
20	N61 18 27.0 W138 34 13.6
25	N61 18 27.2 W138 34 13.6
30	N61 18 27.4 W138 34 13.7
35	N61 18 27.5 W138 34 13.7
40	N61 18 27.7 W138 34 13.7
45	N61 18 27.8 W138 34 13.7
50	N61 18 28.0 W138 34 13.8
55	N61 18 28.2 W138 34 13.9
60	N61 18 28.3 W138 34 13.9
65	N61 18 28.4 W138 34 14.0
70	N61 18 28.6 W138 34 14.0
75	N61 18 28.7 W138 34 14.0
80	N61 18 28.9 W138 34 14.1
85	N61 18 29.0 W138 34 14.2
90	N61 18 29.2 W138 34 14.3
95	N61 18 29.3 W138 34 14.4

Profile [m]	Latitude / Longitude
100	N61 18 29.5 W138 34 14.4
105	N61 18 29.7 W138 34 14.4
110	N61 18 29.8 W138 34 14.5
115	N61 18 30.0 W138 34 14.5
120	N61 18 30.1 W138 34 14.6
125	N61 18 30.3 W138 34 14.7
130	N61 18 30.4 W138 34 14.7
135	N61 18 30.6 W138 34 14.8
140	N61 18 30.8 W138 34 14.9
145	N61 18 30.9 W138 34 15.0
150	N61 18 31.1 W138 34 15.1
155	N61 18 31.2 W138 34 15.2
160	N61 18 31.3 W138 34 15.3
165	N61 18 31.5 W138 34 15.4
170	N61 18 31.7 W138 34 15.5
175	N61 18 31.9 W138 34 15.5
180	N61 18 32.0 W138 34 15.6
185	N61 18 32.2 W138 34 15.6
190	N61 18 32.3 W138 34 15.7
195	N61 18 32.5 W138 34 15.8

Profile [m]	Latitude / Longitude
200	N61 18 32.6 W138 34 15.8
205	N61 18 32.8 W138 34 15.9
210	N61 18 33.0 W138 34 15.9
215	N61 18 33.1 W138 34 16.0
220	N61 18 33.2 W138 34 16.1
225	N61 18 33.4 W138 34 16.1
230	N61 18 33.5 W138 34 16.2
235	N61 18 33.7 W138 34 16.2
240	N61 18 33.9 W138 34 16.2
245	N61 18 34.0 W138 34 16.4
250	N61 18 34.1 W138 34 16.4
255	N61 18 34.3 W138 34 16.5
260	N61 18 34.5 W138 34 16.5
265	N61 18 34.6 W138 34 16.6
270	N61 18 34.8 W138 34 16.7
275	N61 18 34.9 W138 34 16.8
280	N61 18 35.1 W138 34 16.8
285	N61 18 35.3 W138 34 16.9
290	N61 18 35.4 W138 34 17.0
295	N61 18 35.6 W138 34 17.1

Profile [m]	Latitude / Longitude
300	N61 18 35.7 W138 34 17.1
305	N61 18 35.9 W138 34 17.2
310	N61 18 36.0 W138 34 17.2
315	N61 18 36.2 W138 34 17.3
320	N61 18 36.3 W138 34 17.4
325	N61 18 36.5 W138 34 17.4
330	N61 18 36.7 W138 34 17.5
335	N61 18 36.8 W138 34 17.5
340	N61 18 37.0 W138 34 17.6
345	N61 18 37.1 W138 34 17.6
350	N61 18 37.3 W138 34 17.7
355	N61 18 37.4 W138 34 17.8
360	N61 18 37.6 W138 34 17.9
365	N61 18 37.7 W138 34 17.9
370	N61 18 37.8 W138 34 17.9
375	N61 18 38.0 W138 34 18.0
380	N61 18 38.1 W138 34 18.1
385	N61 18 38.3 W138 34 18.1
390	N61 18 38.4 W138 34 18.2
395	N61 18 38.6 W138 34 18.3

Profile [m]	Latitude / Longitude
400	N61 18 38.7 W138 34 18.4
405	N61 18 38.9 W138 34 18.5
410	N61 18 39.0 W138 34 18.5
415	N61 18 39.2 W138 34 18.6
420	N61 18 39.3 W138 34 18.6
425	N61 18 39.5 W138 34 18.6
430	N61 18 39.6 W138 34 18.7
435	N61 18 39.8 W138 34 18.7
440	N61 18 39.9 W138 34 18.8
445	N61 18 40.1 W138 34 18.8
450	N61 18 40.2 W138 34 18.9
455	N61 18 40.4 W138 34 18.9
460	N61 18 40.5 W138 34 19.0
465	N61 18 40.7 W138 34 19.0
470	N61 18 40.8 W138 34 19.1
475	N61 18 41.0 W138 34 19.2
480	N61 18 41.1 W138 34 19.2
485	N61 18 41.3 W138 34 19.3
490	N61 18 41.4 W138 34 19.4
495	N61 18 41.6 W138 34 19.4

Profile [m]	Latitude / Longitude
500	N61 18 41.7 W138 34 19.4
505	N61 18 41.9 W138 34 19.4
510	N61 18 42.0 W138 34 19.5
515	N61 18 42.2 W138 34 19.5
520	N61 18 42.4 W138 34 19.5

Profile [m]	Latitude / Longitude
525	N61 18 42.5 W138 34 19.6
530	N61 18 42.6 W138 34 19.6
535	N61 18 42.8 W138 34 19.7
540	N61 18 42.9 W138 34 19.7
545	N61 18 43.1 W138 34 19.8

Profile [m]	Latitude / Longitude
550	N61 18 43.2 W138 34 19.9
555	N61 18 43.4 W138 34 19.9
560	N61 18 43.6 W138 34 19.9
565	N61 18 43.7 W138 34 20.0
570	N61 18 43.9 W138 34 20.1

Profile [m]	Latitude / Longitude
575	N61 18 44.0 W138 34 20.1
580	N61 18 44.2 W138 34 20.2
585	N61 18 44.3 W138 34 20.2
590	N61 18 44.5 W138 34 20.2
595	N61 18 44.6 W138 34 20.3

Profile [m]	Latitude / Longitude
600	N61 18 44.8 W138 34 20.4
605	N61 18 44.9 W138 34 20.5
610	N61 18 45.2 W138 34 20.7
615	N61 18 45.1 W138 34 20.6
620	N61 18 45.4 W138 34 20.8

Gladstone Creek Line 04

Accuracy 3-5m

Profile [m]	Latitude / Longitude
0	N61 18 33.0 W138 38 18.3
5	N61 18 33.2 W138 38 18.3
10	N61 18 33.4 W138 38 18.2
15	N61 18 33.5 W138 38 18.1
20	N61 18 33.7 W138 38 18.1
25	N61 18 33.8 W138 38 18.0
30	N61 18 33.9 W138 38 18.0
35	N61 18 34.1 W138 38 17.9
40	N61 18 34.2 W138 38 17.9
45	N61 18 34.4 W138 38 17.8
50	N61 18 34.5 W138 38 17.7
55	N61 18 34.6 W138 38 17.6
60	N61 18 34.8 W138 38 17.5
65	N61 18 34.9 W138 38 17.4
70	N61 18 35.1 W138 38 17.2
75	N61 18 35.2 W138 38 17.1
80	N61 18 35.3 W138 38 16.9
85	N61 18 35.4 W138 38 16.8

Profile [m]	Latitude / Longitude
90	N61 18 35.6 W138 38 16.7
95	N61 18 35.7 W138 38 16.6
100	N61 18 35.9 W138 38 16.5
105	N61 18 36.1 W138 38 16.4
110	N61 18 36.2 W138 38 16.4
115	N61 18 36.3 W138 38 16.2
120	N61 18 36.5 W138 38 16.1
125	N61 18 36.6 W138 38 16.0
130	N61 18 36.8 W138 38 15.9
135	N61 18 36.9 W138 38 15.8
140	N61 18 37.1 W138 38 15.6
145	N61 18 37.2 W138 38 15.5
150	N61 18 37.4 W138 38 15.3
155	N61 18 37.6 W138 38 15.2
160	N61 18 37.7 W138 38 15.1
165	N61 18 37.9 W138 38 15.0
170	N61 18 38.0 W138 38 14.9
175	N61 18 38.1 W138 38 14.8

Profile [m]	Latitude / Longitude
180	N61 18 38.3 W138 38 14.7
185	N61 18 38.4 W138 38 14.5
190	N61 18 38.6 W138 38 14.4
195	N61 18 38.7 W138 38 14.3
200	N61 18 38.9 W138 38 14.1
205	N61 18 39.0 W138 38 14.0
210	N61 18 39.1 W138 38 13.8
215	N61 18 39.3 W138 38 13.7
220	N61 18 39.4 W138 38 13.6
225	N61 18 39.6 W138 38 13.4
230	N61 18 39.8 W138 38 13.3
235	N61 18 39.9 W138 38 13.2
240	N61 18 40.1 W138 38 13.0
245	N61 18 40.2 W138 38 12.9
250	N61 18 40.3 W138 38 12.8
255	N61 18 40.5 W138 38 12.7
260	N61 18 40.6 W138 38 12.5
265	N61 18 40.8 W138 38 12.4

Profile [m]	Latitude / Longitude
270	N61 18 40.9 W138 38 12.3
275	N61 18 41.1 W138 38 12.2
280	N61 18 41.2 W138 38 12.1
285	N61 18 41.4 W138 38 12.0
290	N61 18 41.5 W138 38 11.8
295	N61 18 41.7 W138 38 11.7
300	N61 18 41.8 W138 38 11.6
305	N61 18 41.9 W138 38 11.5
310	N61 18 42.0 W138 38 11.4
315	N61 18 42.2 W138 38 11.2
320	N61 18 42.3 W138 38 11.1
325	N61 18 42.5 W138 38 10.9
330	N61 18 42.6 W138 38 10.8
335	N61 18 42.8 W138 38 10.7
340	N61 18 42.9 W138 38 10.5
345	N61 18 43.1 W138 38 10.4
350	N61 18 43.2 W138 38 10.3
355	N61 18 43.4 W138 38 10.1

Profile [m]	Latitude / Longitude
360	N61 18 43.5 W138 38 10.0
365	N61 18 43.6 W138 38 09.9
370	N61 18 43.8 W138 38 09.8
375	N61 18 43.9 W138 38 09.7
380	N61 18 44.1 W138 38 09.5
385	N61 18 44.2 W138 38 09.4
390	N61 18 44.3 W138 38 09.3
395	N61 18 44.5 W138 38 09.1
400	N61 18 44.6 W138 38 08.9
405	N61 18 44.8 W138 38 08.8
410	N61 18 44.9 W138 38 08.6
415	N61 18 45.1 W138 38 08.5
420	N61 18 45.2 W138 38 08.3
425	N61 18 45.3 W138 38 08.2
430	N61 18 45.5 W138 38 08.1

Gladstone Creek Line 05

Accuracy 3-5m

Profile [m]	Latitude / Longitude
0	N61 18 40.7 W138 33 14.9
5	N61 18 40.9 W138 33 14.9
10	N61 18 41.0 W138 33 14.8
15	N61 18 41.2 W138 33 14.8
20	N61 18 41.4 W138 33 14.7
25	N61 18 41.6 W138 33 14.8

Profile [m]	Latitude / Longitude
30	N61 18 41.8 W138 33 14.7
35	N61 18 41.9 W138 33 14.7
40	N61 18 42.0 W138 33 14.6
45	N61 18 42.2 W138 33 14.6
50	N61 18 42.4 W138 33 14.6
55	N61 18 42.5 W138 33 14.6

Profile [m]	Latitude / Longitude
60	N61 18 42.7 W138 33 14.6
65	N61 18 42.8 W138 33 14.6
70	N61 18 43.0 W138 33 14.6
75	N61 18 43.1 W138 33 14.6
80	N61 18 43.3 W138 33 14.6
85	N61 18 43.4 W138 33 14.5

Profile [m]	Latitude / Longitude
90	N61 18 43.6 W138 33 14.5
95	N61 18 43.7 W138 33 14.5
100	N61 18 43.9 W138 33 14.4
105	N61 18 44.0 W138 33 14.5
110	N61 18 44.2 W138 33 14.4
115	N61 18 44.3 W138 33 14.4

Profile [m]	Latitude / Longitude
120	N61 18 44.5 W138 33 14.4
125	N61 18 44.7 W138 33 14.4
130	N61 18 44.8 W138 33 14.4
135	N61 18 45.0 W138 33 14.5
140	N61 18 45.2 W138 33 14.4
145	N61 18 45.3 W138 33 14.4

Profile [m]	Latitude / Longitude
150	N61 18 45.4 W138 33 14.3
155	N61 18 45.6 W138 33 14.3
160	N61 18 45.8 W138 33 14.3
165	N61 18 45.9 W138 33 14.3
170	N61 18 46.1 W138 33 14.2
175	N61 18 46.2 W138 33 14.2
180	N61 18 46.4 W138 33 14.2
185	N61 18 46.6 W138 33 14.1
190	N61 18 46.7 W138 33 14.2
195	N61 18 46.9 W138 33 14.3
200	N61 18 47.0 W138 33 14.3
205	N61 18 47.2 W138 33 14.3
210	N61 18 47.3 W138 33 14.2
215	N61 18 47.5 W138 33 14.2

Profile [m]	Latitude / Longitude
220	N61 18 47.6 W138 33 14.2
225	N61 18 47.8 W138 33 14.2
230	N61 18 47.9 W138 33 14.3
235	N61 18 48.1 W138 33 14.3
240	N61 18 48.2 W138 33 14.3
245	N61 18 48.4 W138 33 14.3
250	N61 18 48.6 W138 33 14.2
255	N61 18 48.7 W138 33 14.1
260	N61 18 48.9 W138 33 14.1
265	N61 18 49.1 W138 33 14.1
270	N61 18 49.2 W138 33 14.1
275	N61 18 49.4 W138 33 14.1
280	N61 18 49.5 W138 33 14.1
285	N61 18 49.7 W138 33 14.1

Profile [m]	Latitude / Longitude
290	N61 18 49.8 W138 33 14.1
295	N61 18 50.0 W138 33 14.1
300	N61 18 50.2 W138 33 14.1
305	N61 18 50.3 W138 33 14.1
310	N61 18 50.5 W138 33 14.1
315	N61 18 50.7 W138 33 14.2
320	N61 18 50.8 W138 33 14.2
325	N61 18 51.0 W138 33 14.2
330	N61 18 51.1 W138 33 14.2
335	N61 18 51.3 W138 33 14.2
340	N61 18 51.5 W138 33 14.2
345	N61 18 51.6 W138 33 14.2
350	N61 18 51.8 W138 33 14.2
355	N61 18 52.0 W138 33 14.2

Profile [m]	Latitude / Longitude
360	N61 18 52.1 W138 33 14.2
365	N61 18 52.3 W138 33 14.2
370	N61 18 52.4 W138 33 14.2
375	N61 18 52.6 W138 33 14.2
380	N61 18 52.8 W138 33 14.2
385	N61 18 52.9 W138 33 14.2
390	N61 18 53.1 W138 33 14.2
395	N61 18 53.2 W138 33 14.1
400	N61 18 53.4 W138 33 14.1
405	N61 18 53.6 W138 33 14.1
410	N61 18 53.7 W138 33 14.1
415	N61 18 53.9 W138 33 14.0
420	N61 18 54.0 W138 33 14.0
425	N61 18 54.2 W138 33 14.0

Profile [m]	Latitude / Longitude
430	N61 18 54.3 W138 33 13.9
435	N61 18 54.5 W138 33 13.9
440	N61 18 54.6 W138 33 13.9
445	N61 18 54.8 W138 33 13.9
450	N61 18 54.9 W138 33 13.8
455	N61 18 55.1 W138 33 13.8
460	N61 18 55.3 W138 33 13.8
465	N61 18 55.4 W138 33 13.8
470	N61 18 55.5 W138 33 13.7
475	N61 18 55.7 W138 33 13.7
480	N61 18 55.8 W138 33 13.7
485	N61 18 56.0 W138 33 13.6
490	N61 18 56.1 W138 33 13.7
495	N61 18 56.3 W138 33 13.7

Gladstone Creek Line 06

Accuracy 4-7m

Profile [m]	Latitude / Longitude
0	N61 19 12.8 W138 32 19.5
5	N61 19 12.7 W138 32 19.2
10	N61 19 12.6 W138 32 18.9
15	N61 19 12.4 W138 32 18.7
20	N61 19 12.4 W138 32 18.4
25	N61 19 12.4 W138 32 18.2
30	N61 19 12.2 W138 32 17.9
35	N61 19 12.1 W138 32 17.7
40	N61 19 12.0 W138 32 17.4
45	N61 19 12.0 W138 32 17.2
50	N61 19 11.9 W138 32 17.0
55	N61 19 11.8 W138 32 16.7
60	N61 19 11.7 W138 32 16.4
65	N61 19 11.6 W138 32 16.1
70	N61 19 11.5 W138 32 15.9
75	N61 19 11.3

Profile [m]	Latitude / Longitude
	W138 32 15.6
80	N61 19 11.2 W138 32 15.4
85	N61 19 11.1 W138 32 15.1
90	N61 19 11.0 W138 32 14.8
95	N61 19 10.9 W138 32 14.5
100	N61 19 10.8 W138 32 14.2
105	N61 19 10.8 W138 32 14.0
110	N61 19 10.7 W138 32 13.7
115	N61 19 10.6 W138 32 13.4
120	N61 19 10.5 W138 32 13.1
125	N61 19 10.4 W138 32 12.9
130	N61 19 10.2 W138 32 12.3
135	N61 19 10.1 W138 32 12.1
140	N61 19 10.1 W138 32 11.9
145	N61 19 10.0 W138 32 11.7
150	N61 19 10.2 W138 32 11.8

Profile [m]	Latitude / Longitude
155	N61 19 10.2 W138 32 11.5
160	N61 19 10.0 W138 32 11.0
165	N61 19 09.7 W138 32 10.6
170	N61 19 09.8 W138 32 10.5
175	N61 19 09.7 W138 32 10.3
180	N61 19 09.5 W138 32 09.9
185	N61 19 09.4 W138 32 09.7
190	N61 19 09.5 W138 32 09.6
195	N61 19 09.3 W138 32 09.3
200	N61 19 09.1 W138 32 08.9
205	N61 19 09.1 W138 32 08.8
210	N61 19 09.1 W138 32 08.6
215	N61 19 09.0 W138 32 08.3
220	N61 19 09.0 W138 32 08.2
225	N61 19 09.0 W138 32 08.0
230	N61 19 08.9

Profile [m]	Latitude / Longitude
	W138 32 07.8
235	N61 19 08.7 W138 32 07.5
240	N61 19 08.6 W138 32 07.3
245	N61 19 08.3 W138 32 07.0
250	N61 19 08.3 W138 32 06.8
255	N61 19 08.2 W138 32 06.6
260	N61 19 07.9 W138 32 06.3
265	N61 19 08.0 W138 32 06.0
270	N61 19 07.9 W138 32 05.9
275	N61 19 07.8 W138 32 05.6
280	N61 19 07.6 W138 32 05.3
285	N61 19 07.5 W138 32 05.1
290	N61 19 07.4 W138 32 04.9
295	N61 19 07.3 W138 32 04.6
300	N61 19 07.2 W138 32 04.3
305	N61 19 07.2 W138 32 04.2

Profile [m]	Latitude / Longitude
310	N61 19 07.0 W138 32 04.0
315	N61 19 06.9 W138 32 03.7
320	N61 19 06.8 W138 32 03.5
325	N61 19 06.6 W138 32 03.2
330	N61 19 06.6 W138 32 03.0
335	N61 19 06.5 W138 32 02.8
340	N61 19 06.4 W138 32 02.5
345	N61 19 06.2 W138 32 02.2
350	N61 19 06.1 W138 32 02.0
355	N61 19 06.0 W138 32 01.8
360	N61 19 05.9 W138 32 01.6
365	N61 19 05.8 W138 32 01.4
370	N61 19 05.7 W138 32 01.1

Gladstone Creek Line 07

Accuracy 2-4m

Profile [m]	Latitude / Longitude
0	N61 18 16.3 W138 34 10.8
5	N61 18 16.2 W138 34 10.5
10	N61 18 16.1 W138 34 10.2
15	N61 18 16.1 W138 34 09.9
20	N61 18 16.2 W138 34 09.7
25	N61 18 16.1 W138 34 09.3
30	N61 18 16.2 W138 34 08.9
35	N61 18 16.2 W138 34 08.5
40	N61 18 16.2 W138 34 08.2
45	N61 18 16.1 W138 34 07.9
50	N61 18 16.1 W138 34 07.6
55	N61 18 16.1 W138 34 07.3
60	N61 18 16.1 W138 34 07.0
65	N61 18 16.0 W138 34 06.6
70	N61 18 16.0 W138 34 06.3
75	N61 18 16.0 W138 34 06.0
80	N61 18 15.9 W138 34 05.7
85	N61 18 15.9 W138 34 05.3
90	N61 18 15.9 W138 34 05.0
95	N61 18 15.9 W138 34 04.7
100	N61 18 15.8 W138 34 04.4
105	N61 18 15.8 W138 34 04.0
110	N61 18 15.8 W138 34 03.7
115	N61 18 15.8 W138 34 03.4
120	N61 18 15.8 W138 34 03.0
125	N61 18 15.8 W138 34 02.8
130	N61 18 15.8 W138 34 02.5
135	N61 18 15.8 W138 34 02.1
140	N61 18 15.8 W138 34 01.8
145	N61 18 15.9 W138 34 01.5
150	N61 18 15.9 W138 34 01.2
155	N61 18 15.9 W138 34 00.9
160	N61 18 15.9 W138 34 00.5
165	N61 18 15.9 W138 34 00.2
170	N61 18 15.9 W138 33 59.9
175	N61 18 15.9 W138 33 59.6
180	N61 18 15.9 W138 33 59.3
185	N61 18 15.9 W138 33 58.9
190	N61 18 15.9 W138 33 58.6
195	N61 18 15.9 W138 33 58.3
200	N61 18 16.0 W138 33 58.0
205	N61 18 16.0 W138 33 57.7
210	N61 18 16.0 W138 33 57.4
215	N61 18 16.0 W138 33 57.1
220	N61 18 16.1 W138 33 56.8
225	N61 18 16.1 W138 33 56.5
230	N61 18 16.1 W138 33 56.1
235	N61 18 16.1 W138 33 55.8
240	N61 18 16.2 W138 33 55.4
245	N61 18 16.2 W138 33 55.3
250	N61 18 16.3 W138 33 54.9
255	N61 18 16.3 W138 33 54.6
260	N61 18 16.4 W138 33 54.3
265	N61 18 16.4 W138 33 54.1
270	N61 18 16.4 W138 33 53.8
275	N61 18 16.5 W138 33 53.5
280	N61 18 16.5 W138 33 53.3
285	N61 18 16.6 W138 33 52.9
290	N61 18 16.6 W138 33 52.6
295	N61 18 16.6 W138 33 52.3
300	N61 18 16.7 W138 33 52.0
305	N61 18 16.7 W138 33 51.6
310	N61 18 16.7 W138 33 51.4
315	N61 18 16.9 W138 33 51.2
320	N61 18 16.9 W138 33 50.9
325	N61 18 16.9 W138 33 50.6
330	N61 18 17.0 W138 33 50.3
335	N61 18 17.0 W138 33 50.0
340	N61 18 17.0 W138 33 49.7
345	N61 18 17.1 W138 33 49.5
350	N61 18 17.1 W138 33 49.1
355	N61 18 17.1 W138 33 48.9
360	N61 18 17.2 W138 33 48.5
365	N61 18 17.2 W138 33 48.1
370	N61 18 17.3 W138 33 47.8
375	N61 18 17.3 W138 33 47.5
380	N61 18 17.3 W138 33 47.2
385	N61 18 17.4 W138 33 46.9
390	N61 18 17.4 W138 33 46.5
395	N61 18 17.4 W138 33 46.2
400	N61 18 17.5 W138 33 45.8
405	N61 18 17.5 W138 33 45.5
410	N61 18 17.6 W138 33 45.2
415	N61 18 17.6 W138 33 44.9
420	N61 18 17.6 W138 33 44.6
425	N61 18 17.7 W138 33 44.3
430	N61 18 17.7 W138 33 43.9
435	N61 18 17.8 W138 33 43.6
440	N61 18 17.8 W138 33 43.3
445	N61 18 17.8 W138 33 42.9
450	N61 18 17.8 W138 33 42.7
455	N61 18 17.8 W138 33 42.4
460	N61 18 17.8 W138 33 42.1
465	N61 18 17.9 W138 33 41.9
470	N61 18 17.9 W138 33 41.6
475	N61 18 18.0 W138 33 41.3
480	N61 18 18.0 W138 33 40.9
485	N61 18 18.1 W138 33 40.7
490	N61 18 18.2 W138 33 40.4
495	N61 18 18.2 W138 33 40.3

Gladstone Creek Line 08

Accuracy 3-4m

Profile [m]	Latitude / Longitude
0	N61 18 18.1 W138 42 01.8
5	N61 18 18.1 W138 42 01.4
10	N61 18 18.1 W138 42 01.1
15	N61 18 18.1 W138 42 00.7
20	N61 18 18.1 W138 42 00.4
25	N61 18 18.1 W138 42 00.1
30	N61 18 18.1 W138 41 59.7
35	N61 18 18.2 W138 41 59.4
40	N61 18 18.2 W138 41 59.1
45	N61 18 18.1 W138 41 58.7
50	N61 18 18.1 W138 41 58.3
55	N61 18 18.2 W138 41 58.0
60	N61 18 18.1 W138 41 57.7
65	N61 18 18.2 W138 41 57.4
70	N61 18 18.2 W138 41 57.1
75	N61 18 18.2 W138 41 56.7
80	N61 18 18.2 W138 41 56.4
85	N61 18 18.2 W138 41 56.1
90	N61 18 18.2 W138 41 55.8
95	N61 18 18.1 W138 41 55.5
100	N61 18 18.0 W138 41 55.1
105	N61 18 18.0 W138 41 54.7
110	N61 18 18.0 W138 41 54.3
115	N61 18 18.0 W138 41 54.1
120	N61 18 17.9 W138 41 53.6
125	N61 18 18.1 W138 41 53.3
130	N61 18 18.0 W138 41 53.0
135	N61 18 18.0 W138 41 52.7
140	N61 18 18.0 W138 41 52.3
145	N61 18 18.0 W138 41 52.0
150	N61 18 18.0 W138 41 51.7
155	N61 18 18.0 W138 41 51.3
160	N61 18 18.0 W138 41 51.0
165	N61 18 18.0 W138 41 50.7
170	N61 18 18.0 W138 41 50.4
175	N61 18 18.0 W138 41 50.1
180	N61 18 18.0 W138 41 49.7
185	N61 18 18.0 W138 41 49.4
190	N61 18 18.0 W138 41 48.9
195	N61 18 18.0 W138 41 48.7
200	N61 18 18.0 W138 41 48.5
205	N61 18 17.9 W138 41 48.1
210	N61 18 17.9 W138 41 47.8
215	N61 18 17.9 W138 41 47.5
220	N61 18 18.0 W138 41 47.2
225	N61 18 18.0 W138 41 46.9
230	N61 18 18.0 W138 41 46.6
235	N61 18 18.0 W138 41 46.2
240	N61 18 18.0 W138 41 45.8
245	N61 18 18.0 W138 41 45.5
250	N61 18 18.0 W138 41 45.2
255	N61 18 17.9 W138 41 44.9
260	N61 18 18.0

Profile [m]	Latitude / Longitude
	W138 41 44.5
265	N61 18 18.0 W138 41 44.1
270	N61 18 18.0 W138 41 43.8
275	N61 18 18.0 W138 41 43.5
280	N61 18 18.0 W138 41 43.2
285	N61 18 18.0 W138 41 42.9
290	N61 18 18.0 W138 41 42.6
295	N61 18 18.1 W138 41 42.3
300	N61 18 18.1 W138 41 41.9
305	N61 18 18.1 W138 41 41.5
310	N61 18 18.1

Profile [m]	Latitude / Longitude
	W138 41 41.2
315	N61 18 18.1 W138 41 40.8
320	N61 18 18.1 W138 41 40.5
325	N61 18 18.1 W138 41 40.2
330	N61 18 18.1 W138 41 39.9
335	N61 18 18.1 W138 41 39.5
340	N61 18 18.1 W138 41 39.2
345	N61 18 18.1 W138 41 38.9
350	N61 18 18.1 W138 41 38.6
355	N61 18 18.2 W138 41 38.2
360	N61 18 18.2

Profile [m]	Latitude / Longitude
	W138 41 37.8
365	N61 18 18.2 W138 41 37.5
370	N61 18 18.3 W138 41 37.2
375	N61 18 18.3 W138 41 36.8
380	N61 18 18.3 W138 41 36.5
385	N61 18 18.3 W138 41 36.2
390	N61 18 18.3 W138 41 35.9
395	N61 18 18.3 W138 41 35.5
400	N61 18 18.3 W138 41 35.2
405	N61 18 18.3 W138 41 34.8
410	N61 18 18.3

Profile [m]	Latitude / Longitude
	W138 41 34.5
415	N61 18 18.3 W138 41 34.2
420	N61 18 18.3 W138 41 33.9
425	N61 18 18.3 W138 41 33.5
430	N61 18 18.3 W138 41 33.2
435	N61 18 18.3 W138 41 32.8
440	N61 18 18.3 W138 41 32.6
445	N61 18 18.3 W138 41 32.3
450	N61 18 18.3 W138 41 31.9
455	N61 18 18.3 W138 41 31.6
460	N61 18 18.3

Profile [m]	Latitude / Longitude
	W138 41 31.3
465	N61 18 18.3 W138 41 31.0
470	N61 18 18.2 W138 41 30.6
475	N61 18 18.2 W138 41 30.3
480	N61 18 18.2 W138 41 29.9
485	N61 18 18.2 W138 41 29.6
490	N61 18 18.2 W138 41 29.3
495	N61 18 18.1 W138 41 29.0