Appendix 4

Part 9.

REPORT DIGEST

«ON EXPLORATION DRILLING RESULTS of Shankhay AREA» carried out in April 2013

West Africa. The Republic of SIERRA LEONE.
Buried auriferous placers.

Ukrainian National Academy of Science
Institute of Geology, Geochemistry and Ore Formations

REPORT DIGEST

«ON EXPLORATION DRILLING RESULTS of Shankhay AREA» carried out in April 2013

West Africa. The Republic of SIERRA LEONE. Buried auriferous placers.

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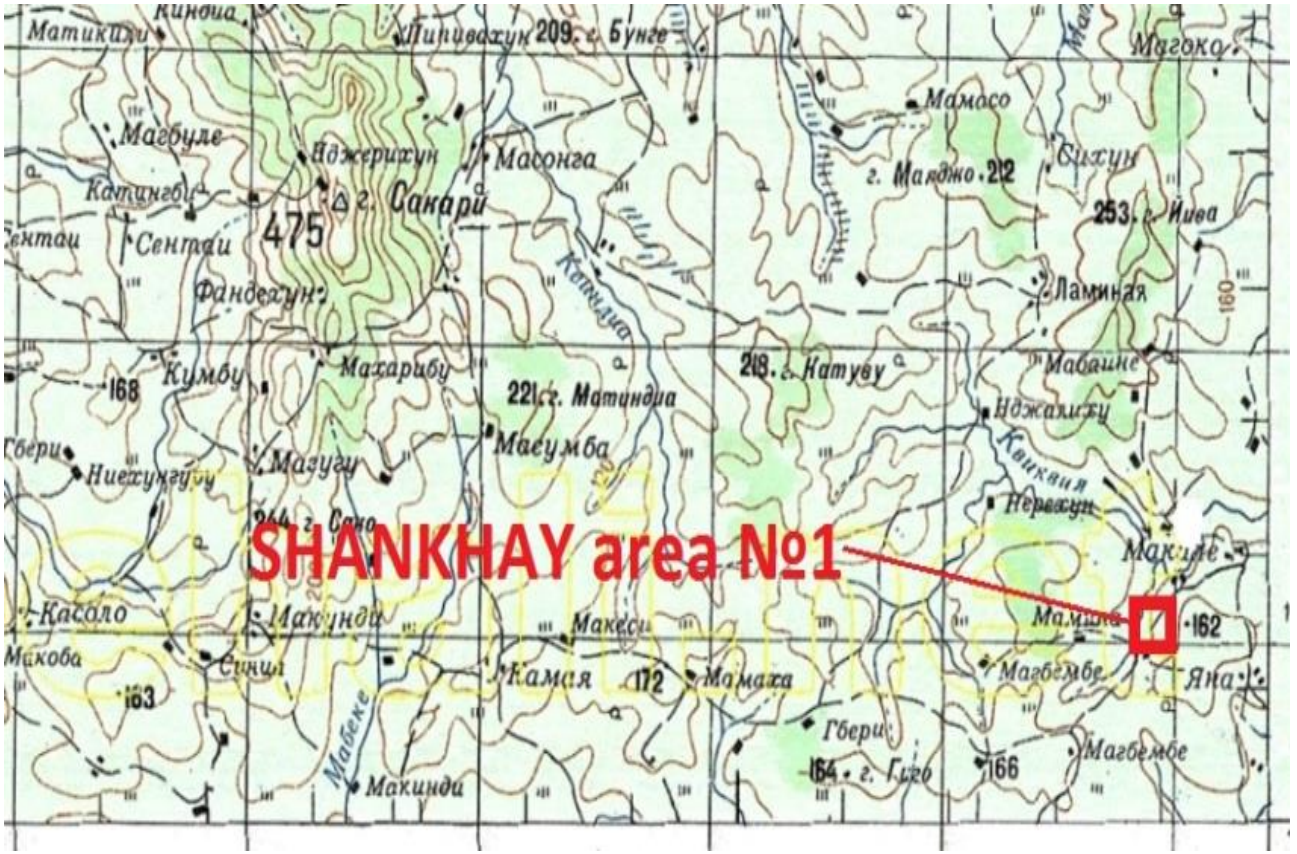
EXPLORATION DRILLING

Shankhay area. Eastern part.

The area is located in the territory of Sanda Loko Chiefdom, to the south of Kampala Village

Fig 1.



It consists of two parts : western and eastern ones. Comprehensive geophysical research was carried out in the eastern part prior to exploration drilling. The process of trenching prospecting operation started in the western part of the area without any geophysical research.

In geological terms the area is localized within well mappable palaeovalley of an ancient river whereon the contemporary valley of a small river Quiquia was developed with displacement. The area occupies 0.047 km^2 (11.6 acres, Fig.1).

On the north it borders with license area of “UA Mining (SL) Limited”, on the east and south it is limited by the river Quiquia, on the west – with license area of a Chinese company. On the north-west and north the area is limited by a natural boundary of productive depositional termination (gravel) in section.

Approximately in the middle it is crossed by a pedestrian walkway between Yana and Kampala villages.

Within eastern half of the area (Fig. 2) the comprehensive geological and geophysical researches were carries out. Western part of the area was not studies by geophysical methods.

Geophysical researches included outrunning topographic minutes (plan and height provision) of geophysical works: gravity and magnetometric mapping, electric profiling and mapping (by vertical electrical sounding).

At the first phase sites and profile lines were prepared for creation of regular network to enable carrying out the above independent geophysical research in the area (Fig.2).

Gravity survey and electric prospecting (network 40x40m), as well as magnetometer (network 10x5m) profiles were prepared in the line 0.5-0.7m wide.

Georadar profiling required preparation of two parallel lines 0.5-0.7m wide, being spaced 3-3.5 m apart in the profile in order the appropriate antennas passed along them.

According to the available experience of operating in similar geological and mining conditions, these comprehensive researches provide maximum reliable spatial results (over the surface and in-depth at any point of the area) for mining operations in the placer objects.

Topographic minutes (plan and height provision) of geophysical operations

At the first phase corner point coordinates of the mining area were obtained. They are also plotted on the site drawing at a scale of 1:2000.
At the second phase the coordinates of geophysical investigation points were determined by the network 40x40 m and prepared in electronic format for operation with satellite navigation equipment GPS «SOUTH».
At the third phase staking and fixing of geophysical investigation points with wooden pegs was performed on site. With the help of satellite navigation (GPS system, SOUTH-S750 device) the heights of geophysical investigation points were measured in the WGS-84 system with error ±15-20 mm .
The prepared points are located in the sublatitudinal profiles spaced at 40 m for gravity, magnetic and electro-physical researches. Distance between the profiles makes 40 m.

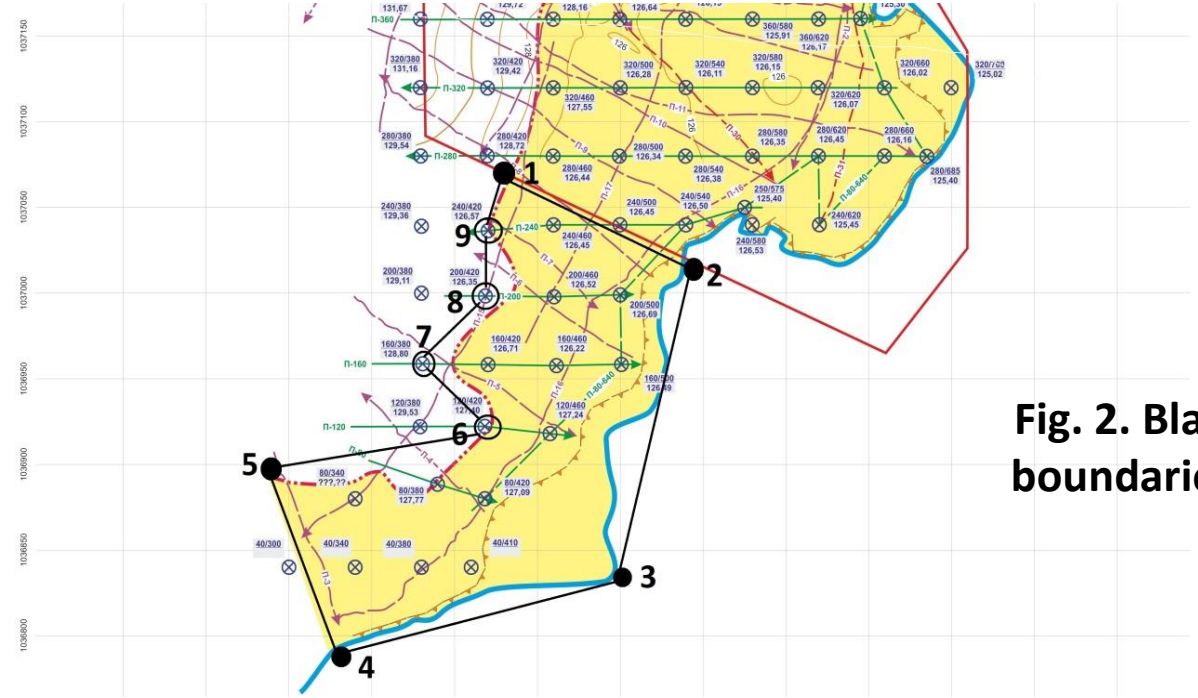


Fig. 2. Black contour with black dots shows boundaries of eastern half of license site of Shankhay area.

Yellow is a natural area of valley of the ancient river Quiquia (riverbed alluvium) according to the data of geophysical researches.

Legend for the georadar profiling fact map:

Survey stations, their numbers and absolute elevation:

Georadar profiles of regular network with antenna size 1.5m

Georadar profiles of irregular network with antenna size 3.0 m

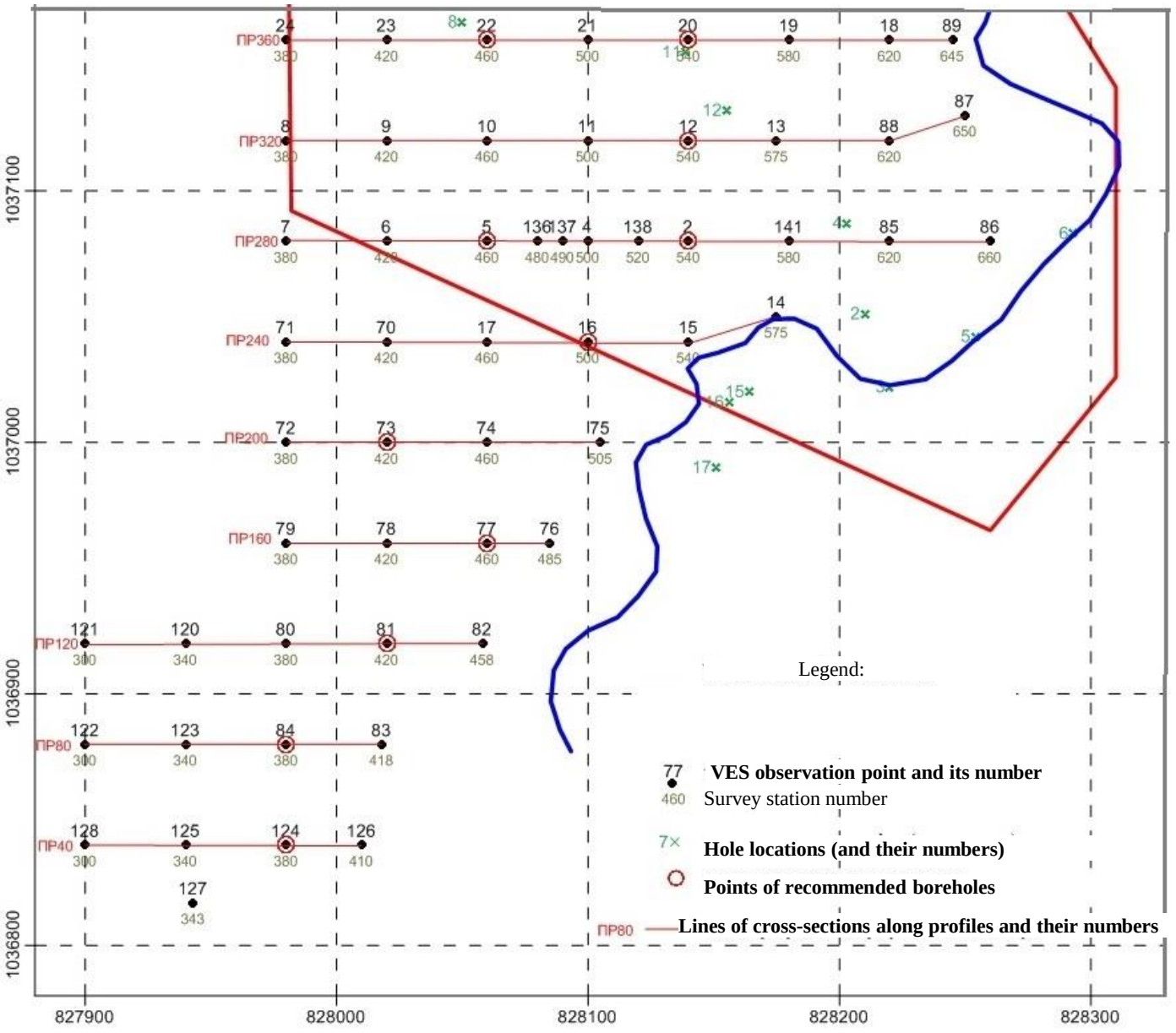
Georadar profiles of irregular network with antenna size 1.5 m

Boundaries of license site

Boundaries of floodplain of the river Quiquia

Red dots on the topographic base marks the position of the area

Fig 3. Map of actual material of geophysical researches



Electrical exploration by Vertical Electric sounding (VES)

Electrical exploration was performed along the network of the prepared points 40x40 spaced at 40 m with power line separation 80-150 m depending on the nature of geoelectrical section.

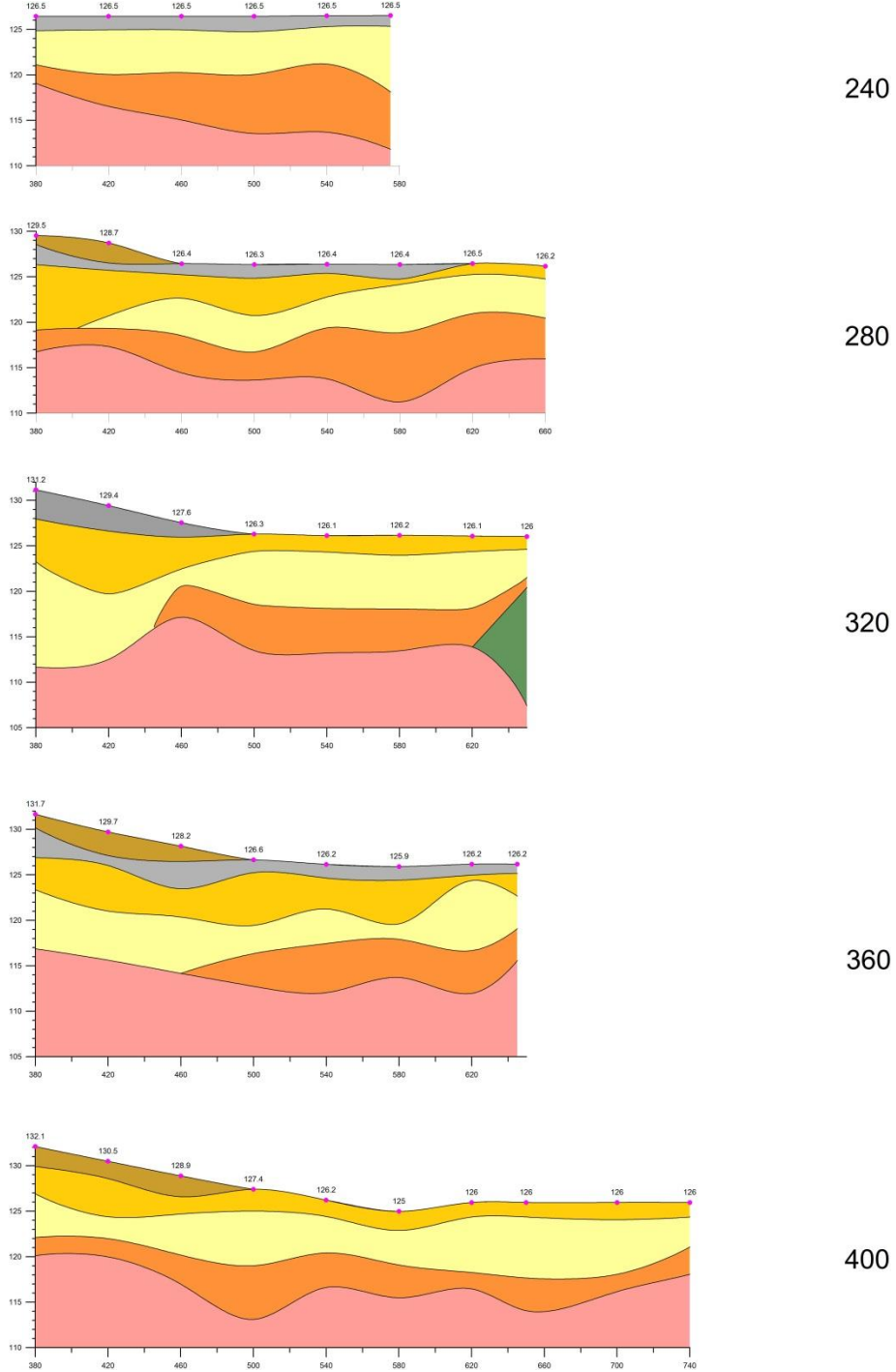
The plant dimensions and scheme of survey were selected at the first phase during field trials. Field operations were carried out at high temperature, during hard earthing application and under complicated metering conditions.

Geoelectrical sections were made along the profiles (Fig. 4) where layers with definite electric resistance were determined which correspond to certain geological horizons.

The constructed (on the basis of profile leveling) **map of apparent resistivity at the separations AB/2=10-30 m** fixed position of the river paleovalley (both within the area itself and over the entire surveyed territory) with gravel spread as the main component of productive placer horizon (Fig. 5).

The performed profiling enabled to obtain particular sections, levelling of which was used for creation of special maps

Fig. 4



Bluish tones of the field in Fig. 5 actually correspond to the area of paleovalley riverbed with productive horizonoм in its section. According to the obtained data, the river paleovalley stretches in meridian direction, it is characterized by clear width bulge at the connection point (along the boundary line) of license areas of UA Mining Ltd and the described area. In the region of the point №4, limiting license area on the south and west the river paleovalley deviates from its stream by 180° and starts stretching towards the north to the point №5. A small interval (river branch) a bit to the south of points 5 and 6 was a small channel for water transfer.

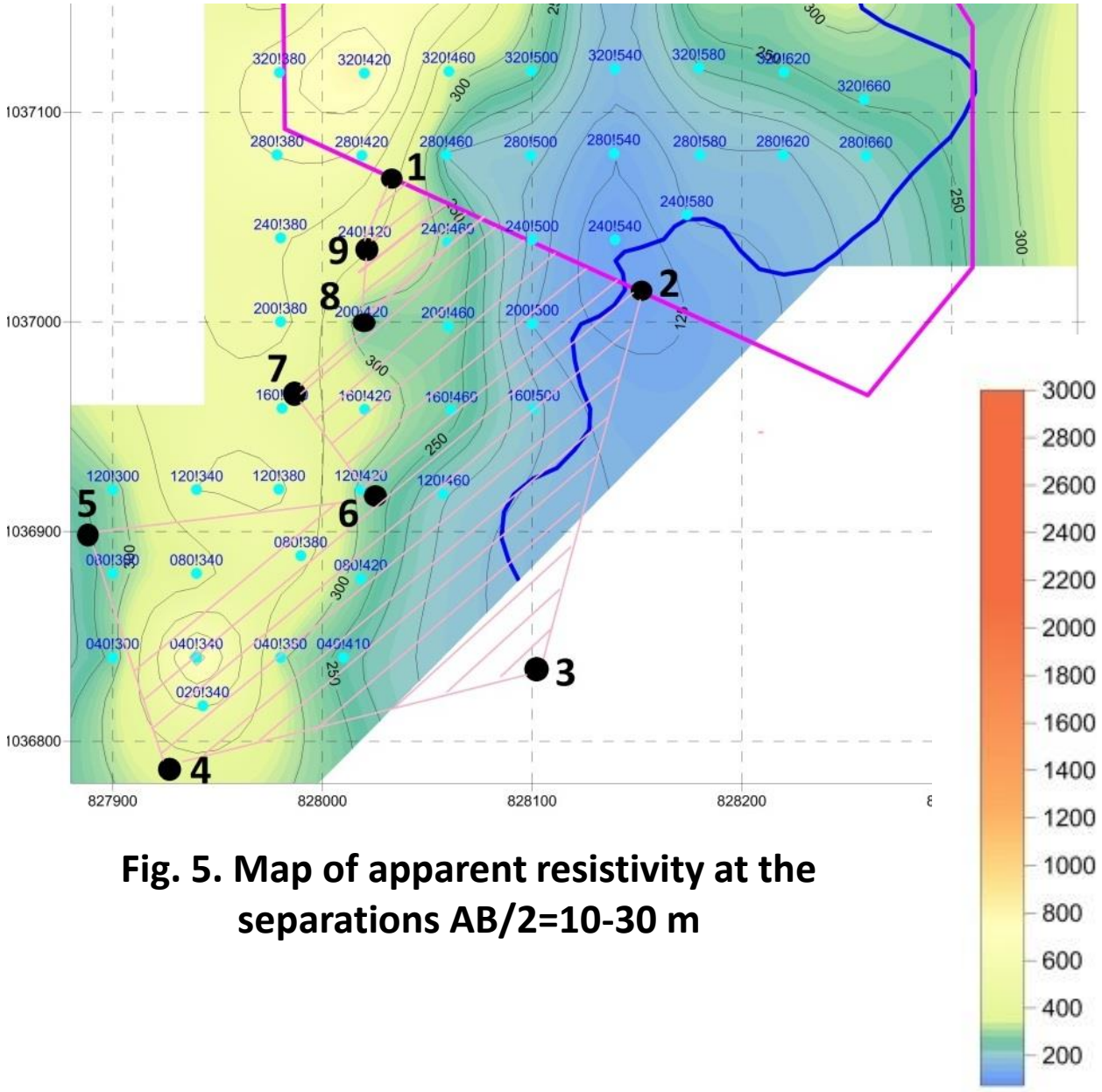


Fig. 5. Map of apparent resistivity at the separations AB/2=10-30 m

The constructed **map of apparent resistivity of over-resistance layer** (ballop) (Fig. 6) shows lateral extension of one of the sublayer components.

The obtained picture shows the place and time of paleovalley formation, as well as ballop spread areas which could be extracted during gold mining as an cumulated component of the extraction horizon. However, the results of the operations carried out by VES method evidence that there are practically no considerable basins of deposit accumulation of this horizon in the territory of the license site as opposed to UA Mining Sl Ltd territory. They are present as extremely limited thickness in the section approximately up to the interval between the points № 5 and 4, displacing further on westwards from the point №6 to the point №1.

The constructed map of apparent resistivity of the over-support horizon (ballop) (Fig. 6) shows lateral extension of one of the sublayer components.

The obtained picture shows the place and the time of the paleovalley formation, as well as spread sites of ballop that could be extracted during gold mining as a cumulated component of the extraction horizon. However, the results of the operations carried out by VES method evidence that there are practically no considerable basins of deposit accumulation of this horizon in the territory of the license site as opposed to UA Mining Sl Ltd territory.

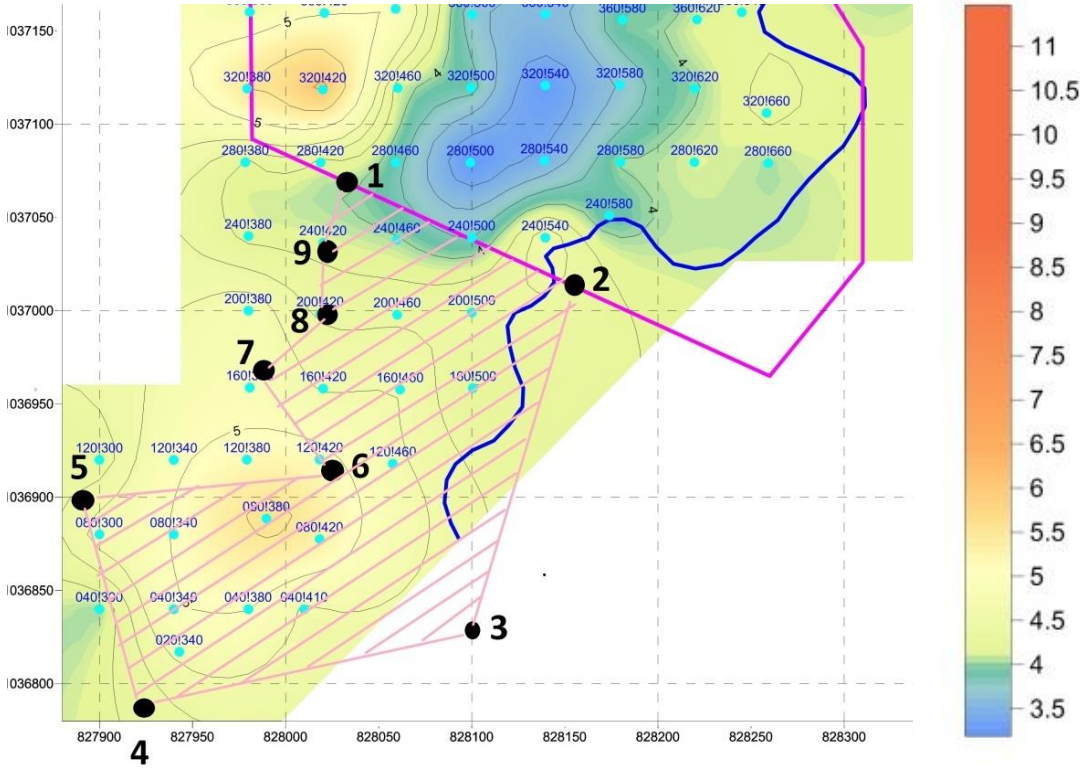


Fig. 6 Map of apparent resistivity of the over-support horizon

They are present as extremely limited thickness in the section approximately up to the interval between the points № 5 and 4, displacing further on westwards from the point №6 to the point №1.

Magnetic mapping

Magnetic mapping was made in the territory being in large excess over the dimensions of the license site (along the irregular network), and also within the area and the nearest adjoining spaces along the regular network.

Irregular network allowed obtaining a preliminary picture of magnetic field on operation site and along the adjoining sections. As a result, magnetic field map id constructed, its scale can be estimated by the range 1:2000-5000 (Fig. 7). Its fragment including the territory of the license area is given below.

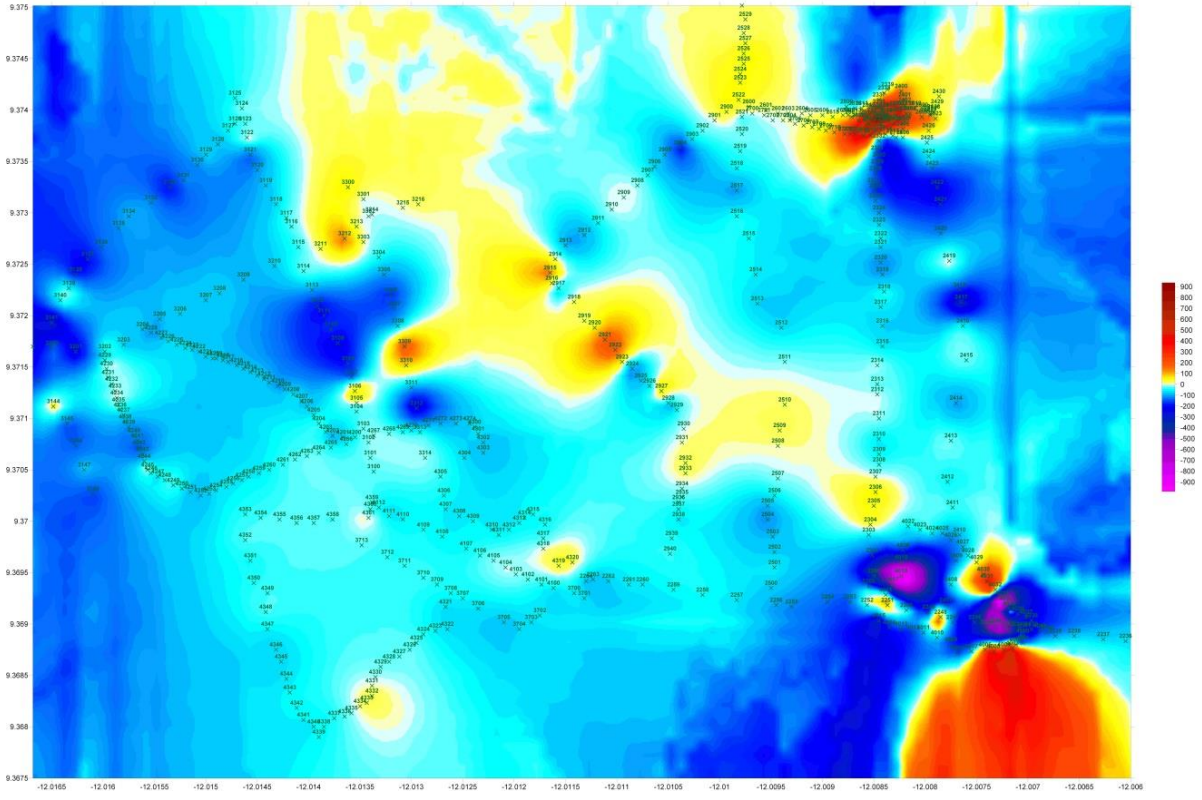


Fig. 7

Later, magnetic mapping was performed over the limited surface along regular network 20x20m, followed by interpretation of the obtained outcomes and the final map of the license site territory was constructed (Fig. 8).

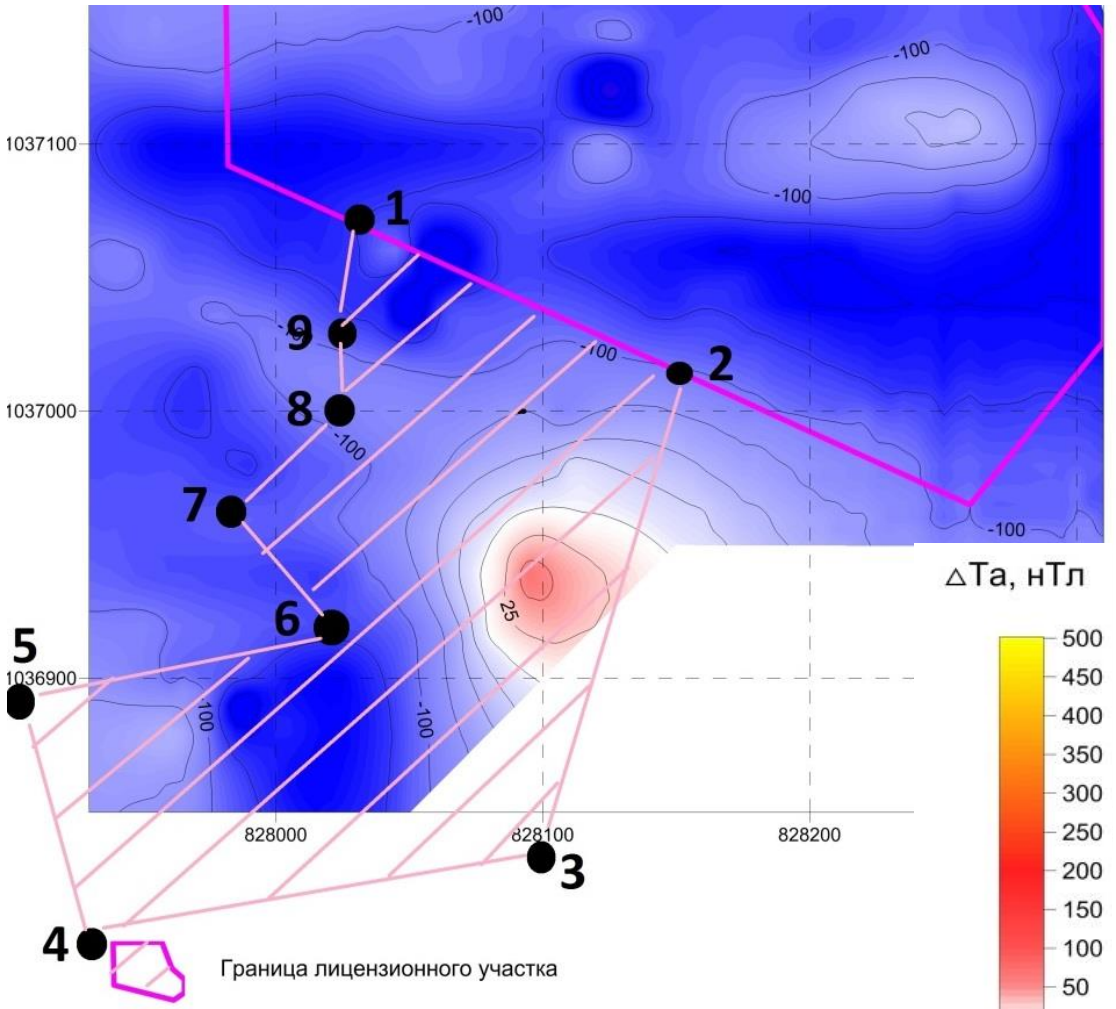


Fig. 8. Magnetic anomaly map obtained along the regular network.

Gravity research

Following the results of field gravity measurements and processing of materials at central office within the area contour, a gravimetric map of Bouguer anomaly was constructed (Fig. 9).

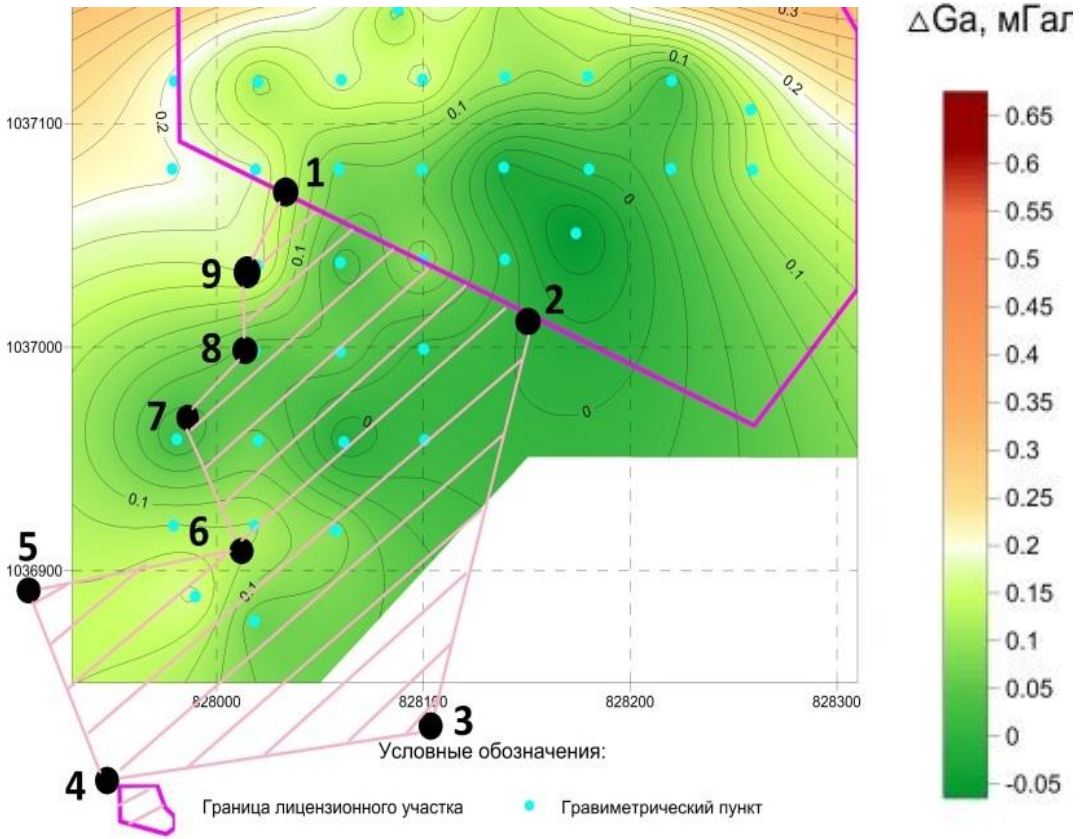


Fig. 9

Georadar plotting

"Losa-2v" Georadar and other auxiliary engineered devices were used during execution of works. The area boundary staking (on site) was made; profile pre-office preparation and treatment was carried out (scale adjustment, cartographic control), GPS data were processed (approximately 11,000 points of GPS measurements);

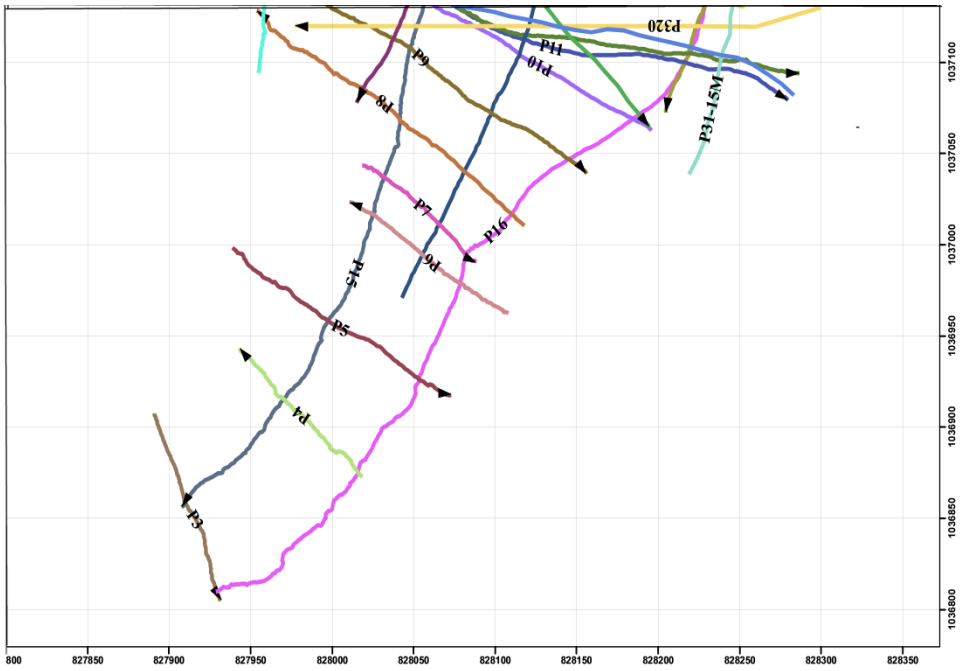
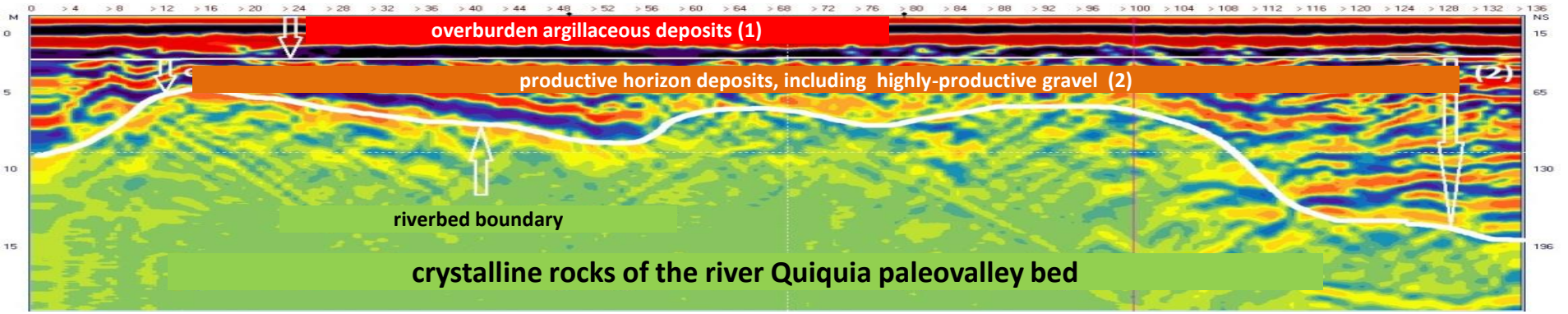
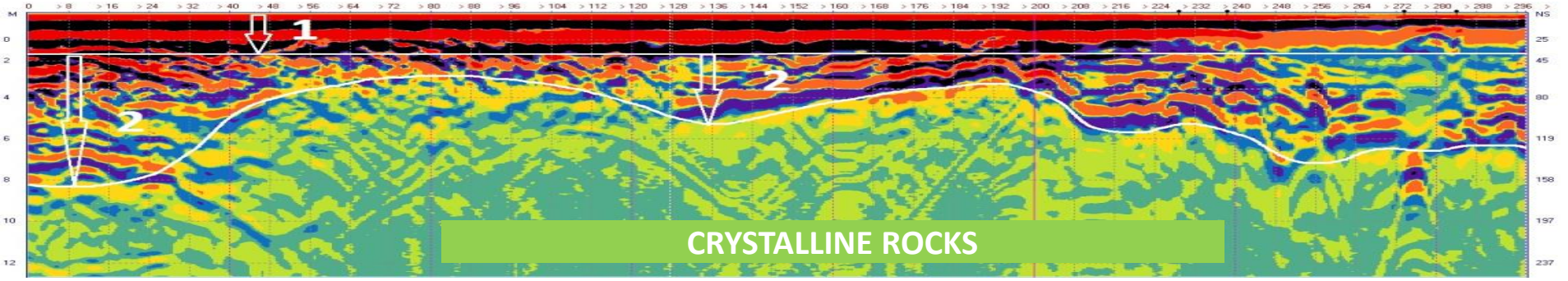


Fig. 10. Layout of georadar plotting profiles

Test survey imaging was performed to obtain direct data on information content of this research method.

Examples of profile sections in the site are given below, they clearly demonstrate structure of geological section of the licensed area. The section character known by previously driven 17 holes allows making confident interpretation of the obtained materials of georadar profiling and other methods of geophysical research.





Marking of the area contours

The area contours were marked in the form of a diagram and points designated by survey markers and portable (pocket) GPS of Garmin Origon 450 type.

Basic geodetic survey of regular network with the help of GPS equipment

Layout of regular network for the purposes of geophysical survey was carried out according to previously drawn surveying scheme with marking of survey stations on site.

Georadar profiling

Profiles were driven over the area (including the test ones, Fig. 10) by "LOSA" georadar referring to the class of geophysical devices for investigation of subsurface soil structure. Profiling was performed down to the depth of 15 m with the span ranging from 30 cm to 150 cm .

Geographical reference of profiling routes was provided with GPS equipment of geodetic class (EpsPak-IIB and South S-750) with an accurately set interval of sounding, followed by recording of coordinates of each profile into the catalog to be processed later on.

Field (express) treatment of georadar profiles and pre-office preparation were held in order to form a general idea of structural features of geological structure and correction of the subsequent georadar surveying and their details. Catalogue of radargrams was compiled.

All the performed operations were documented as a catalogue of coordinates and laid out on the cartographic base.

Interpretation of the results

Georadar profile cross-sections (fig.10)

Fig. 11. Profile 3 Georadar cross-section

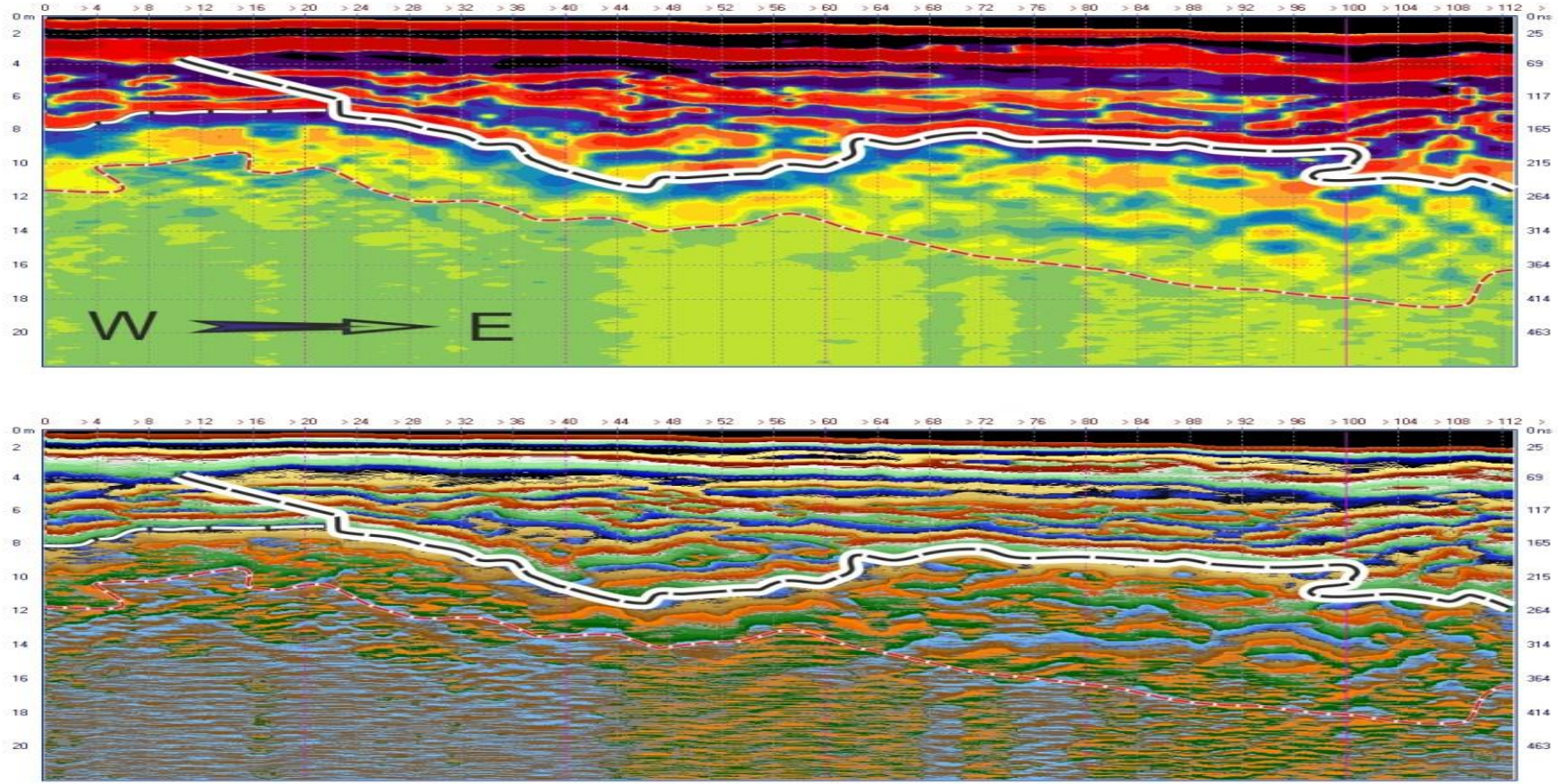


Fig. 12. Profile 4 Georadar cross-section

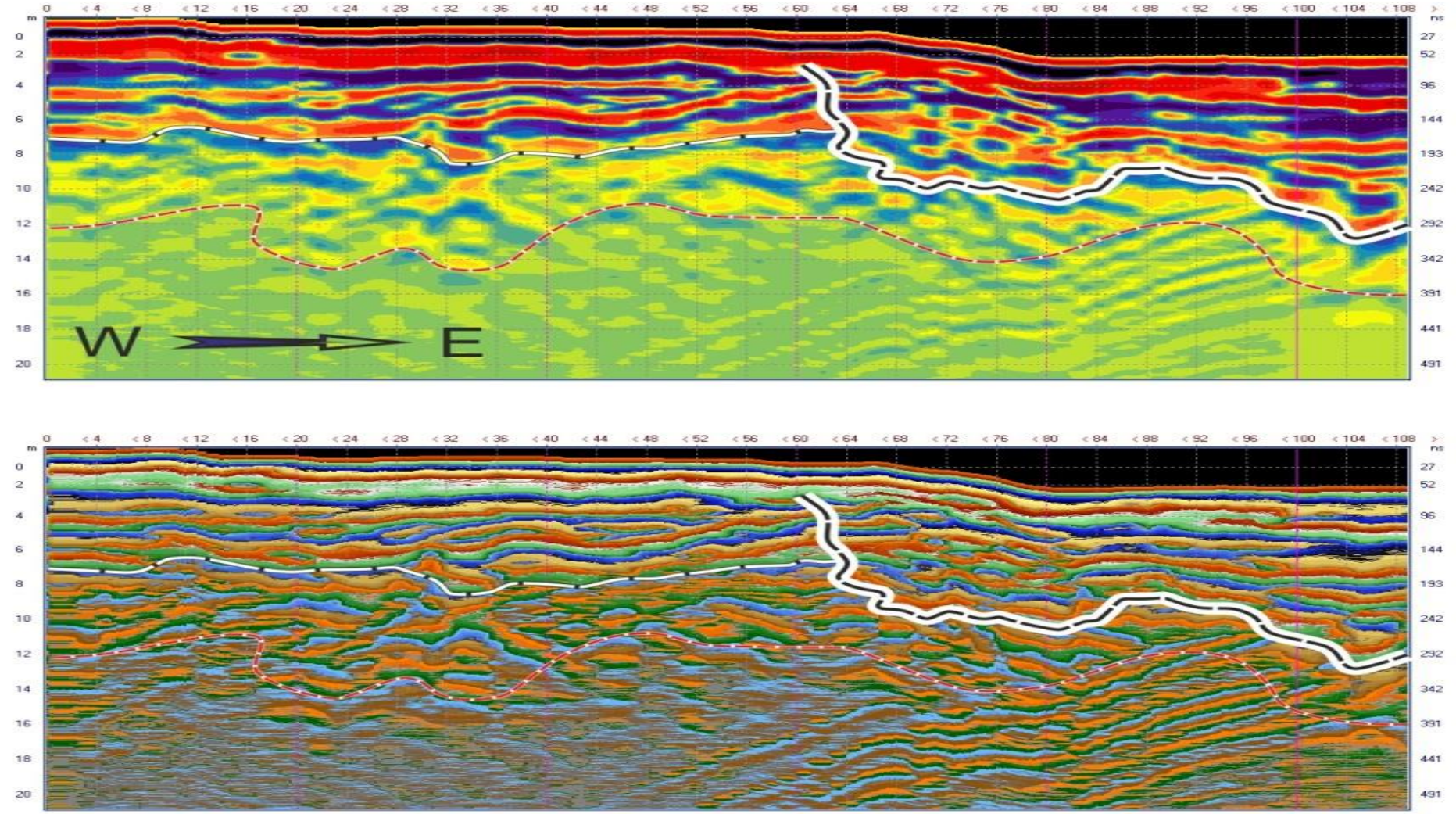


Fig. 13. Profile 5 Georadar cross-section

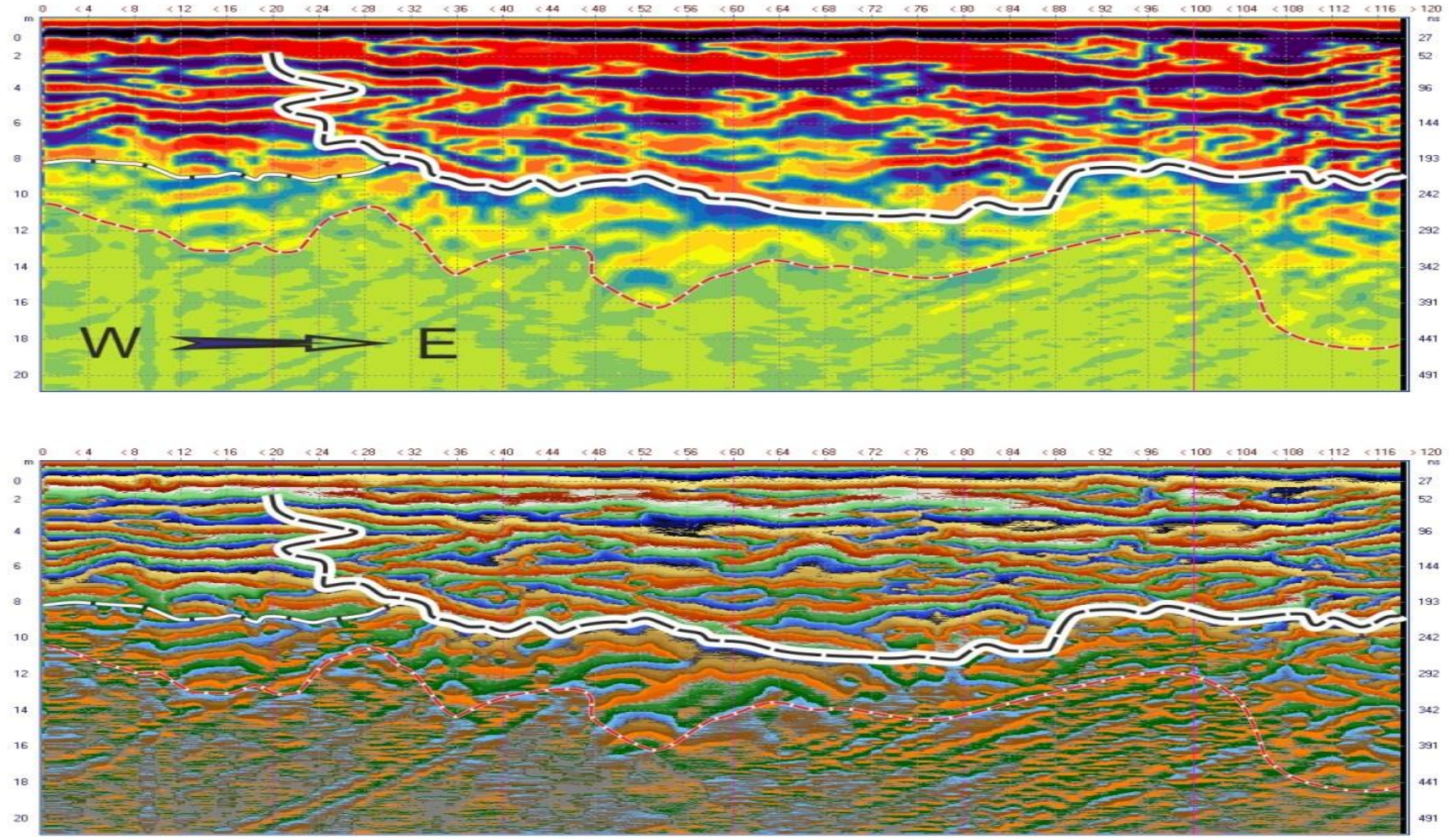


Fig. 14. Profile 6 Georadar cross-section

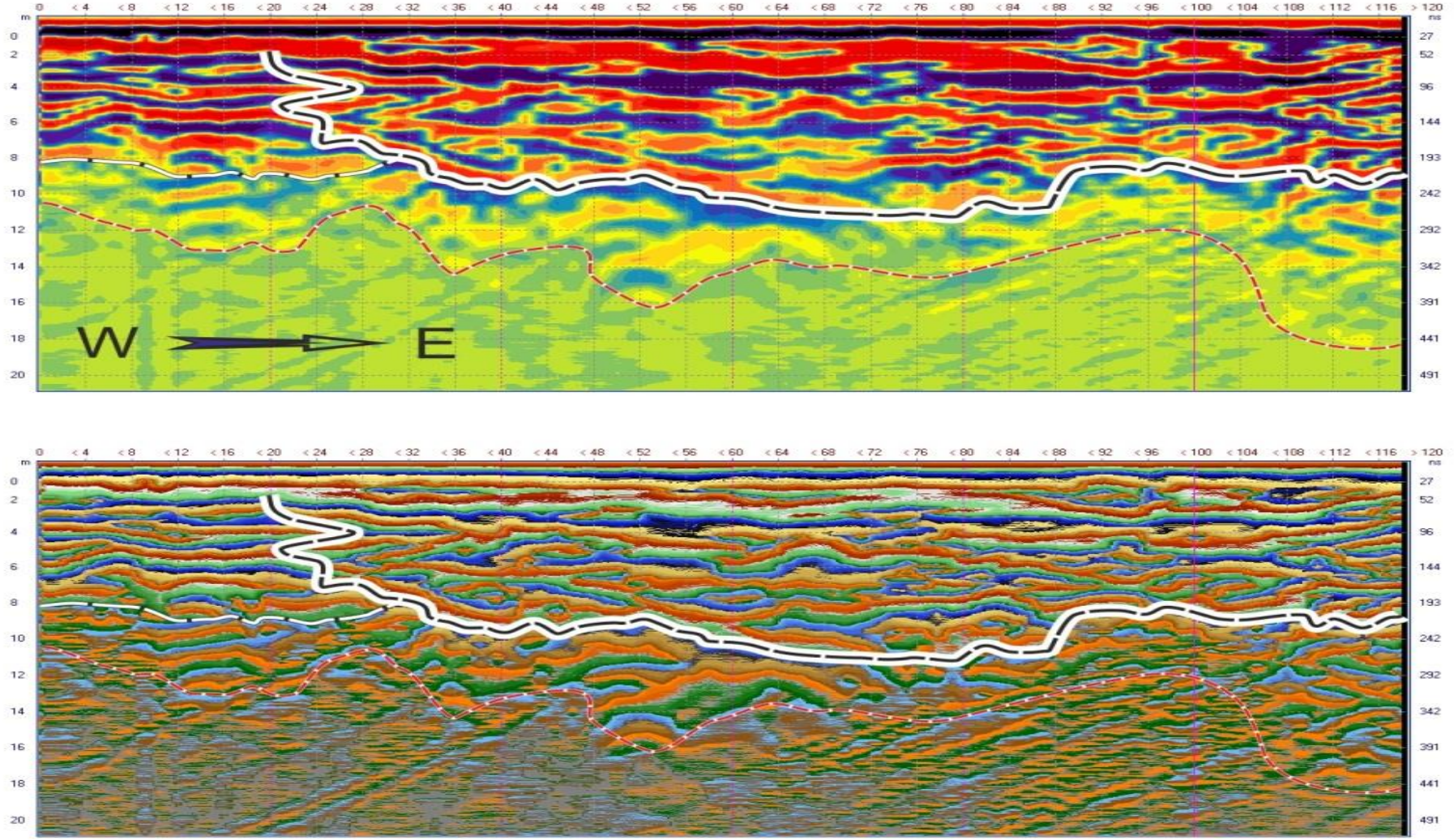


Fig. 15. Profile 7 **Georadar cross-section**

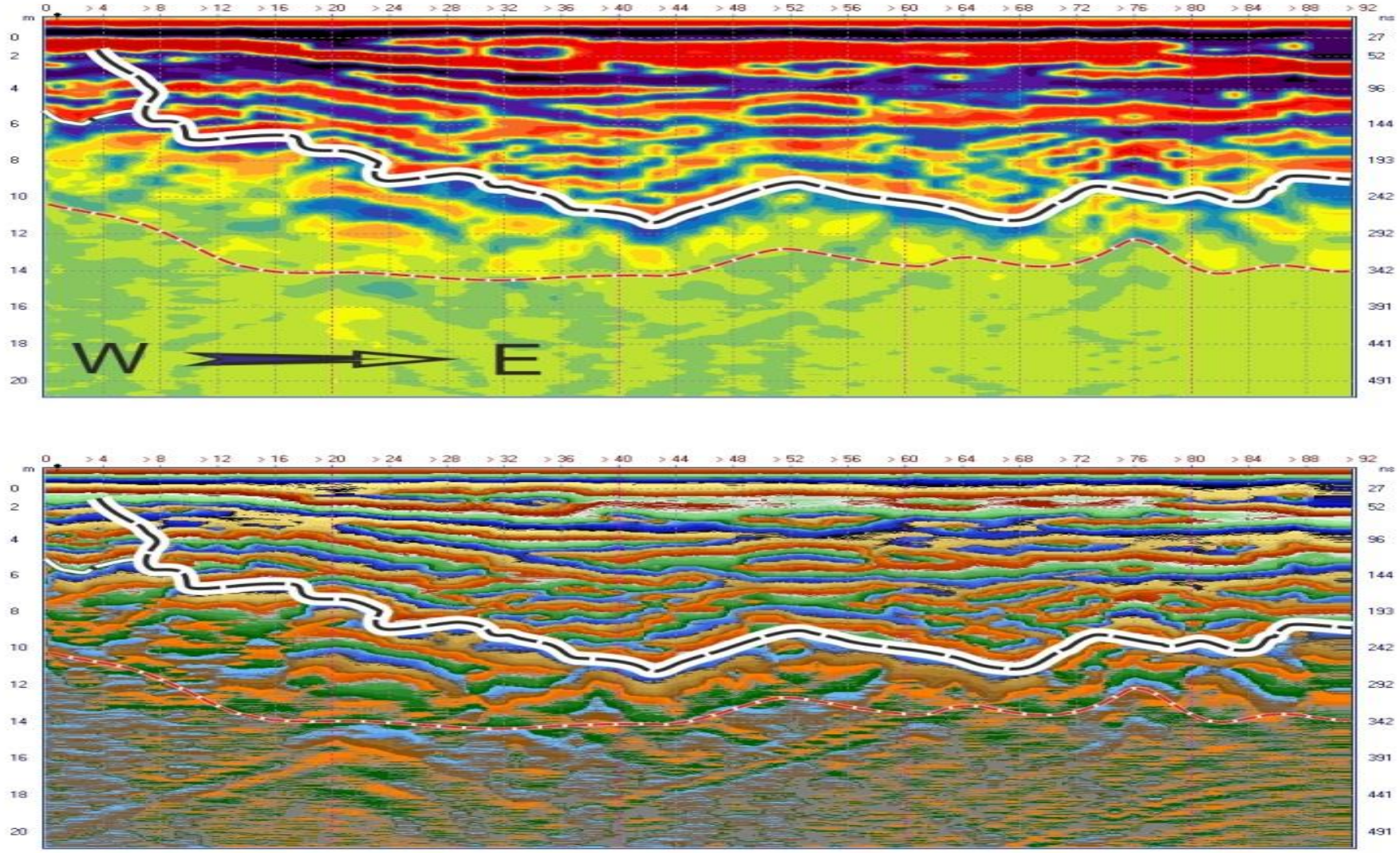


Fig. 16. Profile 8 **Georadar cross-section**

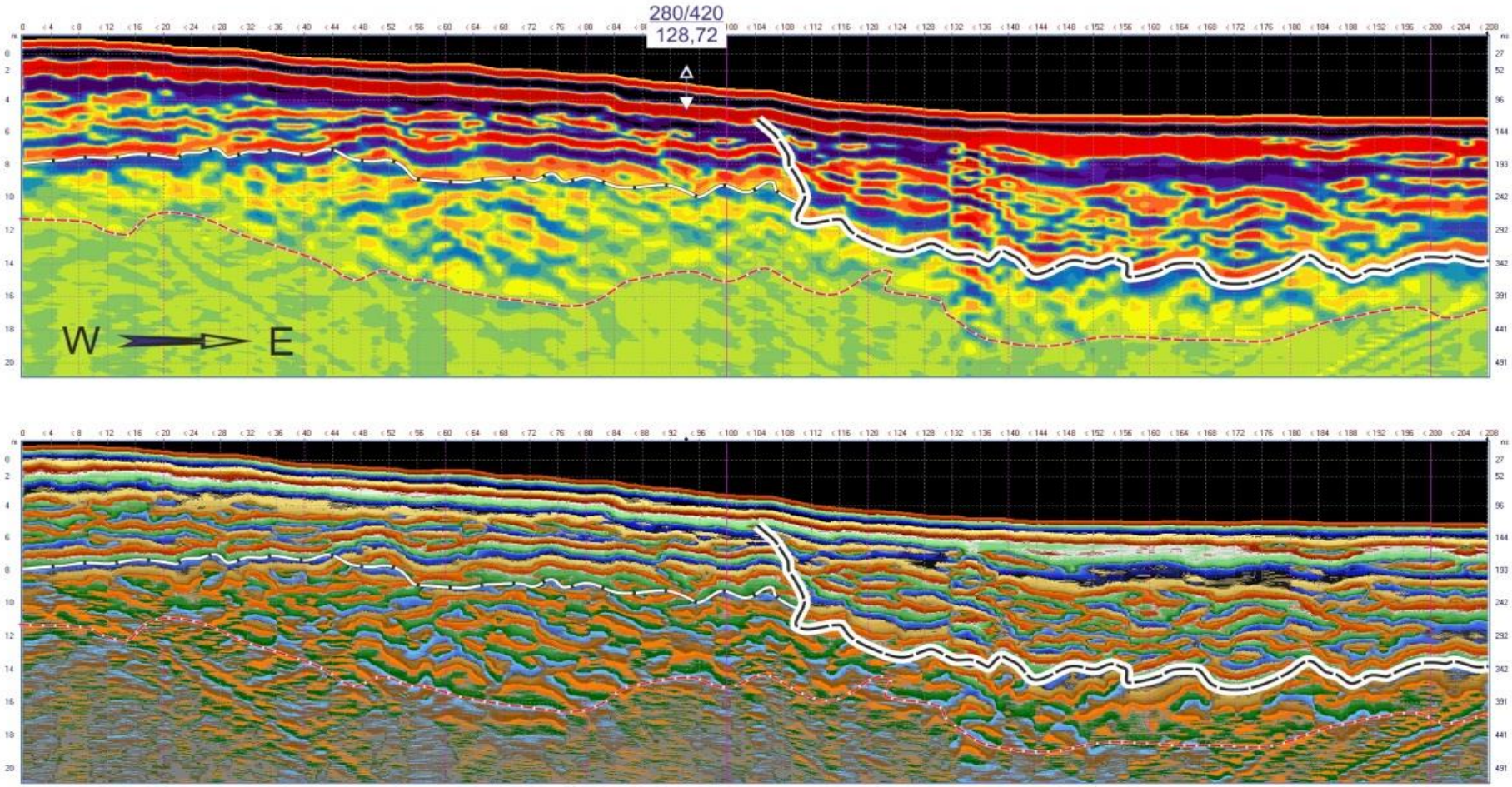
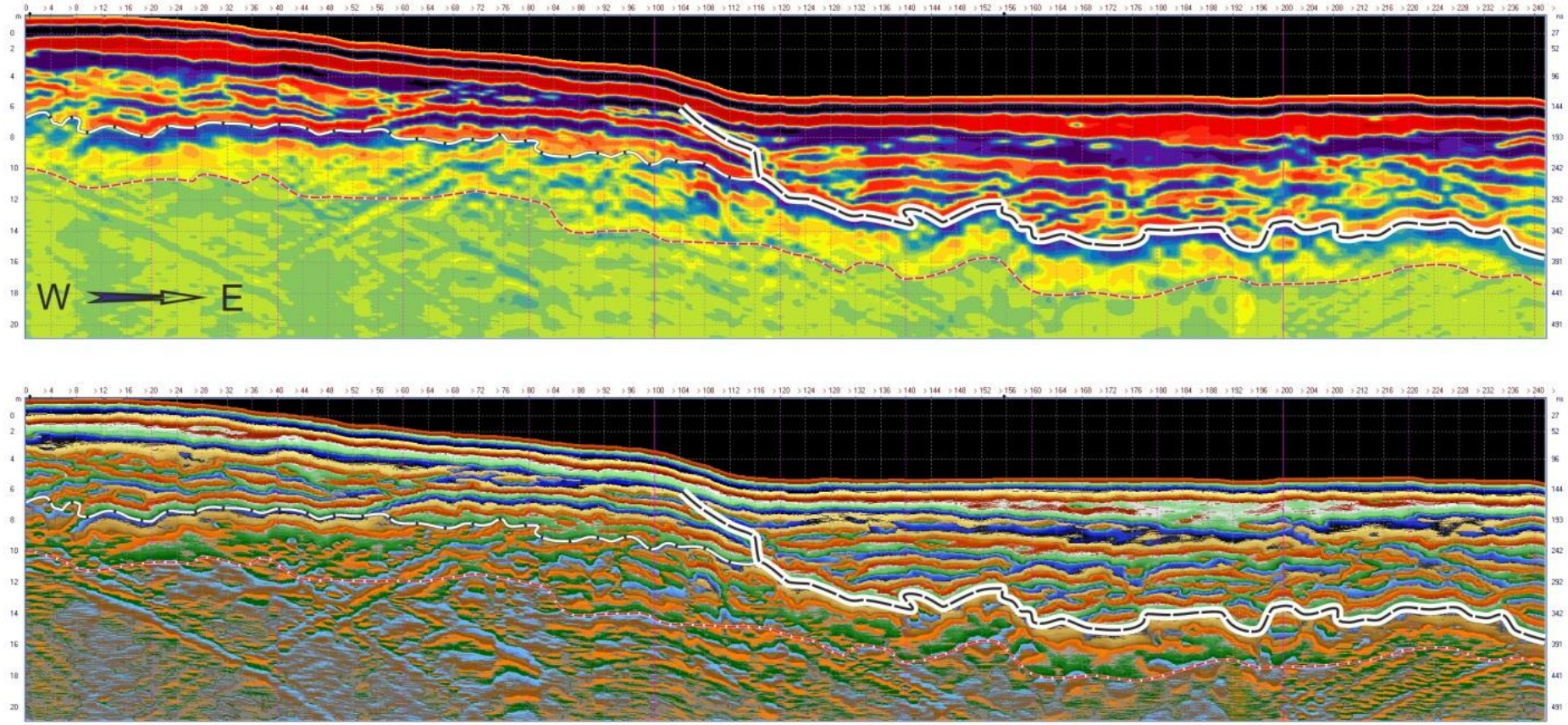


Fig. 17. Profile 9 **Georadar cross-section**



Surface elevation of the crystalline bottom of the ancient river in the form of a rock streamlined by the riverbed is registered in the left half of the profile.

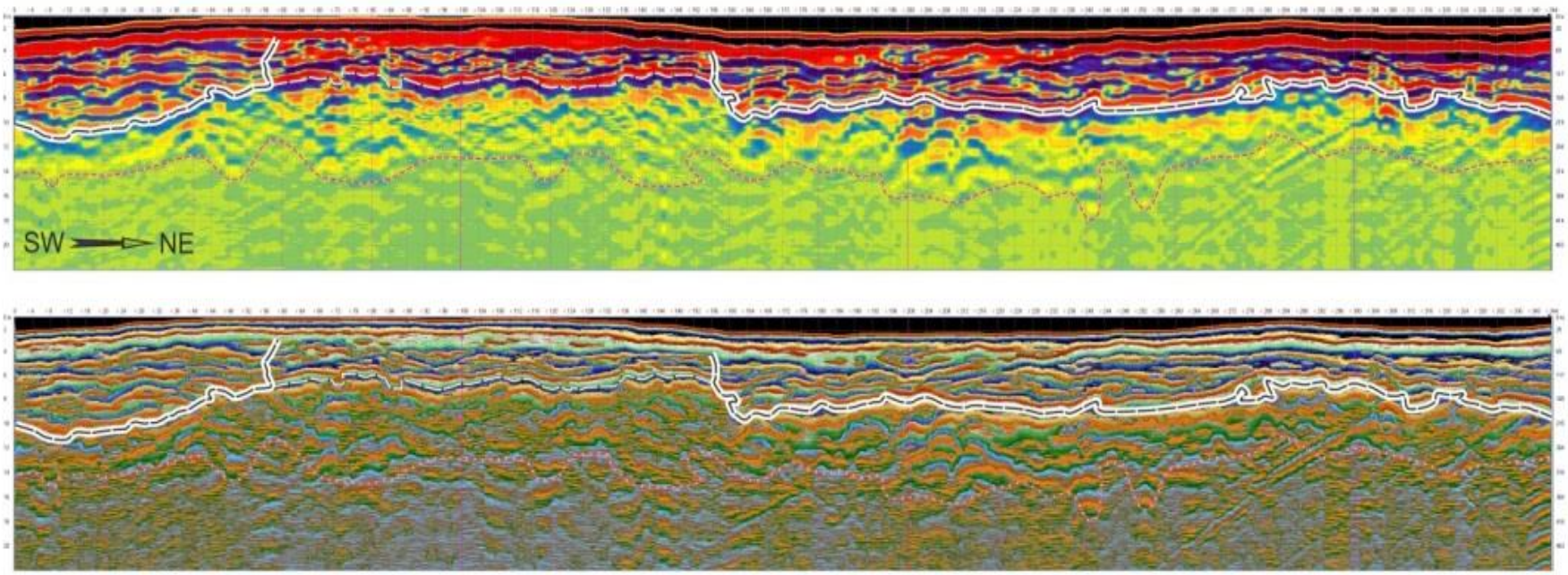
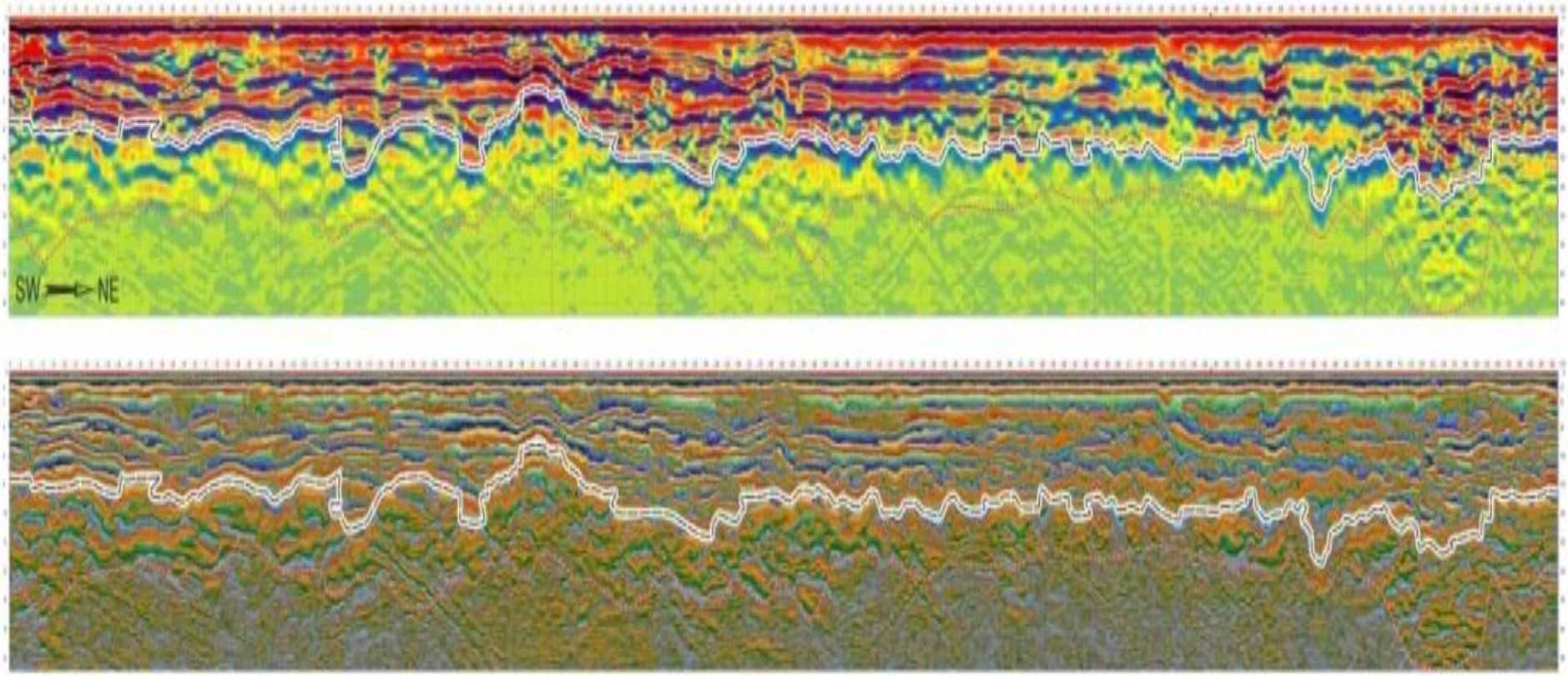


Fig. 18. Profile 15 **Georadar cross-section**

Fig. 19. Profile 16 **Georadar cross-section**



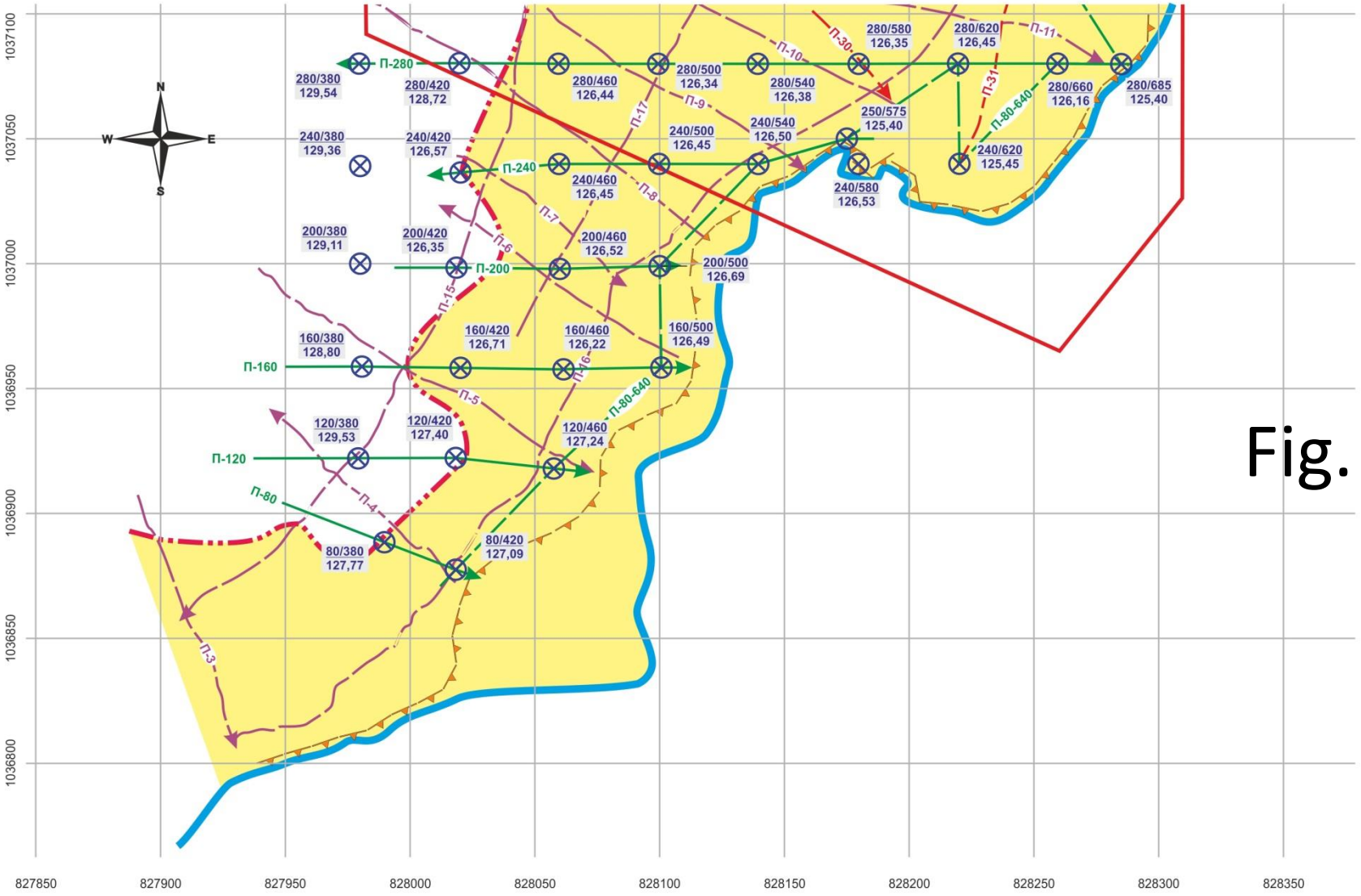


Fig. 20

Profile interpretation and leveling with each other enabled to construct a map of cumulated productive placer horizon extension.

Yellow color of the map corresponds to the bed of the ancient river made by alluvial deposits (main production horizon).

Bore holes were drilled with КШК-30 drilling devices.
Initial diameter of driving in clays (bore hole walls hold on) is 130 cm, final diameter of driving in sands, gravel and ballop is 119 cm .
Accuracy of estimation of depth of strata boundaries formation in section makes ± 3 cm .
In points of intense section water breakthrough drilling was made with casing. Diameter of casing rings was equal to 120 cm . Wall thickness – 5 mm. Ring height – 1m. Ring fixing was of screw type (6 M 20 bolts).

Drill rod lengths are given on the right in the table.

Strata boundaries were fixed by means of tape measure. If necessary, in-hole video camera was used.
Borehole logging was not performed.

Drill rod №	Drill rod length, m	Depth at the drill rod end, m
1	190	1.90
2	185	3.75
3	200	5.75
4	168	7.43
5	181	9.24
6	215	11.39
7	215	13.54
8	176	15.30
9	200	17.30

Hole driving was made with the help of KAMATSU PC 240 LC excavator. Bucket parameters are 110 x 80 cm .

Mine (excavator holes and boreholes) reclamation was made with the help of small sized buldoser.

After drilling, section registration and sampling, the worked out cavity was back-filled with material in reverse way: Ballop → gravel → sand → clays → topsoil

Taking into account that the estimated placer size makes approximately 20,000 m2, the assumed network of exploration workings was brought to the maximum proximity of the 20 x 20 m network.

Exploration drilling was performed along the system of profiles spaced from each other at the distance of 25-50 m. Distance between the workings in the profile made 10-40 m (Fig. 22).

Variations of distances between the profiles and workings in the profile are explained by actual geological environment created in the course of drilling.
In total 15 profiles were driven (from prof. 0 on the north-east to prof. 14 on the south-west).

LAYOUT OF RELATIVE POSITION
of mine workings

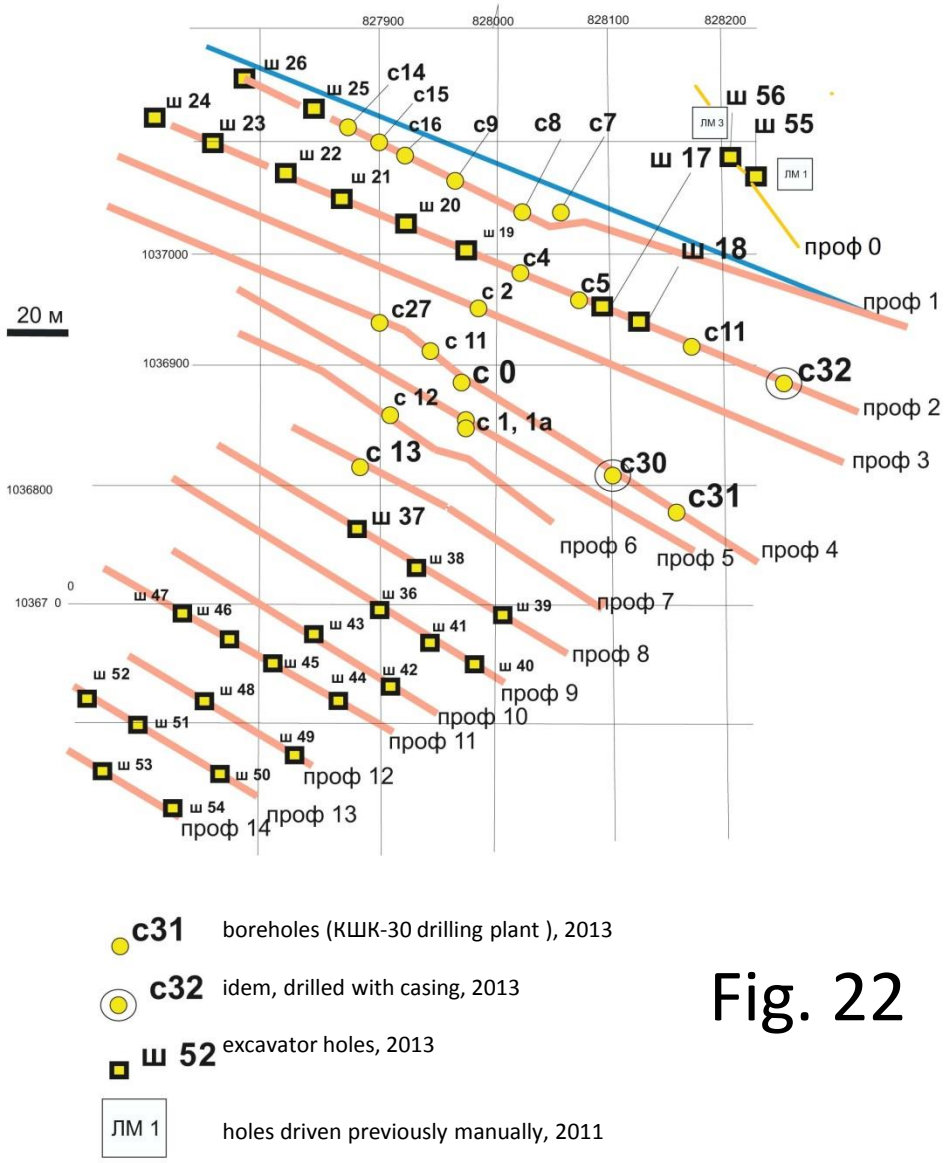


Fig. 22

Since the exploration area is pressed with its north-eastern flank to the license site previously evaluated by UA Mining Ltd and the placer is localized in one and the same paleovalley, the exploration was focused on the less investigated western flank of the ancient river valley and its buried terrace above the flood-plain.

All the previously drilled 15 holes are concentrated mainly in the riverbed part of the valley. The provided sufficient data both in terms of peculiarities of geological structure, and in terms of the parameters of the placer localized therein.

Schematic geological cross-section along the profile 1
Strip log correlation

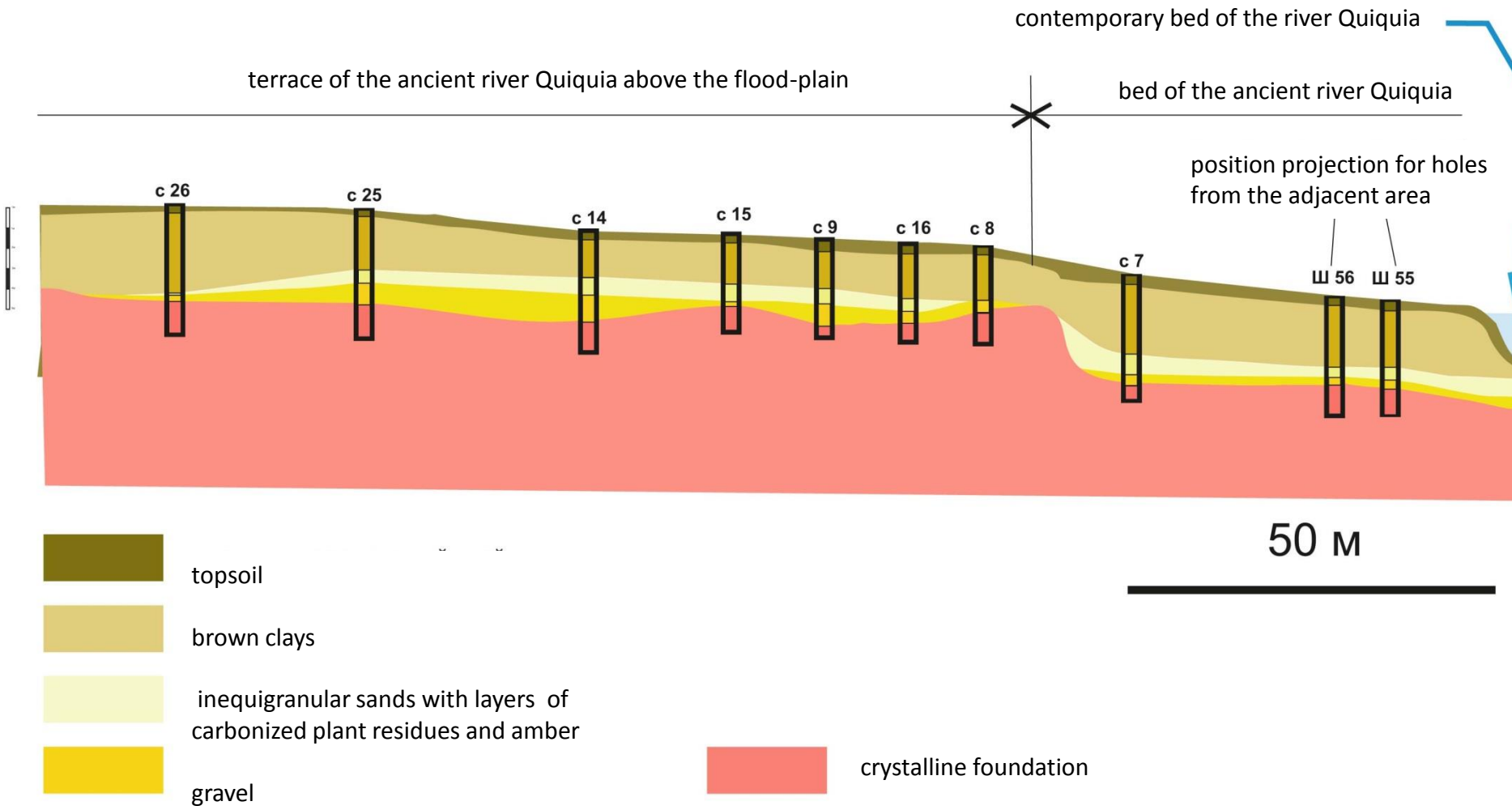


Fig. 23

Schematic geological cross-section along the profile 2
Strip log correlation

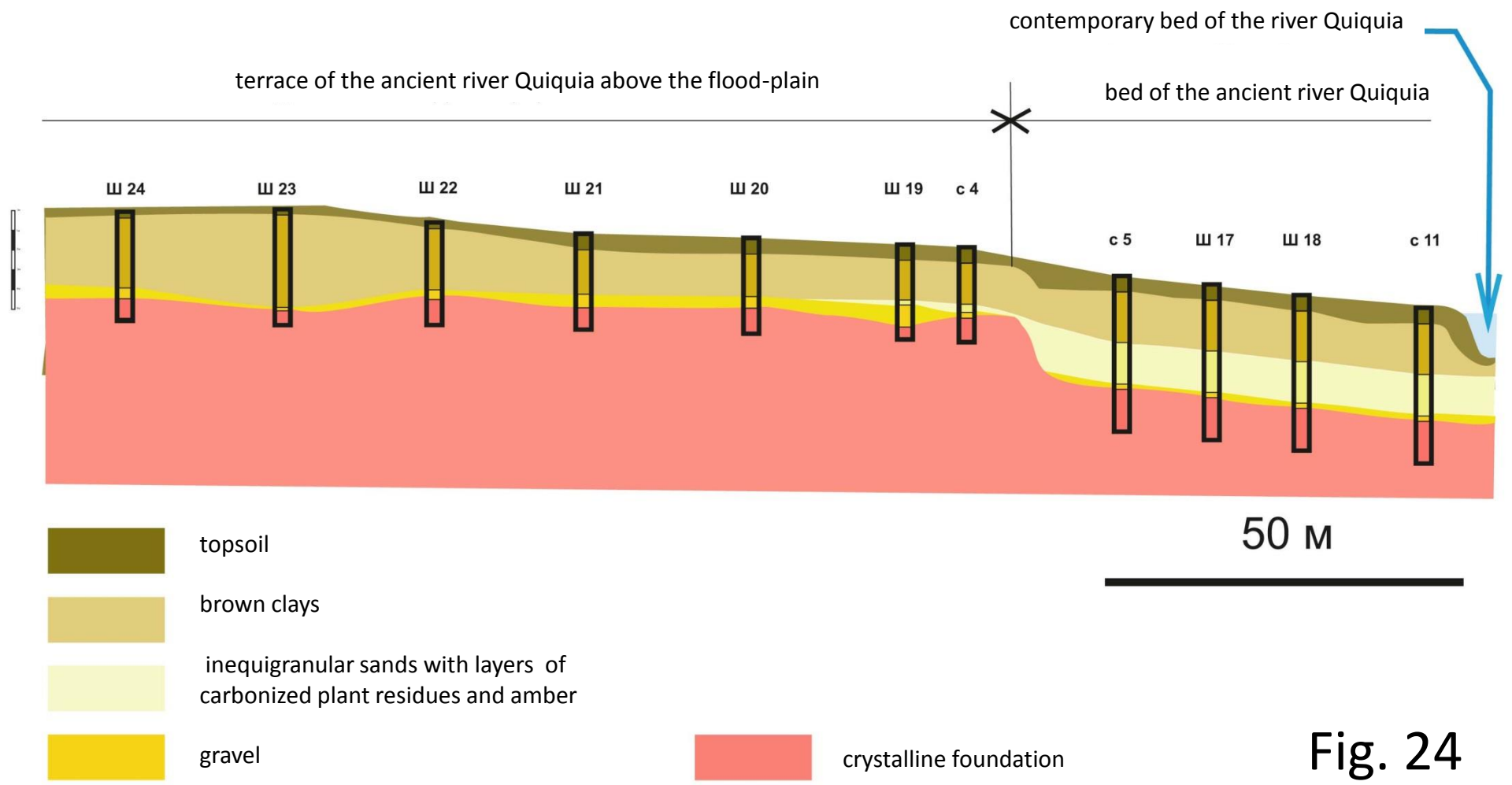


Fig. 24

Sampling was made by conventional methods with regard to the specific mining and geological conditions of the area (for example, it was impossible to test the holes by envelope method as due to abundant water inflow sands overlaying gravel sloughed down immediately, preventing to select clean samples of this or that layer.

In this situation **excavator holes** were tested on the material pulled out by the excavator bucket from each drilling run (25-30 cm). A group sample was selected for washing out from each of the three main layers –overlaying sands, gravel and ballop. The entire pulled out material was washed out. It was impossible to obtain a clean sample because of strong water inflow (drift sand, working wall caving), therefore a mixture of the basic layer material and upper horizon material was tested.

In order to evaluate the degree of a sample dilution, percentage ratio of material of various parts of a section in the washed out sample was determined.

Basic testing of **trenches** (when section is uncovered to the bedrock) was carried out as follows:

- Samples were collected by channels along the lower (with regard to the ancient river stream) edge of the trench;
- Section size in the channels: length – 1m, depth – 0.25-0.5 m, height – 0.2 m. Volume amounted to 0.1 m^3 (5 meter boxes).

Boreholes were tested with the help of material pulled out in the hoist bucket in the process of each drilling run (0.2-0.3 m). Then the sample was grouped in accordance with belonging of material to this or that part of the section.

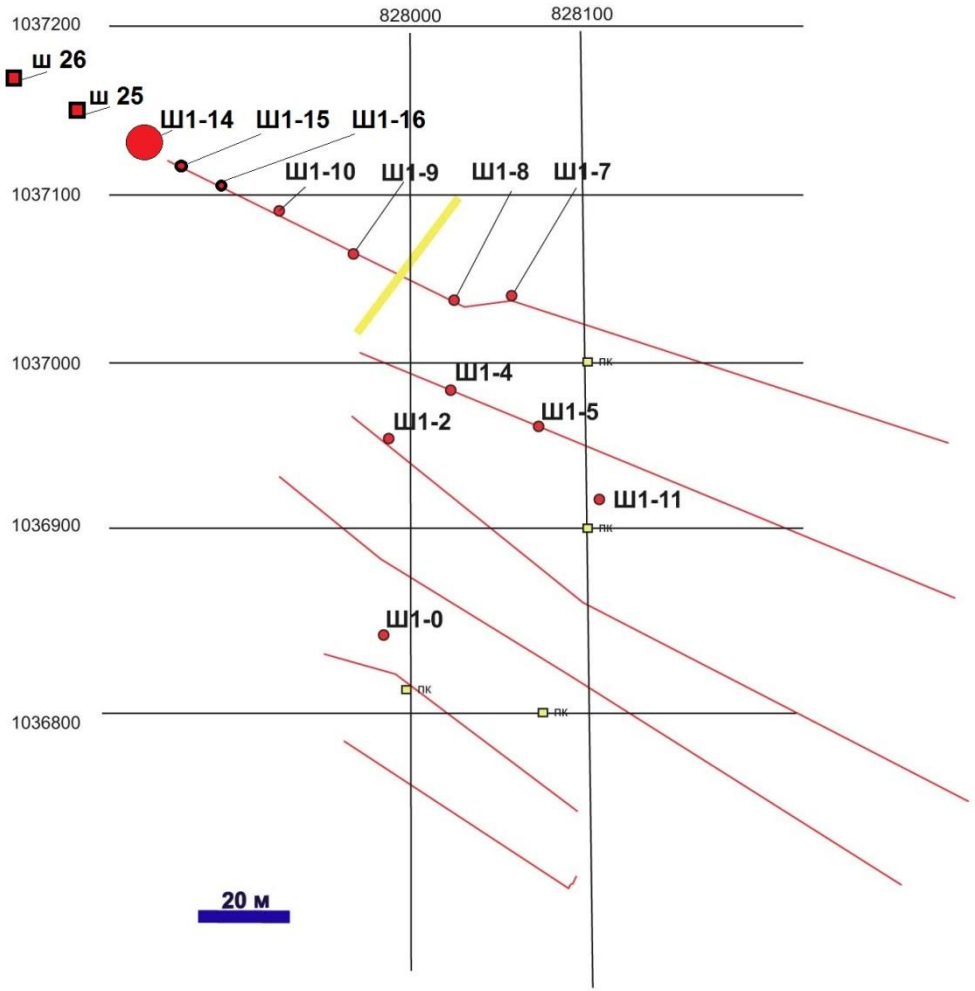
Results of documentation of drillholes and excavator holes

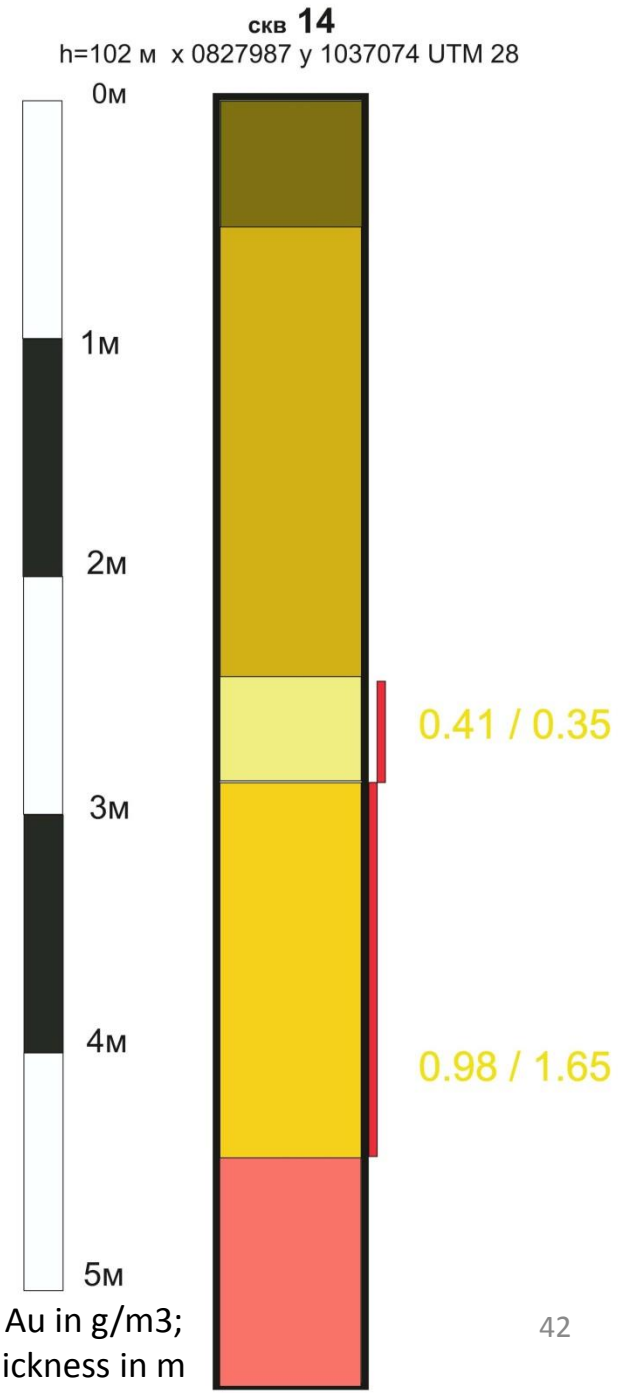
A detailed description of stripped geological section and sample data on productive layer material was made for each of the drilled boreholes or excavator hole. An example of such description is given below.
In the final report all the descriptions of excavator holes and boreholes are summarized in the appropriate appendix.

Drillhole № c14 (Shankhay area)

is located in the profile № 1 between the hole 25 and the borehole 15.
Height 102 m.
Coordinates: x 0827987 y 1037074 (UTM 28)

Diagram of relative location of drillhole №14 and its geologic column



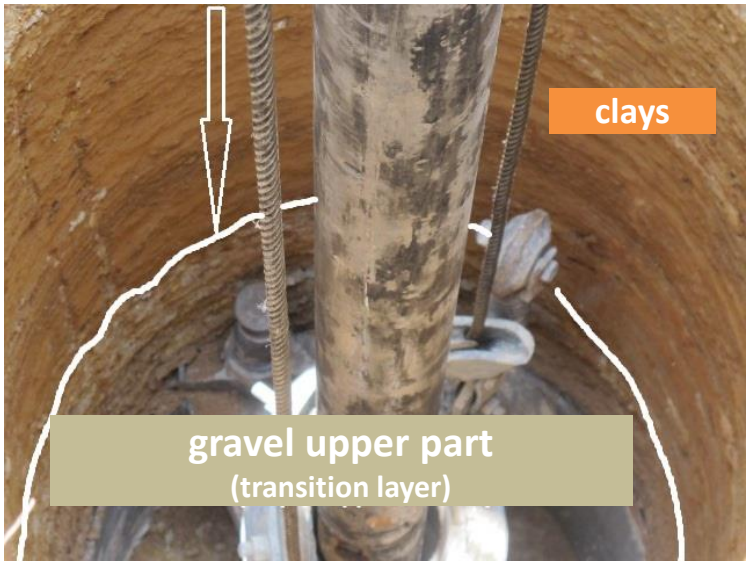


Numerator is content of Au in g/m3;
Denominator is strata thickness in m

Drillhole № 14 (geological section)

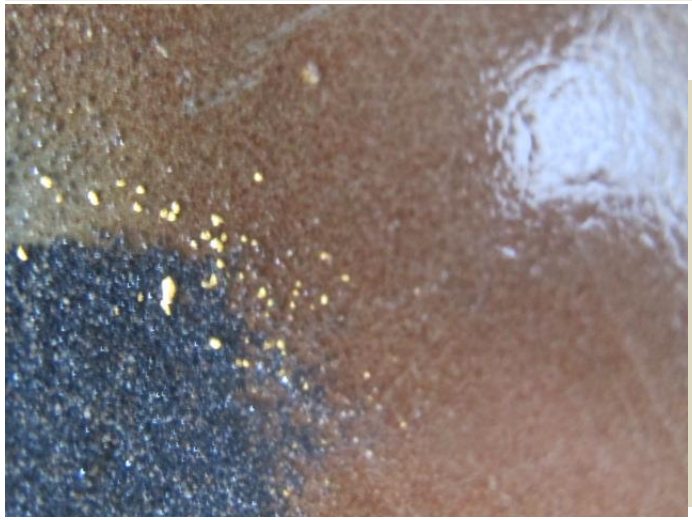
	Description of rocks in section	from	up to	Stratum thickness, m	Aurum content g/m3
1	Topsoil	0	0.5	0.5	
2	Brown, yellow-brown clays with inclusions of dense calcareous flints and brick-red spots of ferrous iron	0.5	2.5	2.0	
3	Sands of various grain size , coarse-grained, brown, grey, quartz clayish with kaolinitic, kaolinite-montmorillonite cement. Transitional to gravel layer. Transition is not sharp. Contact is with pockets and traces of the riverbed erosion.	2.5	2.85	0.35	0.41
4	Middle and large-grained gravel with tophaceous quartz particles (up to 1-3 cm), opalescent and grey quartz pebbles, granitoids and weathered basic rocks (with kaolinitic, kaolinite-montmorillonite cement). In the lower part it is dressed with grail and pebble. Contact with the lower layer is sharp, clear, uneven, repeating configuration of the ancient riverbed surface.	2.85	4.5	1.65	0.98
5	Ballop (granitoid weathering mantle is hydromicaceous and argillous. It differs from the previous layer by absence of gravel and sand material. Quartz fractions resulted from the granitoids of migmatite leicosomes and cross spurs retained after quartz weathering). All elements of textured heterogeneity of initial granitoids are retained	4.5	4.8	0.3	
6	Granitoids weathered to various degree (crushed stony zone of weathering mantle)	4.8	4.85	0.05	

Drillhole №14. Sections of upper part of the borehole shaft. Layer contacts. Samples of crystalline rocks in the face

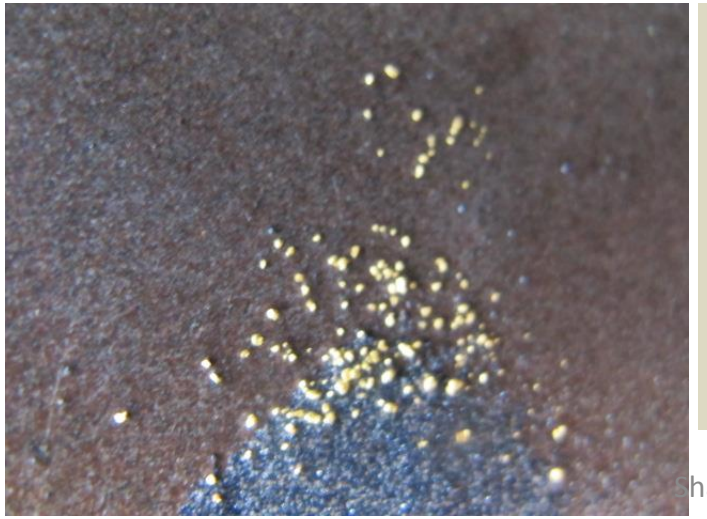


Ballop is a migmatite weathering mantle

Drillhole № 14. Test washing out of productive strata material



Upper coarse-grained (semi-gravel). Photo of washing-out results of 4 washbowls of material.
In total 8 washbowls were washed out. Weight of gold cumulative mono-fraction from all the washbowls amounted to 0.16 g.
(0.05g x 65washbowls/8 washbowls)
Estimated average content of gold is **0.41** g/m3.

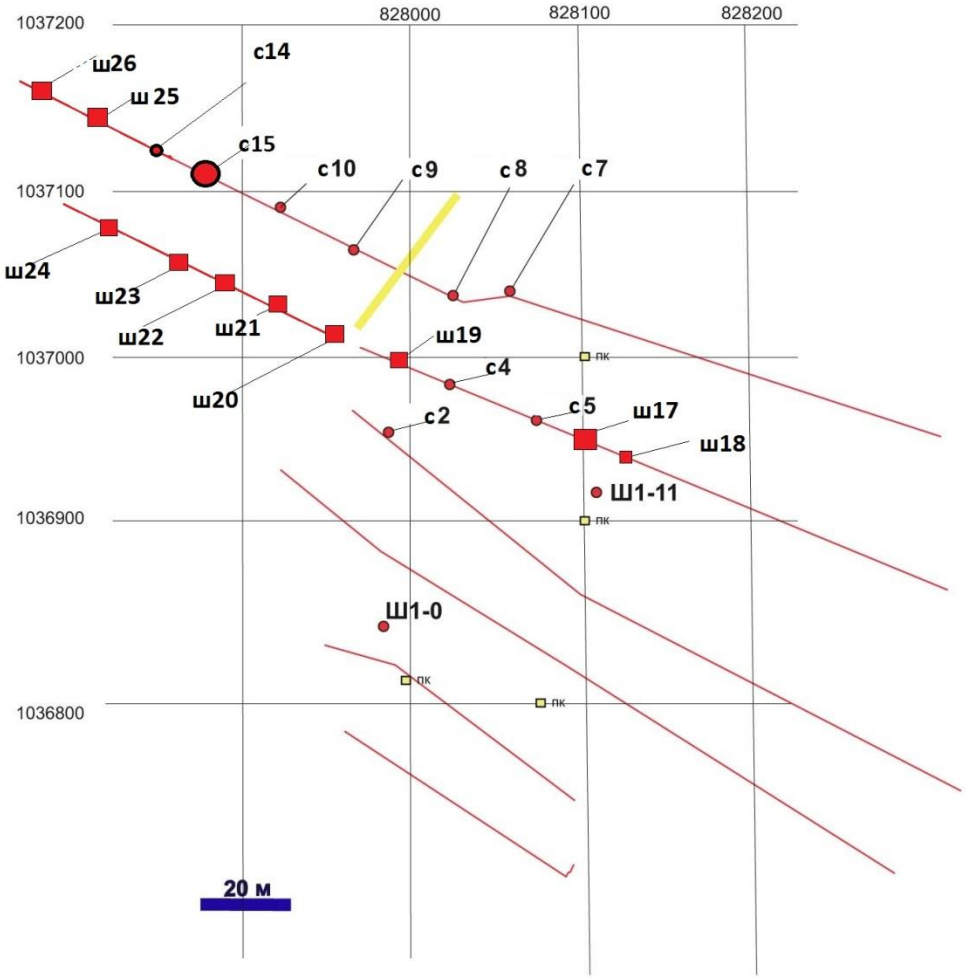


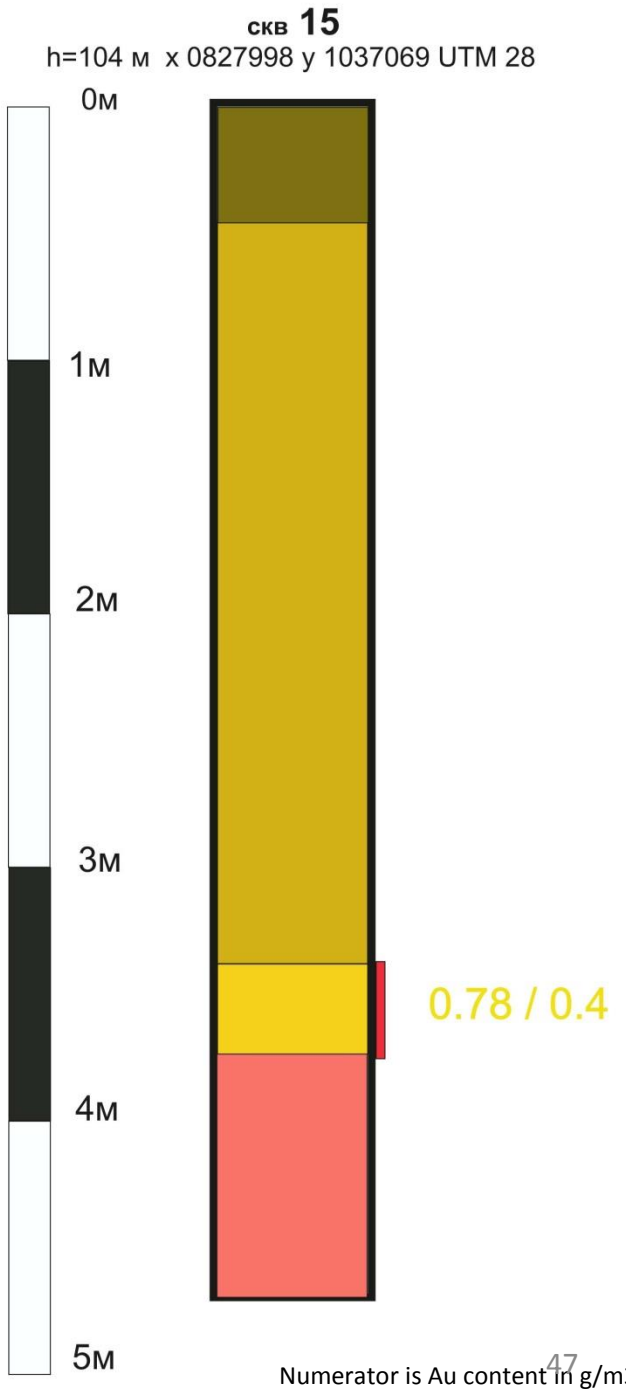
Gravel. Photo of washing-out results of 2 washbowls of material.
In total 12 washbowls of gravel technological mixture (75-80%) and ballop (15-20%) were washed out . Weight of gold mono-fraction was 0.18 r. (0.18r x 65 washbowls /12 washbowls)
Estimated average content of gold is **0.975** g/m3.

Drillhole № 15
(Shankhay area 1)

is located in the profile № 1 between holes 14 and 9.
Height is 104 m.
Coordinates: x 0827998 y 1037069 (UTM 28)

Diagram of relative location of drillhole №15 and its strip log





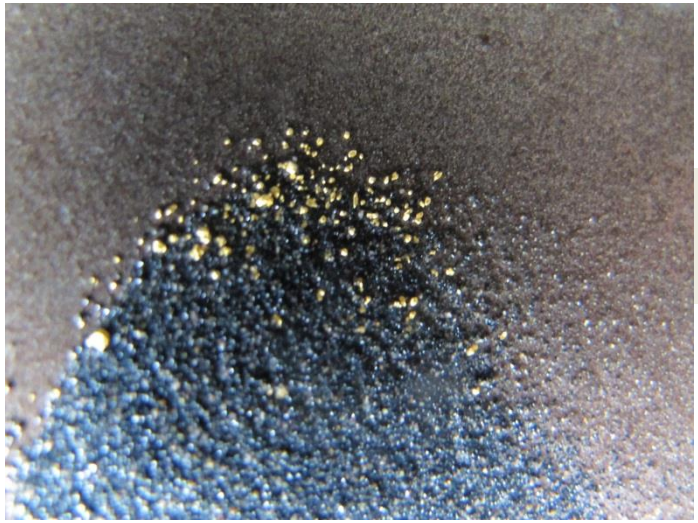
Shankhay area. Drill exploration mining report, 2013

Numerator is Au content in g/m3;
Denominator is strata thickness, m

Drillhole № 15 (geological section)

	Description of rocks in section	from	up to	Strata thickness, m	Aurum content, g/m3
1	Topsoil	0	0.4	0.4	
2	Brown, yellow-brown clays with inclusions of dense calcareous flints and brick-red spots of ferrous iron	0.4	3.45	3.05	
4	Middle and large-grained gravel with tophaceous quartz particles (up to 1-3 cm), opalescent and grey quartz pebbles, granitoids and weathered basic rocks (with kaolinitic, kaolinite-montmorillonite cement). In the lower part it is dressed with grail and pebble. Contact with the lower layer is sharp, clear, uneven, repeating configuration of the ancient riverbed surface. There is outwashed ballop 0.2 m thick in the lower part among the gravel deposits	3.45	3.85	0.40	0.78
5	Ballop (granitoid weathering mantle is hydromicaceous and argillous. It differs from the previous layer by absence of gravel and sand material. Quartz fractions resulted from the granitoids of migmatite leicosomes and cross spurs retained after quartz weathering). All elements of textured heterogeneity of initial granitoids are retained (see photo).	3.85	4.0	0.15	

Drillhole № 15. Test washing-out of productive strata material



Coarse-grained gravel. Photo of washing-out results of 2 washbowls of material

Gravel bottoms mixed with a small quantity (up to 30%) of ballop. Photo of washing-out results of 2 washbowls of material.

Drillhole № 15 .Test washing out of productive strata material

Coarse-grained gravel грубозернистый. Photo of washing-out results of 6 washbowls of material.

In total 16 washbowls were washed out. Weight of gold cumulative mono-fraction from all the washbowls amounted to 0.16 g. 15/1 and 15/2 together

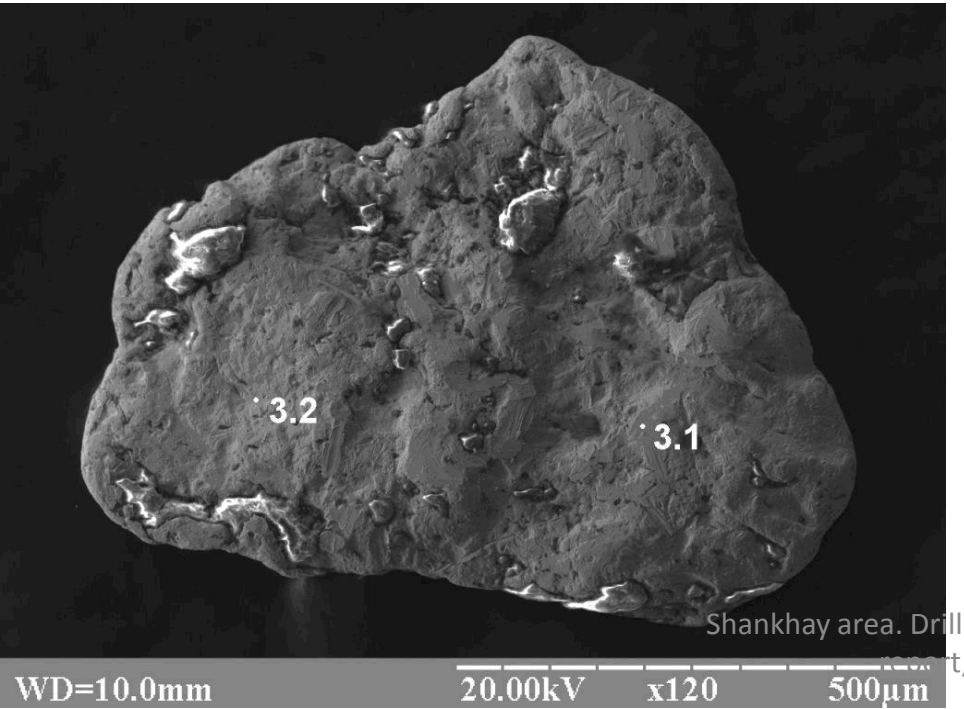
Estimated average content of gold is 0.65 g/m3.

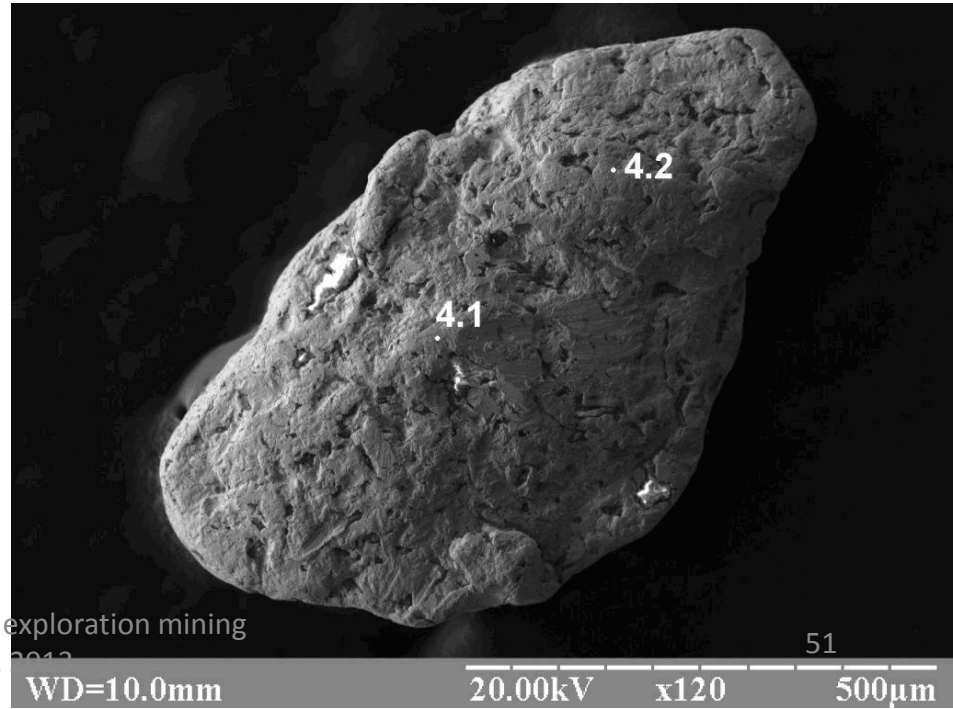
With regard to the cumulative factor 0.2 (flotation losses fro ultra-fine and flat gold, stripping losses; swell and bouldery factor) – 0.78 g/m3

Assay results

In 2011 analytical laboratory of Ukrainian State Geological Research Institute (analyst A.A. Andreev) performed quantitative X-ray spectral microprobe assay of gold mono-fraction samples from the profile located at the utmost north-eastern boundary of the area (LM1 hole, data of UA Mining Ltd).

Electron microscope image with marked points of analysis				
Gold grain No.	Points of analysis	Fe	Au	Amount
3	**3.1**	0.21	**98.79**	99.00
	3.2	0.00	**99.00**	99.00
4	**4.1**	0.00	**99.00**	99.00
	4.2	0.00	**99.00**	99.00





Thus, at Shankhay area as a result of comprehensive geological and geophysical investigations within the licensed site availability of 2 potential types of production facilities were determined, differing by the main features of geological structure of the ancient river valley section, quality of productive seams, resource potential and other characteristics.

These are the riverbed part of the ancient river with the formed channel alluvium (1) and the buried terrace above the flood-plain (2) structurally located above the former by 1-1.5m (Fig. 23 and 24).

This essentially influences the reduction of overburden thickness at the objects of the second type and the necessity to take this peculiarity into regard while planning gold quarrying.

The first type is a buries channel alluvium of the ancient river Quiquia valley localized within the valley which is well-defined in terms of paleontology and geomorphology. The contemporary river is developing inheritably from the ancient river, often with large spatial displacement (up to 80-100 m and more).

It is characterized by the increased (up to 2-3 g/m^3 and more) content of gold, having exceptionally high fineness (about 98-99 %) and considerable fluctuations of thickness of the main productive horizon (gravel), ranging from complete depositional termination (LM8 openpit) in 0.05-0.15 m (northern and southern LM2 openpit walls, respectively) to more than 1.5 m (LM3 openpit , 8a; eastern part of trench №1). Average gravel thickness makes 0.4 m.

The second type is represented by terrace deposits of the ancient river Quiquia.

A layer of overlaying grey sand (or its lower part adjacent to gravel) and re-deposited yellow-brown weathering mantles with nodules and flints of limonitized patches and spots characterized by small (0.1-0.8 g/m^3) and unstable Au content can be considered as an auxiliary source of productive material.

EXPLORATION AND FIELD OPERATION

Shankhay area. Western part.

The works are carried out in the utmost western part of the area by trenching method

Operation trenched are driven at the western flank of the area up to now.

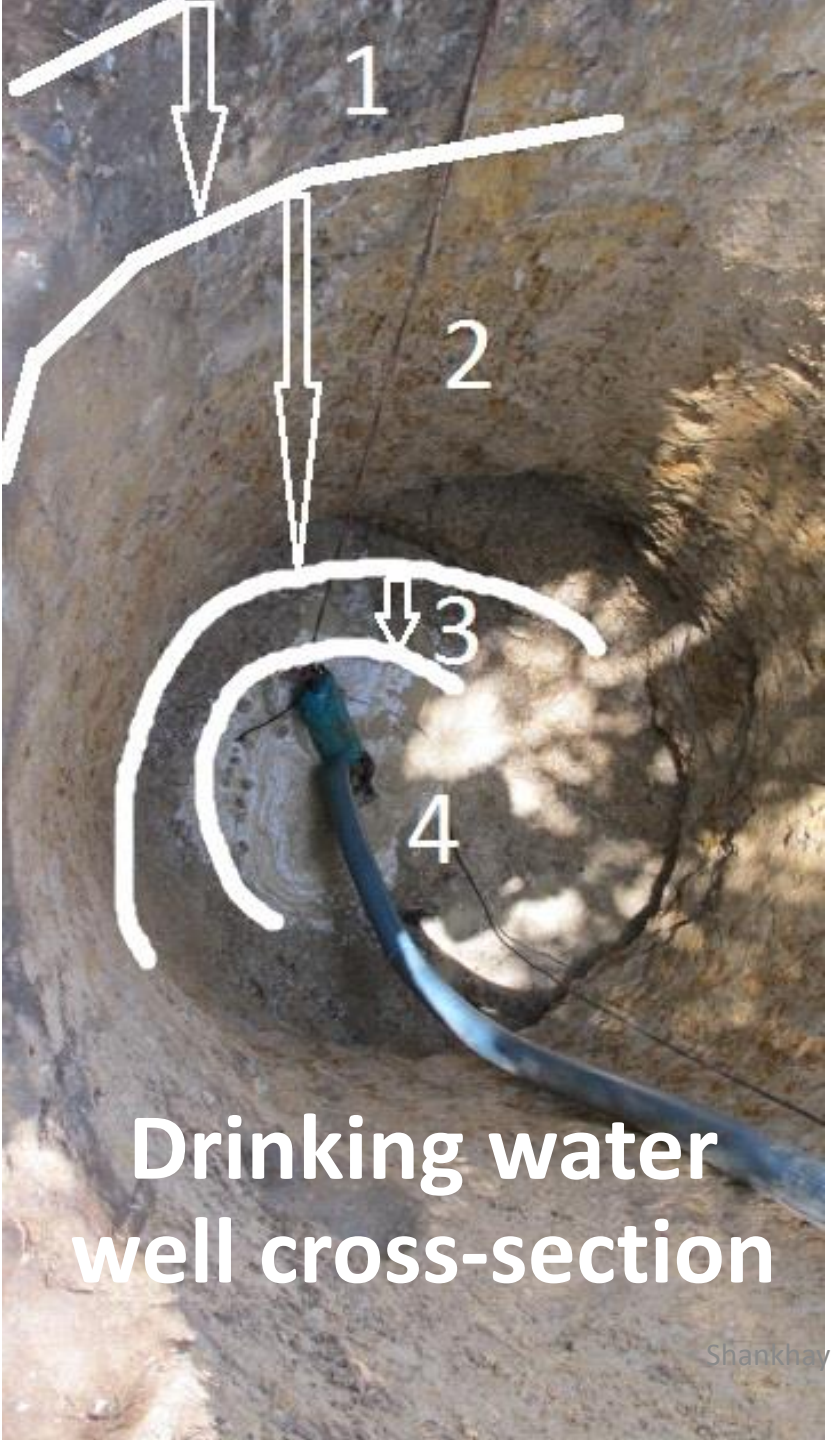
Typical section of the ancient river bed is stripped by trench №1:


0.5 м
3.0 м
Ballop surface

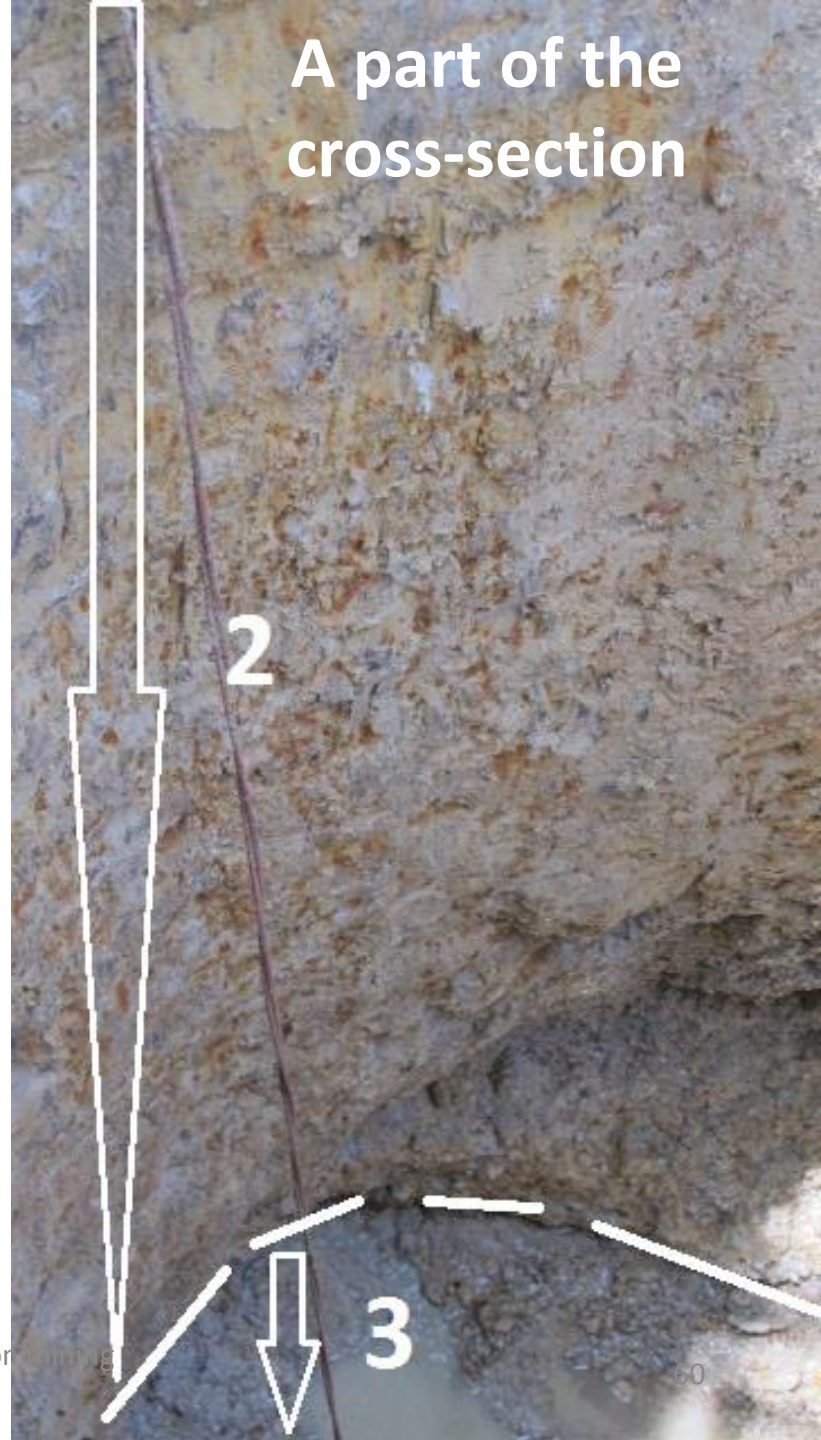
According to the data obtained for trench №1 the cumulated geological cross-section looks as follows:

№	Interval, m		Thickness, m	rocks
	от	до		
1	0.0	0.5	0.5	Topsoil
2	0.5	3.5	3.0	Dense brown clays with calcareous flints, oversanded to various degree downwards.
3	3.5	4.0	0.5	Grey sandy clays. Sandy fraction is inequigranular. Transition to the next layer is clear and sharp.
4	4.0	5.5	1.5	Grey argillaceous inequigranular sands, psammite and psephitic ones in the upper part and psammite in the lower part. They contain numerous carbonized plant debris, tree trunks, young and apparently not quite formed (lithified) amber
5	5.5	5.95	0.45	Gravel (coarse-grained, inequigranular kaolinite (argillaceous)- sandy-pebble deposits)
6	5.95	6.15	0.2	Ballop (structural, not re-deposited hydromicaceous-kaolinitic weathering mantle of granitoids)

In addition, in this part of the area a drinking water well was driven that enabled to obtain the following data:



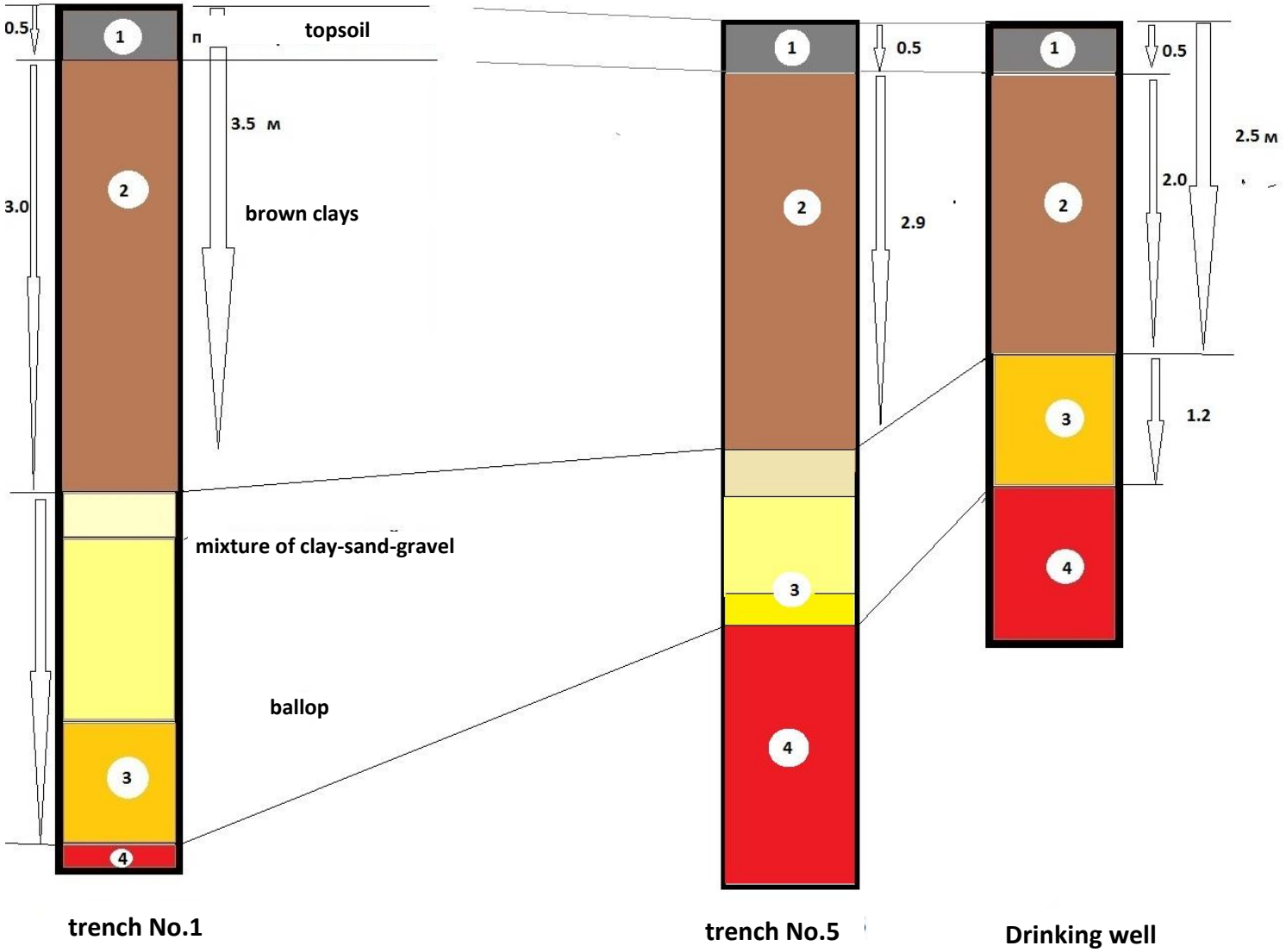
Drinking water well cross-section



A part of the cross-section

Shankhay area. Drill exploration [illegible] report, 2013

CORRELATION OF MINE WORKING CROSS-SECTIONS
western part of the area



Cross-Section of drinking water well

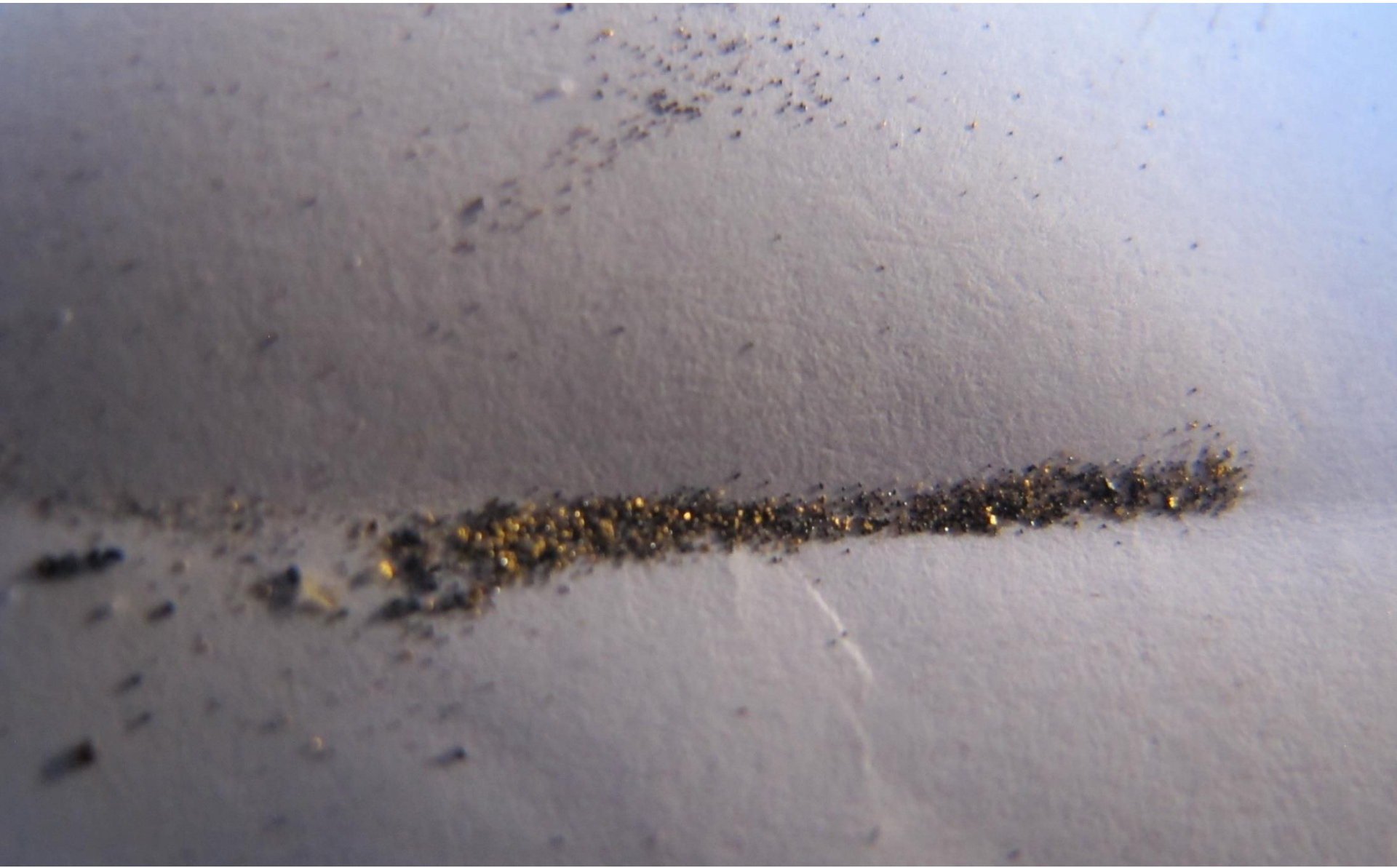
Stratum №	from	up to	Thickness, m	Rocks
1	0	0.45	0.45	Topsoil
2	0.45	2.5	2.05	Brown clays with dense calcareous flints, oversanded to various degree downwards..
3	2.5	3.7	1.2	Gravel (coarse-grained, inequigranular kaolinite (argillaceous)- sandy-pebble deposits)
4	3.7	3.9	0.2	Ballop (structural, not re-deposited hydromicaceous-kaolinitic weathering mantle of granitoids) 

Several test washouts of three main productive placer horizons (overlying sands, gravel, ballop) were carried out.

Image detail

Upper overlying sand (1 washbowl)

Gravity concentrate after washout of 2 washbowls of upper overlying sand



2nd part of the washed out gravel (of the same 10 washbowls)

Irregular content of aurum in the volume of one sample is clearly seen

1st part of the washed out gravel (volume of 10 washbowls) ↓

Overlying sand of 10 washbowls, first part of wash-out

Total weight of mono-fraction amounts to 0.08 g.

C_{Au}=**0.52** g/m³

Shankh

Calculation of aurum content

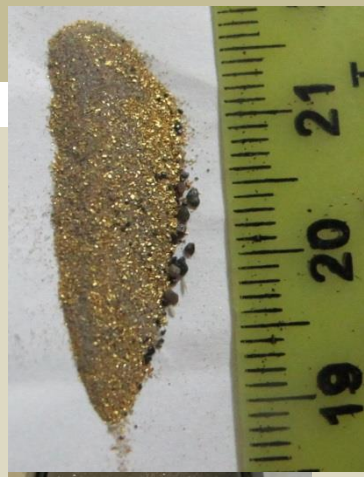
Productive layers were washed out in two steps and then the estimated indicators were summed up with averaging.

1part of washout of 10 gravel washbowls:

Au mono-fraction weight makes 0.48 g.

2 part of washout of the same 10 gravel washbowls:

Au mono-fraction weight makes 0.10 g.



Thus, total weight of Au mono-fraction in the washed-out gravel sample in the volume of 10 washbowls made 0.58 g. Average gold content in the sample (CAu) amounted to **3.77** g/m³

Associated raw material. “Black sands”

- Content of ilmenite-rutile concentrate (with associated rocks) was tested in the section of productive layers.
- Experience of investigation of the adjacent sites shows similar importance of possible presence of tantalite-columbite (ore for Ta, Nb) and cassiterite (ore for Sn)

A sample of black sand mono-fraction was collected from grey sands in one point of a trench from gravel (2) and overlaying sands (1) (ilmenite - 95%, rutile, tantalite-columbite (?), schorl, amphibole, cassiterite – totaling to – 5 %) to determine its quantity as correlated to 1 m^3 of inequigranular sands (see table below)

According to the estimated results of conventional ilmenite reserves (the site area being 40 000 m^2 x 3.5 m seam layer x 4 kg = 560 t), the site is of no independent industrial value as a facility with ilmenite being profile mineral (requirement for a small field – 0.3 mln t of rutile and 2 mln t of ilmenite). However, accompanying mining of such concentrates (containing Ta, Nb, Sn, in particular) will theoretically make mining more attractive.

Though, similar test trial shall be made in various parts of the placer while drill exploring it in order to exclude availability of industrial concentrations of any components of the "black sands" (ilmenite, rutile, alkaline amphibole, tourmaline, wolframite, cassiterite, tantalum niobate et al.).

This will enable accompanying mining of these commercial products, if necessary (with considerable concentrations of such minerals and understanding which of them and in what quantity/quality are present in the section).

Table 3. Results of wash-out of overlying sand and gravel sample from trench №1

Sample №	Description of section part	Volume of the washed out material, quantity of washbowls	Weight of conventional ilmenite mono-fraction, g	Content of conventional ilmenite, kg/m³
Ш2/3	Grey overlaying inequigranular sands	10 (15.4% of m^3)	890	5.79
Ш2/1	Gravel	10 (15.4% of m^3)	4 000	26

Associated raw material. Amber.

Amber is present in the form of samples of various colors: bright apricot, yellow, opalescent and transparent gray and white, brown.

Openpit LM 2

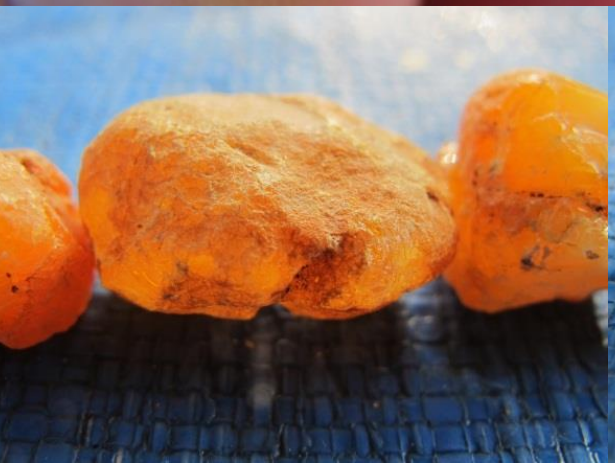
Openpit LM15

Amber detected in the layer of carbonized sands requires laboratory investigation in the city of Rivne ("Ukrburshtyn") which can result in separating it into an individual commercial Project (in case of amber high quality).

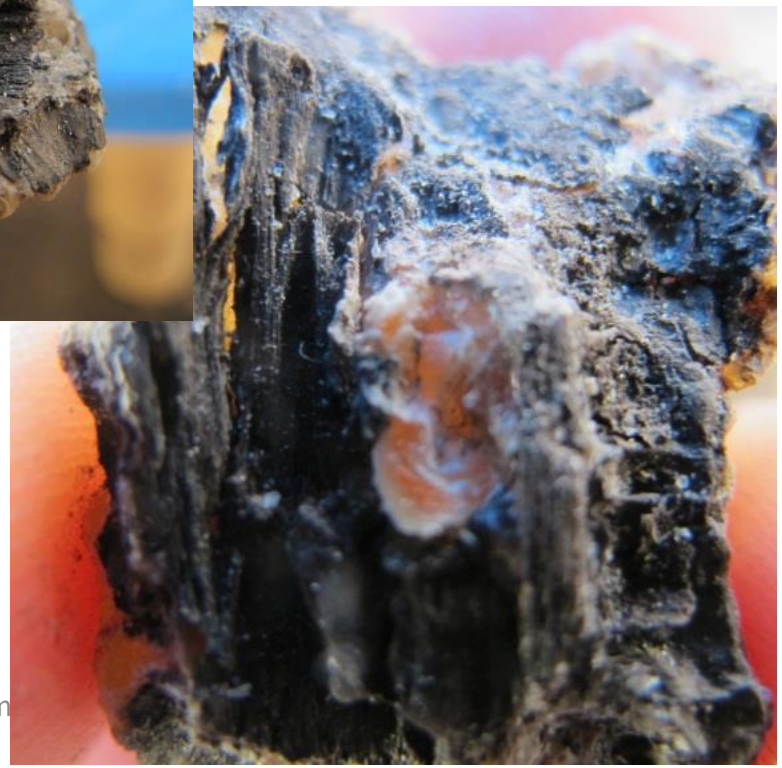
In this case two options can be theoretically considered :

1. Accompanying mining of amber during gold-bearing placer production
2. Purchase and sale of amber

Variety of amber from different Openpits



Forming amber phases on the fossil wood

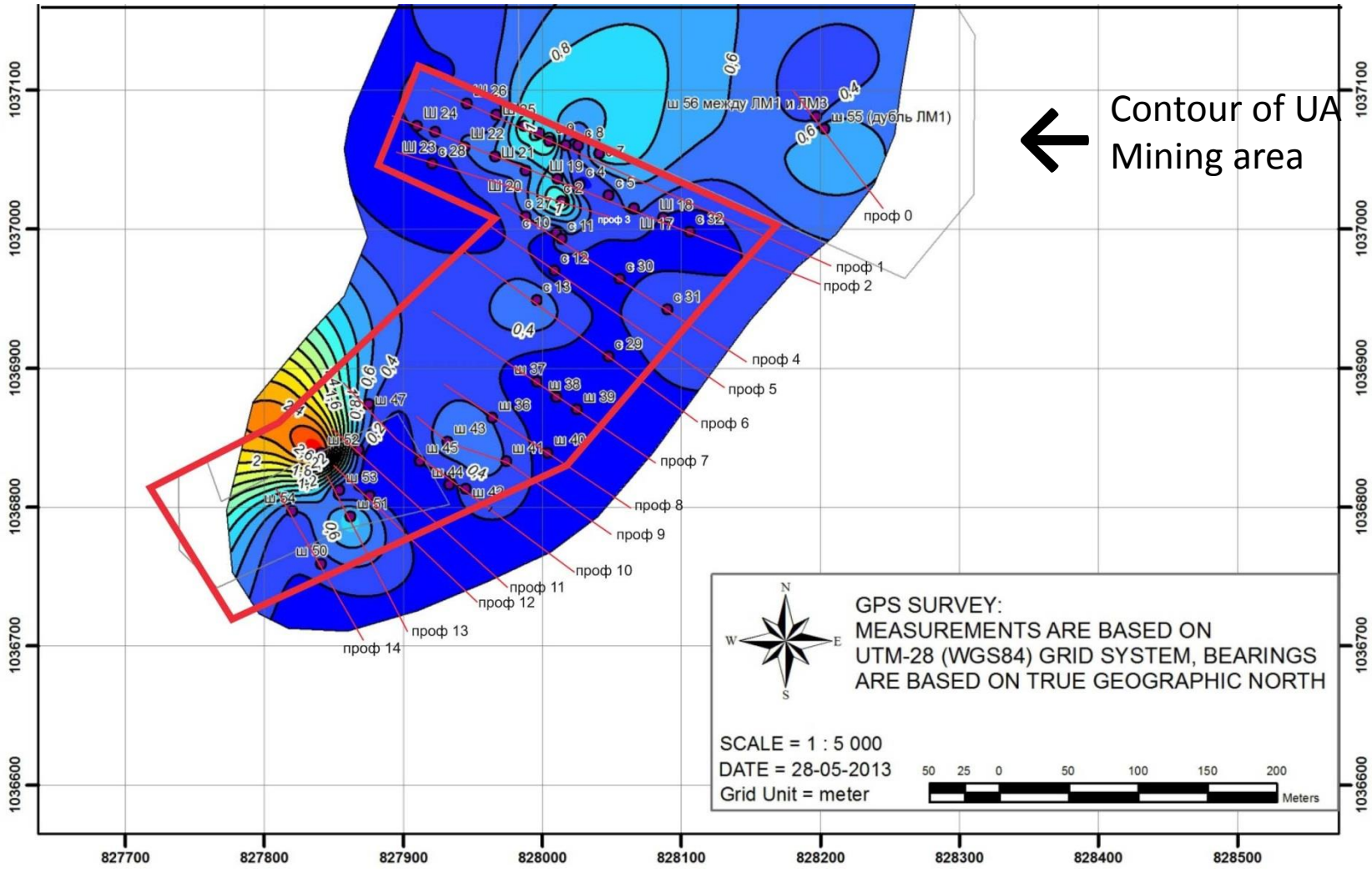


ay area. Drill exploration m
report, 2013

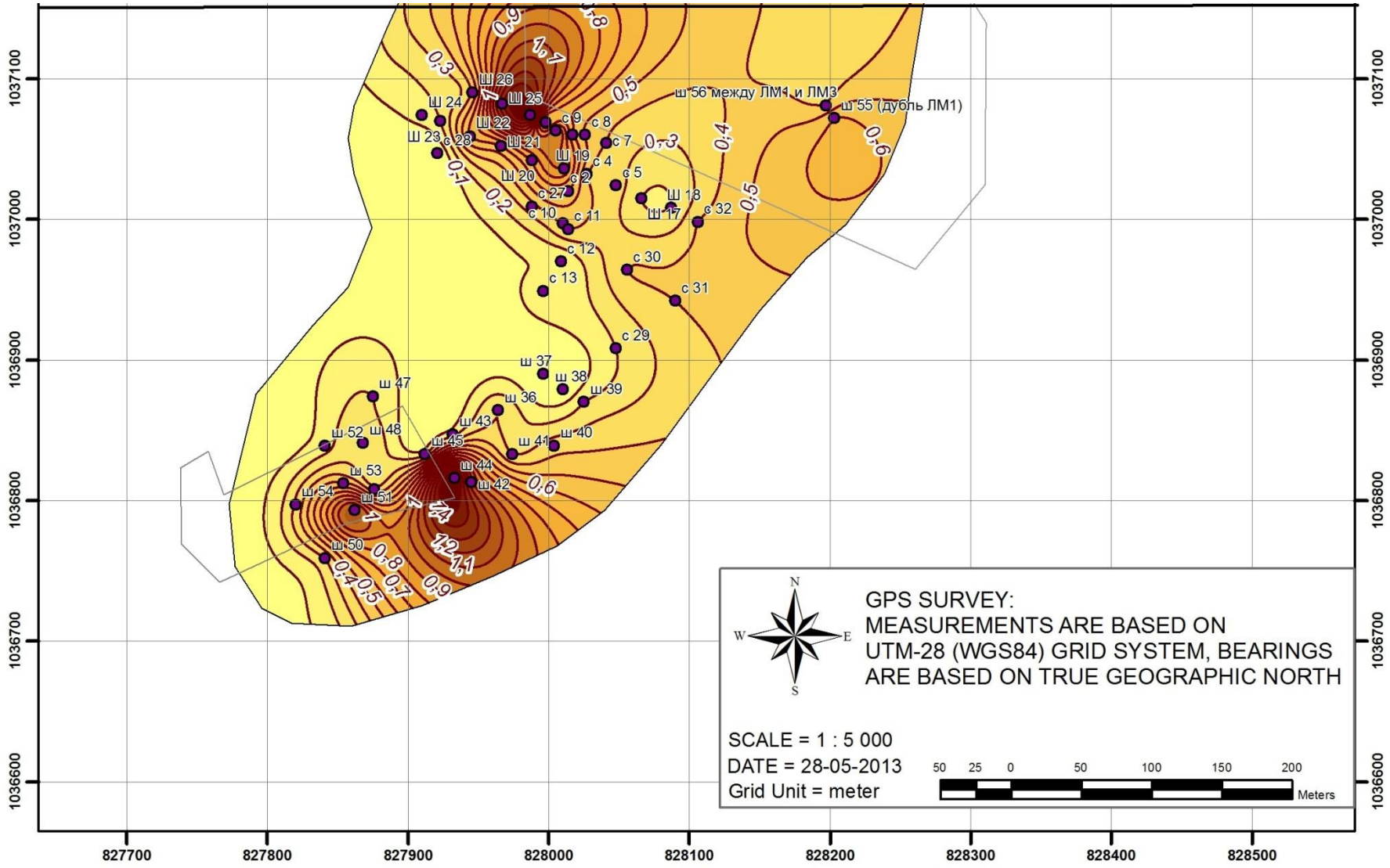
Wash-out results, indicators of quality requirements, estimation of reserves

Following the results of executed exploration, the character of variations of *gravel thickness* distribution and *gold content* therein was established (see the appropriate maps below).

In addition, key indicators of quality requirements for gold placer at the given area were set out (*average gold content at the area*; *average gravel thickness at the area*).



Isolines of gold content at the area in the contour of exploration workings (content values are given in g/m3).
Red contour shows boundaries of the exploration target.



Isolines of gravela thickness at the area in the contour of exploration workings (content values are given in m).

Calculation of parameters of quality requirements. Current estimation of reserves

While calculating aurum content in the samples the following scale-up factors were accepted;

- Bouldery character (0.07)
- swell factor (0.07)
- sample dilution factor while obtaining gold mono-fraction by blow-off after Sochenev's magnet applied (0.03)
- tolerance for loss of ultra-fine and foliated "flotation" gold (0.03)

Cumulative scale-up factor equals to 0.2

Key technical parameters of the placer are given in the table below.

Technical parameters	UM	Numerical rating
Site area	m^2	47,000
Average thickness of gravel	m	0.49
Average thickness of ballop involved in production stratum	m	0.15
Average thickness of overlying sands involved in production stratum	m	0.15
Average cumulative minable thickness of the productive layer (technological mixture of sands, gravel, ballop)	m	0.79
Capacity of cumulated productive stratum	m^3	37,130
Average content of Au in the productive stratum extracted for wash-out	g/m^3	0.52
Au reserves in the volume of the extracted productive stratum	g	19,308