

5-1-5 Rock geochemical exploration

To select the exploration targets under soil cover, geochemical survey using shallow drillhole core was carried out in Central Zalturbulak prospect and Akmola area in Phase II survey. The number of the drillholes is 50 in Central Zalturbulak prospect and 70 in Akmola area. The following are the method of the survey & analysis and the results of survey in Central Zalturbulak prospect. As to the method of survey and analysis, almost same method was used in Akmola area.

(1) Method of the survey and analysis

40 meter interval grid were set targeting IP anomalous zone. Rock chip and drill core samples collected on the surface and by shallow drilling was made for 32 elements in order to prepare geochemical maps for selection of exploration targets. In principal, a one meter core sample of bed rocks in each shallow drill hole was submitted for the chemical analysis. For some holes, however, two or more, bed rock samples were collected for the chemical analysis, according to drill core observation. In case that two or more sets of analytic results were available for one hole, the data set, including the highest values in either gold or copper (where no difference in gold values were indicated), was selected for data-processing purpose as the representative data set at the relevant drill location.

(2) Study of Analytical Data Sets

(a) Geochemical Distribution of Individual Elements

The result of chemical analysis of main elements is shown in Appendix10. Basic statistics of individual elements are as follows:

Table 5-3 Basic statistics

Element	Max.(ppm)	Min.(ppm)	Mean(ppm)	Standard deviation(ppm)
Au	0.62	<0.01	0.017	0.037
As	224	<3	2.35	2.45
Cu	4,150	8	74	217
Mo	68	<1	1.7	7.1
Pb	634	<2	8.5	31.5
Zn	609	<2	44.3	79.6
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Geochemical distributions of individual elements are as follows:

(i) Au (Figure 5-12)

A sizeable zone of relatively high gold values is located in the northeastern part of the Prospect, where the hornblende diorite and hornblende diorite porphyry bodies intrude at or near the contact between the Ordovician volcanics and the Karamendin Intrusive Complex. This zone appears to be composed of two sub zones, trending in the NW-SE and the NE-SW directions which crisscross each other at around the co-ordination of 5371000 N and 469200 E. Their trends are generally coincidental with prevailing structural elements such as faults, fracture systems, trends of intrusive bodies or their arrangement and so forth, and may reflect a structural control of gold mineralization. The highest values of 0.53 g/t and 0.62 g/t Au have been obtained for one sample each of drill cores and surface rocks respectively. Some high gold values are also obtained in association with quartz veins elsewhere in the Prospect. However, their distributions are sporadic without forming any sizeable constellations.

(ii) As (Figure5-12)

Contents of arsenic are generally low with about 75% of analyzed samples indicating values lower than the detection limit of 3 ppm. The values above the detection limit mostly distribute in the southeastern half of the Prospect, while most samples from the northwestern half indicate values lower than the direction limit.

(iii) Cu (Figure 5-13)

A significant zone of high copper values is located in the southwestern part of the Prospect and is elongated in the NW-SE direction. Isolated high copper values appear to be aligned northeastward from this zone and to superimpose over a part of the zone of high gold values. This distribution pattern again suggests a relationship between geochemical trends and structural elements. Several high copper values showing NW-

SE trending zone are located in the southwestern corner of the Prospect.

(iv) Mo (Figure5-13)

A NW-SW trending zone of high molybdenum value is also located in the southwestern part of the Prospect and overprints a major part of the high copper zone as above described. Molybdenite dissemination is observed in drill cores abandoned near the hole (C-25) which was drilled in the era of the former USSR. A sample of the drill cores returned an analytical result of 0.19% Mo, which is not shown in the geochemical map. A few high molybdenum values are located within or near the zones of high gold and copper in the northeastern part of the Prospect.

(v) Pb (Figure5-14)

Relatively high lead values form a broad zone in the western part of the Prospect, which extends to the north, south and west beyond the limit of the Prospect. Although the eastern limit of the zone indicates a direction running roughly north-south, an easterly trending zone branches off and extends to the south-central part of the Prospect across the high copper and molybdenum zones.

(vi) Zn (Figure5-14)

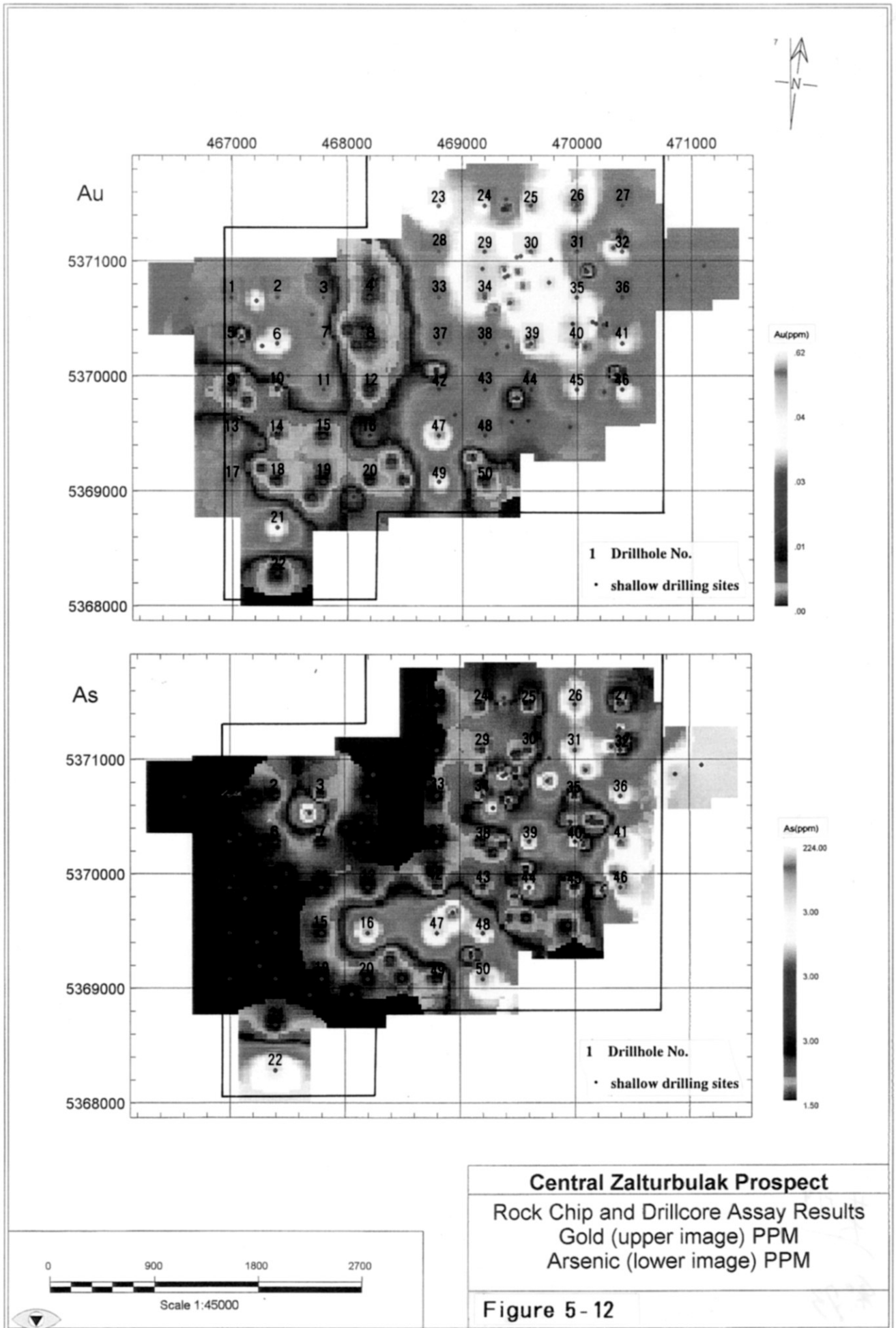
High zinc values distribute in a similar manner as high lead values. A north-northeasterly branch zone is formed as well, superimposing over the branch zone of high lead values.

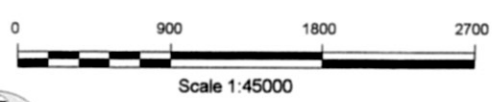
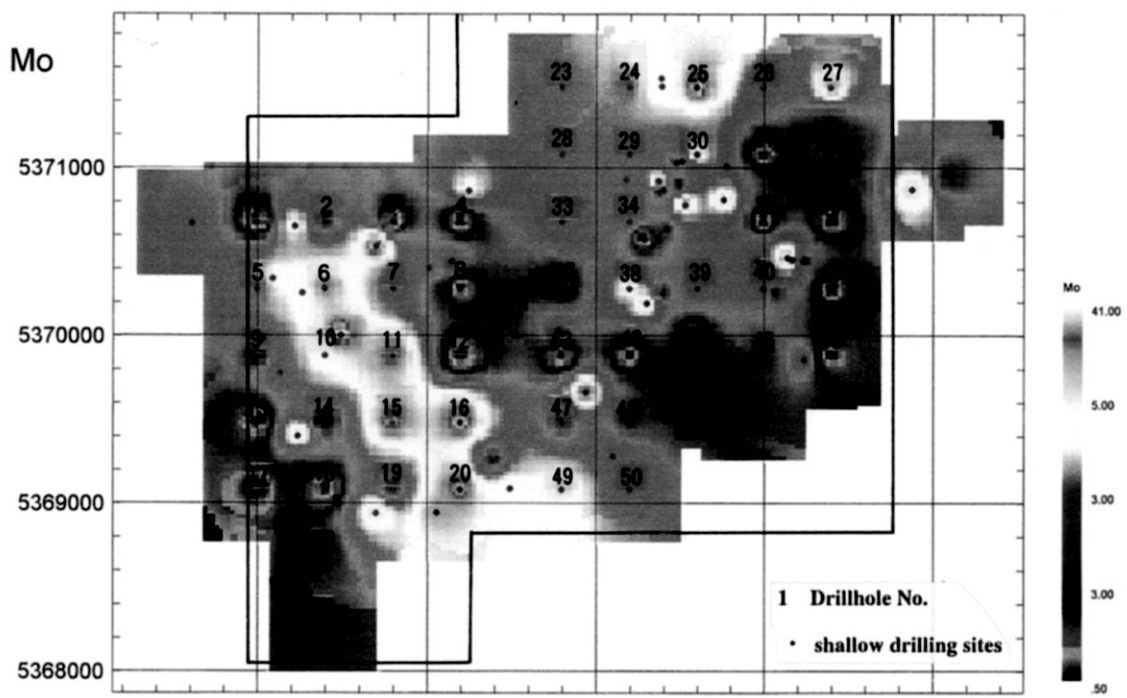
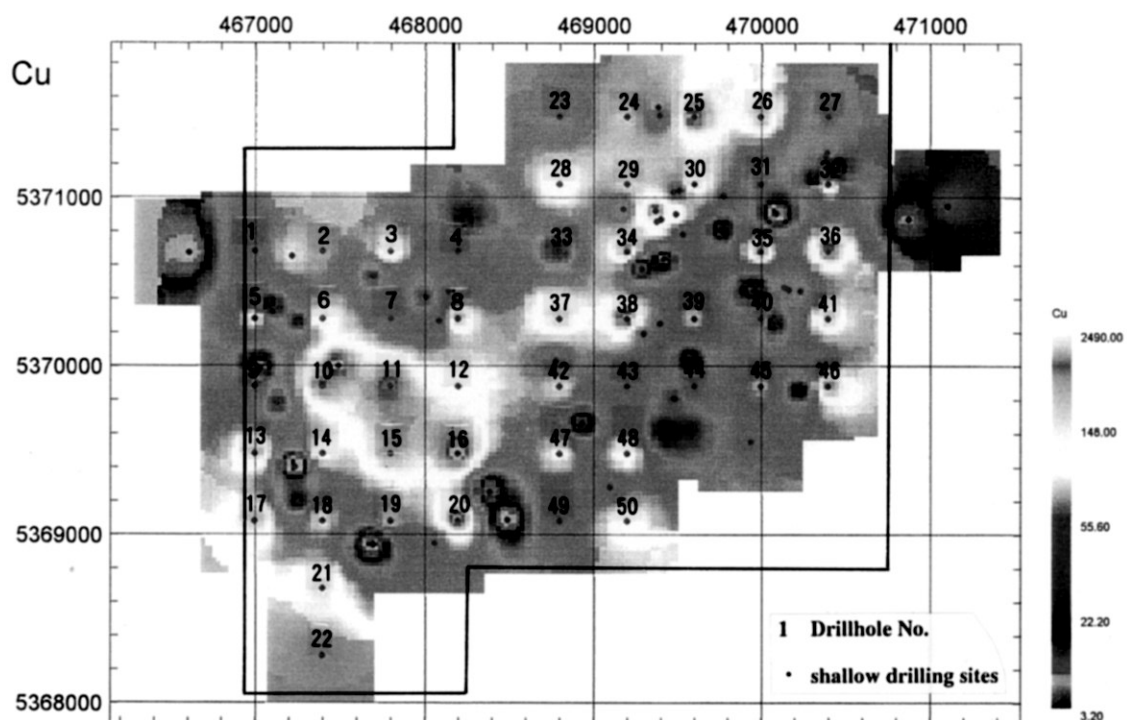
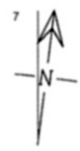
(vii) Ba (Figure5-15)

In the central part of the Prospect, high barium values form a semicircular zone, which may be resulted from combination of two subzones trending in the NW-SE and NE-SW directions. Another high barium zone is located at the east end of the Prospect with its western margin trending in the NNE-SSW direction, and is open to the east beyond the eastern limit.

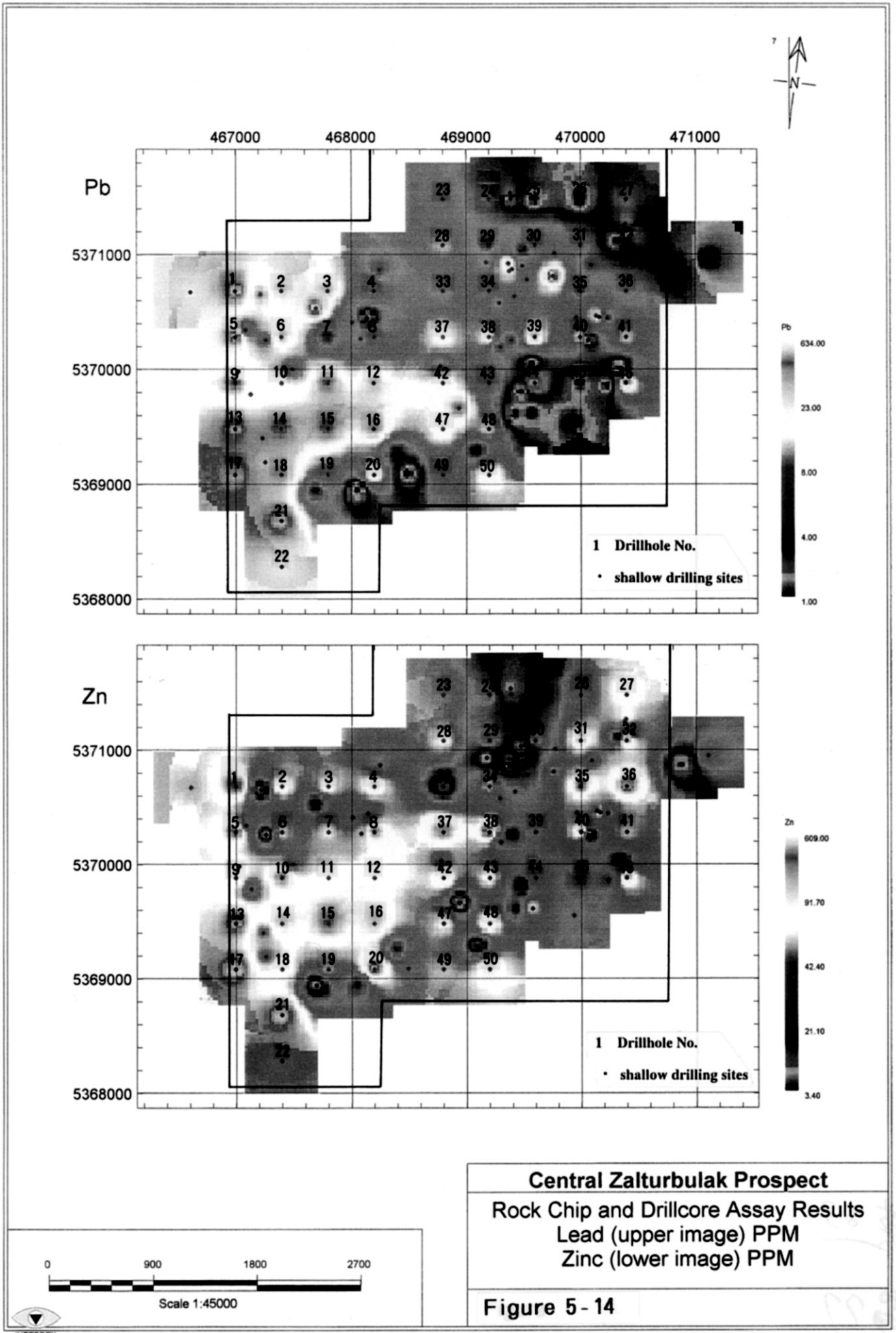
(viii) Ag (Figure5-15)

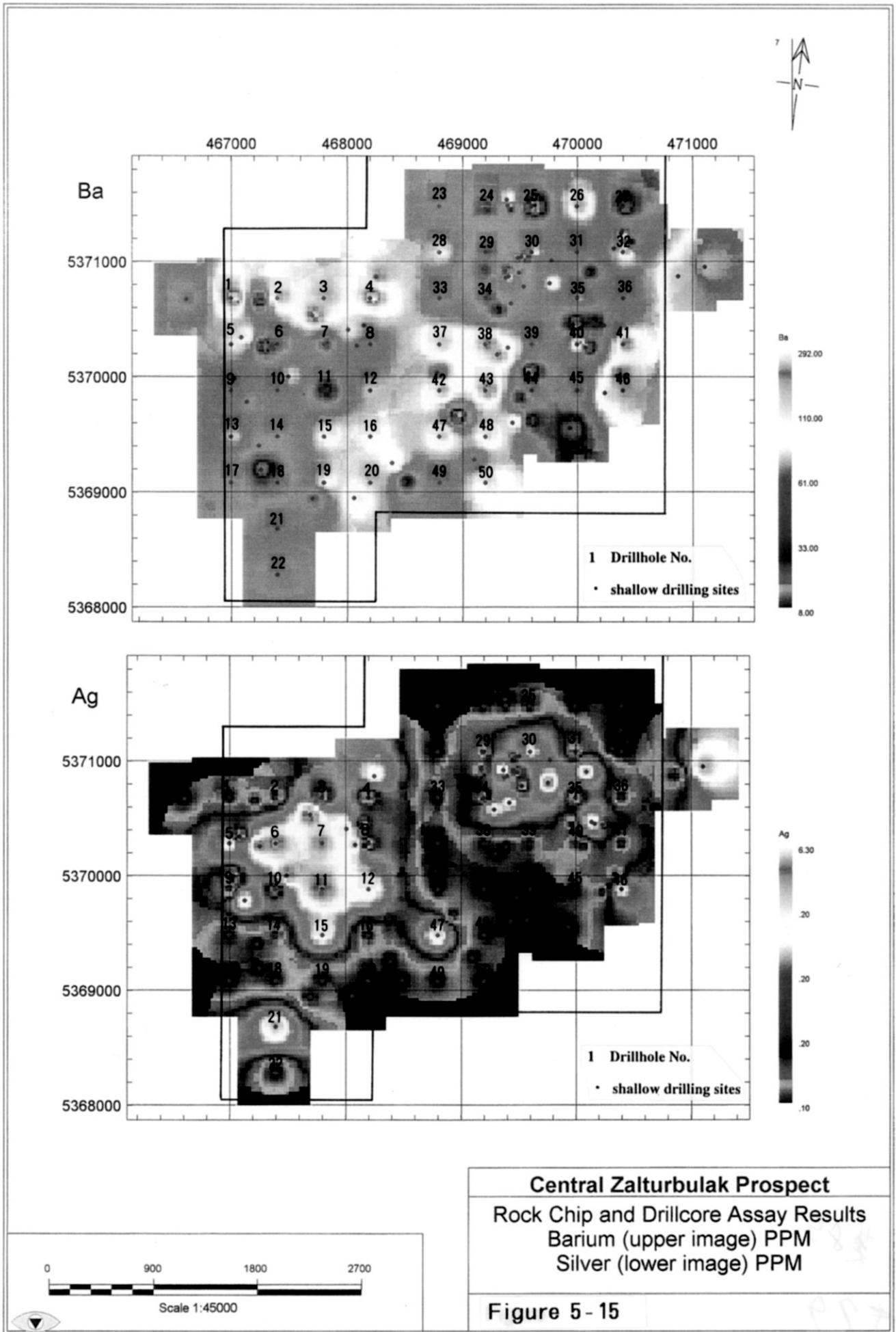
A distinctive zone of relatively high silver values is located in the western part of the Prospect, somewhat elongating in the NW-SE direction. The southern margin of this zone superimposes over the northern margin of the high copper zone and also over the northern part of the high molybdenum zone. Relatively high silver values sporadically distribute in the northeastern part, and form a less distinctive zone over the





Central Zalturbulak Prospect
Rock Chip and Drillcore Assay Results
Copper (upper image) PPM
Molybdenum (lower image) PPM
Figure 5-13





high gold zone.

(ix) Major Elements (Figure 5-16)

Distributions of major elements such as K, Na, Ca and Mg are examined. Two high potash clusters are located in the northern margin of the Prospect, while the zones of high sodium, calcium and magnesium contents distribute in the eastern margin. One of the potash high clusters super imposes over the northern ends of the high sodium and magnesium zones where calcium contents are comparatively low.

(2) Comparison of Geochemical and Geophysical Results (Figure 5-17 and Figure 5-18)

Two outstanding zones of high chargeability are located in the northeastern and western parts of the Prospect. Both zones are, trending roughly in the N-S direction, open to the north beyond the northern limit of the survey area. The zone in the northeastern part approximately super imposes over the high gold zone. As shown in Figure 5-17, most high gold values, as well as a number of high copper values are apparently associated with this zone of high chargeability. The other zone of high chargeability in the western part includes the high copper zone in its center and a major part of the high molybdenum zone. However, no significant gold values are associated with this high chargeability zone. The coincidence of the zones of high chargeability with those of the high gold and copper values seems to be interesting from the view points of a porphyry type mineralization system.

