

551.4 (477.43)

Львів, вул. Св. Юрія, 41, 79007, Україна,
e-mail: oksana.koltun@lnu.edu.ua

(140–250
42 ,), – 820 , – 390 .
(1950- 1970-) –
9), – (–
1980- :
2015 . :
© , 2018

... (... - ...),
 (...) , , (-
 - 140–250),
 (.1). - 326 . 284,4
 (... 15.12.2003). 820 ,
 - 390 , (...
) - 1,3 . “ ” ,
 1980- , 1,8 .

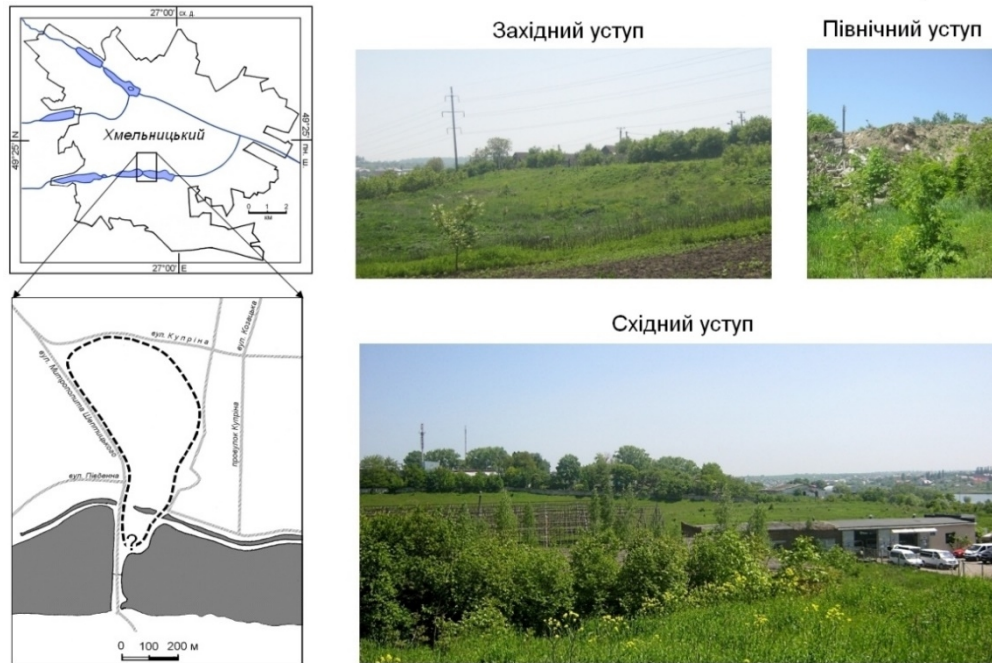


Fig. 1. Location of study object (dashed line) and its present look (May 2015)

[2]:

1950-)
 1950-)
 (-10-15°),
 (- 4°),
 (4-10°);
 1:10 000,
 1950- ([6]
 1:2 000, (2003 2014) 2015 .
 ()
 2016 . (.2).
 1980- .



.2.

(2016 – Google Earth, – [5, 7, 8])

Fig. 2. Territory on maps, plans and aerial photographs of different time (2016 – from Google Earth, other pictures are fragments of [5, 7, 8])

... ;
 ... -
 ...
 ... 30 ,
 ... (,
 ...) .
 ... - 9 ,
 ... (. . 2),
 ... 310 .
 ... 3 .
 ... ()
 ...
 ... [1, 3].
 ... 2015 . 40-75
 ... 7,5 . , -
 ...
 ... 1960-
 ... " " ,
 ... 40 ,
 ... [2], 1962 . ()
 ... 0,5-2,5-
 ... 1951 ()
 ... 1:25 000) 1962 .
 ... 1970-
 ... 1993 .
 ... (. . 3) :
 ...
 ... -

20 .

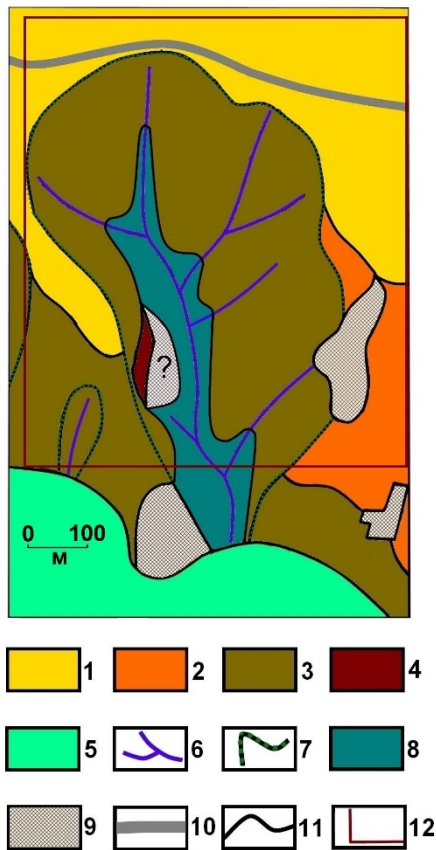
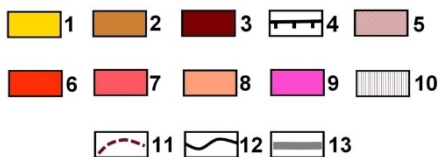
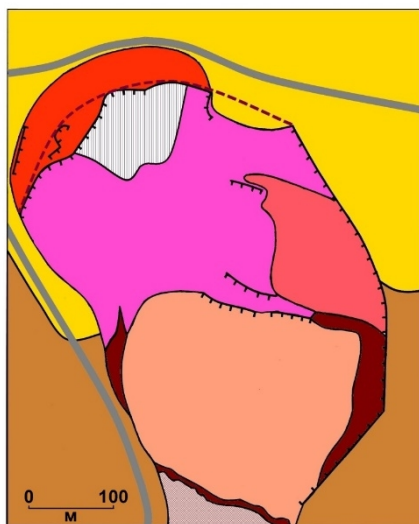


Fig. 3. Geomorphological map of the territory before landslide (middle of the twentieth century)

310–311 , – 298–300 .
80 ,
(- ?),
:
:

... [3, 4].
 ... (.4).
 9



... 4. ...
 1 - ... ;
 2 - ... ;
 3-12 - ... ; 3 - ... ; 4 - ... ; 5 - ...
 ; 6 - ... (... - 320-324 , ...),
 7 - ... (... - 312-313); 8 - ... (...)
 301-302); 9 - ... ;
 10 - ... ; 11 - ... ;
 ; 12 - ... ; 13 - ...

Fig. 4. Geomorphological map of landslide on Kuprin St. in the beginning of twenty first century

- 10 , ... - 5 . 6 , -

1-2 9 .

– 200 ,

2015 . 6 .

1,5 3 .

– 0,7–1,8 .

– 60 .

0,6 .

170 ,

100 , 11 , – 180 ,

– 200 . (– 5)

(.4):

1. // . - . 2016. . 7. . 53–63.
2. // (23–24 . 2016 .,) . : “ ”, 2016. . 206–210.
3. // 2016. . 1(6). . 104–117.
4. : . 2016. . 50. . 208–223. DOI: <http://dx.doi.org/10.30970/vgg.2016.50.8696>
5. 1:25 000. . -35-90- . . -35-90- . . -35-91- . . -35-91- , 1969, 1972.
6. / , 1963. 386 .
7. . [. . . .] . 1:17 000. . : , 1993.
8. Płoskirów [Mapa] / Wojskowy Instytut Geograficzny. 1:100 000. Pas 51, słup 44. Warszawa, 1931. (Opracowano na podstawie map 1: 84 000 wydania 1915 i 17 r. Zdjęcie oryginalne z r. 1890, 1901, 2, 7 i 8).

REFERENCES

1. Koltun, O.V. (2016). Contemporary morphology of the Khmelnytskyi City's nineteenth century quarries. *Scientific Notes of Sumy State Pedagogical University. A Series of Geographical Sciences*, 7, 53–63 (in Ukrainian).
2. Koltun, O.V. (2016). The reason of the landslide on Kuprin str. Khmelnytskyi City. Proceeding from *International conference Land management, cadaster and land protection in Ukraine: current status and European perspective* (September 23–24, 2016. Kyiv, National University of Life and Environmental Sciences of Ukraine), 206–210 (in Ukrainian).
3. Koltun, O. (2016). Geomorphological processes of Khmelnytskyi City's nineteenth century quarries. *Problems of geomorphology and paleogeography of the Ukrainian Carpathians and adjacent areas*, 1(6), 104–117 (in Ukrainian).
4. Koltun, O. (2016). The loess quarries of the twentieth century in Khmelnytskyi City area: contemporary morphology and geomorphological processes. *Visnyk of the Lviv University. Series Geography*, 50, 208–223. DOI: <http://dx.doi.org/10.30970/vgg.2016.50.8696> (in Ukrainian).
5. *Topographic map 1:25 000* (1969, 1972). Sheets M-35-90-G-b, M-35-90-G-g, M-35-91-V-a, M-35-91-V-v. Moscow: The Army General Staff (hence Generalnyy Shtab) (in Russian).
6. *Khmelnytskyi. The city plan project. Explanatory Notes* (1963). Kyiv: GIPROGRAD, 386 pp. (in Russian).

7. *Khmelnyskyi* (1993). City map 1:17 000. Kyiv: Head office of Geodesy, Cartography and Cadastre at the Cabinet of Ministers of Ukraine (in Ukrainian).
8. *Płoskirów* [Мапа] 1:100 000 (1931). Pas 51, slup 44. Warszawa: Wojskowy Instytut Geograficzny. (Opracowano na podstawie map 1:84 000 wydania 1915 i 17 r. Zdjęcie oryginalne z r. 1890, 1901, 2, 7 i 8).

:

12.11.2017

05.01.2018

06.02.2018

THE GEOMORPHIC FEATURES OF THE LANDSLIDE ON KUPRIN ST. IN KHMELNYTSKYI CITY

Oksana Koltun

*Ivan Franko National University of Lviv,
P. Doroshenko St., 41, UA – 79007 Lviv, Ukraine,
e-mail: oksana.koltun@lnu.edu.ua*

The landslide in Quaternary loess sediments occurs a balka at the Samets River left bank and is limited by Metropolitan Sheptytsky St. in the West, Kuprin St. in the North, Kuprin lane in the East (the last locates 140–250 m to the East of the plot), two ponds in the South. The elevation between Kuprin St. and ponds distinguish 42 m, the length from North to South 820 m, and the width 390 m. The exact dates of landslide shift, as well as geological, cartographic or other materials like that at the time of sliding (the end of the 1950s for the first shift and the first half of the 1970s for the second one) were not found, this research bases on reconstruction of terrain morphology by large-scale maps, plans from the late nineteenth till early twenty-first centuries. Balka's slopes and the adjacent areas of the loess plateau undergone significant morphological changes after the landslide, modern terrain is allocated to anthropogenic surfaces, such as plane watershed, built-up without significant vertical planning; built-up terraced slopes of plateau, balkas and riverbank; three artificial terraces on the main body, as well as steep and very steep ledges and outcrops (maximum height 9 m), surfaces with mosaic combination of small terraces, flatter slopes and steep ledges, hilled surface. The landslide toe came to the flood terrace; this part of the landslide was later completely changed after construction of the dam, ponds and channel in the late 1980s. There is a connection between earlier anthropogenic terrain changes and landslide: first of all, the eastern and western scarps were connected to the ledges of quarries. The modern lower terrace has approximately the same absolute heights as level of the western quarry area before sliding. The north scarp mostly repeated the contour shape of balka, but smoothed out smaller bends. In the Northeast, the landslide captured part of the plateau, the present level of the middle terrace is close to the eastern quarry level. Because of landsliding and repeated redevelopment of the territory, the situation with the slope exposures was simplified: except for the scarps, southern exposures dominate. In 2015 curved tree trunks, tilted poles, cracks and other destruction of buildings indicate the slow earthflow within area.

Key words: urban landslides, loess landslides, terrain morphology, Khmelnytskyi City.