Stop 1/8. Ancient landslide (Olbia) on the right (west) shore of Dnieper-Bugsky liman

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The ancient city of Olbia is situated on the paleo-slope of a landslide. The Upper City sits on the plateau, with absolute elevations of 38-42 m (Fig. 8). The Lower City is on the upper landslide terrace, which is 40-85 m wide and has an elevation of 6.5-12.5 m. The surface of the plateau, slope, and terrace are covered by diluvium and cultural layers totaling on average 4-6 m in thickness. Part of the Lower City and the port are currently submerged beneath waters of Bugsky Liman and are located on the lower landslide terrace.

According to borehole data from the upper terrace, the slide activation paleo-surfaces within the Meotian clays of the Lower Pliocene were encountered in core #1425 at an absolute elevation of -10.1 m. Core #1426 (surface elevation: 6.25 m) located 42 m from the liman shoreline revealed an activation paleo-surface within muddy landslide deposits at -4.4 m. This provides the basis for the existence of another episode of activity (landslide dislocation) of the lower part of the slope, which apparently occurred during a later time of higher water level in the liman.

According to archaeological dating, the construction of the Lower City occurred primarily during the V-IV centuries BCE. During this time, the construction area was approximately 12 ha, and reached 17 ha during the IV-III centuries BCE. The maximum depth of the liman where structures still exist is 1.5-2.5 m. On the geological cross-section from drilling data, the anthropogenic form of an ancient relief (quarry, depth - 4.5 m) is suggested.

Therefore, there is reason to suppose that the area was utilized during a time when the water level was 5-7 m lower than at present during the Olbian (Phanagorian) regression. At that time, the liman was substantially narrower and shallower. The landslides shaped the slope into its current form during the periods of low liman water level, and possibly during an even lower stand (e.g., Khadzhibeian regression ca. 4.4-3.9 ka BP). At present, Ukrainian geologists and archaeologists are working on this problem.

The maximum liman-level, probably, was above the modern one: +1.5-2.0 m about 3.2- 3.5 ky BP. Radiocarbon ages of mollusc shells obtained from the sediments at exactly 2.0 and 1.5 m are 3480±60 and 3210±50 ky BP, respectively (Shilik, 1997).