



Quaternary and Neogene Sediments in the Northern Vienna Basin and adjacent areas: Geology in construction sites of the highways A5-Nordautobahn and S1-Wiener Außenring-Schnellstraße (Lower Austria, Austria)

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The section Eibesbrunn – Schrick of the A5 motorway (Nordautobahn) and the section Eibesbrunn – Korneuburg of the S1 motorway (Wiener Außenring-Schnellstraße) were documented geologically. A variety of samples was taken and analysed sedimentologically, paleontologically and mineralogically.

For the most part the construction sites are situated in the Northern Vienna Basin (A5 and S1). Within the tunnel “Tradenberg” (S1) the Flysch Zone is passed through, west of the tunnel the route crosses the Korneuburg Basin and leads to the highway A22 within the alluvial sediments of the Danube. Construction started in spring 2007, the opening of both highway-sections ist scheduled for the beginning of 2010.

Along the construction sites in the Vienna Basin (A5 and eastern part of the S1) a great variety of geological features can be found within small areas. The Quaternary consists mostly of loess, which differs greatly in appearance and thickness. Besides massive developed loess with pseudomycelia and sometimes molluscs, stratified loess can be observed. The loess is often weathered to loess clay and interstratified with paleosols. Up to three consecutive paleosol-horizons can be observed, which are distinguished mainly by color. In the area of Schrick a thin red, clayey layer is situated between an underlying sequence of sand and gravel and overlying loess. Most likely this red layer is a Pliocene to early Pleistocene fluvial deposit with paleosol. Quaternary gravels can be found only locally and occasionally, sometimes they show signs of permafrost. Often Neogene sediments, which were resedimented in channels during the Quaternary, are observed, for example east of the Tradenberg tunnel, north and west of Gaweinstal, as well as north of Wolkersdorf.

Neogene sediments are represented by the Sarmatian and Pannonian, consisting of clay, marl, silt-sand, and gravel. Sometimes these sediments are rich with fossils and therefore could be classified stratigraphically.

The Tradenberg tunnel passes through the Rhenodanubian Flysch Zone. Both at the portals and in the excavation itself, an alternate bedding of clay, marl and calcareous sandstone could be seen. During tunnelling only few bigger sandstone layers were intercepted, so nearly the whole tunnel could be advanced by loader. Analysis of calcareous nannoplankton of samples from all 4 excavations documented Paleocene age (Danian NP 2/3).

West of the Tradenberg tunnel the Korneuburg Basin is passed through. Sediments of the Karpatian (Lower Miocene) Korneuburg-Formation can be observed, consisting of clay, marl and sand. A thin layer of gravel, containing large fragments of *Ostrea*, also can be found. North of Korneuburg the route passes through thick layers of Quaternary gravels of the Danube.

The problem of slope stability is often revealed along construction sites in Neogene and Quaternary sediments. Small, but impressive slope failures occur frequently in the fine-grained sediments.

Faults in these young sediments bear witness to the young tectonics within the Basins.