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A preliminary study of the flocculation of iron-bound sediment in a Belgian river

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The Nete basin, located in the North-East of Belgium and part of the river Scheldt basin, contains the Grote Nete and the Kleine Nete and their tributaries. In total, the basin drains about 1670 km^2 of which approximately 590 km^2 lie upstream of Grobbendonk, on the Kleine Nete, where a monitoring station of Flanders Hydraulics Research is located.

The river Kleine Nete transports a significant amount of suspended iron-bound sediment in the form of flocculated material. Previous research has indicated that around 70% of the annually transported sediment is being authigenically generated in the river, through iron-rich groundwater seepage. In April 2005 samples were taken in-situ at Grobbendonk with a specialized sampler, which preserves the shape and size of the flocs and which allows a two-dimensional view of the flocs after filtration on a 0.45μm filter. The sampling was located on three different depths at the centre of the river. The size and composition of the flocs varied according to their location in the river. A second sampling campaign, planned in February and March 2006, will repeat the measurements done in 2005. The information obtained from this would aid to determine if the variability observed in floc distribution throughout the watercolumn, is significant or not. Also, ground water, from aquifers seeping into the Kleine Nete, would be sampled simultaneously. This provides insight into the possible relation between flocculation and the amount of Fe^{2+} and Fe^{3+} in the ground water, as the iron content in ground water could both influence the chemical composition as well as the physical properties of the flocs. This preliminary research strives to provide a better insight in the flocculation process in the Kleine Nete, as well as expose the areas where

further research is needed. Results of this study will be presented on the poster.