

Andreas Ney:

„A close-to-nature follow-up treatment of treated sewage designed for the vitalisation of rivers and water meadows and for an increasing efficiency of sewage treatment“

This thesis mainly deals with the question in how far the partly enormous remaining pollution of biologically treated sewage caused by nutrients and harmful substances as well as by germs can be reduced by close-to-nature wetlands. Among other things, the possible risk potential and the habitat function of the areas were also investigated.

Three follow-up treatment areas (1,1 m²/person, 1,3 m²/p, 5,2 m²/p) were explored, all of which are placed behind constructed reed-beds and consist of flat moulds covered with verdure, of trenches as well as of meadows where there is a surface-flow or a subsurface-flow of treated waste-water. An increase in oxygen and a significant reduction of nutrients were discovered in the areas mentioned. Compared to the effluent of the sewage treatment plants, the NH₄-N-concentration of the treated sewage was reduced by 71-92 %, N_{min} by 23-64 % on average and TN by 17-59 %. The reduction of the PO₄-P-concentration was 23-79 %, the reduction of TP 21-85 %. Due to the follow-up treatment, there was, for example, an improvement of the efficiency of treatment that ranged from 49 % to 95 % for NH₄-N, from 38 % to 68 % for TN and from 47 % to 90 % for TP at one sewage treatment plant.

The follow-up treatment areas were able to cut pollution peaks and to reduce the pollution caused by germs. The risks of ground water pollution, of an accumulation of persistent toxic substances in the soil and of an expansion of exitants of disease were low. Especially the small moulds filled with water were largely beneficial to the habitat function of the areas. Areas for follow-up treatment that were close to nature make an ecologically and economically reasonable contribution to an increasing efficiency of sewage treatment. They are also suitable for the treatment of polluted water, which comes from drainages, drainage ditches or stormwater tanks with overflows in combined sewer systems.