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Tellij: Tallinna Kommunaalamet

TALLINNA SADEMEVEE UURINGUTE TEOSTAMINE

Objekti asukoht: Tallinn
Köide:
Stadium: Kokkuvõte

Keskkonnadivisjoni direktor
Projekti juht

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SUMMARY

The purpose of Tallinn Stormwater Study was to identify the numerical values of hydraulic and pollution indicators necessary for the design and reference calculations and based on this, the performance of sample calculations.

In order to implement the contractual tasks the measurement of pre-selected six catchment areas, the measurement of precipitation and stormwater flows during four different months, sampling and testing was carried out within the frame of the study.

The pre-selected catchment areas were:

1. Rocca al Mare (the test point before Õismäe stormwater sewer intake);
2. Vabaduse alley catchment area (the test point before the degritter at the end of Olevi Str.);
3. Sütiste road catchment area (the test point before the intake of Sõpruse alley stormwater sewer);
4. Õismäe road catchment area;
5. Võru Str. catchment area
6. Õismäe pumping station catchment area (the test point before the intake of Õismäe pumping station).

The measurement of stormwater flows and sampling

The measurement of stormwater flows and sampling was carried out within the year 2008 during four observation periods (March, June, August and September). In parallel with the measurement of stormwater flows also the precipitation intensity was identified on Marja Street. Six automatic stormwater flow controllers were used which were located into the stormwater sewers. The measurement of stormwater flow and sampling was executed in parallel with the interval of 5 minutes. In order to identify the average concentration of pollution indicators during the measurement period by one sampling, in addition to single sampling the composite sampling was done.

In line with the requirements for discharge of effluent into the water body or soil (Government Decree Nr 269) the average concentrations of hazardous substances, suspended solids and petroleum products, listed in Annex 1 of the Decree, were identified. In addition, in order to get the variation in time of suspended solids the concentrations of suspended solids with the interval of 5 minutes within the full sampling period was also identified.

The measurements and chemical tests were done by the Estonian Environmental Research Centre. Part of hazardous substances were tested in the Laboratory of Environmental Protection of Tampere University

The results of chemical tests reflected that none of the selected hazardous substance concentration in none of the test points is exceeding the limits established by the Decree Nr 269. Moreover, the concentration of some components was below the sensitivity level of modern equipment (principally, these substances in stormwater were not found) or a division less than the established limits. The average concentration of oil products was normally below one milligram per litre. In only one sample of 24 the concentration of petroleum products was 4,8 mg/l.

The verification of test results with the legislation in force expressed one important shortcoming of the legislation. Namely, it is not clearly defined in the Water Act, the Environmental Tariffs Act, neither in the Decree Nr 269, what the lawmaker means under the average concentration, whether the average concentration of stormwater flow caused by one rainfall, daily, weekly, quarterly or yearly average concentration.

As soon as the lawmaker has not identified what is the case, it is not possible to control the stormwater outlets, design stormwater treatment plants or follow the taxation requirement of stormwater, established by the Environmental Tariffs Act.

Based on the analysis of test results and available literature the main trends were formulated, from what the stormwater pollution is depending and proposals were made for decreasing the pollution.

Recommendations were given for the measurement (sampling methodology) and computing of average concentrations of stormwater pollution caused by one rainfall. The attention was also given in the study to the circumstance, that for the identification of the pollution load carried into environment by stormwater within longer period it is necessary to measure during the test period under consideration (week, quarter, year) the appeared precipitation, which is very expensive and from the environmental protection aspect unreasonable exercise.

As a conclusion, the implemented study confirmed the known in Western Europe fact, that the simplest solution for the decrease of environmental hazard of stormwater is cleaning of streets and not the treatment of stormwater.