MAINTENANCE

At traffic junction Raasdorp six artificial wetlands are located, see Figure 1. To investigate the influence of de-icing salts on these systems, measurements in one of these wetlands should be carried out. First field visit with an employee of the Road District Amsterdam took place.

During this field visit it became clear that the artificial wetlands are poorly maintained. Also it became clear that not every wetland is designed properly. The different problems which are noticed will be described below in following order:

1. Willows are growing in the artificial wetlands
2. Plant in the filter died because of suffocation
3. Holes in the plastic sheeting
4. Plants are growing in the sedimentation basin / wrong location inflow pipe
5. Large quantity of water under the plastic sheeting

To clarify the different troubles, pictures of the current state are added. These pictures are made during the different field visits.
1: WILLOWS ARE GROWING IN THE ARTIFICIAL WETLAND

The growth of willows in the artificial wetland is undesired. The roots can perforate the plastic sheeting. If this is the case, water from the filter can infiltrate directly to groundwater. Also groundwater can enter the filter, depending on the groundwater level. This occasion can cause a decrease of the purifying function of the artificial wetland.

2: PLANTS IN THE FILTER DIED BECAUSE OF SUFOCATION

In this case the plants are not able to fulfil their task anymore so the artificial wetland loses its purifying function. Also nutrients and other elements stored in the plant are released because of the degradation of the plant. These elements are now present in soil and water which reduces the water quality in the end.

3: HOLES IN THE PLASTIC SHEETING

This lack does cause the same problems as the first problem.
4: PLANTS ARE GROWING IN THE SEDIMENTATION BASIN / WRONG LOCATION INFLOW PIPE

According to the description of the system, the sedimentation basin should be empty of plants. Plants in the sedimentation basin can cause blockage of the drain. If this occurs, the water cannot enter the filter basin unless the water is discharged by overtopping.

For some artificial wetlands water from the road is discharged into the sedimentation basin at the filter side. If discharge by overtopping will take place, a shortcut flow can occur. This means that water which enters the sedimentation basin is almost directly discharged to the filter basin. The sedimentation step is skipped in this way. The filter does have to deal with higher pollutant rates which is not desired.

5: LARGE QUANTITY OF WATER UNDER THE PLASTIC SHEETING

During the second field visit it was noticed that there was water under the plastic sheeting. While walking over the sides of the plastic sheeting it was like walking on a water bed. Since the water level in the infiltration ditch is much lower than the water level of the water under the plastic sheeting, it cannot be ground water. It is possible that there are two layers of plastic sheeting. One layer at the top, which is visible, and one layer in the soil. Between this layers the drains can be constructed. If the drain from the sedimentation basin to the filter is blocked, the water could have come between the two plastic sheets. This could explain the water which is under the plastic sheeting.

CONCLUSION

In the end it can be concluded that for functioning of the artificial wetlands maintenance should be carried out properly. The problems described do not occur in a period of one year so there is deferred maintenance. Also it is important to check if maintenance is carried out and if so, is it carried out in a proper way. It is important that someone is responsible for the functioning of the artificial wetlands. Supervision on the contractor who is responsible for maintenance is then also defined.