A clear solution for farmers

CATCHMENT SENSITIVE FARMING

Farm track improvements to protect the River Nadder

Burcombe, Wiltshire

Hampshire Avon Catchment
CSFO: Jodene Williams

Sediment input into the River Nadder was clearly visible before

The issue

The River Nadder is a major tributary of the River Avon and is designated as a Site of Special Scientific Interest and Special Area for Conservation. The designations recognise the river's importance for breeding species such as Atlantic salmon, brook and sea lamprey, bullhead and the water-crowfoot plant. The Avon is a significantly diverse chalk stream system.

The Avon is failing, however, to meet the required standards for environmental water quality under these designations and under the European Commission's Water Framework Directive. One of the issues identified is diffuse water pollution from agriculture, namely soil particles which wash into the river from fields and tracks and nutrient enrichment from phosphate bound to the soil particles.

A survey carried out by consultants APEM in 2010 recorded fine sediment, sand and calcium carbonate (chalk) entering the river which could be traced to a track nearby. At the point of discharge into the river, the suspended solid average was 11,480mg/L. Upstream of this point, suspended solids measured only 9mg/L and downstream this increased to 328mg/L. Prior to this, there was local knowledge of sediment reaching the river but it had not been quantified. The nearby track had sunken over a number of years of use and it transported sediment along its entire length (about 1.5km) into a road drain, which discharged directly into the river. The sediment came from the track itself rather than adjacent runoff or erosion from fields.

The solution

By collaborating with the tenant farmer at Burcombe Manor Farm and The Wilton Estate, as well as Natural England and the Environment Agency, a series of improvement works began.

In 2010, a Special Project grant was awarded through Higher Level Stewardship and subsequent funding gained from Catchment Sensitive Farming's (CSF) Capital Grant Scheme. The funds were used to make a series of improvements to the farm track. Then in 2012, CSF helped to fund a sediment trap to catch the remaining sediment still travelling along the track.

Firstly, the level of the track was substantially raised using local chalk and road planings with the farmer contributing machinery and time. The track was compacted and given a convex camber to shed the water continually and gently along the track length. Regular drainage

Before work commenced; showing the extent the track had to be raised

The sediment trap installed in 2012 at the base of the track

channels (grips) were not possible due to the proximity of a chalk grassland SSSI and farm buildings below so there was a need to avoid localised nutrient enrichment and avoid flood risk.

A suitable location was available at the base of the track for the sediment trap. A hole was excavated and 24 concrete panels were sunk onto a concrete base. The panels were linked together but left unsealed between. The trap measures 8m by 3m and is 2.4m deep. The reduction of water in the trap allows the sediment and fine particles to settle out before the clean water either seeps away between the panels into the groundwater or overflows at the outlet (pictured above right). It is estimated in an intense rain storm of 15mm in half an hour, the trap will provide four hours retention time. The trap will need periodic maintenance to empty the material, which can be composted on the manure heap. To empty the trap, the iron frame on top is removed and contents scooped out with a mini digger. The floor of the trap is concrete, therefore when emptied; the trap will not get deeper each time it is cleared. Catchment Sensitive Farming, the Environment Agency and the local fishing club are pleased at how effective the works have been to date.

The sediment trap overflow outlet showing the solids trapped since installation

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