

Integrated Buffer Zones in LIFE GoodStream

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En



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IBZ is a new kind of Buffer Strip along water courses. It is called Integrated Buffer Zone as it is entirely connected to the field by providing protection against runoff from both field surface and from the ground.

IBZ is one of the main tools for achieving the goal of reducing phosphorus concentrations in the river Trönningeån within the framework of the LIFE Project "LIFE-Good Stream". It is here we are introducing this new tool on a large scale along with other types of wetland plants.



At the beginning of 2017, there were four scientific testing facilities in Sweden and Denmark as well as demonstration sites in Sweden and Åland (Finland). Up to 90% of the phosphorus and 50% of the nitrogen can be removed in an IBZ.

IBZ can also be applied in fields with very little slope towards the stream. The drainage water is collected in an enclosed open ditch, where even soil eroding from the field surface can be caught. A flat embankment for infiltration is established between the ditch and the stream. When the area is flooded the water begins to infiltrate through the soil profile.

Efficient infiltration will take effect if there are trees on the floodable infiltration bank, so that the water can follow the stems and root systems into the soil. Parts of the nutrients will be immobilized in the soil and another part is taken up by the trees which can be harvested when fully grown.

When nearby fields need to be worked at, the water level can temporarily be lowered by a level well. When the ditch is completely emptied the accumulated nutrient-rich sediment may be excavated and returned to the field.

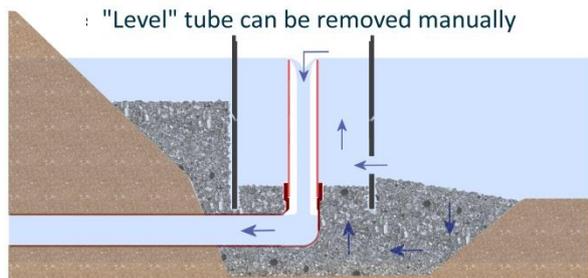


Fig 1. There is always a controlling level well with the ability to empty the open ditch, regulate the water to the level of the floodable infiltration bank and discharge excess water that cannot be infiltrated.

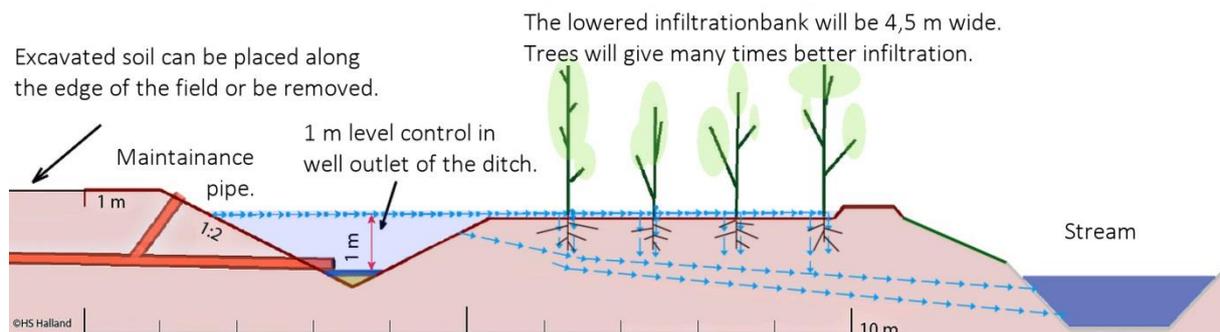


Fig 2. Section through a 10 m wide IBZ facility next to the stream.

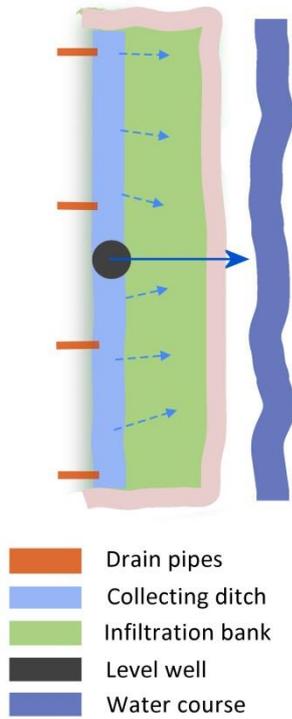


Fig 3. **"Classical"** IBZ. At least 10 m wide with a 4 m wide drivable infiltration bank. Incoming drainpipes are separately emptied in the collecting ditch. They are usually temporally flooded during rainy weather conditions.

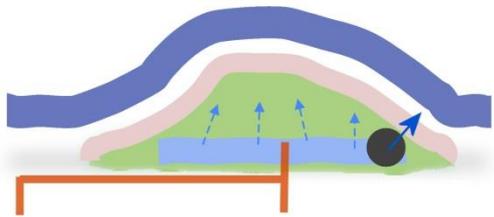


Fig 4. **"Meander"** IBZ. Drain pipes are connected and the water is directed to a meander bank or any other irregular infiltration bank.

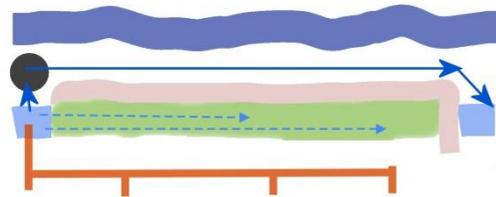


Fig 5. **"Narrow"** IBZ. The 4 m wide infiltration bank is placed downstream the collecting ditch. This model will reduce the width of the facility to 5 m.

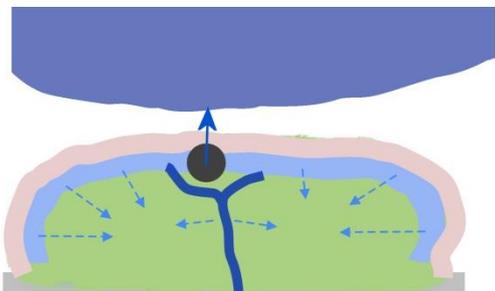


Fig 6. **"Ditch mouth"** IBZ. Open ditches which enter into lakes or ponds along a marshy shore may be divided into channels and the water infiltrated in the marshy shore zone.

