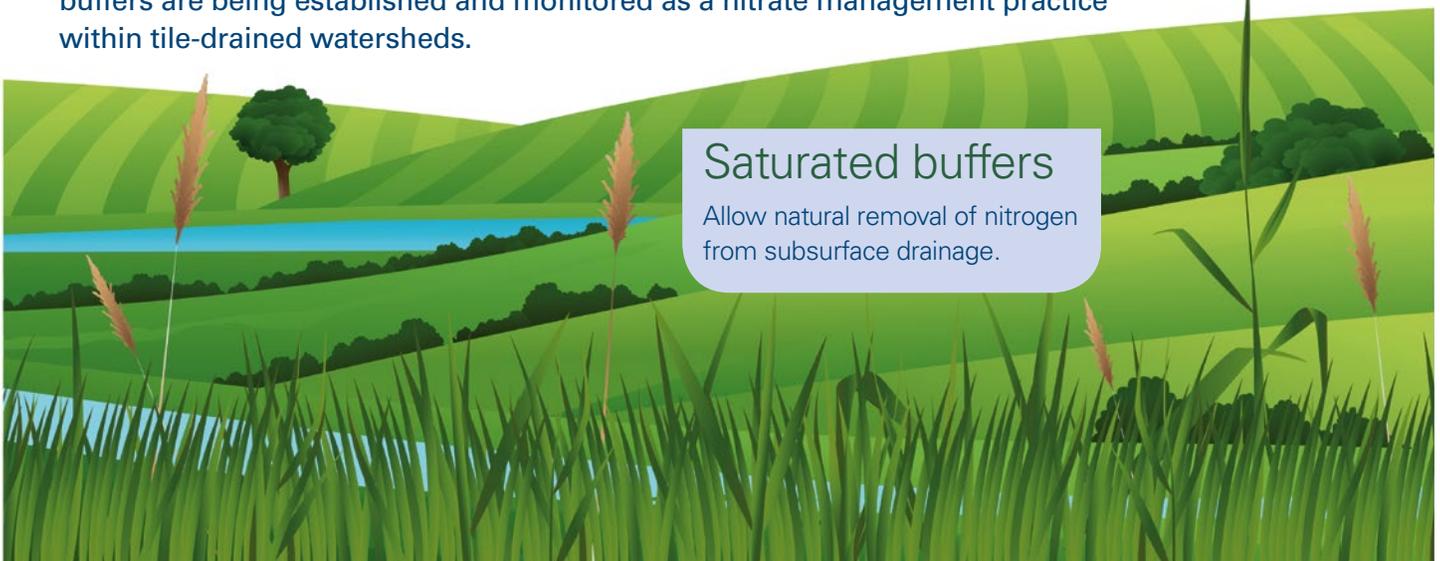


Cleaning Iowa's Waters with Saturated Buffers in Iowa Watersheds

Working with private land-owners in Iowa Water Quality Initiative watersheds, saturated buffers are being established and monitored as a nitrate management practice within tile-drained watersheds.



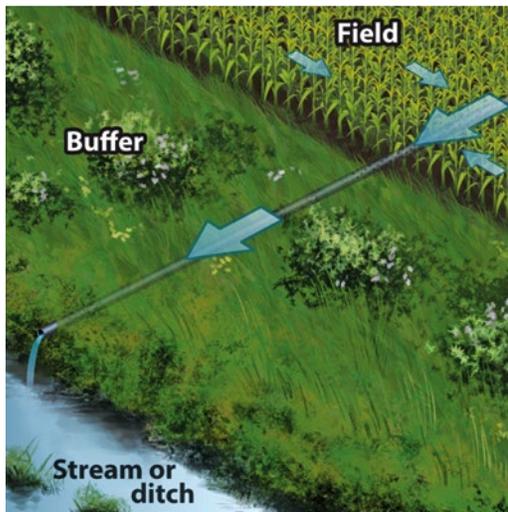
Saturated buffers

Allow natural removal of nitrogen from subsurface drainage.

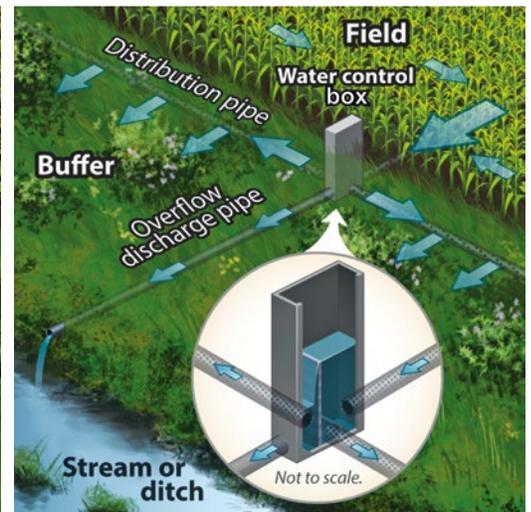
Tile-drained lands

Underground pipes divert water from cropland, reducing stress on plants. A box diverts water flow into the buffer, increasing the shallow groundwater level and nutrient removal. This is a saturated buffer.

CONVENTIONAL OUTLET



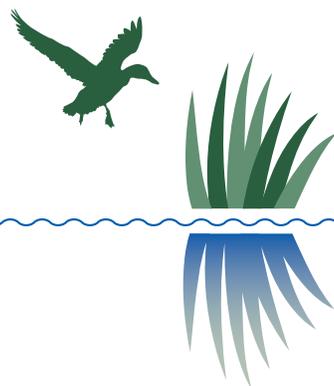
OUTLET with SATURATED BUFFER



Source: Frankenburger et al., unpublished

BENEFITS OF A SATURATED BUFFER

- Existing buffer removes sediment, phosphorus and pesticides and provides **wildlife habitat**
- Nitrate** is removed through denitrification and plant uptake



Flooding

- 5% streamflow reduction
- Reduces peak flow in streams

INITIAL RESEARCH

Initial research is being conducted within two saturated buffers on privately owned fields located in Hamilton and Story counties, north-central Iowa. Sites were established in 2010 and 2013. Additional monitoring is needed to demonstrate performance at other sites across the state.

DRAINAGE TILE FLOW

first 4 years



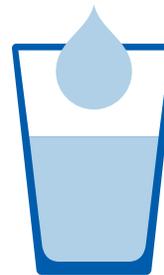
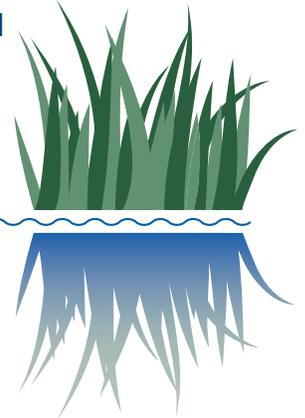
35% to 59% tile flow
diverted into buffers

Study: Bear Creek Watershed

NITRATE REMOVAL WITHIN SATURATED BUFFERS

most NITRATE entering the **BUFFER**

removed by plant uptake, microbial immobilization, and denitrification



the end result is **CLEANER WATER**

IOWA WATER QUALITY INITIATIVE SITES

Additional saturated buffers are being established within Iowa Water Quality Initiative watersheds. Data is being used to develop criteria for installing saturated buffers as a **conservation practice**.



Construction of saturated buffer

For more information go to

www.extension.iastate.edu/waterquality

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