Environmental Quality Incentives Program
2013 EQIP Signup

Minnesota Supplement for:
Practice Standard 747 – Denitrifying Bioreactor

Supplemental Criteria

1. Payment is based upon the volume of wood chips installed and includes; woodchips, excavation, piping, control structures, fabric, and site restoration.

Scenarios

1. Drainage Bioreactor, with topsoil cover and 1 structure

This practice is installed at the outlet of a subsurface drainage system. The water passes through a structure (with overflow bypass) which disperses it through a volume of woodchips (or equivalent material as supported by research) where the nitrogen is converted such that the discharged water has a reduced level of nitrogen compared to the initial inflow. Typical size is 15' x 100' x 5' deep. This scenario uses one structure with two baffles so inflow and outflow happen at the same structure. This bioreactor has geotextile fabric between the wood chips and the soil cover plus the following components: woodchip filled pit, a soil cover, one water control structure with two baffles, and piping to convey water to and from the bioreactor. Woodchips serve as the carbon source necessary to the denitrification process. 20% settling of wood chips may occur but the volume is based on neat line in the drawings.
Associated practices: Subsurface Drain (606), Structure for Water Control (587), Drainage Water Management (554).
Resource concern: Water Quality Degradation - Excess nutrients in surface and ground waters.
Management and maintenance of the bioreactor (including chip replenishment), as well as monitoring and reporting to demonstrate the performance of the practice are not included in this scenario.

2. Drainage Bioreactor, with no topsoil cover and 1 structure

This practice is installed at the outlet of a subsurface drainage system. The water passes through a structure (with overflow bypass) which disperses it through a volume of woodchips (or equivalent material as supported by research) where the nitrogen is converted such that the discharged water has a reduced level of nitrogen compared to the initial inflow. Typical size is 15' x 100' x 5' deep. This scenario uses one structure with two baffles so inflow and outflow happen at the same structure. The woodchips extend to the ground surface. The following components are used: woodchip filled pit to ground surface, one water control structure with two baffles, and piping to convey water to and from the bioreactor. Woodchips serve as the carbon source necessary to the denitrification process. 20% settling of wood chips may occur but payment is by neat line on drawing.
Associated practices: Subsurface Drain (606), Structure for Water Control (587), Drainage Water

Management (554).
Resource concern: Water Quality Degradation - Excess nutrients in surface and ground waters.
Management and maintenance of the bioreactor (including chip replenishment), as well as monitoring and reporting to demonstrate the performance of the practice are not included in this scenario.

3. Drainage Bioreactor, with topsoil cover and 2 structures

This practice is installed at the outlet of a subsurface drainage system. The water passes through a structure (with overflow bypass) which disperses it through a volume of woodchips (or equivalent material as supported by research) where the nitrogen is converted such that the discharged water has a reduced level of nitrogen compared to the initial inflow. The typical size is 15' x 100' x 5' deep. This scenario uses separate structures for inlet and outlet. This bioreactor has geotextile fabric between the wood chips and the soil cover plus the following components: woodchip filled pit, a soil cover, two water control structures (to allow management of the flow rate and free water elevation within the bioreactor), and piping to convey water to and from the bioreactor. Woodchips serve as the carbon source necessary to the denitrification process. 20% settling of woodchips may occur but payment is by neat line on the drawing.
Associated practices: Subsurface Drain (606), Structure for Water Control (587), Drainage Water Management (554).
Resource concern: Water Quality Degradation - Excess nutrients in surface and ground waters.
Management and maintenance of the bioreactor (including chip replenishment), as well as monitoring and reporting to demonstrate the performance of the practice are not included in this scenario.

4. Drainage Bioreactor, with no topsoil cover and 2 structures

This practice is installed at the outlet of a subsurface drainage system. The water passes through a structure (with overflow bypass) which disperses it through a volume of woodchips (or equivalent material as supported by research) where the nitrogen is converted such that the discharged water has a reduced level of nitrogen compared to the initial inflow. The typical size is 15' x 100' x 5' deep. The woodchips are placed up to the ground surface. This scenario uses separate structures for inlet and outlet. This bioreactor has the following components: woodchip filled pit, two water control structures (to allow management of the flow rate and free water elevation within the bioreactor), and piping to convey water to and from the bioreactor. Woodchips serve as the carbon source necessary to the denitrification process. 20% settlement of woodchips may occur but payment is by neat line on drawing.
Associated practices: Subsurface Drain (606), Structure for Water Control (587), Drainage Water Management (554).
Resource concern: Water Quality Degradation - Excess nutrients in surface and ground waters.
Management and maintenance of the bioreactor (including chip replenishment), as well as monitoring and reporting to demonstrate the performance of the practice are not included in this scenario.

5. Denitrifying Bioreactor, fully lined with geotextile and soil cover, 2 structures

This practice is installed at the outlet of a subsurface drainage system. The water passes through a structure (with overflow bypass) which disperses it through a volume of woodchips (or equivalent material as supported by research) where the nitrogen is converted such that the discharged water has a reduced level of nitrogen compared to the initial inflow. Typical size is 15' x 100' x 5' deep. This scenario uses two structures with one baffle each so inflow and outflow happen different structures. This bioreactor has geotextile fabric lining the pit and between the wood chips and the soil cover plus the following components: woodchip filled pit, a soil cover, two water control structures, and piping to convey water to and from the bioreactor. Woodchips serve as the carbon source necessary to the denitrification process. 20% settling of wood chips may occur but the volume is based on neat line in the drawings.
Associated practices: Subsurface Drain (606), Structure for Water Control (587), Drainage Water Management (554).
Resource concern: Water Quality Degradation - Excess nutrients in surface and ground waters.
Management and maintenance of the bioreactor (including chip replenishment), as well as monitoring and reporting to demonstrate the performance of the practice are not included in this scenario.