



Summary of permit requirements for bioretention

The following are requirements of the Construction Stormwater General Permit (https://stormwater.pca.state.mn.us/index.php?title=2018_Minnesota_Construction_Stormwater_Permit).

Infiltration systems (bioinfiltration) (https://stormwater.pca.state.mn.us/index.php?title=MN_CSW_Permit_Section_16_Infiltration_Systems)

- Permittees must design infiltration systems such that pre-existing hydrologic conditions of wetlands in the vicinity are not impacted (e.g., inundation or breaching a perched water table supporting a wetland).
- Permittees must not excavate infiltration systems to final grade, or within three (3) feet of final grade, until the contributing drainage area has been constructed and fully stabilized unless they provide rigorous erosion prevention and sediment controls (e.g., diversion berms) to keep sediment and runoff completely away from the infiltration area.
- When excavating an infiltration system to within three (3) feet of final grade, permittees must stake off and mark the area so heavy construction vehicles or equipment do not compact the soil in the infiltration area.
- Permittees must use a pretreatment device (<https://stormwater.pca.state.mn.us/index.php?title=Pretreatment>) such as a vegetated filter strip, forebay, or water quality inlet (e.g., grit chamber) to remove solids, floating materials, and oil and grease from the runoff, to the maximum extent practicable, before the system routes stormwater to the infiltration system.
- Permittees must design infiltration systems to provide a water quality volume (https://stormwater.pca.state.mn.us/index.php?title=Water_quality_criteria) (calculated as an instantaneous volume) of one (1) inch of runoff, or one (1) inch minus the volume of stormwater treated by another system on the site, from the net increase of impervious surfaces created by the project.
- Permittees must design the infiltration system to discharge all stormwater (including stormwater in excess of the water quality volume) routed to the system through the uppermost soil surface or engineered media surface within 48 hours. Permittees must route additional flows that cannot infiltrate within 48 hours to bypass the system through a stabilized discharge point.
- Permittees must provide a means to visually verify the infiltration system is discharging through the soil surface or filter media surface within 48 hours or less.
- Permittees must provide at least one soil boring (https://stormwater.pca.state.mn.us/index.php?title=Understanding_and_interpreting_soils_and_soil_boring_reports_for_infiltration_BMPs), test pit or infiltrometer test (https://stormwater.pca.state.mn.us/index.php?title=Determining_soil_infiltration_rates) in the location of the infiltration practice for determining infiltration rates.
- For design purposes, permittees must divide field measured infiltration rates by 2 as a safety factor or permittees can use soil-boring results with the infiltration rate chart in the Minnesota Stormwater Manual (https://stormwater.pca.state.mn.us/index.php?title=Design_infiltration_rates) to determine design infiltration rates. When soil borings indicate type A soils, permittees should perform field measurements to verify the rate is not above 8.3 inches per hour. This permit prohibits infiltration if the field measured infiltration rate is above 8.3 inches per hour.

- Permittees must employ appropriate on-site testing ensure a minimum of three (3) feet of separation (https://stormwater.pca.state.mn.us/index.php?title=Shallow_soils_and_shallow_depth_to_bedrock) from the seasonally saturated soils (or from bedrock) and the bottom of the proposed infiltration system.
- Permittees must design a maintenance access, typically eight (8) feet wide, for the infiltration system.
- This permit prohibits permittees from constructing infiltration systems that receive runoff from vehicle fueling and maintenance areas including construction of infiltration systems not required by this permit.
- This permit prohibits permittees from constructing infiltration systems where infiltrating stormwater may mobilize high levels of contaminants in soil or groundwater. Permittees must either complete the MPCA's contamination screening checklist (https://stormwater.pca.state.mn.us/index.php?title=File:Contamination_screening_checklist_for_stormwater_infiltration_July_2018.xlsx) or conduct their own assessment to determine the suitability for infiltration. Permittees must retain the checklist or assessment with the SWPPP.

For more information and to access the MPCA's "contamination screening checklist" see the Minnesota Stormwater Manual (https://stormwater.pca.state.mn.us/index.php?title=Stormwater_Infiltration_and_soil/groundwater_contamination:_A_guide_to_the_Construction_Stormwater_Permit_requirements).

- This permit prohibits permittees from constructing infiltration systems in areas where soil infiltration rates (https://stormwater.pca.state.mn.us/index.php?title=Guidance_for_amending_soils_with_rapid_or_high_infiltration_rates) (including amended soils) are field measured at more than 8.3 inches per hour unless they amend soils to slow the infiltration rate below 8.3 inches per hour.
- This permit prohibits permittees from constructing infiltration systems in areas with less than three (3) feet of separation distance (https://stormwater.pca.state.mn.us/index.php?title=Shallow_soils_and_shallow_depth_to_bedrock) from the bottom of the infiltration system to the elevation of the seasonally saturated soils or the top of bedrock.
- This permit prohibits permittees from constructing infiltration systems in areas of predominately Hydrologic Soil Group type D soils (https://stormwater.pca.state.mn.us/index.php?title=Soils_with_low_infiltration_capacity) (clay).
- This permit prohibits permittees from constructing infiltration systems within a Drinking Water Supply Management Area (https://stormwater.pca.state.mn.us/index.php?title=Guidance_for_using_the_Stormwater_Special_and_impaired_waters_search_tool) (DWSMA) as defined in Minn. R. 4720.5100, subp. 13, if the system will be located:
 - a. in an Emergency Response Area (ERA) within a DWSMA (https://stormwater.pca.state.mn.us/index.php?title=Guidance_for_using_the_Stormwater_Special_and_impaired_waters_search_tool) classified as having high or very high vulnerability as defined by the Minnesota Department of Health; or
 - b. in an ERA within a DWSMA classified as moderate vulnerability unless a regulated MS4 Permittee performed or approved a higher level of engineering review sufficient to provide a functioning treatment system and to prevent adverse impacts to groundwater; or
 - c. outside of an ERA within a DWSMA classified as having high or very high vulnerability, unless a regulated MS4 Permittee performed or approved a higher level of engineering review sufficient to provide a functioning treatment system and to prevent adverse impacts to groundwater.

See "higher level of engineering review (https://stormwater.pca.state.mn.us/index.php?title=Guidance_and_recommendations_for_conducting_a_higher_level_of_engineering_review_for_stormwater_infiltration_in_DWSMAs_and_Wellhead_Protection_Areas)" in the Minnesota Stormwater Manual for more information.

- This permit prohibits permittees from constructing infiltration systems in areas within 1,000 feet upgradient or 100 feet downgradient of active karst features.
- This permit prohibits permittees from constructing infiltration systems in areas that receive runoff from the following industrial facilities (https://stormwater.pca.state.mn.us/index.php?title=Stormwater_infiltration_at_permitted_industrial_stormwater_facilities) not authorized to infiltrate stormwater under the NPDES stormwater permit for industrial activities: automobile salvage yards; scrap recycling and waste recycling facilities; hazardous waste treatment, storage, or disposal facilities; or air transportation facilities that conduct deicing activities.

Filtration systems (biofiltration) (https://stormwater.pca.state.mn.us/index.php?title=MN_CSW_Permit_Section_17_Filtration_Systems)

- Permittees must not install filter media until they construct and fully stabilize (https://stormwater.pca.state.mn.us/index.php?title=MN_CSW_Permit_Section_25_Definitions#25.30) the contributing drainage area unless they provide rigorous erosion prevention (https://stormwater.pca.state.mn.us/index.php?title=MN_CSW_Permit_Section_25_Definitions#25.9) and sediment controls (https://stormwater.pca.state.mn.us/index.php?title=MN_CSW_Permit_Section_25_Definitions#25.29) (e.g., diversion berms) to keep sediment and runoff completely away from the filtration area.
- Permittees must design filtration systems to remove at least 80 percent of TSS.
- Permittees must use a pretreatment device such as a vegetated filter strip, small sedimentation basin, water quality inlet, forebay or hydrodynamic separator to remove settleable solids, floating materials, and oils and grease from the runoff, to the maximum extent practicable, before runoff enters the filtration system.
- Permittees must design filtration systems to treat a water quality volume (https://stormwater.pca.state.mn.us/index.php?title=MN_CSW_Permit_Section_25_Definitions#25.36) (calculated as an instantaneous volume) of one (1) inch of runoff, or one (1) inch minus the volume of stormwater treated by another system on the site, from the net increase of impervious surfaces (https://stormwater.pca.state.mn.us/index.php?title=MN_CSW_Permit_Section_25_Definitions#25.15) created by the project (https://stormwater.pca.state.mn.us/index.php?title=MN_CSW_Permit_Section_25_Definitions#25.24).
- Permittees must design the filtration system to discharge all stormwater (including stormwater in excess of the water quality volume) routed to the system through the uppermost soil surface or engineered media surface within 48 hours. Additional flows that the system cannot filter within 48 hours must bypass the system or discharge through an emergency overflow.
- Permittees must design the filtration system to provide a means to visually verify the system is discharging through the soil surface or filter media within 48 hours.
- Permittees must employ appropriate on-site testing to ensure a minimum of three (3) feet of separation between the seasonally saturated soils (or from bedrock) and the bottom of the proposed filtration system.
- Permittees must ensure that filtration systems with less than three (3) feet of separation between seasonally saturated soils or from bedrock are constructed with an impermeable liner.
- The permittees must design a maintenance access, typically eight (8) feet wide, for the filtration system.

Related pages

- Bioretention terminology (including types of bioretention)
- Overview for bioretention
- Design criteria for bioretention
- Construction specifications for bioretention
- Operation and maintenance of bioretention
- Assessing the performance of bioretention
- Cost-benefit considerations for bioretention
- Calculating credits for bioretention
- Soil amendments to enhance phosphorus sorption
- Summary of permit requirements for bioretention
- Supporting material for bioretention
- External resources for bioretention
- References for bioretention
- Requirements, recommendations and information for using bioretention with no underdrain BMPs in the MIDS calculator
- Requirements, recommendations and information for using bioretention with an underdrain BMPs in the MIDS calculator

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