

Appendix E. BMP Pollutant Removal Efficiency

Pollutant Removal Efficiencies for Best Management Practices for Use in Pollutant Loading Analysis

Best Management Practice (BMP) removal efficiencies for pollutant loading analysis for total suspended solids (TSS), total nitrogen (TN), and total phosphorus (TP) are presented in the table below. These removal efficiencies were developed by reviewing various literature sources and using best professional judgment based on literature values and general expectation of how values for different BMPs should relate to one another. The intent is to update this information and add BMPs and removal efficiencies for other parameters as more information/data becomes available in the future.

NHDES will consider other BMP removal efficiencies if sufficient documentation is provided.

Please note that all BMPs must be designed in accordance with the specifications in the Alteration of Terrain (AoT) Program Administrative Rules (Env-Wq 1500). If BMPs are not designed in accordance with the AoT Rules, NHDES may require lower removal efficiencies to be used in the analysis.

BMP in Series: When BMPs are placed in series, the BMP with the highest removal efficiency shall be the efficiency used in the model for computing annual loadings. Adding efficiencies together is generally not allowed because removals typically decrease rapidly with decreasing influent concentration and, in the case of primary BMPs (i.e., stormwater ponds, infiltration and filtering practices), pre-treatment is usually part of the design and is therefore, most likely already accounted for in the efficiencies cited for these BMPs.

| Pollutant Removal Efficiencies for Best Management Practices for Use in Pollutant Loading Analysis | | | | Values Accepted for Loading Analyses | | |
|--|--|-------|--|--------------------------------------|-----|-----|
| BMP Type | BMP | Notes | Lit. Ref. | TSS | TN | TP |
| Stormwater Ponds | Wet Pond | | B, F | 70% | 35% | 45% |
| | Wet Extended Detention Pond | | A, B | 80% | 55% | 68% |
| | Micropool Extended Detention Pond | TBA | | | | |
| | Multiple Pond System | TBA | | | | |
| | Pocket Pond | TBA | | | | |
| Stormwater Wetlands | Shallow Wetland | | A, B, F, I | 80% | 55% | 45% |
| | Extended Detention Wetland | | A, B, F, I | 80% | 55% | 45% |
| | Pond/Wetland System | TBA | | | | |
| | Gravel Wetland | | H | 95% | 85% | 64% |
| Infiltration Practices | Infiltration Trench (≥ 75 ft from surface water) | | B, D, I | 90% | 55% | 60% |
| | Infiltration Trench (< 75 ft from surface water) | | B, D, I | 90% | 10% | 60% |
| | Infiltration Basin (≥ 75 ft from surface water) | | A, F, B, D, I | 90% | 60% | 65% |
| | Infiltration Basin (< 75 ft from surface water) | | A, F, B, D, I | 90% | 10% | 65% |
| | Dry Wells | | | 90% | 55% | 60% |
| | Drip Edges | | | 90% | 55% | 60% |
| Filtering Practices | Aboveground or Underground Sand Filter that infiltrates WQV (≥ 75 ft from surface water) | | A, F, B, D, I | 90% | 60% | 65% |
| | Aboveground or Underground Sand Filter that infiltrates WQV (< 75 ft from surface water) | | A, F, B, D, I | 90% | 10% | 65% |
| | Aboveground or Underground Sand Filter with underdrain | | A, I, F, G, H | 85% | 10% | 45% |
| | Tree Box Filter | TBA | | | | |
| | Bioretention System | | I, G, H | 90% | 65% | 65% |
| | Permeable Pavement that infiltrates WQV (≥ 75 ft from surface water) | | A, F, B, D, I | 90% | 60% | 65% |
| | Permeable Pavement that infiltrates WQV (< 75 ft from surface water) | | A, F, B, D, I | 90% | 10% | 65% |
| | Permeable Pavement with underdrain | | Use TN and TP values for sand filter w/ underdrain and outlet pipe | 90% | 10% | 45% |

| Pollutant Removal Efficiencies for Best Management Practices for Use in Pollutant Loading Analysis | | | | Values Accepted for Loading Analyses | | |
|--|---|-------|------------------|--------------------------------------|-----|-----|
| BMP Type | BMP | Notes | Lit. Ref. | TSS | TN | TP |
| Treatment Swales | Flow Through Treatment Swale | TBA | | | | |
| Vegetated Buffers | Vegetated Buffers | | A, B, I | 73% | 40% | 45% |
| Pre-Treatment Practices | Sediment Forebay | TBA | | | | |
| | Vegetated Filter Strip | | A, B, I | 73% | 40% | 45% |
| | Vegetated Swale | | A, B, C, F, H, I | 65% | 20% | 25% |
| | Flow-Through Device - Hydrodynamic Separator | | A, B, G, H | 35% | 10% | 5% |
| | Flow-Through Device - ADS Underground Multichamber Water Quality Unit (WQU) | | G, H | 72% | 10% | 9% |
| | Other Flow-Through Devices | TBA | | | | |
| | Off-line Deep Sump Catch Basin | | J, K, L, M | 15% | 5% | 5% |