

Best Management Practices (BMPs) Guide

Agricultural BMP's

- Conservation Tillage – The practice of reducing the amount of tillage prior to seeding or after harvesting to increase the amount of ground cover. This decreases the amount of evaporation of soil moisture and protects the soil from erosion during precipitation events.
- Contour Farming – The practice of planting row crops across the slope (instead of up/down the slope) to prevent runoff from transporting soil down slope and infiltration.
- Heavy Use Area Protection – The practice of adding stone or rip-rap to areas of heavy use or potential mud tracking. This prevents soil from being transported onto road ways or other areas where it can be transported by run-off into streams and other water ways.
- Stream Bank Fencing – The practice of fencing off water ways where cattle or other livestock may wander. This prevents the deposition of fecal matter either directly or through contaminated run-off.

Planning BMP's

- Open Space Development Planning – This practice involves planning development projects to protect natural resources such as forests, wetlands, and open space. This includes creating smaller size lots, creating streets to follow natural contours, and to minimize grading.
- Protection of Natural Features – This practice includes providing naturalized buffers between the development and natural resources so that they are not as severely impacted during construction and after the development has been established.
- Eliminating Curb and Gutter – This practice involves the design of new subdivisions to not include curbs and gutters to manage stormwater run-off from streets and parking lots. This design encourages stormwater run-off to travel off the roadways into drainage swales where vegetation can filter contaminants out of the water during infiltration rather than run-off carrying pollutants directly to streams and lakes.
- Minimize Grading / Sequencing – This practice implores the developer to design and sequence the project so that there is a minimum of grading necessary, thus exposing minimal areas of ground. This reduces the amount of sediment that is carried into the storm sewers and waterways by erosion.

Construction BMPs

- Construction Entrances – This practice is similar to the Heavy Use Area Protection practice where stone is placed at the entrance of the construction site to eliminate the tracking of sediment from the site onto public roads.
- Permanent Diversions – This practice entails the creation of swales to carry stormwater run-off to designated areas on-site to be treated to remove sediment or contaminants prior to discharging off-site.

- Rock Check Dams – This practice involves the placement of rock dams at specific locations along diversions or grassed waterways to lower the velocity of stormwater moving through the channels. This allows sediment to settle out while decreasing the amount of erosion that occurs with rapidly moving water.
- Erosion Control Blanket / Mulch – This practice is used to provide a long-term, yet temporary cover of bare or freshly seeded ground to prevent erosion before permanent cover has been effectively established.

Post Construction BMPs

- Permeable Pavers / Porous Asphalt – This practice encourages infiltration of stormwater into the ground by using a hard surface which has pore space where water can seep through slowly. This reduces the amount of stormwater which may need to be detained on site and allows the filtering out of contaminants.
- Natural Landscaping – This practice involves the use of native vegetation communities in place of using turf grass in areas where stormwater run-off will travel. This includes buffers around wetlands and detention basins, grassed waterways, and vast open spaces.
- Conservation Easements – This practice provides protection of created areas and BMPs from future development. Many municipalities currently require these in developments which utilize BMP's.

Stormwater BMPs

- Extended Detention – This practice involves the storage of stormwater runoff in a detention basin for a period of time up to 48 hours. Turf grass is the typical vegetation along the bottom and side slopes of the basin. The extended detention slows and reduces the peak discharges from the tributary watershed and increases water quality by allowing suspended sediments and pollutants to settle out of the runoff.
- Dry Bottom Detention Basin – This practice is a detention facility that is designed to empty between storm events. Storage at the restricted outlet allows the basin to attenuate peak discharges, and some settlement of suspended sediments and pollutants is able to occur in the settling basin near the outlet.
- Wet Bottom Detention Basin – This practice is an open water detention facility with a substantial permanent pool of water below the restricted outlet elevation. Runoff from a storm event is detained by the basin's restrictor for an extended period of time, allowing suspended sediments and pollutants to settle out of the excess runoff into sedimentation basins below the normal water surface of the pond.
- Wetland Bottom Detention Basin - A wetland bottom detention basin is a detention facility whose bottom is a created wetland. A restricted outlet on the basin allows for the extended detention of run-off; the shallow pools of water below the outlet elevation necessary to maintain the wetland plantings allow suspended sediments and pollutants to settle out of the accumulated runoff.
- Level Spreader – This practice involves the use of a perforated drain tile placed parallel to the slope, at the outlet end of existing drain tile. The level spreader will help reduce

the velocity of the water coming out of the pipe and spreads it over a larger horizontal area to reduce the erosion around an outlet.

- Bioswales – This practice creates a specialized waterway with native vegetation which will allow filtering of contaminants by the plants and promoting infiltration of stormwater.
- Rain Gardens – This practice includes creating specialized gardens into which stormwater is routed to in order to provide a water source for the plants. The native vegetation is chosen specifically so that the collected stormwater is dispersed through evaporation rather than being outlet into a storm sewer system.
- Infiltration Gallery – This practice involves installing a sub-surface groundwater collection system, typically shallow in depth, constructed with open-jointed or perforated pipes that discharge collected water into a watertight chamber from which the water is pumped to treatment facilities and into the distribution system. These are usually located close to streams or ponds.