

3. BMP Identification and Implementation

3.1. Overview

This section presents an overview of the process followed by the Michigan of Department Transportation (MDOT), to assess appropriate structural and non-structural Best Management Practices (BMPs), which may be applicable to the activities. In 1999, MDOT undertook a detailed investigation of nation-wide BMP programs and pilot studies for urban areas and other departments of transportation. This analysis was summarized in a report and matrix of the BMPs evaluated in early 2000. MDOT officials reviewed this BMP matrix and report, provided specific comments on each BMP, and generated a list of approved BMPs for MDOT as summarized in this section.

3.2. BMP Adoption Procedure

This section provides the results of initial BMP selections. Selected BMPs are identified as structural or non-structural. A process for future the revision or expansion of this initial list is also described.

The full list of BMPs reviewed by MDOT is provided in Appendix B and summarized below. The matrix includes an overall and preliminary investigation of urban runoff control BMPs, which could be applicable to MDOT activities. The matrix includes structural and non-structural BMPs, as well as BMPs currently being tested in pilot studies by California Department of Transportation (Caltrans). Information such as BMP description, limitations, benefits, pollutant removal efficiency (based on actual monitoring data), capital costs, and O&M costs is included. The information presented was retrieved from data available at the time the matrix was generated. Costs presented are from 1999, unless indicated otherwise. MDOT reviewed this summary information and provided specific comments on each BMP, based on applicability to their operations and activities.

3.2.1. Structural BMPs

The following is a brief outline of the structural BMPs approved by the MDOT as appropriate for its activities:

Infiltration Trench is a gravel-filled trench designed to infiltrate storm water into the ground. Typically, infiltration trenches can only capture a small amount of runoff, and therefore, may be designed to capture the first flush of the runoff event. For this reason, they are typically used with other BMPs, such as detention basins to control peak flows.

Infiltration Basin are designed to capture a storm water runoff volume, hold this volume and infiltrate it into the ground over a period of days. This system consists of a pretreatment structure, a manifold system, and a drain field. Basins are typically not designed to retain a permanent pool of water.

First Flush Basins are sized to regulate water quality by dropping out pollutants attached to sediments. First flush refers to the large percentage of storm pollutant loading that is

produced by a relatively small percentage of the runoff volume during the initial stages of the runoff. First flush basins may be used with other BMPs.

Concrete Grid Pavements are lattice grid structures with grassed or pervious material placed in the grid openings. Their use, however, is generally restricted to parking areas and driveways.

Wetlands (constructed) consist of a basin with a forebay and wetland vegetation area. The forebay traps floatables and the larger settleable solids, facilitating maintenance, as well as protecting the wetland vegetation.

Vegetated Swales are vegetated shallow channels with a dense stand of vegetation covering the side slopes and channel bottom that treat concentrated flows.

Infiltration (Vegetative Filter) Strips are densely vegetated, uniformly graded areas that intercept sheet flow and are usually placed parallel to the contributing surface.

Detention Basins are basins that are dry between storms. During a storm, the basin fills. A bottom outlet releases the storm water slowly to provide time for sediments to settle.

Catch Basin Inlet Devices are devices that are inserted into storm drain inlets to filter, or absorb sediment, pollutants, and oil and grease. These devices are typically placed at locations with a high potential for contamination.

BMPs that can be used during construction to control soil erosion and sediment include:

- Temporary Seeding of Stripped Areas
- Mulching and Matting
- Plastic Covering

3.2.2. Non-Structural BMPs

Non-structural BMPs are preventative actions that involve managerial planning and source controls. In addition to the structural BMPs presented above, MDOT approved of the non-structural and erosion control BMPs listed below: These BMPs are discussed in the Operations and Maintenance Handbook.

- Employee Training
- Litter Control
- Identify and Prohibit Illegal or Illicit Discharges to Storm Drains
- Street Sweeping
- Clean and Maintain Storm Drain Channels
- Clean and Maintain Storm Inlet and Catch Basins
- Snow and Ice Control Operations

Additional non-structural BMPs will be discussed throughout this plan.

3.2.3. Future BMP Adoption Process

This section describes the process that MDOT will use to identify, evaluate, and approve BMPs for consideration into activities and projects. The approval process described in this section is currently used for all changes in procedures and new products within MDOT.

The first step in the approval process is to determine the changes needed and conduct the necessary research on the subject. Responsibility for this step is on the individual desiring the change. For storm water management BMPs, the MS4 team described in Section 2.2., has undertaken this task in order to ensure that all appropriate BMPs are approved and available to use on MDOT projects. The second step in the process is to submit this change to the appropriate area of responsibility within MDOT. The MS4 team will assist with identifying the appropriate area of responsibility to submit the document and research to. Once submitted, the change must be reviewed and approved by the appropriate individual within the area of responsibility with expertise in the area. Final approval is required prior to implementation. Refer to Section 10.7. and 10.10., for additional information on the reporting of changes to BMPs and to the Storm Water Management Plan.

3.3. BMP Implementation

The Development Engineer, the Delivery Engineer and the Maintenance Coordinators will evaluate on a site-by-site basis, when and where to deploy the BMPs. BMPs for treatment will be considered both for incorporation into transportation improvement projects (new construction and major reconstruction) and to retrofit existing storm drain systems.

The Development Engineer will then select the specific BMP(s) to implement from the list of potential BMPs, based upon site constraints and specifics of the case-by-case application.