Managing Stormwater

Stormwater management is applicable across multiple disciplines including civil engineering, various environmental fields, planning, construction, design, operations and maintenance.

Academia provides minimal coverage of stormwater management. Most training and experience in stormwater management is acquired through certification and field experience. Certification training and field experience are specific-task-oriented and range in subject matter, level of difficulty, and complexity.

Training is a key element of a successful stormwater program. For years, State departments of transportation (DOTs) have implemented stormwater-related training, most notably to address hydrology, roadside maintenance, and potential storm-water runoff from construction sites. Emphasis for managing stormwater has changed from efficient conveyance to stormwater treatment and volume reduction approaches.

Earlier training may have been implemented as a means to protect a DOT’s assets while most current training focuses on meeting stormwater permit requirements and stormwater program efficiency. Many MS4 NPDES permits require that State DOT staff have specific training on stormwater quality issues, including erosion and sediment control, illicit discharge detection and elimination, pollution prevention, and in some cases, post-construction stormwater BMP design and maintenance.

Instructor-led, online, and self-paced training is available through various agencies, universities, institutes and firms. However, training is most effective when it is adapted for the specific role of the trainee.

Reciprocity of certification programs and training between States is desirable, but difficult, due in part to the following:

- **Training requirements are State-specific:** Staff should be educated on State-specific regulations, and some State environmental resource agencies may require training in unique topics or resources within the State.
• **Training requirements are technology-specific:**
For example, learn to develop application rates for products (such as polyacrylamide) in the design of structural construction -- a Best Management Practice (BMP) to treat clay soils or learn about additional infiltration BMPs that require advanced training.

• **Training requirements are project-specific:**
The U.S. Environmental Protection Agency’s Construction General Permit (and other State-specific construction permits) generally requires construction staff be trained on the content and management requirements of the Stormwater Pollution Prevention Plan (SWPPP) for each specific site. A requirement to assign a trained or certified Erosion Control Specialist for certain projects is increasing in many States.

• **Training requirements are role-specific:**
The amount, detail, and complexity of training on any topic should be tailored to the employee’s role within the organization and relative to their potential impact on water quality. Most stormwater programs have a limited number of staff to dedicate to their program, although stormwater touches many program areas. Some States utilize an inter-division technical advisory group for bridging communication across program areas and between management and field staff.

• **Increasing the breadth of knowledge and coordination of staff involved has accelerated program improvements and performance.** Successful programs consider and use information from other program areas.

Broader stormwater training includes the following:

- Erosion and sediment control;
- Illicit discharge detection and elimination;
- Pollution prevention at maintenance yards, rest areas, park and rides, rail and ferry stations, and construction sites;
- Design, maintenance and inspection of structural and non-structural BMPs to reduce volume and treat runoff; and
- Specific training on the state-specific stormwater regulation and DOT-specific practices and policies.

For Best Practices in addressing The National Pollutant Discharge Elimination System (NPDES) and other Water Quality issues as they relate to the Nation’s highway systems, visit: onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-68A_08-03.pdf

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**STORMWATER MANAGEMENT RESOURCES**


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