

Getting Technical for Compliance

CUSTOMIZED SOFTWARE TOOLS INCREASE EFFICIENCY IN MEETING STORM WATER SYSTEM PERMITTING REQUIREMENTS

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Prior to the implementation of existing regulations, for decades the discharge of pollutants in the nation's waters caused severe degradation in water quality. To protect the quality of surface water and groundwater, Congress passed laws and federal agencies developed discharge rules.

Compliance with the environmental regulations requires significant effort, especially when a large number of systems is involved. Compliance reports

and permit applications generally require field inspection of facilities/systems and certification from registered professionals. As laws and rules continue to evolve, so does the technology for complying with environmental regulations.

In this paper, the application of technology in developing a tool for storm water inspection and permit compliance is presented. This tool has been designed to handle large quantities of data associated with inspection and permitting of storm water management systems. This program allows users to save time and omit errors.

REGULATORY BACKGROUND

To protect the nation's water resources and maintain the integrity of the environment, the federal government developed and implemented a series of rules (e.g., Rivers & Harbor Act [1899]; Water Pollution Act [1948] and Water Quality Act [1965]). These rules, however, contained deficiencies and were ineffective in protecting the environment, which led to the development of the federal Clean Water Act (CWA) of 1972, 33 U.S.C. This legislation required the U.S. Environmental Protection Agency (EPA) to set national water quality standards. Since Congress passed the CWA, the U.S. has made tremendous strides in cleaning up its rivers, lakes and coastal waters.

The CWA of 1972 provides many tools to achieve its goals. A major

element within the CWA, the National Pollutant Discharge Elimination System (NPDES), was designed to prevent discharge of any pollutant without a permit. The NPDES permitting program covers discharge of pollutants from any site (i.e., industrial facilities, wastewater treatment plants, construction sites, storm water runoff). Over the past three decades, point sources of pollutants have been controlled via the issuance of permits. The monitoring and discharge limits imposed as permit conditions have proven to be effective in protecting water quality and the environment.

The CWA was amended in 1987 to require the EPA to develop a comprehensive, phased program to regulate storm water discharge, including nonpoint source pollutants, under the NPDES storm water program.

To control nonpoint sources, Phase I of the storm water NPDES rule was issued in 1990. This program addressed storm water discharge from medium to large municipal separate sewer systems (MS4s) and discharge associated with industrial activities. In addition to industrial activities and municipalities with more than 100,000 residents, Phase I NPDES required permits for construction sites with more than five acres of disturbance and the development and implementation of a monitoring program.

In 1998 (the 25th anniversary of the CWA), former President Bill Clinton and former Vice President Al Gore released



Handheld devices help field inspectors confirm locations.

the Clean Water Action Plan (CWAP), a comprehensive strategy designed to protect and restore the nation's water resources using a watershed approach. The federal government funded this program, and initially, federal agencies led its implementation. In coordination with or parallel to the federal government, state and local agencies worked to develop and implement tools for improving water quality. The CWAP was designed to protect water quality; address pollution runoff; improve public involvement and citizens' right to know; and develop a unified federal policy. Many programs in the CWAP are designed to assist in maintaining and improving water quality.

In addition to the CWAP, under Section 319 of the CWA the EPA is authorized to establish, in conjunction with the states, a nonpoint source pollution program. Section 319 of the CWA authorizes states to apply for nonpoint source grants. State governments and agencies have already started to implement a statewide watershed approach and form partnerships with federal agencies to conserve and restore bodies of water.

The storm water Phase II rule was finalized by Oct. 29, 1999, but associated permits were not due until 2003. The Phase II NPDES program required municipalities with 10,000 or more residents to develop a storm water management plan that fits local conditions and allows flexibility to meet local needs. It defines a storm water management program for a small MS4 as a program composed of six elements that, when implemented together, are expected to reduce pollutants discharged into receiving water bodies.

Unlike the Phase I monitoring requirements, Phase II NPDES rules took a more flexible approach by relying on the implementation of best management practices that are likely sufficient to meet the compliance requirements. This program requires municipalities and owners of storm water systems to develop tools (e.g., mapping of their NPDES systems) and monitor and update their storm water management plans on an annual basis. The Phase II rule defines a storm water management program.

NPDES SYSTEM INSPECTION

Municipalities and state agencies generally own, maintain and operate storm water systems associated with facilities located within their jurisdictional areas. In Florida, the installation of storm water systems requires owners to obtain environmental resource permits (ERPs) from one of the five water management districts (WMDs). As required by the rules, storm water management facilities, whether for conveyance or treatment, must be properly maintained to operate as designed.

In addition to ERPs, municipalities and state entities, (e.g. departments of transportation [DOTs]) are required to comply with their NPDES permit requirements. As part of the NPDES Phase II permit conditions, mapping of the existing storm water systems and identification of outfalls and potential illicit discharge locations are also required.

To ensure proper operation of the systems and to keep compliant, DOTs perform regular inspection of their storm water management systems. The inspection process involves:

- Inspecting all permitted surface and storm water management systems, including wetland mitigation sites;
- Inspecting all permitted and specified nonpermitted storm water conveyance systems;
- Identifying problems and providing recommendations to correct deficiencies;
- Submitting inspection reports and any engineering studies performed in accordance with specified conditions; and
- Collecting plans and drainage computations of existing systems from the WMDs if not provided by the permit holder.

The information collected during system inspections is used to generate inspection reports. These reports are certified by a registered professional engineer prior to being submitted to the agencies. The field information is recorded and used to determine whether any of the inspected systems require corrective actions. If so, a work plan is developed to define and perform the required corrective action. Corrective actions could range from simple cleaning of a conveyance system to major design and refurbishing of the system.



NPDES management software can help save time and prevent errors.

TECHNOLOGICAL DEVELOPMENTS

The field inspection associated with a large number of storm water systems—plus the data handling, inspection report generation and work order development that come with it—becomes a tedious task. This task becomes even more difficult considering it is required regularly and has to be completed under a tight schedule. To overcome this problem, a customized program was developed.

The NPDES management system was developed to assist the ERP and MS4 permit holders with handling filed inspection data and maintaining compliance with permit conditions. This user-friendly program was written in visual basic language and is designed to hold a database of design and field information. It can be modified to handle other environmental permits and allows users to readily view the information associated with any system within the database. **SWS**

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